

## **Competitive Intelligence and Resource Based view of the Firm**

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### **Introduction**

Any organization that fails to respond to the changes and challenges in its business environment cannot expect to remain in business for very long. The organization requires adaptability, flexibility, and an ability to create variety in order to survive in a changing, complex, and uncertain competitive environment. With the globalization of the world economy, rapid advance of technology and rising customer expectations, sustain a competitive advantage is become very difficult. Through the exploration of knowledge, organization develops valuable competencies. (Moingeon & Edmondson, 1996) (Sanchez & Heene, 1997). One of the ways to gain a comparative advantage in the market is application of competitive intelligence in business enterprises (Wright, Eid, & Fleisher, 2009) The ability to produce and use Competitive Intelligence will become a necessity in the near future for most organizations (Bose, 2008).

Despite the importance of systematic Competitive Intelligence the concept is still trying to find a footing in academic theory. The objective of this paper is to provide analysis of definition of Competitive Intelligence and how it is related to the theory of Resource based view of the firm.

### **Definition of Competitive Intelligence**

Competitive Intelligence is not a new concept. Many competitive intelligence articles refer to the work of Sun Tzu, who some 2400 years ago wrote "The art of war" a seminal text which provides a detail description how to develop a military intelligence. (Rouach & Santi, 2001). In ancient time it was a practice of Spying and espionage. In 1815 Nathan Rothschild makes a fortune on London stock exchange due to his timely intelligence about battle of Waterloo (Ferguson, 1998). In the modern era the Kelly's Book "*Marketing Intelligence: the Management of Marketing Information*" considered to be the pioneering work in competitive intelligence. It introduced the field of Intelligence. Nearly 30 years ago Porter reported that whilst companies were carrying this activity out informally, in his opinion this was nowhere near sufficient. He advocated the need for a structured intelligence process at all times in order to continuously and systematically identify business opportunities and threats (Porter, 1980). Although competitive intelligence evolved out of marketing the activities of the discipline have come to serve all business functions. "Research and development" people seek to monitor rival organizations while safeguarding their own data. Possessing information such as the production capabilities of a competitor's factories, furthermore, can provide valuable insights. The financial health of a competitor may influence a decision to confront the rival "head on" or (as an alternative) to strategically avoid direct conflict. Although competitive intelligence began as a special area of marketing research, it has grown beyond its origins and today it provides information in all these areas (Walle, 1999) (Dishman & Calof, 2008).

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In business and academics there are many synonym terms for competitive intelligence used by different researchers for example Environmental Scanning (Aguilar, 1967) , Business Intelligence (Pearce, 1976), Competitor analysis (Ghoshal & Westney, 1991), Marketing Intelligence (Kelley, 1965). Market Intelligence (Maltz & Kohli, 1996). Competitive Intelligence helps companies to sustains and develop distinct competitive advantages by using the entire organization and its networks to develop actionable insights about the environment (customers, competitor, regulars, and technology). It uses a systematic and ethical process involving, planning, collection, analysis, communication and management (Calof & Wright, 2008). According to Kahaner “Competitive Intelligence is a systematic programme for gathering and analyzing information about your competitor’s activity and general business trends to further your own companies’ goals” (Kahaner, 1998). The Society of Competitive Intelligence Professionals (SCIP) defines the competitive intelligence as follows: “Competitive intelligence (CI) is the process of monitoring the competitive environment. CI enables senior managers in companies of all sizes to make informed decisions about everything from marketing, R&D, and investing tactics to long-term business strategies. Effective CI is a continuous process involving the legal and ethical collection of information, analysis that doesn't avoid unwelcome conclusions, and controlled dissemination of actionable intelligence to decision makers”

The term “CI” has been in popular use and practice for two or three decades. It has demonstrated staying power and is not viewed as “faddish.” A good number of associations, authors, business departments, consulting firms, practitioners and/or scholars have for years used the term with little ill effect and would see the costs, not benefits, associated with changing it. Also, extending this argument suggests that competitive intelligence is now viewed as an accepted, legitimate, and necessary activity in today’s global business world.

#### **Competitive Intelligence and Business Intelligence**

Sometimes CI is confused with business intelligence (BI). The difference between Business Intelligence and Competitive Intelligence is that BI is internal intelligence about and within the company, whereas CI is external intelligence about the firm’s competitive environment. CI Examples include analysis of the manufacturing or service capabilities of the competitors; analysis of alliances and/or joint ventures entered into by competitors; the competitor’s future plans and strategies for specific markets, or product lines; reasons behind changes in the corporate or business unit strategy (Britt, 2006).

#### **Competitive Intelligence and Competitor Intelligence**

The focus of Competitor Intelligence is on competitors and industry. It identifies and understands the competitors, their strengths, weaknesses, and anticipates their moves (Wright & Calof, 2006). It is the surveillance of the activities of rival firms whereas Competitive Intelligence is a broader concept. Competitive intelligence adds value to the organisation by connecting competitor intelligence with strategic planning. Competitor Intelligence is a subset of Competitive Intelligence. Competitor Intelligence focuses on short term effectiveness of the firms and problems associated with it, whereas Competitive Intelligence focuses on long term sustainability of the firm (Badr, 2003).

#### **Competitive Intelligence and Marketing Research**

According to Walle (1999) Competitive Intelligence used to be a part of marketing research called marketing intelligence now; it has been developed into a distinct business function which serves all other business functions (Walle, 1999). Due to its origin as an activity of marketing research, executives make a common error by considering it synonymous with

marketing research (Dishman & Calof, 2008). Competitive Intelligence isn't confined to occasional research directed by organizations as for their rivals, markets and client inclinations. It is a continuous process which includes gathering and investigation of information as well as incorporating it into the key decision making procedure of the organizations (Bose, 2008) (Dishman & Calof, 2008). Owing to the accessibility of open source data and computing revolution, competitive intelligence has been developed. The other difference between competitive intelligence and marketing research is based upon responsibility; competitive intelligence team is not only responsible for data collection but also for defending the business's own proprietary information. Competitive Intelligence is considered a more comprehensive discipline that simultaneously serves other business functions (Walle, 1999).

The focus of marketing research tends to be on problems associated with the profitable marketing of a firm's product and services. The scope of CI is broader. CI is a valuable added concept that layers over the top of business development, market research and strategic planning. CI is done for the purpose of driving companies business decisions regarding marketing, products, prices, and marketing efforts in order to gain competitive advantage and it must be a total effort, practiced on a continuing basis. This discipline is strongly linked with marketing research and uses many marketing research techniques.

### **Theory of Strategy**

The mechanics of how the firm can maximize its potential in the market place. Any organization's environment is the sum of all the external factors that impact upon it in any manner and degree. There are different levels of environment of the organization like the industry in which organization operates, the city, the country, indeed the whole globe. There are also different kinds of environment: technological, economic, physical, social, and political. These are all factors of which the business strategist is at least subliminally aware. But the rates at which changes occur also vary - fastest in technology, less so in politics. Change requires a company to continuously monitor its environment. Strategy is future-oriented, and those who formulate it must be sensitive to the ways in which their company is vulnerable to change, and to how such changes will affect that future.

With the emerging era of rapid, systemic and radical change, Organization requires more flexible, systemic and dynamic approaches to strategy formulation. The old linear and static approaches require rethinking. Strategic competitiveness is achieved when a firm successfully formulates and implements a value creating strategy but it achieved competitive advantage only when competitors are unable to duplicate or find too costly to try to imitate its strategy. Firms without a competitive advantage at best earn average return. The probability of achieving strategic competitiveness in the 21<sup>st</sup>-century competitive landscape is enhanced for the firm that realize that its survival is depends on the ability to capture intelligence , transform it into usable knowledge and diffuse it rapidly throughout the company. (Ethiraj, Kale, Krishnan, & Singh, 2005). Therefore firm must develop and acquire knowledge, integrate it in to the organization to create capabilities and then apply it to gain a competitive advantage. To be strategically flexible, a firm has to develop the capacity to learn. A company has to learn and apply the knowledge throughout its business faster than its competitors. There are two modern schools of thought which describes how firms generate the information for strategic flexibility and Competitive Advantage.

- The Industrial/Organization(I/O) or Environmental Model of competitive advantage
- The Resource-Based Model of Competitive Advantage

### **The Industrial Organization (I/O) model of Competitive Advantage**

It explains the external environment's dominant influence on firm's strategic actions. This model is grounded in economics and has four underlying assumptions. First the external environment is assumed to impose pressure and constraints that determine the strategies that would result in above average returns. Second, most firms competing within an industry or within a segment of that industry are assumed to control similar strategically relevant resources and to pursue similar strategies in light of those resources. Third, resources used to implement strategies are assumed to be highly mobile across firms, so any resource difference that might develop between firms will be short-lived. Fourth, organizational decision makers are assumed to be rational and committed to acting in firm's best interest.

### **The Resource Based Model of Above Average Return**

The Resource based model assumes that each organization is a collection of unique resources and capabilities. The uniqueness of its resources and capabilities is the basis of firm's strategy and its ability to earn above average returns. Individual resources alone may not yield a competitive advantage. Resources are source of competitive advantage when they are formed into a capability. Resources and Capabilities that serves as a source of competitive advantage for a firm over its rivals are called core competencies.

### **Resource Based View and Competitive Intelligence**

Wernerfelt argued that looking at firms in terms of their resources leads to different immediate insights than the traditional product perspective. Firms can identify the resources leads to high profit. Acquisition can be seen as a purchase of a bundle of resources in a highly imperfect market. Strategy for a bigger firm involves striking a balance between the exploitation of existing resources and the development of new ones. (Wernerfelt, 1984). Firm's resources are heterogeneous and immobile. In order to attain sustained competitive advantage the firm's resources should be valuable, rare, imperfectly imitable, and not substitutable. These resources and capabilities can be viewed as bundles of tangible and intangible assets, including a firm's management skills, its organizational processes and routines, and the information and knowledge it controls (Barney, 1991). A major contribution of the resource-based model is that it explains long-lived differences in firm profitability that cannot be attributed to differences in industry conditions. According to resource based theory the firm performance is determine by the resources it owns.

### **Conclusion**

Competitive Intelligence is defined in literature as a process of converting raw information in to actionable intelligence. The process consists of following steps: Planning and Direction, Collection, Analysis, and Dismination. The process of competitive intelligence can be used as a valuable, rare, imperfectly imitable, and not substitutable resource to get the competitive advantage.

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## **Investigation On Harden Property Of Concrete By Using Copper Slag In Place Of Fine Aggregate With Percentage Inclusion Of Steel Fiber**

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### **Abstract**

A huge mass of concrete is used in construction field in entire world. Gradually the sand is getting depleted and the natural resources are becoming scant hence Government is restricting sand quarrying, thus resulting in a significant increase in its cost. In this present study we are making copper slag as substitute for fine aggregate. Along with the copper slag we are adding steel fiber at different percentage so as to increase the strength. Steel fiber having aspect ratio of 50, and it is hooked end steel fiber. Test are done on compressive strength and acid resistance test and their results are tabulated for 3, 7 and 28 days.

**Keywords:; *fine aggregate, Steel fibre***

### **1. Introduction**

Concrete is one of the important Building Material used in our construction field for different types of structure due to its Strength and Mould ability<sup>[2]</sup>. And it gives all requirements like Durability, fire resistance and impermeability for development of infrastructure<sup>[3]</sup>. As this Aggregate acquires major part in concrete the scarcity of this material is increasing. Because of this problem we are moving with substitution of fine aggregate by other industrial waste materials, by this it contributes in reduction of use fine aggregate. Copper slag is one of the material waste generated in refinery part during extraction of copper metal and its appearance is like black glassy granular material<sup>[5]</sup>. It has huge quantity of iron oxide and its density is comparable high that any other material It is said that in India around 25 million ton of copper is generated per year. Only 15 to 20 % is used in construction industry and remaining is dumped off<sup>[3]</sup>. In manufacture of pig iron, the by product which we get is nothing but granulated blast furnace slag. It is used with ordinary Portland cement because of its good durability, and it extends building life span. It avoids formation of cold joint and gain strength at later period. By using granulated furnace slag the risk of damage is less and also attack of corrosion to reinforcement is less.

Dr.T.Ch Madhavi et al (2015)<sup>[8]</sup> Studied on copper slag effect on concrete with different percentage of polypropylene fiber reinforced concrete. study states that copper slag can be used up to 30 to 50% exceeding that limit decrease strength, and fiber can be used up to 0.2%. Binaya Patnaik et al (2015)<sup>[3]</sup> studied the strength properties of concrete by using both fiber and copper slag. Mix design is done for 20 and 30 grade, They say beyond 1% of steel fiber there is decrease in strength. But for split tensile test and flexural test the strength was increasing without any limit. As they used 2 grade of concrete for M20 they got strength of 11.5% increment and for M30 15.8%. Similarly for tensile test 12.45%, 18.94% for M20 and M30 grade respectively. And 22.97% and 22.38 % for M20 and M30 grade concrete for

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flexural test. The aim of this research is Study on percentage increase in strength of member by replacement of fine aggregate. We used M40 Grade of concrete

## 2. Experimental Programme

### 2.1 Materials Used

The materials used were cement, sand, Coarse aggregate, copper slag and steel fibre. ordinary portland cement of grade 43 with specific gravity of 3.14. The fine aggregate conforming to grading zone II as per IS 383-1970<sup>[7]</sup>. The specific gravity of the fine aggregate and coarse aggregate were 2.64 and 2.66 respectively. Adopted steel fiber of aspect ratio 50.

### Mix Proportion

Design was done as per IS 10262-1982 to achieve characteristic compressive strength of 49.53 N/mm<sup>2</sup>.

TABLE 1: MIX PROPORTION

Cement (kg/m <sup>3</sup> )	Fine aggregate (kg/m <sup>3</sup> )	Coarse aggregate (kg/m <sup>3</sup> )	Water (lit/m <sup>3</sup> )
350	707	1265	140
1	1.62	2.87	0.5



Fig. 1 Steel fiber and copper slag

### 2.2 Sampling and testing Methods

#### Specimen Preparation

The quantities of cement, fine aggregate and coarse aggregate were determined by weight. By using slump cone test method workability was checked. For the determination of compressive strength test, concrete specimens were cast in 0.150m x 0.150m x 0.150m cube steel. The specimens were covered with sacks for 24 hours to maintain the humidity. After 24 hours the specimen were demoulded and allowed for curing till the date of testing we have done testing on 3, 7 and 28 days

### 2.3 Tests Conducted

Compression test After 28-days of curing the concrete cubes were removed from the curing tank and the surface was wiped off. The compressive strength test was conducted on a compression testing machine with a capacity of 200 Tonnes. For 1% steel fiber with 40% copper slag we got maximum compressive strength of 58.76 N/mm<sup>2</sup>

#### Acid resistance test

Cubes of dimension 0.150x0.150x0.150m were casted and kept for curing period of 28 days, after curing they were kept in air for 24 hours. As we are doing acid resistance test we had taken dilute sulphuric acid of 1% these cubes are immersed in this solution for 30 days

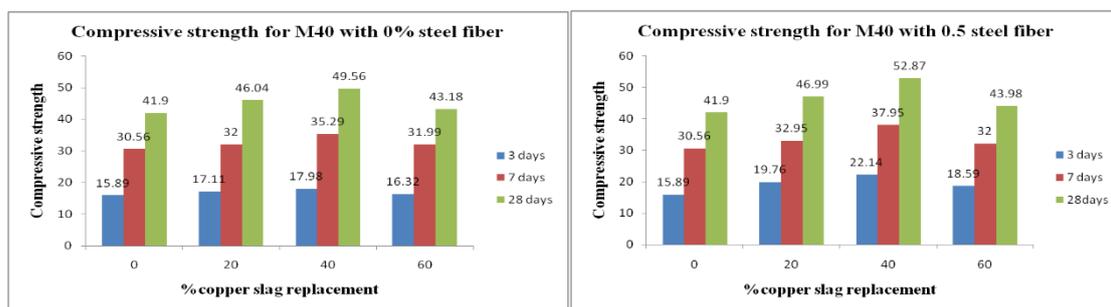
care is taken the solution in maintained uniformity. After 30 days the cubes are removed and strength is checked. and we have got maximum strength 40.23 N/mm<sup>2</sup> for 1% Steel fiber.

### 3. Results and Analysis

In this we shall study on compressive strength and Acid resistance test which was conducted by replacing fine aggregate. Achieved target strength results are studied based on our trial mix. The replacement is in the from 0%, 20%, 40% and 60% for mix of M40 grade

**TABLE 2: COMPRESSIVE TEST RESULTS**

		COMPRESSIVE STRENGTH N/mm <sup>2</sup>			
		Replacemnt Fine aggregate +Copper slag			
Days	% steel added	100+0	80+20	60+40	20+60
3	0	15.89N/mm <sup>2</sup>	17.11N/mm <sup>2</sup>	17.98N/mm <sup>2</sup>	16.32N/mm <sup>2</sup>
	0.5	15.89N/mm <sup>2</sup>	19.76N/mm <sup>2</sup>	22.14N/mm <sup>2</sup>	18.59N/mm <sup>2</sup>
	1	15.89N/mm <sup>2</sup>	20.84N/mm <sup>2</sup>	25.5N/mm <sup>2</sup>	9N/mm <sup>2</sup>
	1.5	15.89N/mm <sup>2</sup>	19N/mm <sup>2</sup>	22.7N/mm <sup>2</sup>	17N/mm <sup>2</sup>
7	0	30.56N/mm <sup>2</sup>	32N/mm <sup>2</sup>	35.29N/mm <sup>2</sup>	31.99N/mm <sup>2</sup>
	0.5	30.56N/mm <sup>2</sup>	32.95N/mm <sup>2</sup>	37.95N/mm <sup>2</sup>	32N/mm <sup>2</sup>
	1	30.56N/mm <sup>2</sup>	34.79N/mm <sup>2</sup>	42.11N/mm <sup>2</sup>	31.92N/mm <sup>2</sup>
	1.5	30.56N/mm <sup>2</sup>	33.56N/mm <sup>2</sup>	40.59N/mm <sup>2</sup>	30.69N/mm <sup>2</sup>
28	0	41.9N/mm <sup>2</sup>	46.04N/mm <sup>2</sup>	49.56N/mm <sup>2</sup>	43.18N/mm <sup>2</sup>
	0.5	41.9N/mm <sup>2</sup>	46.99N/mm <sup>2</sup>	52.87N/mm <sup>2</sup>	43.98N/mm <sup>2</sup>
	1	41.9N/mm <sup>2</sup>	49.61N/mm <sup>2</sup>	58.76N/mm <sup>2</sup>	44N/mm <sup>2</sup>
	1.5	41.9N/mm <sup>2</sup>	47.89N/mm <sup>2</sup>	56.76N/mm <sup>2</sup>	43.67N/mm <sup>2</sup>



**Fig. 2 Variation in Compressive strength for 0% and 0.5% of steel fiber**

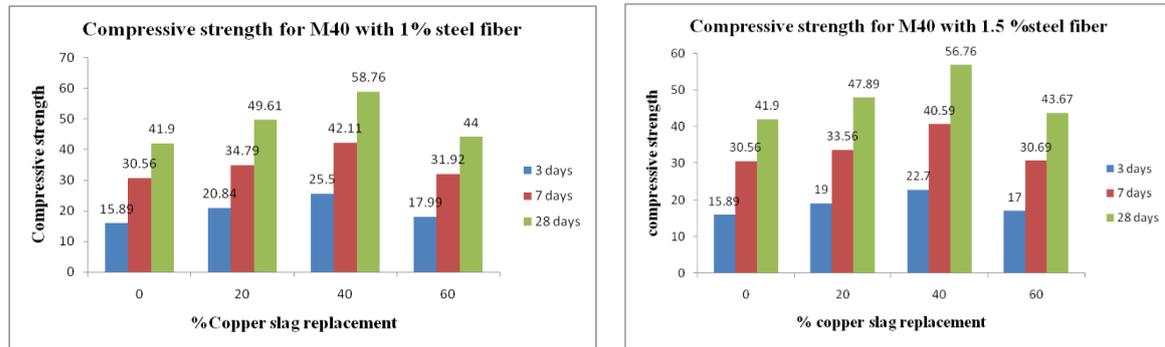


Fig. 3 Variation in Compressive strength for 1% and 1.5% of steel fiber  
TABLE 3: ACID RESISTANCE TEST RESULTS

		Acid Resistance test			
		Replacemnt Fine aggregate +Cooper slag			
Days	% steel added	100+0	80+20	60+40	20+60
28	0	0N/mm <sup>2</sup>	9.88N/mm <sup>2</sup>	18.28N/mm <sup>2</sup>	3.05N/mm <sup>2</sup>
	0.5	0N/mm <sup>2</sup>	12.14N/mm <sup>2</sup>	26.18N/mm <sup>2</sup>	4.96N/mm <sup>2</sup>
	1	0N/mm <sup>2</sup>	18.4N/mm <sup>2</sup>	40.23N/mm <sup>2</sup>	5.01N/mm <sup>2</sup>
	1.5	N/mm <sup>2</sup>	14.29N/mm <sup>2</sup>	35.46N/mm <sup>2</sup>	4.22N/mm <sup>2</sup>

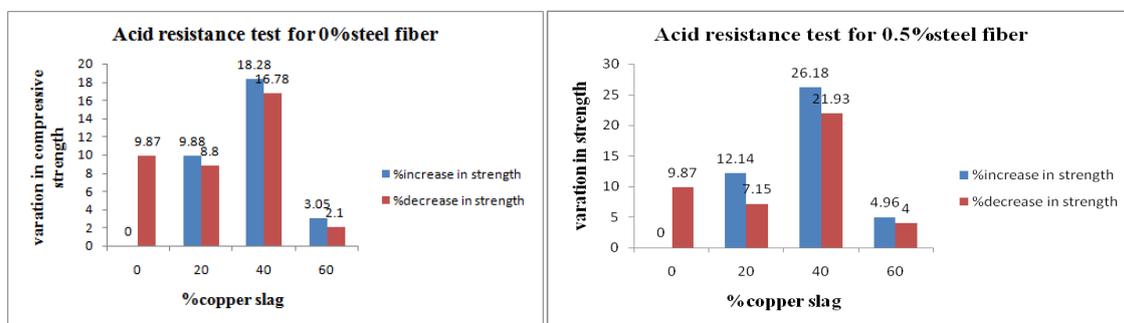


Fig. 4 Acid resistance test for 0 and 0.5% steel fiber

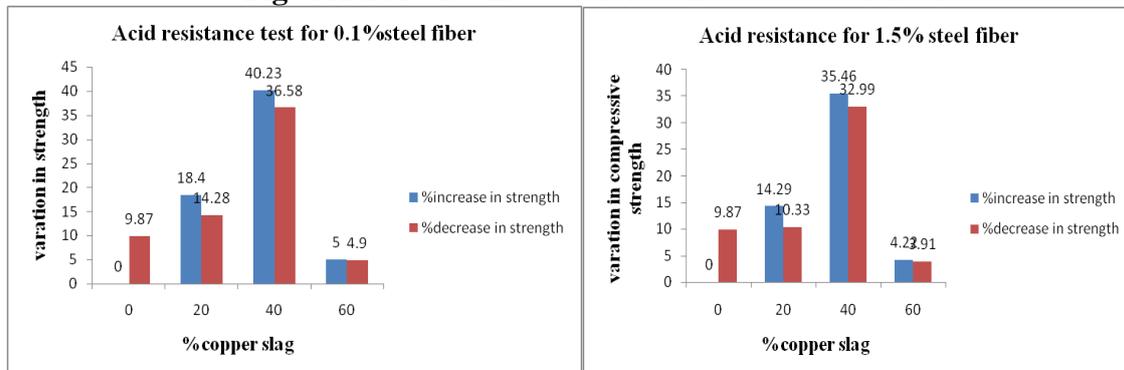


Fig. 5 Acid resistance test for 1% and 1.5 % steel fiber

#### **4. Conclusion**

- The density of concrete goes on increased by adding copper slag. The slump value lies between 72 mm to 100 mm.
- For 0.5 % steel fiber addition to concrete gives percentage increase in strength from 24.95 to 39% for all 3, 7, and 28 days. Highest strength achieved is 52.87 N/mm<sup>2</sup> at 28 days; hence 26 % increment is seen compared with nominal concrete. Similarly for 1% steel we get increase strength of 58.76N/mm<sup>2</sup> that is, 40.23% increment in strength is achieved.
- At 1.5 % steel fiber we get decreased value in strength compared to 1%, the value decreased by 6% for 1% steel fiber.
- It has been seen that there is decrease in strength by 5 % with addition of copper slag by 60%.
- The Compressive strength increased by 18.28% for 40% slag with 0% steel fibre. As we go on adding steel fibre we were getting good strength but at 1.5% steel fibre and 40% slag we found that strength goes on decreasing.
- For acid resistance test, as the percentage of steel fiber goes on increasing there is no much variation in compressive strength Hence we can conclude that steel fiber concrete shows good durability against acid attack

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## **Asset Management System: Criticality of Assets**

**Muhammed Shiyas.K.M**

### **Abstract**

Criticality assessment is a fundamental component of effective Asset Management. Criticality rating uses in asset management to identify the criticality of assets in various organizations throughout the world. Criticality is dealing with Asset Management and Maintenance however it plays an important role in facilitating many of the Asset Management functions. Through proper development of the criticality analysis, an organization will be able to know how to manage their assets and how it is critical to its regular operations. A well-developed Criticality rating is beneficial to the organisation it impacts positively on decision making and provides an objective guide when establishing appropriate responses for various end-user scenarios. Assigning criticality enables every organization to begin implementing the practice of Asset Management by providing a formal means to prioritize work activities and investments and to implement an effective maintenance management system.

**Key Words:** Criticality, Asset Management, Maintenance.

### **Introduction**

Asset failures mainly arise from a lack of appreciation of the risk associated with operating systems or asset. The likelihood and consequences of a potential failure are considered in many instances only after a significant failure triggers a retrospective assessment of a risk to the organisation. The critical failure modes for each asset need to be determined so that asset maintenance, planning and development, capital expenditure, and conditioning monitoring can be planned. The different modes of failure complicate this planning because of incidents, or accidents, or may be damaged during asset maintenance or any other reasons. Failure modes, effects, and criticality analysis (FMECA) is a common approach used to determine the maintenance or renewal required for any asset. The approach is used to determine the primary failure modes, consequences of failure, and the probability of failure, and then design the maintenance programs to prevent them. The practical approach for the criticality in most of the modern organisation is to carry out a planned and structured assessment of the known and likely risks associated with the operation of the organization. Starting from the premise that there is no way to completely eliminate all risk from the organisation, the responsible team in the organization must address the potential for negative impacts in a systematic and scientific way rather than wait for an event to occur to draw our attention to the risk. Assets with a high criticality index should be maintained based on risk management principles. Assets that are not critical may be best managed by leaving them to Run to fail and then replacing them on a reactive basis (e.g. Asset which doesn't require any maintenance). To summarize, assets can be ranked by their criticality, i.e. their calculated or relative risk for maintenance and management applied according to that priority. This approach can generate significant savings over the asset lifecycle, ties in with a comprehensive risk management program, and provides a basis for optimizing future asset investments.

### Literature Review

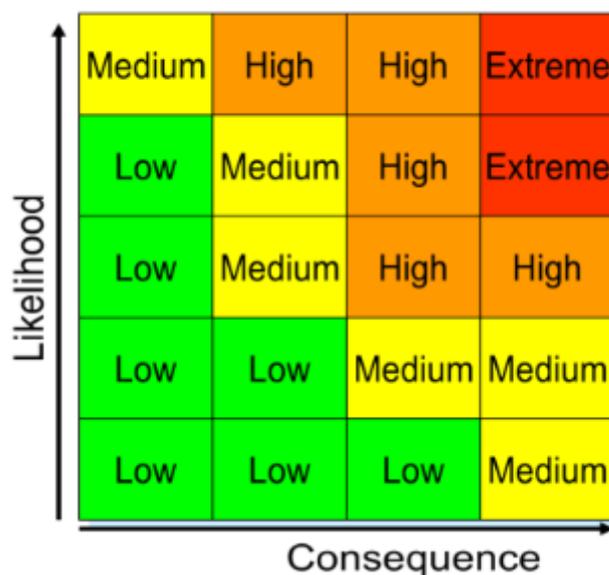
It is very important to know the criticality of every assets owing by the organizations. It will help mainly to improve the performance and life of the assets also to avoid the asset failures. Criticality analysis is a process for determining the relative ranking of assets in a plant or system. The purpose is to objectively rank assets and form a collective agreement and analysis. The study based on Doha, Qatar and this paper outlines the development and implementation of a Risk based assessment of Criticality and discusses the application of Criticality in day-to-day Asset Management and Maintenance activities. A deeper understanding and follow-through with asset criticality strengthen maintenance planning and scheduling operations as industrial businesses learn how best to leverage predictive analytics through their CMMS.

### What is Asset Criticality?

ISO 31000:2009 - Risk Management - Principles and Guidelines defines risk as “the effect of uncertainty on objectives”. The risk assessment process starts by first identifying risk events. In turn, these risk events have two dimensions:

- The consequence of an event
- The likelihood of an event

The overall level of risk is determined by the combination of these dimensions, visualised in a risk matrix.



An Organization can consider risk to be the combination of the severity of consequences of an event, and the probability or likelihood of that event occurring. If we consider that the asset criticality is the same as asset failure risk, then we had better be clear about what the failure event(s) are that we are assessing. An asset may fail due to many different causes, and the likelihood and consequences of each of these failure events will be different.

Failure modes, effects, and criticality analysis (FMECA) is a common approach used to determine the maintenance or replacement required for any asset. However, it should be noted that in this process, the criticality is determined at a failure mode (failure cause) level, and is used as part of a process to identify the most appropriate action to be taken to minimise

or eliminate the potential likelihood or consequences of each failure mode (cause). This process is not intended to result in an overall criticality assessment at asset level.

However, assessing risk implies having to assess the likelihood of an event which in turn means that we need to be clear about exactly which events are being assessed, and how the probability and consequences associated with multiple events on an asset item are to be rolled up to an overall failure risk associated with that asset. It is always advisable to consider the highest probability and consequences for the risk calculation. In other words, are we supposed to assess the risks assuming that we do not have any controls in place to minimise the likelihood or consequences of those failure events.

### **Why do you Need Criticality for Assets?**

To determine the overall priority for performing a maintenance task

The priority for a maintenance task should be determined by the level of risk associated. The level of risk associated with asset is higher, it indicates that the asset is very critical for the particular organization. The higher risk is giving higher priority for the assets. The failure on any critical asset may can affect the regular operation of the organization which will affect reputation and other parameters affecting the performance of the organization.

To determine at a high level, the type of risk mitigation strategy to be applied to the asset

The key issue with this type of approach for determining whether Predictive Maintenance, Preventive Maintenance or Run to Failure strategies are employed is that it fails to comply with the Concepts of Preventive Maintenance Development. The selection of maintenance strategy occurs at a task, not an asset level, and must be in response to the specific failure modes (causes) occurring on the equipment. In any way it is strictly advisable to make sure that a contingency plan are in place for very high criticality equipment items.

To determine the optimum spare parts holdings required for the asset

It requires to assess the risks (criticality) that we would be exposed to without holding the spare part in stock, and compare this with the risks that we would be exposed to if we did hold the item in stock. The level of risk reduction that results needs to be balanced against the costs of holding the spare part in stock. The risk is higher it is advisable to maintain the required quantity of the spares in the stock.

To provide input into the capital program to get high priority for upgrade or replacement

One of the major factors in determining whether to replace or retire an item of an asset in its current condition. In addition, life cycle analysis will determine what the appropriate replacement schedule for an asset. The criticality will give a priority list to upgrade and replacement actives of the assets.

To support maintenance team for the improvement efforts on the most "critical" assets.

Asset criticality can be valuable in terms of providing direction to the maintenance team for improving asset performance as to which asset items are more important, in an overall sense to the business and therefore where they should be directing their efforts. In general, the asset is more critical to the business, then the team to be more careful regarding the decisions we make regarding that asset and therefore apply more rigorous analytical approaches when making decisions on critical assets.

### **How to Identify the Critical Assets**

Critical assets are those that are essential for supporting the operation or business need of an organization. These assets will have a high consequence of failure, but not necessarily a high likelihood of failure. These assets should be identified separately and assessed in greater detail as part of the asset management process. By identifying critical assets, the asset owner

can target and refine investigative activities, maintenance plans, and financial plans at the most crucial and critical areas. Critical asset considerations may also include access to assets managed by third parties and sub-contractors.

Criticality can be assessed by applying broad assumptions about the implications of failure, for example, whether the non-availability of a major asset would have a significant impact on the operation of an organization. Depending on the criticality of the asset, the risk management approach may be at a network level, by ensuring that diversions are available and have minimal impact; at an individual asset level; or at a detailed component level, with extensive consideration of failure modes.

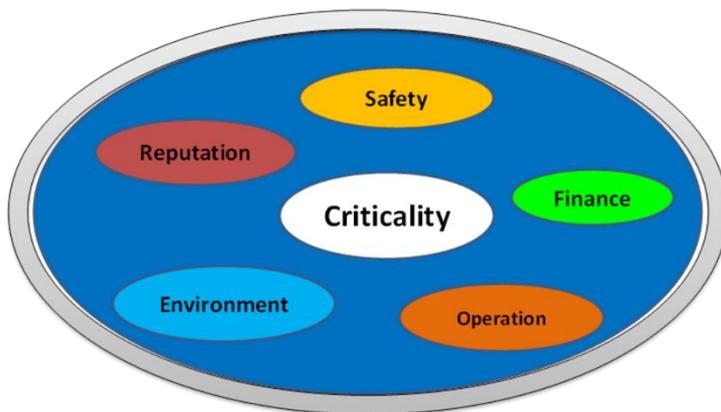
### **Criticality Assessment**

Criticality assessment is a structured methodology that provides a proactive approach for the assessment of risks in the organisation. A comprehensive Criticality assessment would provide a ranked list of systems and/or asset (a Criticality Ranking) identifying possible failure mechanisms, underlying failure rates, likelihood of impact from the failure and the consequences of the failure. The outcome of the assessment would typically lead to risk management strategies for equipment which would benefit most from the application of a particular management, operating or maintenance strategy. Criticality ranking also assists in making decisions about which equipment is most important for planning and scheduling maintenance work as well as other management functions.

Criticality assessments can be carried out using various techniques. The more common systematic approaches to identifying and representing Criticality include 'Qualitative Assessments', 'Semi-Quantitative assessments' and 'Quantitative Assessments'. Within each of these broad groupings a wide range of approaches are often used. Each approach has its merits and disadvantages and should be clearly understood by those undertaking the study before committing to a specific approach. For an initial assessment of criticality, or where information is limited upon which to base the assessment, a Qualitative or Semi-Quantitative approach is likely to be the most practical and can give effective results if well implemented. It is likely that the initial assessment would highlight the lack of suitable data as being a risk factor and the management of that risk may involve improved data collection and analysis in the future.

There are a wide range of risks, and their identification and evaluation is a crucial part of the asset management process. some common Criticality Ranking criteria include,

- Safety
- Reputation
- Operations
- Environmental
- Financial



#### Operations

Operations having an effect on the operational process of the organization whether by interfering with their customers, Clients, Stakeholders, infrastructure or punctuality.

#### Environment

Environment having an effect or with the potential to affect land and/or air and /or wear equality or causing nuisance.

#### Finance

If the failure is realized, what is Organizations financial exposure, what is their total financial liability, how much would it cost to restore normality? The financial impact is defined as the loss of the company.

#### Reputation

Actions or incidents having an effect on the reputation of the company.

#### Safety

Actions or omissions having a safety consequence.

#### **Risk Identification**

in this step, it has to identifies the risks that could affect its objectives. These can be various i.e. internal and external. Th external risks such as price changes, legislative actions, Political, Social, Economical, extreme weather and climatic events, seismic events, or malevolent acts. Risks also can be internal, such as operational failures, data failures, conflicting internal program objectives, or a lack of trained personnel for key tasks. All risks are generally recorded in a formal risk register.

#### **Risk Analysis**

This step evaluates the probability of risk with its consequence. The calculation can be qualitative and based upon expert judgment, it can be quantified simply in a 1 to 10 scale, or it can be subject to complex mathematical modelling. Most such analyses are relatively simple. Regardless of the method used, the intent of this step is to understand the risks and their magnitude.

Risk assessment involves a determination of the likelihood and consequence of an event. Risk assessment allows the identified risks to be analysed in a systematic manner to highlight which risks are the most severe and which are unacceptably high. A senior leadership team in an organization can then determine its level of exposure to the risk and the actions necessary to minimize that risk.

Overall, risk is normally described as follows:

Risk = Likelihood × Consequence

Likelihood is the chance of an event happening, for example, a failure (asset as well as organizational). It can be measured objectively, subjectively, qualitatively, or quantitatively. It can be described using general or mathematical terms, such as frequency or probability. Issues to be considered include the following:

- Changes in policy and funding
- Current and historic performance of the asset
- Severity of the environment, rate of deterioration, and/or current age of the asset
- Asset type, material type, mode of failure, extent of failure, etc.
- Exposure to incidents of all types
- Human behaviour and workmanship
- Vulnerability to climate change
- Quality of the asset management approach and system

The likelihood of physical failure of an asset is related to the current condition of the asset, hence the importance of a realistic and accurate condition assessment. The likelihood of natural and external events is determined less easily, but scientific studies are usually available. The likelihood of other events, such as poor work practices or planning issues, can be difficult to ascertain.

Risk management is the framework to define the necessary treatments for the reduction of the different types of risk.

The steps of risk management occur within the context of continuous communication and consultation and continuous monitoring and review. The communication flows up and down the organization and into and out of it with stakeholders. Similarly, the monitoring occurs within the agency as well as outside it from oversight bodies, legislators, the media, and the public.

Understanding and management of risk is fundamental to effective asset management and should figure strongly in training and development programs for asset managers.

A Criticality Analysis can be carried out by applying Risk Analysis techniques to identify the Risk associated with particular equipment failure mechanisms in a specific operating context. The risk can be calculated by applying a score to the likelihood of an event occurring and another score to the expected consequences associated with each occurrence. These scores are multiplied together to give a risk score which can be used as a measure of criticality. The risk (or criticality) ranking is used to identify the most important assets in the organisation. Depending upon the range of scores available (1...5 each for Likelihood and Consequences in this example) and whether the scale is ascending or descending with increasing importance, the Risk ranking can range from a score of 1 through to 25.

#### **Applicability of Criticality**

The criticality assessment will be beneficial to the organisation if it impacts positively on decision making. In deciding how best to respond to various situations the criticality ranking is a useful guide in establishing typical responses for various end user scenarios. The development of project plans needs to take account of the criticality of different assets in the proposed operating system, if maximum advantage is to be gained from the plant at the lowest cost. A clear and detailed understanding of an asset and system criticality is vital for decisions on reliability and the need for redundant equipment to achieve the design system reliability

One of the most useful outputs from the criticality assessment is the ability to identify where the 'system reliability' is critical and therefore should be subject to additional reliability

studies. For example, when the system reliability requirements are greater than can be achieved by one unit alone it may be necessary to install a stand-by unit to ensure the system reliability targets can be met. The manner in which the equipment is used during normal operations has a significant impact on the reliability that can be achieved from individual machines and therefore 'best practice' operating practices must be enforced to maximise the utilisation of an asset and achieve the 'Maximum Sustainable Capacity' (MSC) of the equipment. Correctly specified equipment that is well operated and maintained has an 'Inherent Reliability' which sets the maximum reliability that can be reasonably expected from the equipment over time.

Backlog management quickly gets highlighted whenever maintenance and operating practices are being reviewed and is a common point of conflict between the operations and maintenance groups. Much of the conflict arises because of a poor understanding of what jobs should be in the backlog and which shouldn't. It is common practice in many organizations to consider any job known about but not yet completed, to be included in the backlog. The reason for keeping an inventory of spare parts is to control or avoid the consequences of failure of the equipment. Spare parts have to be managed to maintain the optimum trade-off between the cost of purchasing/holding spare parts and the consequences of not having these spares available when required. When the cost of sourcing a spare part off-site only when required (considering all costs especially downtime and lost product) is significantly greater than the cost of holding the spare in-house, the spare is usually held on site. This superficially simple cost-benefit analysis can be very difficult to carry out in practice especially for those parts infrequently or irregularly used or if their impact cannot be easily quantified in cost terms.

Documents such as operating manuals, maintenance manuals, drawings etc. are a vital resource for the organisation and must be the subject of rational management strategies just as hardware or other assets might be. Documents can be difficult and expensive to obtain and in the case of drawings expensive to produce. Across the board reductions in budgets have become almost routine in many organisations in pursuit of cost reductions and ever better efficiencies. Most common is the percentage-based reduction over a previous budget (e.g. 10% reduction in the maintenance budget compared to the previous year) which is often repeated in subsequent years and by subsequent management team members.

### **Conclusions**

Criticality is very important for operations and maintenance functions underpinning decisions regarding equipment operating strategies, maintenance strategy development, planning and scheduling of routine jobs and backlog management. In addition, the criticality ranking assists in decision making regarding project design, redundancy, spare parts, training, document management etc. The Asset criticality can help the maintenance team prioritize equipment, select the best economic maintenance program, prioritize work orders despite resource constraints, plan to reduce maintenance costs, plan for design modifications and upgrades, and increase productivity. For this reasons, it is important that an organisation develops a clear indication of the criticality of its assets using a systematic approach which is sufficiently detailed, rigorous, auditable, and reviewable and can be updated over time to time.

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## **Rough Generalized Minimal And Maximal Closed Sets**

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**Abstract:** This paper introduced a new class of sets called Rough minimal and maximal closed sets and Rough generalized minimal and maximal closed sets in Rough topological spaces which are subclasses of Rough generalized closed sets. Basic properties of Rough minimal and maximal closed sets and Rough generalized minimal and maximal closed sets are also analyzed.

**Keywords:** *R-Min closed sets, R-Max closed sets, Rg-Min closed sets, Rg-Max closed sets*

### **1. Introduction**

In 1970 Levine[5] introduced the concept of generalized closed sets as a generalization of closed sets in topological spaces. Rough set theory proposed by Pawlak [6] is a new mathematical tool for data reasoning. The basic structure of rough set is an approximation space such as lower, upper and boundary approximations. The lower approximation of a set is the set of all elements that surely belongs to X, whereas the upper approximation of X is the set of all elements possibly belong to X. The difference between upper and lower approximation of X is its boundary region. Bhuvaneshwari et al., [1] have introduced and investigate Nano generalized closed sets in Nano topological spaces. F. Nakaoka et al.,[3] [4] introduced minimal open set and, Some Properties of Maximal open sets. S.S.Benchalli et al., [2] have introduced generalized maximal closed sets topological spaces. In this paper we introduced a new class of sets called Rough minimal and maximal closed sets and Rough generalized minimal and maximal closed sets in Rough topological spaces and the relation of these new sets with the existing well sets.

### **2. Preliminaries**

**Definition 2.1[5]:** A subset A of  $(X, \tau)$  is called a **generalized closed set** (briefly g closed) if  $cl(A) \subseteq U$  whenever  $A \subseteq U$  and U is open in X.

**Definition 2.2[3]:** A nonempty subset A of a topological space  $(X, \tau)$  is called a **minimal open** (resp. minimal closed) set if and only if any open (resp. closed) subset of X which is contained in A, is either A or  $\emptyset$ .

**Definition 2.3[4]:** A non-empty open set A of a topological space X is said to be a **maximal open** (resp. maximal closed) set if and only if any open (resp. closed) set which contains A, is either A or X.

**Definition 2.4[6]:** Let U be a non-empty finite set of objects called the universe and R be an equivalence relation on U named as indiscernibility relation Elements belonging to the same equivalence class are said to be indiscernible with one another. The pair  $K=(U,R)$  is said to be the **approximation space**. Let  $X \subseteq U$ .

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- (i) The lower approximation of  $X$  with respect to  $R$  is the set of all objects, which can be for certain classified as  $X$  with respect to  $R$  and its is denoted by  $U/R$ . That is,  $\underline{R}X = U\{Y \in U/R : Y \subseteq X\}$ .
- (ii) The upper approximation of  $X$  with respect to  $R$  is the set of all objects, which can be possibly classified as  $X$  with respect to  $R$  and it is denoted by  $\overline{U/R}$ . That is  $\overline{R}X = U\{Y \in U/R : Y \cap X \neq \emptyset\}$
- (iii) The boundary region of  $X$  with respect to  $R$  is the set of all objects, which can be classified neither as  $X$  nor as not- $X$  with respect to  $R$  and it is denoted by  $R_b(X) = \overline{R}X - \underline{R}X$

**Definition 2.5:** Let  $U$  be the universe,  $R$  be an equivalence relation on  $U$  and  $\tau R = \{U, \emptyset, \underline{R}X, R_b(X), \overline{R}X\}$  where  $X \subseteq U$ . Then  $\tau R$  satisfying the following axioms:

- (i)  $U$  and  $\emptyset \in \tau R$
  - (ii) The union of the element of any sub collection of  $\tau R$  is in  $\tau R$ .
  - (iii) The intersection of the element of any finite sub collection of  $\tau R$  is in  $\tau R$ .
- $\tau R$  forms a topology on  $U$  called as the rough topology on  $U$  with respect to  $X$ . We call  $(U, \tau R(X))$  as the rough topological spaces.

**Definition 2.6[1]:** A closed  $A$  of  $(U, \tau R(X))$  is called a **Nano generalized closed set** (briefly Rg closed) if  $Rcl(A) \subseteq V$  whenever  $A \subseteq V$  and  $V$  is Nano open in  $(U, \tau R(X))$

**Definition 2.1[2]:** A subset  $A$  of a topological space  $(X, \tau)$  is said to be **generalized minimal closed** (briefly g-mi closed) set if  $cl(A) \subseteq U$  whenever  $A \subseteq U$  and  $U$  is a minimal open in  $X$ .

### 3. Rough Minimal And Rough Generalized Minimal Closed Sets

In this section, the concepts of Rough minimal closed sets and Rough generalized minimal closed sets are defined and studied some of its properties.

**Definition 3.1:** Let  $(U, \tau R(X))$  be a rough topological space. A non-empty rough closed (resp. rough open) set  $A$  of  $U$  is said to be a rough minimal closed (resp. rough minimal open) set if only if any rough closed (resp. rough open) set which is contained in  $A$  is  $\emptyset$  or  $A$ .

**Example 3.2:** Let  $U = \{H, I, J, K, L\}$  with  $U/R = \{\{H, I\}, \{J, K\}, \{L\}\}$  and  $X = \{I, K, L\}$

$R\tau(X) = \{U, \emptyset, \{L\}, \{H, I, J, K\}\}$  which are the rough open sets.

Rough closed sets =  $\{U, \emptyset, \{H, I, J, K\}, \{L\}\}$

Rough Minimal open sets =  $\{\emptyset, \{L\}, \{H, I, J, K\}\}$

Rough Minimal closed sets =  $\{\emptyset, \{L\}, \{H, I, J, K\}\}$

**Theorem 3.3:** (i) Let  $R$  be a rough minimal open set and  $K$  be a rough open set. Then  $R \cap K = \emptyset$

or  $R \subset K$ .

(ii) Let  $R$  and  $S$  be rough minimal open sets. Then  $R \cap S = \emptyset$  or  $R = S$ .

**Proof:** (i) Let  $K$  be a rough open set such that  $R \cap K \neq \emptyset$ . Since  $R$  is a rough minimal open set and  $R \cap K \subset R$ . We have  $R \cap K = R$ .

(ii) If  $R \cap S \neq \emptyset$ , then we see that  $R \subset S$  and  $S \subset R$  by (i). Therefore  $R = S$ .

**Theorem 3.4:** Let  $R$  be a rough minimal open set and  $K$  be a rough open set. If  $p$  is an element of  $R$ , then  $R \subset K$  for any rough open neighborhood  $K$  of  $p$ .

**Proof:** Let  $K$  be a rough open neighborhood of  $p$ . Such that  $R \not\subseteq K$ . Then  $R \cap K$  is a rough open set such that  $R \cup K \subsetneq R$  and  $R \cap K \neq \emptyset$ . This contradicts the assumption that  $R$  is a rough minimal open set.

**Theorem 3.5:** Let  $R$  be a rough minimal open set, then  $R = \bigcap \{K/K \text{ is a rough open neighborhood of } p\}$  for any element  $p$  of  $R$ .

**Proof:** By Theorem 3.2 and the fact  $R$  is a Rough open neighborhood of  $p$ , we have  $R \subset \bigcap \{K/K \text{ is a rough open neighborhood of } p\} \subset R$ . Therefore  $R$  is a finite intersection of all rough open neighborhood of  $p$ .

**Definition 3.6:** If  $(U, \tau R(X))$  is a Rough topological space with respect to  $X$  where  $X \subseteq U$  and if  $A \subseteq U$ , then

- The rough minimal closure of  $A$  is defined as the intersection of all rough minimal closed sets containing  $A$  and it is denoted by  $\tau R - \min cl(A)$ .  $\tau R - \min cl(A)$  is the smallest rough minimal closed set containing  $A$ .
- The rough minimal interior of  $A$  is defined as the union of all rough minimal open subsets of  $A$  contained in  $A$  and it is denoted by  $\tau R - \min Int(A)$ .  $\tau R - \min Int(A)$  is the largest rough minimal open subset of  $A$ .

**Definition 3.7:** A subset  $A$  of a Rough topological space  $(U, \tau R(X))$  is said to be **Rough generalized minimal closed set** if  $Rcl \subseteq V$  whenever  $A \subseteq V$  and  $V$  is Rough minimal open set in  $(U, \tau R(X))$ .

**Example 3.8:** Let  $U = \{H, I, J, K, L\}$  with  $U/R = \{\{H, I\}, \{J, K\}, \{L\}\}$  and  $X = \{L, H\}$

$\tau R(X) = \{U, \emptyset, \{L\}, \{H, I\}, \{H, I, L\}\}$  which are the rough open sets.

Rough closed sets =  $\{U, \emptyset, \{H, I, J, K\}, \{J, K, L\}, \{J, K\}\}$

Rough Minimal open sets =  $\{\emptyset, \{L\}, \{H, I\}\}$

Rough Minimal closed sets =  $\{\emptyset, \{J, K\}\}$

Rough generalized open set =  $\{U, \emptyset, \{J\}, \{K\}, \{H, J\}, \{H, K\}, \{I, J\}, \{I, K\}, \{J, K\}, \{J, L\}, \{K, L\}, \{H, I, J\}, \{H, I, K\}, \{H, I, L\}, \{H, J, K\}, \{H, J, L\}, \{H, K, L\}, \{I, J, K\}, \{I, J, L\}, \{J, K, I\}, \{J, K, L\}, \{H, I, J, K\},$

$\{H, I, J, L\}, \{H, J, K, L\}, \{I, J, K, L\}\}$

Rough generalized closed set =  $\{U, \emptyset, \{H, I, K, L\}, \{H, I, J, L\}, \{I, K, L\}, \{I, J, L\},$

$\{H, K, L\}, \{H, J, L\},$

$\{H, I, L\}, \{H, I, K\}, \{H, I, J\}, \{K, L\}, \{J, L\}, \{J, K\}, \{I, L\}, \{I, K\}, \{I, J\}, \{H, L\}, \{H, K\}, \{H, L\}, \{H, I\}, \{L\},$

$\{K\}, \{I\}, \{H\}\}$

Rough generalized minimal open sets =  $\{U, \emptyset, \{I\}\}$

Rough generalized minimal closed sets =  $\{U, \emptyset, \{H, J, K, L\}\}$ .

**Remark 3.9:** Let  $(U, \tau R(X))$  be a Rough topological space and  $A$  be a subset of  $(U, \tau R(X))$

. If  $A$  is a Rough minimal closed set, then it is a Rough closed set. But not conversely. From Example 3.3,  $U$  is a Rough closed set, but not a Rough minimal closed set.

**Theorem 3.10:** Let  $(U, \tau R(X))$  be a Rough topological space and  $A$  be a subset of  $(U, \tau R(X))$ . If  $A$  is a Rough minimal closed set, then it is a Rough generalized closed set.

**Proof:** Let  $A$  be a Rough minimal closed set. But, every Rough minimal closed set is a Rough closed set. But, every Rough closed set is a Rough generalized closed set and hence  $A$  is a Rough generalized closed set.

**Remark 3.11:** The converse of the above Theorem 3.10 need not be true. From Example 3.8, the set  $\{H, I, K, L\}$  is a Rough generalized closed set, but not a Rough minimal closed set.

**Theorem 3.12:** Let  $(U, \tau R(X))$  be a Rough topological space. If the Rough minimal open set containing A in that Rough topological spaces are also Rough closed set, then the subset A of  $\{J, K, L\}$  is a Rough generalized minimal closed set.

**Proof:** Lets consider the Rough minimal open set V containing A are Rough closed set,  $A \subseteq V$  then  $Rcl(A) \subseteq Rcl(V) = V$  (Since V is Rough minimal closed set). Which implies  $Rcl(A) \subseteq V$  that whenever  $A \subseteq V$  and V is Rough minimal open. Hence from the definition of Rough generalized minimal closed set, A is a Rough generalized minimal closed set.

**Theorem 3.13:** Let  $(U, \tau R(X))$  be a Rough topological space and A be a subset of  $(U, \tau R(X))$ . If A is a Rough generalized minimal closed set, then it is a Rough generalized closed set.

**Proof:** Let A be a Rough generalized minimal closed set. By the definition of Rough generalized minimal closed set, we have  $Rcl(A) \subseteq V$  whenever  $A \subseteq V$  and V is Rough minimal open. Since every Rough minimal open set is a Rough open set and hence V is a Rough open set. Thus  $Rcl(A) \subseteq V$  whenever  $A \subseteq V$  and V is Rough open set. Hence A is Rough generalized closed set.

**Remark 3.14:** The converse of the above theorem is not true. From Example 3.8,  $\{I, J, K, L\}$  is a Rough generalized closed set, but not a Rough generalized minimal closed set.

**Theorem 3.15:** Let  $(U, \tau R(X))$  be a Rough topological space. Then  $\phi$  is a Rough generalized minimal closed set, but U is not a Rough generalized minimal closed set.

**Proof:** Every  $Rcl(\phi) = \phi$  subset of any Rough minimal open set containing  $\phi$ . So  $\phi$  is a Rough generalized minimal closed set. But U is not contained in any Rough minimal open set, so U is not a Rough generalized minimal closed set.

**Theorem 3.16:** Let  $(U, \tau R(X))$  be a Rough topological space and A and B are subsets of  $(U, \tau R(X))$ . If A and B are two Rough generalized minimal closed sets in  $(U, \tau R(X))$ , then the intersection of A and B is also a Rough generalized minimal closed set in  $(U, \tau R(X))$ .

**Proof:** Let A and B be two Rough generalized minimal closed sets in  $(U, \tau R(X))$ . Then V is Rough minimal open in  $(U, \tau R(X))$  such that  $B \subseteq V$ , which implies that  $A \cap B \subseteq V$ . As A and B are Rough generalized minimal closed sets in  $(U, \tau R(X))$ ,  $Rcl(A) \subseteq V$  and  $Rcl(B) \subseteq V$ . Now,  $Rcl(A \cap B) = Rcl(A) \cap Rcl(B) \subseteq V$ . Thus we have,  $Rcl(A \cap B) \subseteq V$  whenever  $A \cap B \subseteq V$  and V is Rough minimal open set in  $(U, \tau R(X))$ , Which implies that  $A \cap B$  is a Rough generalized minimal closed set.

**Remark 3.17:** The union of two Rough generalized minimal closed set need not be a Rough generalized minimal closed set. From Example 3.2, Let  $A = \{H\}$  and  $B = \{I\}$ . Now,  $A \cup B = \{H\} \cup \{I\} = \{H, I\}$  which is not a Rough generalized minimal closed set. Hence the union of two Rough generalized minimal closed set need not be a Rough generalized minimal closed set.

**Theorem 3.18:** Let A be a Rough generalized minimal closed set in a Rough topological space  $(U, \tau R(X))$ . If  $A \subseteq B \subseteq Rcl(A)$ , then B is a Rough generalized minimal closed subset of  $(U, \tau R(X))$ .

**Proof:** Let  $V$  be a Rough minimal open set of a Rough generalized minimal closed subset of  $(U, \tau R(X))$  such that  $B \subseteq V$ . As  $A \subseteq B$ , we have  $A \subseteq V$ . As  $A$  is Rough generalized minimal closed set,  $Rcl \subseteq V$ . Given that  $B \subseteq Rcl(A)$ , which implies that  $Rcl(B) \subseteq Rcl(A)$ . But  $Rcl(A) \subseteq V$ , which implies that  $Rcl(B) \subseteq V$  whenever  $B \subseteq V$  and  $V$  is Rough minimal open. Hence,  $B$  is a Rough generalized minimal closed subset of  $(U, \tau R(X))$ .

**Theorem 3.19:** If  $A$  is any Rough generalized minimal closed set in a Rough topological space  $(U, \tau R(X))$ , then for each  $x \in Rcl(A)$ ,  $Rcl\{x\} \cap A \neq \phi$ .

**Proof:** Let  $A$  be any Rough generalized minimal closed set in  $(U, \tau R(X))$  such that for each  $x \in Rcl(A)$ . Let  $Rcl\{x\} \cap A = \phi$ . Then  $A \subseteq [Rcl\{x\}]^c$ , where  $[Rcl\{x\}]^c$  is an open set in  $(U, \tau R(X))$ . But,  $A$  is Rough generalized closed set, and  $A \subseteq [Rcl\{x\}]^c$ . Therefore by the definition of Rough generalized closed set,  $Rcl(A) \subseteq [Rcl\{x\}]^c$ , which is a contradiction to the fact that  $x \in Rcl(A)$ . Therefore  $Rcl\{x\} \cap A \neq \phi$ .

**Theorem 3.20:** If  $A$  is a Rough generalized minimal closed set in a Rough topological space  $(U, \tau R(X))$  then  $Rcl(A) - A$  contains no nonempty Rough minimal closed subset.

**Proof:** Let  $F$  be any Rough minimal closed subset of  $Rcl(A) - A$ . Then  $F^c$  is a Rough minimal open set in  $X$ . Now  $F \subseteq Rcl(A) - A = Rcl(A) \cap A^c$ . Since  $Rcl(A) \cap A^c \subseteq Rcl(A)$  and  $Rcl(A) \cap A^c \subseteq A^c$ , we have  $F \subseteq Rcl(A)$  and  $F \subseteq A^c$ , which implies  $A \subseteq F^c$ , where  $F^c$  is Rough minimal open set. Since  $A$  is a Rough generalized minimal closed set, by the definition of Rough generalized minimal closed set,  $Rcl(A) \subseteq A^c$ . So  $F \subseteq [Rcl(A)]^c$ . Also  $F \subseteq Rcl(A)$ . Then  $F \subseteq Rcl(A)^c \cap Rcl(A) = \phi$ . Therefore  $F = \phi$ .

#### 4. Rough Maximal And Rough Generalized Maximal Closed Sets

In this section, the concepts of Rough maximal closed sets and Rough generalized maximal closed sets are defined and studied some of its properties.

**Definition 4.1:** Let  $(U, \tau R(X))$  be a Rough topological space. A non-empty Rough closed (resp. R open) set  $A$  of  $U$  is said to be a Rough maximal closed (resp. R- max open) set if only if any R closed (resp. R open) set which is contain in  $A$  is  $\Phi$  or  $U$ .

**Example 4.2:** Let  $U = \{H, I, J, K, L\}$  with  $U/R = \{\{H, I\}, \{J, K\}, \{L\}\}$  and  $X = \{I, K, L\}$   
 $\tau R(X) = \{U, \phi, \{L\}, \{H, I, J, K\}\}$  which are the R open sets.

R closed sets =  $\{U, \phi, \{H, I, J, K\}, \{L\}\}$

R-max open sets =  $\{U, \{H, I, J, K, L\}\}$

R-max closed sets =  $\{U, \{L\}, \{H, I, J, K\}\}$

**Theorem 4.3:** Let  $(U, \tau R(X))$  be a R topological space and  $A$  be a subset of  $(U, \tau R(X))$ . If  $A$  be a R- max closed set, then it is a Rg- closed set.

**Proof:** Let  $A$  be a R- max closed set. But, every R- max closed set is a R closed set. But, every R closed set be a Rg-closed set and hence  $A$  is a Rg-closed set.

**Definition 4.4:** If  $(U, \tau R(X))$  is a Rough topological space with respect to  $X$  where  $X \subseteq U$  and if  $A \subseteq U$ , then

- The rough maximal closure of  $A$  is defined as the intersection of all rough maximal closed sets containing  $A$  and it is denoted by  $\tau R - \max cl(A)$ .  $\tau R - \max cl(A)$  is the smallest rough minimal closed set containing  $A$ .
- The rough minimal interior of  $A$  is defined as the union of all rough minimal open subsets of  $A$  contained in  $A$  and it is denoted by  $\tau R - \max Int(A)$ .  $\tau R - \max Int(A)$  Is the largest rough minimal open subset of  $A$ .

**Definition 4.5:** A subset  $A$  of a Rough topological space  $(U, \tau R(X))$  is said to be **Rough generalized maximal closed** (briefly Rg-max closed) set if  $Rcl \subseteq V$  whenever  $A \subseteq V$  and  $V$  is R maximal open set in  $(U, \tau R(X))$ .

**Example 4.6:** Let  $U = \{H, I, J, K, L\}$  with  $U/R = \{\{H, I\}, \{J, K\}, \{L\}\}$  and  $X = \{L, H\}$

$\tau R(X) = \{U, \phi, \{L\}, \{H, I\}, \{H, I, L\}\}$  which are the rough open sets.

Rough closed sets =  $\{U, \phi, \{H, I, J, K\}, \{J, K, L\}, \{J, K\}\}$

Rough Maximal open sets =  $\{U, \{H, I, L\}\}$

Rough Maximal closed sets =  $\{U, \{H, I, J, K\}\}$

Rough generalized open set =  $\{U, \phi, \{J\}, \{K\},$

$\{H, J\}, \{H, K\}, \{I, J\}, \{I, K\}, \{J, K\}, \{J, L\}, \{K, L\},$

$\{H, I, J\}, \{H, I, K\}, \{H, I, L\}, \{H, J, K\}, \{H, J, L\}, \{H, K, L\}, \{I, J, K\}, \{I, J, L\}, \{J, K, I\}, \{J, K, L\}, \{H, I, J,$

$K\}, \{H, I, J, L\}, \{H, J, K, L\}, \{I, J, K, L\}\}$

Rough generalized closed set =  $\{U, \phi, \{H, I, K, L\}, \{H, I, J, L\}, \{I, K, L\}, \{I, J, L\},$

$\{H, K, L\}, \{H, J, L\},$

$\{H, I, L\}, \{H, I, K\}, \{H, I, J\}, \{K, L\}, \{J, L\}, \{J, K\}, \{I, L\}, \{I, K\}, \{I, J\}, \{H, L\}, \{H, K\}, \{H, L\}, \{H, I\}, \{L\},$

$\{K\}, \{I\}, \{H\}\}$

Rough generalized maximal open sets =

$\{U, \phi, \{J\}, \{K\}, \{H, J\}, \{H, K\}, \{I, J\}, \{I, K\}, \{J, K\}, \{J, L\},$

$\{K, L\}, \{H, I, J\}, \{H, I, K\}, \{H, I, L\}, \{H, J, K\}, \{H, J, L\}, \{H, K, L\}, \{I, J, K\}, \{I, J, L\}, \{J, K, I\}, \{J, K, L\},$

$\{H, I, J, K\}, \{H, I, J, L\}, \{H, I, K, L\}, \{H, J, K, L\}, \{I, J, K, L\}\}$

Rough generalized maximal closed sets =  $\{U, \phi, \{H, I, K, L\}, \{H, I, J, L\}, \{I, K, L\}, \{I, J, L\},$

$\{H, K, L\}, \{H, J, L\}, \{H, I, L\}, \{H, I, K\}, \{H, I, J\}, \{K, L\}, \{J, L\}, \{J, K\}, \{I, L\}, \{I, K\}, \{I, J\}, \{H, L\}, \{H,$

$I\}, \{L\}, \{K\}, \{J\}, \{I\}, \{H\}\}$ .

**Theorem 4.7:** Let  $(U, \tau R(X))$  be a R topological space and  $A$  be a subset of  $(U, \tau R(X))$ . If  $A$  is a Rg- max closed set, then it is a Rg- closed set.

**Proof:** Let  $A$  be a Rg- max closed set. By the definition of Rg- max closed set, we have  $Rcl(A) \subseteq V$  whenever  $A \subseteq V$  and  $V$  is R- max open. Since every R- max open set is a R open set and hence  $V$  is a R open set. Thus  $Rcl(A) \subseteq V$  whenever  $A \subseteq V$  and  $V$  is R open set. Hence  $A$  is Rg- closed set.

**Remark 4.8:** The converse of the above Theorem 4.7 is not true. From Example 4.6,  $\{H, I, J, K\}$  is a Rg- closed set, but not a Rg-max closed set.

**Theorem 4.9:** Let  $(U, \tau R(X))$  be a R topological space. Then  $\phi$  is a Rg-max closed set, but  $U$  is not a Rg- max closed set.

**Proof:** Every  $Rcl(\phi) = \phi$  subset of any R-max open set containing  $\phi$ . So  $\phi$  is a Rg- min closed set. But  $U$  is not contained in any R-max open set, so  $U$  is not a Rg- min closed set.

**Theorem 4.10:** Let  $(U, \tau R(X))$  be a R topological space and  $A$  and  $B$  are subsets of  $(U, \tau R(X))$ . If  $A$  and  $B$  are two Rg-max closed sets in  $(U, \tau R(X))$ , then the intersection of  $A$  and  $B$  is also a Rg-max closed set in  $(U, \tau R(X))$ .

**Proof:** Let  $A$  and  $B$  be two Rg-max closed sets in  $(U, \tau R(X))$ . Then  $V$  is R-max open in  $(U, \tau R(X))$  such that  $B \subseteq V$ , which implies that  $A \cap B \subseteq V$ . As  $A$  and  $B$  are Rg-max closed sets in  $(U, \tau R(X))$ ,  $Rcl(A) \subseteq V$  and  $Rcl(B) \subseteq V$ . Now,  $Rcl(A \cap B) = Rcl(A) \cap Rcl(B) \subseteq$

$V$ . Thus we have,  $Rcl(A \cap B) \subseteq V$  whenever  $A \cap B \subseteq V$  and  $V$  is R-max open set in  $(U, \tau R(X))$ , Which implies that  $A \cap B$  is a Rg-max closed set.

**Remark 4.11:** The union of two Rg-max closed set need not be a Rg-max closed set. From Example 4.2, Let  $A = \{H\}$  and  $B = \{I\}$  Now,  $A \cup B = \{H\} \cup \{I\} = \{H, I\}$  which is not a Rg-max closed set. Hence the union of two Rg-max closed set need not be a Rg-max closed set.

**Theorem 4.12:** Let  $A$  be a Rg-max closed set in a R topological space  $(U, \tau R(X))$ . If  $A \subseteq B \subseteq Rcl(A)$ , then  $B$  is a Rg-max closed subset of  $(U, \tau R(X))$ .

**Proof:** Let  $V$  be a R-max open set of a Rg-max closed subset of  $(U, \tau R(X))$  such that  $B \subseteq V$ . As  $A \subseteq B$ , we have  $A \subseteq V$ . As  $A$  is Rg-max closed set,  $Rcl(A) \subseteq V$ . Given that  $B \subseteq Rcl(A)$ , which implies that  $Rcl(B) \subseteq Rcl(A)$ . But  $Rcl(A) \subseteq V$ , which implies that  $Rcl(B) \subseteq V$  whenever  $B \subseteq V$  and  $V$  is R-max open. Hence,  $B$  is a Rg-max closed subset of  $(U, \tau R(X))$ .

**Theorem 4.13:** If  $A$  is any Rg-max closed set in a R topological space  $(U, \tau R(X))$ , then for each  $x \in Rcl(A)$ ,  $Rcl\{x\} \cap A \neq \phi$ .

**Proof:** Let  $A$  be any Rg-max closed set in  $(U, \tau R(X))$  such that for each  $x \in Rcl(A)$ . Let  $Rcl\{x\} \cap A = \phi$ . Then  $A \subseteq [Rcl\{x\}]^c$ , where  $[Rcl\{x\}]^c$  is an open set in  $(U, \tau R(X))$ . But,  $A$  is Rg-closed set, and  $A \subseteq [Rcl\{x\}]^c$ . Therefore by the definition of Rg-closed set,  $Rcl(A) \subseteq [Rcl\{x\}]^c$ , which is a contradiction to the fact that  $x \in Rcl(A)$ . Therefore  $Rcl\{x\} \cap A \neq \phi$ .

**Theorem 4.14:** If  $A$  is a Rg-max closed set in a R topological space  $(U, \tau R(X))$  then  $Rcl(A) - A$  contains no nonempty R-max closed subset.

**Proof:** Let  $F$  be any R-max closed subset of  $Rcl(A) - A$ . Then  $F^c$  is a R-max open set in  $X$ . Now  $F \subseteq Rcl(A) - A = Rcl(A) \cap A^c$ . Since  $Rcl(A) \cap A^c \subseteq Rcl(A)$  and  $Rcl(A) \cap A^c \subseteq A^c$ , we have  $F \subseteq Rcl(A)$  and  $F \subseteq A^c$ , which implies  $A \subseteq F^c$ , where  $F^c$  is R-max open set. Since  $A$  is a Rg-max closed set, by the definition of Rg-max closed set,  $Rcl(A) \subseteq A^c$ . So  $F \subseteq [Rcl(A)]^c$ . Also  $F \subseteq Rcl(A)$ . Then  $F \subseteq Rcl(A)^c \cap Rcl(A) = \phi$ . Therefore  $F = \phi$ .

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## A New Generalization Of Regular Semi Set In Nano Topological Space

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### Abstract

The purpose of this paper is to define and study a new class of sets called nano semi regular and nano regular semi generalized closed sets in nano topological spaces. Basic properties of nano semi regular and nano regular semi-generalized closed sets are analyzed and their relation with existing sets are investigated.

**Keywords:** *nano semi regular set, nano semi regular open, nano regular semi generalized closed sets*

### 1. Introduction

In 1970, Levine [5] introduced the concept of generalized closed sets as a generalization of closed sets in topological spaces. In 1987, Battacharyya and Lahiri [1] used semi-open sets [4] to define the notion of semi-generalized closed sets. Mean while In 1987 Di Maio et al. [3] have introduced the concept of semi-regular set. In 2010 Noiri et al. [6] have defined the concept of regular semi generalized closed sets. Rough set theory introduced by Pawlak [8] in 1982 is a mathematical tool that supports the uncertainty reasoning but qualitatively. In Pawlak's study, any rough set is replaced by the crisp sets called lower and upper approximations of it. If the rough set satisfies the topological properties is called rough topology/nano topology. In 2014, Bhuvanewari et al. [2] have introduced the notion of nano semi generalized and nano generalized semi closed sets in nano topological space. The purpose of this paper is to define and study a new class of sets called nano semi regular and nano regular semi-generalized closed sets in nano topological spaces. Also study the relation of these new sets with the existing well known sets.

### 2. Preliminaries

**Definition 2.1 [7]:** A subset  $A$  of a topological space  $(X, \tau)$  is called a **regular open** set if  $A = \text{Int}[cl(A)]$ . The complement of a regular open set of a space  $X$  is called **regular closed** set in  $X$ .

**Definition 2.2 [4]:** A subset  $A$  of a topological space  $(X, \tau)$  is called a **semi open** set if  $A \subseteq cl[\text{Int}(A)]$ . The complement of a semi open set of a space  $X$  is called **semi closed** set in  $X$ .

**Definition 2.3 [1]:** If  $(X, \tau)$  is a topological space with respect to  $X$  where  $X \subseteq U$  and if  $A \subseteq U$ , then

- (i). The **semi-closure** of  $A$  is defined as the intersection of all semi closed sets containing  $A$  and it is denoted by  $scl(A)$ .  $scl(A)$  is the smallest semi closed set containing  $A$ .
- (ii). The **semi interior** of  $A$  is defined as the union of all semi open sets contained in  $A$  and

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it is denoted by  $sInt(A)$ .  $sInt(A)$  is the largest semi open subsets of A.

**Definition 2.4 [1]:** A subset A of  $(X, \tau)$  is called a **semi generalized closed** set (briefly sg-closed) if  $scl(A) \subseteq U$  whenever  $A \subseteq U$  and U is semi-open in X.

**Definition 2.5 [3]:** A subset A of a space  $(X, \tau)$  is said to be **semi regular set** if it is both semi open and semi closed.

**Definition 2.6 [3]:** A subset A of a topological space  $(X, \tau)$  is called a **semi regular open** set if  $A = sInt[scl(A)]$ . The complement of a semi regular open set of a space X is called semi regular closed set in X.

**Definition 2.7 [6]:** A subset A of a space  $(X, \tau)$  is said to be **regular semi generalized closed** (briefly, rsg-closed) if  $scl(A) \subseteq U$  whenever  $A \subseteq U$  and U is semi regular in  $(X, \tau)$ .

**Definition 2.8 [8]:** Let U be a certain set called the universe, and let R be an equivalence relation on U named as indiscernibility relation. The pair  $A = (U, R)$  will be called an **approximation space**. If  $x, y \in U$  and  $(x, y) \in R$  we say that x and y are indistinguishable in A. Let  $X \subseteq U$ .

- (i). The lower approximation of a set X with respect to R is the set of all objects, which can be for certain classified as X with respect to R (are certainly X with respect to R) and its is denoted by  $\underline{R}(X)$ . That is,  $\underline{R}(X) = U\{Y \in U / R : Y \subseteq X\}$ .
- (ii). The upper approximation of a set X with respect to R is the set of all objects which can be possibly classified as X with respect to R (are possibly X in view of R) and it is denoted by  $\overline{R}(X)$ . That is  $\overline{R}(X) = U\{Y \in U / R : Y \cap X \neq \phi\}$
- (iii). The boundary region of a set X with respect to R is the set of all objects, which can be classified neither as X nor as not-X with respect to R and it is denoted by  $BN_R(X) = \overline{R}(X) - \underline{R}(X)$

**Definition 2.9 [8]:** Let U be a certain set called the universe, and let R be an equivalence relation on U named as indiscernibility relation. Let  $X \subseteq U$ .

- (i). A set X is **crisp** (exact with respect to R), if the boundary region of X is empty. That is  $\overline{R}(X) = \underline{R}(X)$ .
- (ii). A set X is **rough** (inexact with respect to R), if the boundary region of X is nonempty. That is  $\overline{R}(X) \neq \underline{R}(X)$ .

**Definition 2.10 [8]:** Let U be the universe, R be an equivalence relation on U and  $\tau_R(X) = \{U, \phi, \underline{R}(X), \overline{R}(X), BN_R(X)\}$ , where  $X \subseteq U$  which satisfies the following axioms:

- (i).  $U$  and  $\Phi \in \tau_R(X)$ .
- (ii). The union of the elements of any sub-collection of  $\tau_R(X)$  is in  $\tau_R(X)$ .
- (iii). The intersection of the elements of any finite sub collection of  $\tau_R(X)$  is in  $\tau_R(X)$

That is,  $\tau_R(X)$  is a topology on U called the **rough topology/nano topology** on U with respect to X. We call  $(U, \tau_R(X))$  as the Rough/nano topological space. The elements of  $\tau_R(X)$  are called Rough/nano open sets.

**Definition 2.11 [8]:** If  $(U, \tau_R(X))$  is a nano topological space with respect to  $X$  where  $X \subseteq U$  and if  $A \subseteq U$ , then

- (i). The **nano closure** of  $A$  is defined as the intersection of all nano closed sets containing  $A$  and it is denoted by  $Ncl(A)$ .  $Ncl(A)$  is the smallest nano closed set containing  $A$ .
- (ii). The **nano interior** of  $A$  is defined as the union of all nano open sets contained in  $A$  and it is denoted by  $NInt(A)$ .  $NInt(A)$  is the largest nano open subsets of  $A$ .

**Definition 2.12 [9]:** Let  $(U, \tau_R(X))$  be a nano topological space and  $A \subseteq U$ . Then  $A$  is said to be

- **Nano semi open** if  $A \subseteq Ncl[NInt(A)]$
- **Nano semi closed** if  $NInt[Ncl(A)] \subseteq A$

**Definition 2.13 [2]:** If  $(U, \tau_R(X))$  is a nano topological space with respect to  $X$  where  $X \subseteq U$  and if  $A \subseteq U$ , Then

- The **nano semi-closure** of the set  $A$  is defined as the intersection of all nano semi closed sets containing  $A$  and it is denoted by  $Nscl(A)$ .  $Nscl(A)$  is the smallest nano semi closed set containing  $A$ .
- The **nano semi-interior** of the set  $A$  is defined as the union of all nano semi open subsets contained in  $A$  and it is denoted by  $NsInt(A)$ .  $NsInt(A)$  is the largest nano semi open subset of  $A$ .

**Definition 2.14 [2]:** A subset  $A$  of is called **nano semi-generalized closed** set (briefly Nsg-closed) if  $Nscl(A) \subseteq V$  whenever  $A \subseteq V$  and  $V$  is nano semi open in  $(U, \tau_R(X))$ .

### 3. Nano Regular Semi-Generalized Closed Sets

In this section, the definition of nano semi-regular set and nano regular semi-generalized closed sets are introduced and studied some of its properties.

**Definition 3.1:** A subset  $A$  of  $(U, \tau_R(X))$  is called **nano semi regular** set if it is both nano semi open and nano semi closed.

**Definition 3.2:** A subset  $A$  of a nano topological space  $(U, \tau_R(X))$  is called a **nano semi regular open** set if  $A = NsInt[Nscl(A)]$ . The complement of a nano semi regular open set of a space  $U$  is called nano semi regular closed set in  $U$ .

**Definition 3.3:** A subset  $A$  of  $(U, \tau_R(X))$  is said to be **nano regular semi generalized closed** set (briefly Nrsg-closed) if  $Nscl(A) \subseteq V$  whenever  $A \subseteq V$  and  $V$  is nano semi regular set in  $(U, \tau_R(X))$ .

**Example 3.4:** Let  $U = \{a, b, c, d\}$  with  $U/R = \{\{a\}, \{c\}, \{b, d\}\}$  and  $X = \{a, b\}$  then  $\tau_R(X) = \{U, \phi, \{a\}, \{a, b, d\}, \{b, d\}\}$  which are open sets.

The nano closed sets =  $\{U, \phi, \{c\}, \{a, c\}, \{b, c, d\}\}$ .

The nano semi closed sets =  $\{U, \phi, \{a\}, \{c\}, \{b, d\}, \{b, c, d\}\}$

Nano semi open sets =  $\{U, \phi, \{a\}, \{a, c\}, \{a, c, d\}, \{b, c, d\}\}$

Nano semi regular sets =  $\{U, \phi, \{a\}, \{b, c, d\}\}$

Nano semi generalized closed sets are

$\{U, \phi, \{a\}, \{b\}, \{c\}, \{d\}, \{a, b\}, \{b, c\}, \{b, d\}, \{c, d\}, \{a, b, c\}, \{a, b, d\}, \{b, c, d\}\}$

Nano generalized semi closed sets are

$\{U, \phi, \{a\}, \{b\}, \{c\}, \{d\}, \{a, c\}, \{b, c\}, \{b, d\}, \{c, d\}, \{a, b, c\}, \{a, c, d\}, \{b, c, d\}\}$

Nano regular semi generalized closed sets are

$\{U, \phi, \{a\}, \{b\}, \{c\}, \{d\}, \{a, b\}, \{a, c\}, \{a, d\}, \{b, c\}, \{b, d\}, \{c, d\}, \{a, b, c\}, \{a, b, d\}, \{a, c, d\}, \{b, c, d\}\}$

**Theorem 3.5:** Let  $(U, \tau_R(X))$  be a nano topological space. If a subset A of a nano topological space  $(U, \tau_R(X))$  is nano closed set in  $(U, \tau_R(X))$ , then A is a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Proof:** Let A be a nano closed set in U and  $A \subseteq V$ , V is nano semi regular set in U. Since A is nano closed, that is  $Ncl(A) = A$ . So,  $A \subseteq V$  and  $Ncl(A) = A$  imply  $Ncl(A) \subseteq V$ . Also,  $Nscl(A) \subseteq Ncl(A)$  implies  $Nscl(A) \subseteq V$ ,  $A \subseteq V$ , V is nano semi regular set in U. Therefore, A is a nano regular semi-generalized closed set.

**Theorem 3.6:** Let  $(U, \tau_R(X))$  be a nano topological space. If a subset A of a nano topological space  $(U, \tau_R(X))$  is nano semi regular set in  $(U, \tau_R(X))$ , then A is a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Proof:** Let A be a nano semi regular set in U and  $A \subseteq V$ , V is nano semi regular set in U. Since A is nano semi regular set, that is  $Nscl(A) = NsInt(A) = A$ . So,  $A \subseteq V$  and  $Nscl(A) = A$  implies  $Nscl(A) = A \subseteq V$ . Therefore  $Nscl(A) \subseteq V$ . Since  $A \subseteq V$  then  $Nscl(A) \subseteq V$  whenever V is nano semi regular set in U. Hence A is a nano regular semi generalized closed set.

**Remark 3.7:** The converse of the above Theorem 3.6 need not be true. In the Example 3.4, {b} is a nano regular semi generalized closed set but it is not nano semi regular set.

**Theorem 3.8:** Let  $(U, \tau_R(X))$  be a nano topological space. If a subset A of a nano topological space  $(U, \tau_R(X))$  is nano semi closed set in  $(U, \tau_R(X))$ , then A is a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Proof:** Let A be a nano semi closed set of U and  $A \subseteq V$ , V is nano semi regular set in U. Since A is nano semi closed,  $Nscl(A) = A$ . So,  $A \subseteq V$  and  $Nscl(A) = A$  implies  $Nscl(A) \subseteq V$ . Also,  $A \subseteq V$ , V is nano semi regular set in U. Therefore, A is a nano regular semi generalized closed set.

**Remark 3.9:** The converse of the above Theorem 3.8 need not be true. In the Example 3.4, {a,c} is a nano regular semi generalized closed set but it is not nano semi closed set.

**Theorem 3.10:** The intersection of two nano regular semi generalized closed sets in  $(U, \tau_R(X))$  is also a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Proof:** Let A and B be two nano regular semi generalized closed sets in  $(U, \tau_R(X))$ . Let V be a nano semi regular set in U such that  $A \subseteq V$  and  $B \subseteq V$ . Then  $A \cap B \subseteq V$ . Since A and B are nano regular semi generalized closed sets in  $(U, \tau_R(X))$ , Therefore  $Nscl(A) \subseteq V$  and  $Nscl(B) \subseteq V$ . Now  $Nscl(A \cap B) = Nscl(A) \cap Nscl(B) \subseteq V$ . Thus we have  $Nscl(A \cap B) \subseteq V$  whenever  $A \cap B \subseteq V$ , V is nano semi regular set in  $(U, \tau_R(X))$  which

implies  $A \cap B$  is a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Theorem 3.11:** The union of two nano regular semi generalized closed sets in  $(U, \tau_R(X))$  is also a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Proof:** Let  $A$  and  $B$  be two nano regular semi generalized closed sets in  $(U, \tau_R(X))$ . Let  $V$  be any nano semi regular set in  $U$  such that  $A \subseteq V$  and  $B \subseteq V$ . Then we have  $A \cup B \subseteq V$ . Since  $A$  and  $B$  are nano regular semi generalized closed sets in  $(U, \tau_R(X))$ . Therefore  $Nscl(A) \subseteq V$  and  $Nscl(B) \subseteq V$ . Now  $Nscl(A \cup B) = Nscl(A) \cup Nscl(B) \subseteq V$ . Thus we have  $Nscl(A \cup B) \subseteq V$  whenever  $A \cup B \subseteq V$ ,  $V$  is nano semi regular set in  $(U, \tau_R(X))$  which implies  $A \cup B$  is a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Theorem 3.12:** Let  $A$  be a nano regular semi-generalized closed subset of  $(U, \tau_R(X))$ . If  $A \subseteq B \subseteq Nscl(A)$ , then  $B$  is also a nano regular semi-generalized closed subset of  $(U, \tau_R(X))$

**Proof:** Let  $V$  be a nano semi regular set of a nano regular semi-generalized closed subset of  $U$  such that  $B \subseteq V$ . As  $A \subseteq B$ , that is  $A \subseteq V$ . As  $A$  is a nano regular semi-generalized closed set,  $Nscl(A) \subseteq V$ . Given  $B \subseteq Nscl(A)$ , then  $Nscl(B) \subseteq Nscl(A)$ . As  $Nscl(B) \subseteq Nscl(A)$  and  $Nscl(A) \subseteq V$ , which implies  $Nscl(B) \subseteq V$  whenever  $B \subseteq V$  and  $V$  is nano semi regular set. Hence  $B$  is also a nano regular semi-generalized closed subset of  $(U, \tau_R(X))$ .

**Theorem 3.13:** Let  $(U, \tau_R(X))$  be a nano topological space. If a subset  $A$  of a nano topological space  $(U, \tau_R(X))$  is nano semi generalized closed set in  $(U, \tau_R(X))$ , then  $A$  is a nano regular semi generalized closed set in  $(U, \tau_R(X))$ .

**Proof:** Let  $A$  be any nano semi generalized closed set and  $V$  be any nano semi regular set in  $U$ . Then  $Nscl(A) \subseteq V$  whenever  $A \subseteq V$ . But  $Nscl(A) \subseteq Ncl(A)$  whenever  $A \subseteq V$ ,  $V$  is nano semi regular set in  $U$ . Therefore  $Nscl(A) \subseteq V$ ,  $A \subseteq V$ ,  $V$  is nano semi regular set in  $U$ . Hence  $A$  is nano regular semi generalized closed set.

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## **An Evaluation Of Juvenile Crime And Human Rights In India**

**Tapesh Singh\***

### **Introduction**

Children and childhood across the world, have broadly been construed in terms of a 'golden age' that is synonymous with innocence, freedom, joy, play and the like. It is the time when, spared the rigours of adult life, one hardly shoulders any kind of responsibility or obligations. But, then, it is also true that children are vulnerable, especially when very young. The fact that children are vulnerable, they need to be cared for and protected from 'the harshness of the world outside' and around.

This being so, the adult-child relation, parents in particular, is said to provide 'care and protection' – serving thereby the 'best interests of the child' and meeting their day-to-day 'needs of survival and development'. The adult is presumed to be the guardian and in that respect expected to take the responsibility of child's welfare and development. Whether or not, the premise underlying this is correct or not, the childhood 'reality' on the whole is questionable, demanding critical evaluation.

Accordingly, idealistic notions and representations associated with children and childhood have been challenged, especially in relation to poverty, disease, exploitation and abuse rife across the globe. Many also believe that childhood is that period during which children are subject to a set of rules and regulations unique to them, and one that does not apply to members of other social categories. It is indeed a period in a person's life during which she/he is neither expected nor allowed to fully participate in various domains of social life. It is thus not a world of freedom and opportunity but one of confinement and limitation in which children are 'wholly subservient and dependent'. This being so, childhood is nothing short of a world of isolation, sadness, exploitation, oppression, cruelty and abuse.

To dichotomize and juxtapose these theoretical models of the child-adult relation reveals fundamentally different ways of seeing and understanding the very essence of childhood and children. In this sense, childhood is not a static, objective and universal fact of human nature, but a social construction which is both culturally and historically determined. The history of Hebrews, Greeks and Romans, whose cultures had a great impact upon the Western society,

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bears testimony to the fact that children, by and large, were taken for granted by their parents and the patriarchal society at large.

The resultant effect of all this was that they were treated as objects of intervention rather than as legal subjects in their own right. Many labeled them as a 'problem population' whereas others reduced them to being seen as property and thus treated them as non-entities. The Roman law, for instance, provided for the *patria potestas* whereby the father was endowed with absolute power and authority over his family. It included *ius vitae necisque*, the power of life and death, and a *fortiori*, of uncontrolled corporal chastisement over wife, children and other family members.

Ancient Greeks left girls and children born with disabilities on the wild hillsides, where exposure or animals were sure to kill them and the practice was continued routinely in Rome until Christianity became the State religion. The killing of unwanted children may have become less common in the centuries since then, but it never completely disappeared. In the given adult-child power relation, the usual cliché of childhood being a 'golden age' not only seemed to be a myth but a distant dream for majority of these children.

Children are the future custodians of sovereignty, rule of law, - justice, liberty, equality, fraternity and finally international peace and security. They are the potential embodiment of our ideals, aspirations, ambitions, future hopes. They are the 'future shoulders' in the form of great philosophers, rulers, scientists, politicians, able legislators, administrators, teachers, judges, technologists, industrialists, engineers, workers, planners on which the country would rest.

Nature has provided some inherent rights to every human being including children. These fundamental rights bestowed in human being from the very inception. Human being is endowed with rights since the stage of foetus. Foetus in the mother womb is the starting point since then human being is guaranteed certain basic rights. These rights are intrinsic in every one. State cannot give or nullify these rights, which are inherent. State has to recognize and guarantee these rights.

Human Rights Instruments specific to the rights of the child: The Declaration of the Rights of the child 1924, adopted by the fifth assembly of the League of Nations, can be seen as the first international instrument dealing with children's rights.

Millions of children around the world are exploited, abused, and discriminated against. These children include child labourers, children affected by armed conflicts, sexually exploited children, children in conflict with the law or in the care of the state, as well as children living on the streets, coping with disabilities, or suffering from discrimination because of their religious or ethnic-minority status. Undoubtedly, the child by reason of his physical and mental immaturity needs special care and protection including adequate legal protection. Children were recipients of welfare measures<sup>†</sup>.

It was only during the twentieth century the concept of children's rights emerged. The rights approach is primarily concerned with issues of social justice, non-discrimination, equity, and empowerment. It is because of the unique vulnerability of children that their rights are of priority concern within Canada's foreign policy. Canada played a key role in the negotiations that led to the adoption of the United Nations Convention on the Rights of Child in 1989. The UN has designated November 20 as Universal Children's day.

### **Purpose of having children's rights**

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<sup>†</sup> Lansdown, G. "Children's welfare and Children's rights," in Henrick, h. (2005) *Child Welfare And Social Policy: An Essential Reader*.

Children's rights aim to ensure that each child has the opportunity to reach their full potential. Children's rights stipulate that all children – without discrimination (Article 2) – should be able to develop fully, have access to education and health care, grow up in an appropriate environment, be informed about their rights, and participate actively in society<sup>‡</sup>. Children's right is a tool to protect children from violence and abuse Children's rights foster mutual respect among people. Respect for the rights of the child can only be fully achieved when everyone, including children themselves, recognizes that every person has the same rights, and then adopts attitudes and behavior of respect, inclusion and acceptance.

### **The recognition of the rights of the children**

Children's rights were recognized after the 1st World war, with the adoption of the Declaration of Geneva, in 1924. The process of recognition of children's rights continued with the adoption of the Declaration of children's rights in 1959. The recognition of the child's interest and his rights becomes real on 20 November 1989 with the adoption of the International Convention on the Rights of the Child which is the first international legally binding text recognizing all the fundamental rights of the child. Children's rights are human rights. They protect the child as a human being. As human rights, children's rights are constituted by fundamental guarantees and essential human rights:

1. Children's rights recognize fundamental guarantees to all human beings: the right to life, the non-discrimination principle, the right to dignity through the protection of physical and mental integrity (protection against slavery, torture and bad treatments, etc)
2. Children's rights are civil and political rights, such as the right to identity, the right to a nationality, etc.
3. Children's rights are economic, social and cultural rights, such as the right to education, the right to a decent standard of living, the right to health, etc.
4. Children's rights include individual rights: the right to live with his parents, the right to education, the right to benefit from a protection, etc.
5. Children's rights include collective rights: rights of refugee and disabled children's, of minority children or from autochthonous groups.

### **Indian Constitution and Children Rights (Present Legal Framework)**

The Government of India has articulated its commitment to children through various provisions in the Indian Constitution. The Constitution of India is the basic law of the country that includes the fundamental rights and directive principles for every citizen. The fundamental rights in the Constitution of India impose on the state a primary responsibility of ensuring that all the needs of children are met and that their basic human rights are fully protected<sup>§</sup>.

Fundamental rights if violated can be brought before the courts. Directive Principles lay down the guidelines the Government have to follow. If they are violated they cannot be taken before the courts but because of judicial interpretation, many of the directive principles have now become enforceable through legal actions brought before courts.

### **The Fundamental Rights in the Constitution that directly relate to children are**

1. Article 15(3) requires the state to make special provisions for children.
2. Article 21A provides for free and compulsory education to all children of the age 6 – 14 years. In such a manner as the state may by law determine. This Article 21A of the

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<sup>‡</sup> Bajpal Asha, (2006). "Child rights in India: Law, Policy and Practice, New Delhi, 2nd Edition.

<sup>§</sup> International Journal of Science and Research (IJSR) ISSN: 2319-7064 Volume 2 Issue 11, November 2013

Constitution of India envisages that children of age group 6 to 14 years have a fundamental right to education.

3. Article 23 prohibits trafficking of human beings including children.

4. Article 24 mandates that no child below 14 years can work in any hazardous occupation or industry.

**The Directive Principles of State Policy that directly relate to children are**

1. Article 39(a) & (f) direct that the state policies are directed towards securing the tender age of children.

2. Article 45 states that the state shall Endeavour to provide early childhood care and education for all children until they complete the age of six years.

3. Article 51A mentions that it shall be the fundamental duty of the parent and guardian to provide opportunities for education to his child or as the case may be, ward between the age of six and fourteen.

4. 86th constitutional Amendment – Right to Education, is a fundamental right. It was after a long struggle that the 86<sup>th</sup> constitutional amendment to make the right to education as a fundamental right in 2001 was made. The State laws have not yet been drafted. The Government of India has prepared a draft bill on the Right to Education Bill, 2005, seeks to give effect to the 86th constitutional Amendment.

The Preamble of the draft bill states that it is put into effect the Right to Free and Compulsory Education to all children in the age group of 6 – 14 years\*\* .

**Children in Need of Protection**

Every child has the right to protection. This not only includes children who are in different circumstances and those who have suffered violence, abuse and exploitation, but also those who are not in any of these adverse situations and yet need to be protected in order to ensure that they remain within the social security and protection net. Child protection is about protecting children from or against any perceived or real danger/risk to their life, their personhood and childhood. It is about reducing their vulnerability to any kind of harm and in harmful situations.

Child protection is integrally linked to every other right of the child. The failure to ensure children's right to protection adversely affects all other rights of the child and the development of the full potential of the child. Child protection is about protecting every right of every child. It must also relate to children's capacity for self-reliance, self-defense, and to the roles and responsibilities of family, community, society and state. The need to protect some children is certainly greater than others due to their specific socio-economic and political circumstances and geographical location. These are the children who are more vulnerable in term of the harm/danger/risk to their right to survival/ development/ participation.

1. Homeless children (pavement dwellers, displaced/evicted, etc.)
2. Refugee and migrant children
3. Orphaned or abandoned and destitute children
4. Children whose parents cannot or are not able to take care of them
5. Street and working children
6. Child beggars
7. Victims of child marriage
8. Trafficked children

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\*\* Pandey J.N. (2016). "The Constitutional Law of India.

9. Child prostitutes
10. Children of prostitutes
11. Children of prisoners
12. Children affected by conflict/civil strife
13. Children affected by disasters both natural and manmade
14. Children affected by substance abuse, HIV/AIDS and other terminal diseases
15. Disabled children
16. Children belonging to ethnic, religious minorities and other marginalized groups
17. The girl child
18. The unborn child
19. Children in conflict with law(those who commit crime)
20. Children who are victims of crime.

### **Recommendations: Prevention of Child Rights violation At Society**

1. Sexual education for children
2. Punish those who commit the acts against child
3. Create support centers for victims
4. Set up free phone lines to break the silence
5. Ensure children's safety
6. Educate children about sexual violence
7. Ratify and conform to laws protecting children
8. Create preventative laws and disseminate information about them
9. Create committees for eliminating violence against children
10. Find healthy ways for children to spend their free time
11. Limit TV Channels
12. Forbid harmful traditional practices by law
13. Launch awareness campaigns for the community
14. Create local committees for child protection.

### **At work place, in the streets and in institutions**

1. sensitise employers about child rights and consequences of corporal punishment to children
2. respect children
3. educate employers to listen to children
4. ensure employers to listen to children
5. ensure children's safety at work
6. value alternative education methods
7. Encourage and support the development of child led organizations.

### **At School**

1. increase the number of education advisers and sensitise teachers about corporal punishment
2. create councils for discipline in schools that can work in partnership with children's organisations
3. establish and disseminate internal rules of conduct
4. sensitise education inspectors about corporal punishment
5. ensure children's security in schools
6. parents have to accompany younger children to school

7. offer alternative punitive measures.

#### **At Home**

1. sensitise parents about the consequences of violence against children
2. teach parents how to communicate with their children (parents' school)
3. prioritise dialogue with children
4. train them on education without violence
5. offer alternative disciplining methods
6. inform parents about child rights and laws that ban corporal punishment
7. alleviate poverty and increase family benefits for children

#### **Other Recommendations to Government of India to Prevent Child Rights Violation**

It is just not possible for the government to fight the battle alone. Every individual in the society should contribute to this effort. For a participative action, government should be encouraging the following projects:

1. Start a scheme "Sponsor a child" and get sponsorship from Individuals, business man, politician, Cinema field etc. Give the sponsors some tax benefit to encourage sponsorship.
2. More child help line telephone numbers should be in place and popularize those by means of advertisements campaigns.
3. Minimum Rs.1/- Project: Collect a minimum of Rs.1/- from every Indian (Close to 100 crores can be collected) and use it for poor child development - (Keep Hundi in Government Banks to collect this)
4. Strict Law to be amended on TV Channels which telecast and encourages violence, sex and vulgar programs.
5. Celebrate Pandit Jawaharlal Nehru's birthday as "Children's Rights Day" rather than children's day alone.
6. Release a postal cover / post card with campaigning information on Child Rights.
7. Special police stations for protecting "Child" (Like Women police stations).
8. Form local communities with volunteers for campaigning and creating awareness on child rights.
9. Schools to have awareness classes for "Child Rights"

#### **Challenges Ahead**

Like many developing countries, India faces problems of infant mortality, child marriage, maternal mortality and the phenomena of child widows, sex tourism, and child trafficking even across national borders for prostitution, child abuse and child labour. There are several challenges ahead.

Of all the demographic groups, the girl child are probably the most socially disadvantaged. At every stage of her life cycle – from conception to adulthood – she is especially vulnerable to human rights abuses. Recent incidents of Delhi gang rape and Pondicherry Acid attack cases can be quoted as examples for the human rights abuse of girl child.

So, a child focused culture has to be developed. The legal system should interpret the laws in the context of the rights and standards given in the CRC. This will give the child access to justice through the court system. All the children's legislations need to be reviewed in the context of CRC and its standards and there has to be linkages between them. The Indian legal system has to evolve a great deal for securing the rights of the child and providing justice to the child.

Legal reform alone cannot bring justice to the child. Undoubtedly, the most effective preventive measure is awareness of such possible abuse and how to deal with it amongst the

various service providers – the doctors, teachers, lawyers, judges, police, volunteers, parents, trade unions, and social workers – so that they can significantly reduce the risk of abuse, if it does occur, by responding appropriately.

Thus to conclude these challenges have to be rapidly addressed. And above all, the core value of the universal legal principle that policies be made, structures and processes be established, and actions be taken that are always and invariably in the best interest of the child should be followed. Child is a bud, let it blossom as a flower with nutrition of rights, with fruits of freedom and with care and attention not only from parents but also from the state under the auspices of the society. The struggle for realization of the rights of the child is going to be a long journey.

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## **Right To Equality As A Fundamental Rights In Indian Scenerio**

**Dr. Sitaram\***

Relevance of Justice and Equality in Ambedkarian Thought Babasaheb Bhimrao Ambedkar is one of the greatest figures of modern India who liberated a vast section of the Indian people from the debased, dehumanized, irrevocable condition of divine slavery. That is why; he was called, with devotional fondness, Babasaheb, the father by the destitute who goes resurrected into humanity. The Dalitbahujans, pay homage and respect, adore and worship their messiah, Babasaheb.

Like the Buddha, he never made any compromise with injustice, never cared for prestige and self-aggrandizement. He was an uncompromising rebel against social injustice and inequality. He worked relentlessly for the regeneration of humanity, for the well-being of mankind, for the transformation of man and society. He was a great social liberal. His vision was to produce a new social order based on the principles of justice, equality and fraternity. Thus, the idea of justice, equality, liberty and fraternity was the crux of his activities.

The purpose of this Article is to identify the general principle of "right to equality" the word "Right to equality" need no explanation because it tell its meaning itself. And it is one the fundamental right. But there are some hidden points which are needed to explain & this research project highlights those points & exception, which are admissible by our Indian constitution. It also helps to know why discrimination accepted under constitution law of India.

Right to equality given under article 14 of Indian law. it is one of the fundamental right. It ensure the guarantees to every person the right to equality before law & equal protection of the laws .it is not only right of Indian citizens but also right of non-citizens .article 14 says "The state shall of India." article 14 define no one is above the law. All are equal in eye of law.

### **Equality before law**

"The state shall not deny to any person equality before the law."<sup>††</sup>

### **Meaning of right to equality**

This means that every person, who lives within territory of India, has the equal right before the law. The meaning of this all are equal in same line. No discrimination based on religion, race, caste, sex, and place of birth. Its mean that all will be treated as equality among equal .and there will be no discrimination based on lower or higher class.<sup>‡‡</sup>

### **Article-14 of Constitution of India**

The state not deny to any person equality before the law or the equal protection of the laws within the territory of India. Protection prohibition of discrimination on grounds of religion, race, Caste, sex, or place of birth. Prof. Dicey, explaining the concept of legal equality as it operated in England, said: "with us every official, from the prime minister down to a constable or a collector of taxes, is under the same responsibility for every act done without any legal justification as any other citizen."<sup>§§</sup>

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†† Art.14 the Constitution Law of India.

‡‡ Pandey J. N., The constitutional Law of India. Ed. 2018

§§ Dicey, A.V., Law of the constitution.

The phrase “equality to the law” “find a place in all written constitutions that guarantees fundamental rights. “All citizens irrespective of birth, religion, sex, or race are equal before law; that is to say, there shall not be any arbitrary discrimination between one citizen or class of citizens and another.” “All citizens shall, as human persons be held equal before law.” “All inhabitants of the republic are assured equality before the laws.”

Pantanjali Sastri, c.j., has expressed that the second expression is corollary of the first and it is difficult to imagine a situation in which the violation of laws will not be the violation of equality before laws thus, in substance the two expressions mean one and the same thing.

According to Dr. Jennings said that: “Equality before the law means that equality among equals the law should be equal for all. And should be equally administered, that like should be treated alike. The right to sue and be sued, to prosecute and be prosecuted for the same kind of action should be the same for all citizens of full age and understanding without distinctions of race, religion, wealth, social status or political influence.”

### **Equal Protection of Law**

“Equal protection of law” has been given in article 14 of our Indian constitution which has been taken from section 1 of the 14th amendment act of the constitution of the United States.<sup>\*\*\*</sup>

Meaning of equal protection of law: here, it means that each person within the territory of India will get equal protection of laws.

In *Stephen's College v. University of Delhi* under the court held that the expression “Equal protection of the laws is now being read as a positive obligation on the state to ensure equal protection of laws by bringing in necessary social and economic changes so that everyone may enjoy equal protection of the laws and nobody is denied such protection. If the state leaves the existing inequalities untouched by its laws, it fails in its duty of providing equal protection of its laws to all persons. State will provide equal protection to all the people of India who are citizens of India and as well as non-citizens of India.

### **Exceptions to Rule of Law**

In the case of *Indira Sawhney* the right to equality is also recognized as one of the basic features of the Indian constitution. Article 14 applies to all persons and is not limited to citizens. A corporation, which is a juristic person, is also entitled to the benefit of this article. This concept implied equality for equals and aims at striking down hostile discrimination or oppression of inequality. In the case of *Ramesh Prasad v. State of Bihar*, AIR 1978 SC 327 It is to be noted that the aim of both the concepts, ‘Equality before law’ and ‘Equal protection of the law’ is the equal justice.

The principle of equality is not the uniformity of treatment to all in all respects. It only means that all persons similarly circumstanced shall be treated alike both in the privileges conferred and liabilities imposed by the laws. Equal law should be applied to all in the same situation, and there should be no discrimination between one person and another.

### **Rule of Law**

The rule of law embodied in Article 14 is the “Basic feature” of the Indian constitution. Hence it cannot be destroyed even by an amendment of the constitution under article 368 of the constitution.

### **Meaning of rule of Law**

The rule of law has been given by Prof. Dicey the expression the guarantee of equality before the law. It means that no man is above the law, all are equal in the eye of law. The concept of rule of law comes from Magna Carta. It means that law is equal for all in the same line.

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<sup>\*\*\*</sup> Wade & Phillips, Constitutional Law, 62

Because state have no religion all are equal in same line. And uniformity will be applied for all. Every organ of the state under the constitution of India is regulated and controlled by the rule of law. Absence of arbitrary power has been held to be the first essential of rule of law. The rule of law requires that the discretion conferred upon executive authorities must be contained within clearly define limits. The rule of law permeates the entire fabrics of the constitution of India and it forms one of its basic features.<sup>†††</sup>

#### **Termination & Prohibition of Article 14**

Article 14 permits classification but prohibits class legislation the equal protection of law guaranteed by article 14 does not mean that all laws must be general in character. It does not mean that the same laws should apply to all persons. It does not mean that every law must have universal application for, all person are not, by nature, attainment or circumstances in the same position. The varying need of different classes of persons often require separate treatment. From the very nature of society there should be different places and the legislature controls the policy and enacts laws in the best interest of the safety and security of the state. In fact, identical amount to unequal circumstances would amount to inequality.

Thus, a reasonable classification is permitted for the develop society. Article is forbids is class-legislation but it does not forbids reasonable classification. The classification, however, must not be "Arbitrary, artificial or evasive" but must be based on some real and substantial Distinction bearing a just and reasonable relation to the object sought be achieved by the legislation.

Article 14 implied where equals are treated differently without any reasonable basis. But where equals and unequal are treated differently, article 14 does not apply class legislation is that which makes an improper discrimination by conferring particular privileges upon a class of persons arbitrarily selected from a large number of persons, all of whom stand in the same relation to the privilege granted that between whom and the persons, not so favored no reasonable distinction or substantial difference can be found justifying the inclusion of one and the exclusion of the other from such privilege.

#### **New Concept of Equality for the Protection of Indian People**

In the case of the Air India v. Nargesh Meerza<sup>†††</sup> Regulation 46 of Indian Airlines regulations provides an air Hostess will be retire from the service upon attaining the age of 35 years or on marriage within 4 years of Service or on first pregnancy, whoever found earlier but regulation 47 of the regulation act the managing director had the discretion extend the age of retirement one year at a time beyond the age of retirement up to the age of 45 years at his option if an air hostess was found medically fit .it was held by the court that an air hostess on the ground of pregnancy was unreasonable and arbitrary, it was the violation of article 14 under constitution law of India. The regulation did not restrict marriage after four years and if an air hostess after having fulfilled the condition became pregnant, there was no ground why first pregnancy should stand in the way of her running service of the court said that the termination of service on pregnancy was manifestly unreasonable and arbitrary on the basis of this it was violation of article 14 of Indian constitution.

In John Vallamattom v. union of India, section 118 of the Indian succession Act, 1925 court invalidated which prohibited the right of a Christian to make valid will for a religious or charitable purpose only if he made it at least 12 months before his death. The court occurred

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<sup>†††</sup> V.N. Shukla, The Indian Constitutional Law. Ed. 2015

<sup>†††</sup> AIR 1981 SC 1829

the prescription of time and the application of the provision only to Christian artificial having no nexus with the object of law.

In P. Rajendan v. state of Madras, court said that there was district wise distribution of seats in state medical colleges on the ground of proportion of population of a district to the total population of the state. Classification will be valid under article 14, there must be a relation between the classification and the object sought to be achieved. Any one scheme of admission rules should be devised so as to select the best available talent for admission to medical college in the state. in reality discriminatory as a high qualified candidate from one district may be rejected while a less qualified candidate from another district may be admitted.

In D.S Nakara v. union of India, in this case supreme court said that Rule 34 of the central services (pension) rules, 1972 as unconstitutional on the ground that the classification made by it between pensioners retiring before a certain date and retiring after that date was not depend upon the any rational principal it was arbitrary and the infringement of article of article 14 of Indian constitution law.

### **Conclusion**

Keeping in view of above mentioned statements said by the different courts, it is clear that Article 14 gives the ensurity of equal rights without discrimination. It says equal everyone is Equal in eye of law. Whether he belongs to different race, religion, social status or wealth. As Dr. Jennings rightly said: "equality before the law means that among equals the law should be equal and should be equally administered, that like should be treated alike. The right to sue and be sued to prosecute and prosecuted for the same kind of action should be same for all citizens of full age and understanding without distinctions of race, religion, wealth, social status or political influence." Right to equality is a one of the most important part of our Indian constitution, which gives strengthen to all those people who belongs to Indian nationality. It is necessity of the upcoming generation to secure their right & change our developing India in to develop India.

## **A Study Of Human Rights Violation In Police Custody**

**Rajkamal\***

Human rights are the basic rights of every individual against the state or any other public authority as a member of the human family irrespective of any other consideration. Thus every individual of the society has the inherent right to be treated with dignity in all situations including arrest and keeping in custody by the police. Rights of an individual in police custody are protected basically by the Indian Constitution and by various other laws like Code of Criminal Procedure, Evidence Act, Indian Penal Code and Protection of Human Rights Act.

These rights are also recognized by various international documents like Universal Declaration of Human Rights, International Covenant on Civil and Political Rights, Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment and Body of Principles for the Protection of All Persons under Any Form of Detention or Imprisonment. In spite of these international and national legal standards for the protection of rights of persons in police custody, human rights violations in police custody are endemic in India and are tarnishing the image of India abroad. Since the police play a vital role in a democracy not only with respect to maintenance of law and order but also in dealing with the rapid increase of crime rates in the criminal justice system, policy of police must strive to attain objectives like fairness, consistency, tolerance of minority views and other values which are inherent in a society. Being the visible symbol of state authority, police should see that their actions are not affecting the liberty and freedom of individuals and not infringing the basic human rights values of the suspects in custody, while fulfilling the avowed objectives of prevention and investigation of crimes.

Ensuring liberty and upholding dignity of an individual is the paramount concern of every democratic state. Living in this era of globalisation, any incident violating human rights is of pivotal importance to the world at large. Expanding ambit of human rights on one hand and increasing counts of crime rate on other hand, poses a challenge to all law-enforcing machineries to strike a balance between the two.

Human rights and custodial torture are contradictory terms. Torture in custody at the hands of protectors of law i.e. police is considered to be a harshest form of human rights violation. Perseverance of human rights can be guaranteed only by curbing this unnecessary evil. The expression "torture" has neither been defined in the Constitution of India nor in any other penal law. Issue of custodial torture is concern of international community and a universal subject.

Thus, custodial forcefulness, suffering and abuse by police authority are not peculiar to this country but a widespread phenomenon. India, being the biggest democracy of the world, embedded in its laws, protection of life and personal liberty as one of the fundamental rights. Still, existence of cases of custodial torture and third degree upon under-trials and suspects is an integral part of investigation. The former Supreme Court judge, V.R. Krishna Iyer, J., has said that custodial torture is worse than terrorism because the authority of the State is behind it.

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India is party to almost all the key International Instruments protecting human rights.<sup>§§§</sup> This give rise to question- why such incidents still prevail? This fact portrays a contradictory picture of our country to world at large.<sup>\*\*\*\*</sup>

Thus in this Article, the author aims to look at the various international instruments as well as the efforts incorporated by Indian legislature and judiciary to curb the evil of torture and what more can be done in this context.

In India, an attempt has been made since 1999 to gather information on details of cases where human rights were violated due to Police excesses such as 'Illegal Detentions', 'Fake Encounters', 'Extortion', 'Torture', etc. by National Crime Record Bureau, New Delhi and National Human Rights Commission, New Delhi, Under Home Ministry, Government of India.

The details are presented by NCRB's Crime in India Report 2008, that as per the report 253 cases of Human Rights Violation by Police were reported throughout the country during 2015. Only 14 Policemen were charge-sheeted and only 08 of them were convicted for these Human Rights Violations during the year. Chhattisgarh has reported the maximum 233 cases (92.1% of such cases). 59 out of 253 cases were reported under crime head 'Torture'. 39 and 33 cases were reported under the head of 'Extortion' and 'Failure in taking action' respectively. 25 cases reported under the head of 'False implication'.

On the other hand, also Asian Centre for Human Rights (ACHR) in its latest report Torture in India 2009 states that in the last eight years (from April 2001 to March 2009), an estimated 1,184 persons were killed in police custody in India. Most of the victims were killed as a result of torture within the first 48 hours after being taken into custody. The official data available with (TwoCircles.net) says every second police encounter that takes place in the country is fake. Colonial-era police laws enable state and local politicians to interfere routinely in police operations, sometimes directing police officers to drop investigations against people with political connections, including known criminals, and to harass or file false charges against political opponents. These practices corrode public confidence.

The universal declaration of human rights was unanimously adopted and proclaimed by the U.N. General Assembly on December 10, 1948. This universal declaration came into force in the legal form on 3rd January 1976 known as international covenant on civil and political rights. The international covenant on civil and political rights came into force on 23rd March 1976. India was one of the signatories of the universal declaration of human rights and acceded to the two international covenants by depositing the instrument of accession on 10th April 1979. On 25th June 1993, the Vienna declaration and programme of action adopted by the world conference on Human Rights declared that 'Human Rights and Fundamental freedom are birth right of all human beings'.<sup>††††</sup>

Despite state prohibitions against torture and custodial misconduct by the police, torture is widespread in police custody, which is a major reason behind deaths in custody (AHRC Report 2014). The police often torture innocent people until a 'confession' is obtained to save influential and wealthy offenders (ALRC 2014). G.P.Joshi, the programme coordinator of the Indian branch of the Commonwealth Human Rights Initiative in New Delhi comments

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<sup>§§§</sup> 317Jaswal, Paramjit S. And Jaswal, Nishtha, Police Atrocities, Human Rights and Judicial Wisdom, HUMAN RIGHTS YEAR BOOK, 2010.

<sup>\*\*\*\*</sup> JineeLokaneeta, Torture in Postcolonial India: A Liberal Paradox? (unpublished manuscript) (on file with author)

<sup>††††</sup> H.O. Agarwal 2016.

that the main issue at hand concerning police violence is a lack of accountability of the police.

In 2006, the Supreme Court of India in a judgment in the case of Prakash Singh vs. Union of India, ordered central and state governments with seven directives to begin the process of police reform. The main objectives of this set of directives were twofold, providing tenure to and streamlining the appointment/transfer processes of policemen, and increasing the accountability of the police<sup>\*\*\*\*</sup>.

"All men are born free but everywhere they are in chains " - - Rousseau

"Human rights" as the expression goes, means certain rights which are considered to be very basic for an individual's full physical, mental and spiritual development. Human rights encompasses the fundamental principles of humanity and these are the rights which every human being is entitled to enjoy on the basis of the fact of being born human. Indeed, the conception of rights, which every human being is entitled to enjoy by virtue of being a member of human society, has evolved through the history of struggles for the recognition of these rights. In plain simple words, human rights are the rights which every human being possesses by virtue of being a human.

The very idea of human being in custody saves for protection and nurturing is an anathema to human existence. The word custody implies guardianship and protective care. Even when applied to indicate arrest or incarceration, it does not carry any sinister symptoms of violence during custody. No civilized law postulates custodial cruelty- an inhuman trial that springs out of a perverse desire to cause suffering when there is no possibility of any retaliation; a senseless exhibition of superiority and physical power over the one who is empowered or collective wrath of hypocritical thinking.

The attack on human dignity can assume any form and manifest itself at any level. It is not merely the negative privilege of a crude merciless display of physical power by those who are cast in a role play of police functioning, but also a more mentally lethal abuse of position when springing from high pedestals of power in the form of uncalled for insinuation, unjustified accusations, unjust remarks, menacingly displayed potential harm, that can strike terror, humiliation and a sense of helplessness that may last much longer than a mere physical harm and which brook no opposition. The idea of human dignity is in one's sacred self and that field is quite a part and distinct from the field of considerations of rights and duties, power and privileges, liberties and freedoms or rewards and punishments wherein the law operate. If a person commits any wrong, undoubtedly he should be penalized or punished, but it is never necessary to humiliate him and maul his dignity as a human being.

### **The Universal Concern**

The Universal Declaration of Human Rights 1948, adopted and proclaimed by the General Assembly Resolution of 10\* December, 1948 declared in the preamble that recognition of the inherent dignity and of the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world. Article 1 proclaimed that all human beings are born free and equal, in dignity and rights. Article 3 proclaimed that everyone has the right to life, liberty and security of person, and in Article 5 that no one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment. The presumption of innocence of a person charged with a penal offence until proved guilty as contained in Article 11(a) is meant to insulate him against any high-handed treatment by the authorities dealing with him in the matter.

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\*\*\*\* DR. N. V. V Pranjape 2015.

Article 7 of the International Covenant on Civil and Political Rights, 1966 adopted by the General Assembly Resolution dated 16\* December, 1966 covenanted that no one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment. Under Article 10 of the said covenant all persons deprived of their liberty shall be treated with humanity and respect for the inherent dignity of the human person and the accused persons shall, save in exceptional circumstances, be segregated from convicted persons and shall be subject to separate treatment appropriate to their status as convicted persons.

The minimum guarantees to which everyone charged with a criminal offence, is entitled in full equality covenanted in Article 14(3), inter alia, provide that no one shall be compelled to testify against himself or to confess guilt, which obviously will rule out use of force of any kind on a person accused of any crime. Respect for human dignity is thus not a matter for any deep study in axiology for an estimate of comparative values in ethical, social or an aesthetic problem but a matter of acknowledging a simple truth already recognized by our national document when opening chant exudes the cultural nobility of a fraternity that assures the dignity of the individual. The Constitution recognized it to be fundamental in the governance of the country that the State shall direct its policy to secure conditions of freedom and dignity and insulates against all forms of tyranny against mind.

#### **Accused right to Silencer**

History of mankind is replete with instances where under every type of regime the accused in custody was tortured within the four corners of the cell for forcing him to confess or disclose information. When there is none to hear his cries or to his rescue. The right not to be compelled to testify against himself is a universally recognized right of the accused under Article 14 of the International Convention on Civil and Political Rights and is a fundamental right conferred by the Constitution. Article 20(3) of Indian Constitution says that "no person accused of any offence shall be compelled to be witness against himself. This is often described as right to silence.

No person accused of any offence shall be compelled to be witness against himself as per the protection granted by Article 20(3) of the Constitution. Therefore, a suspect of the crime cannot be compelled to disclose facts, which he can recall from his memory, likely to implicate him in a crime in which he was involved. A person accused of an offence, therefore, cannot be compelled to subject himself to brain fingerprinting test for finding out whether the information relating to the offence is stored in his brain. When on seeing the object familiar to the offence, his brain emits a microvolt response of recognition, he may refrain from disclosing that fact under the constitutional guarantee. If he is agreeable to the knowledge of the crime being detected by subjecting him to the computer brain testing, he would rather give his version in response to an oral interrogation. Before subjecting a person accused of an offence to brain fingerprinting test, he should, therefore, be told in no uncertain terms that the information connected with the offence if it is stored in the memory of his brain get detected and this would be done without his becoming aware of such information being extracted from his memory. Anything short of obtaining informed consent of the accused might raise a constitutional issue of violation of the fundamental right guaranteed by Article 20(3) of the Constitution. It is to be noted here that article 20(3) does not prohibit the accused being questioned during investigation or trial. When questioned the accused may deny or make a confession. The Supreme Court in *Smt. Selvi and Others v. State of Karnataka* has prohibited the narcoanalysis test, brain mapping test and lie-detector test on

the basis of right to privacy and right against self-incrimination. But the voluntary admission of test is permitted under certain safeguards.

### **Right against Handcuffing**

Handcuffing of accused persons by escorts taking them from jail to court and back in absence of there being a compulsive need to do so has been disapproved by the Supreme Court in *Prem Shanker v. Delhi Administration*, It has been expressed in no uncertain terms that to handcuff is to hoop harshly and to punish humiliatingly and that it is necessarily implicit in Article 14 and 19 of the Constitution that when there is no compulsive need to fetter person's limbs, it is sadistic, capricious, despotic and demoralizing to humble a man by manacling him. The minimal freedom of movement, which even a detainee, is entitled to under Article 19, cannot be cut down by application of handcuffs. A malicious use of the power to restrain a person by handcuffing him or otherwise can bring Section 220 of the Indian Penal Code into play. The object of imposing restraint on the person of the prisoner while in continued custody is to prevent his escape and that object itself defines at once the bounds of the power to keep the person in custody.

### **Right against Torture and Assault**

"It has always been a mystery to me how man can feel honored by the humiliation of their fellow beings." - - Mahatma Gandhi

Violence and inhuman treatment to the prisoners under police custody is nothing new in our country. There are thousands of examples where police himself is violator of human rights. The arrest of the person suspected of crime does not warrant any physical violence on the person or his torture. But when the captive exercises his fundamental right to silence against self-incrimination during his interrogation, the police often abuse their authority by use of criminal force to extort information. The tyrannical way of custodial interrogation that exposes the suspect to the risk of abuse of his person or dignity has prompted the Supreme Court to ordain that interrogation should not be accompanied with torture or use of "third degree" methods, The Constitution as well as the statutory laws condemn the conduct of any official in extorting the confession or information under compulsion by using any "third degree" methods. A confession to any police officer cannot be proved as against a person accused of any offence.

### **Right against Arbitrary Arrests**

A large number of complaints pertaining to human rights violations are in the area of abuse of police powers, particularly those of arrest and detection. It has, therefore, become necessary, with a view to narrowing the gap between law and practice, to prescribe guidelines regarding arrest while at the same time not unduly curtailing the power of the police to effectively maintain and enforce law and order and proper investigation.

In modern society liberty is absolutely essential for progress. The exercise of liberty, however, is only possible if some limitations are placed on it. Absolute liberty only leads to anarchy and lawlessness. It is where we have to strike the balance which is the matter of great importance. In *Joginder Kumar v. State of U. P. and Others*, the Supreme Court observed: "To strike the balance between the needs of the law enforcement on the one hand and protection of citizen from oppression and injustice at the hands of the law enforcement machinery on the other is a perennial problem of statecraft<sup>§§§§</sup>".

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<sup>§§§§</sup> Pal, Rama, "Tackling custodial crimes - an over view", Human Rights Year Book, Universal Law Publishing Co. Pvt. Ltd., Delhi (2014).

In India the practice of police force is that whenever a cognizable offence is reported, the police arrests the accused person without even making a preliminary inquiry whether there is a prima facie evidence of guilt. This was rightly criticized in Joginder Kumar case in which the Supreme Court quoting the report of the Third Report of the National Police Commission held that on an average 60% of the arrests are either unnecessary or unjustified. In this connection it may be pointed out that in Section 157 of Criminal Procedure Code it is mentioned that that the police may make investigating of a cognizable case and if necessary arrest the offender. Thus arrest is not must in every case where a cognizable case is reported. Despite this clear provision the practice of the police has been to arrest the accused in all cases of cognizable offences. Unlawful and unjustified arrest may irreparably harm the reputation of a person. Arrest should not be arbitrary and in deciding whether to arrest or not the police officer must be guided by the principles laid down in Joginder Kumar case.

An arrest during the investigation of a cognizable case may be considered justified in one or other of the following circumstances:-

- (1) The case involves a grave offence like murder, dacoity, robbery, rape etc., and it is necessary to arrest the accused and bring his movements under restraint to infuse confidence among the terror stricken victims.
- (2) Accused is likely to abscond and evade the process of law.
- (3) The accused is given to violent behavior and is likely to commit further offences unless his movements are brought under restraint.
- (4) Accused is habitual offender and unless kept in custody he is likely to commit similar offences again.

The above guidelines have been followed in various other cases. It may be suggested that suspected that suspected person should be arrested after preliminary enquiry. A basic tenet of our criminal justice system is: 'Let hundred guilty walk free but do not punish an innocent.' The police, which is a part of criminal justice system, functions exactly the other way round. Liberty is an important feature of civilized society and it should not be lightly transgressed. When we have to enforce the criminal law in a fair and just manner, we must never give up our civil liberties which were won by our founding fathers after great sacrifices, as these are essential for the progress of nation.

In the foregoing chapters an attempt has been made to analyse the origin and development of the concept of police in India with special reference to Kerala and evolution and development of the concept of human rights and various kinds of human rights violations in police custody in different stages of history. A detailed description of legal standards for the protection of human rights of persons in police custody is also made.

Interview with the victims of custodial abuses, police officers from the higher echelons of the service to those at the cutting edge level, human rights activists and various voluntary organisations reveals that there are so many factors contributing towards the causes of violations of human rights by police. Sociological causes like ambivalent outlook of the society with respect to the use of third degree methods by the police, economic causes like meager salary and inadequate living conditions, rampant corruption in police service, unnecessary political interference in the crime investigation, work load of police personnel without any time limit and periodic holidays, unnecessary pressure from superior police officers and the general public for speedy detection causing great mental strain to the investigating officers, defective system of recruitment and training, imperfect system of

investigation and lack of public co-operation are some of the factors identified in the field survey towards the causes of violations of human rights in police custody.

Even though the Supreme Court and various High Courts in India, National Human Rights Commission and State Human Rights Commissions, various voluntary organisations and the media have contributed much towards ensuring custodial justice, it is found that the incidents of custodial violence are endemic in India. Therefore it is high time to take immediate steps for introducing certain practical measures to check this menace.

The problem cannot be solved through mere lip service or through the enactment of strict laws. Similarly it is difficult to find a remedy without altering certain concepts as well as certain social and legal realities which have emerged through centuries. Hence earnest efforts should be made to bring in some changes in the behavioural pattern of the police. In addition to this, vigorous campaigning from different angles and from various platforms is required to eradicate the threat of violations of human rights of persons in police custody. Government should identify the problems and the deficiencies and prepare a master plan regarding the action that has to be taken to curb human rights violations in police custody.

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## Square Multiplicative Labeling For Disconnected Graphs

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G. Visalatchi\*\*

Dr. D. Paul Dhayabharan\*\*\*

### Abstract

Let  $G$  be  $(p, q)$  graph.  $G$  is said to be a square multiplicative labeling if there exists a bijection  $f : V(G) \rightarrow \{1, 2, \dots, p\}$  such that the induced function  $f : E(G) \rightarrow N$  given by  $f(uv) = f(u)^2 * f(v)^2$  for every  $uv \in E(G)$ . A graph which admit square multiplicative labeling is called square multiplicative graphs. In this paper, we investigated the square multiplicative labeling for disconnected graphs.

**Keywords:** Labeling, Multiplicative labeling, Strongly multiplicative labeling, Minimization of multiplicative labeling and Maximization of multiplicative labeling.

### 1. Introduction

In Mathematics, Graph Theory is the study of graphs, which are mathematical structures that are being used to model pair wise relationship between objects. A graph is made up of vertices, nodes or points which are connected by edges, arcs or lines. The graphs that are taken in this paper are finite and undirected. A linear graph (or simply a graph)  $G = (V, E)$  consists of set of object  $V = \{v_1, v_2, \dots\}$  called vertices and another set  $E = \{e_1, e_2, \dots\}$ , whose elements are called edges, such that each edge  $e_k$  is identified with an unordered pairs  $(v_i, v_j)$  of vertices. The symbols  $V(G)$  and  $E(G)$  are denoted as vertex set and edge set of a graph  $G$ . The cardinality of the vertex set is called the order of  $G$ , denoted by  $p$  and the cardinality of the edge set is called the size  $G$ , denoted by  $q$ . Hence the graph is referred to as  $(p, q)$  graph.

Graph Theory is applied in various fields such as Physics, Chemistry, Biology, Computer Science, Operations Research, Social Networks, etc., Graph labeling is the assignment of integers from its vertices or edges subject to some certain conditions. A dynamic survey on graph labeling is regularly updated by Gallian [4] and it is published by electronic journal of combinatority. Some basic definitions and notations are taken from Bondy and Murthy [3]. Beineke and Hedge [1] referred a graph with  $p$  vertices as strongly multiplicative if the vertices of  $G$  can be labeled with distinct integers  $1, 2, \dots, p$  such that the labels induced on the edges by the product of the end vertices are distinct. Shalini and Paul Dhayabaran [14] introduced a minimization of multiplicative graphs. In this paper, we discussed square multiplicative labeling for disconnected graphs.

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**Definition 1.1:**

A graph  $G$  is said to be **square multiplicative labeling** if there exists a bijection  $f : V(G) \rightarrow \{1, 2, \dots, p\}$  such that the induced function  $f : E(G) \rightarrow N$  given by  $f(uv) = f(u)^2 * f(v)^2$  for every  $uv \in E(G)$  are all distinct.

**Definition 1.2:**

A graph  $G$  is said to be **square multiplicative graph** if it admits a square multiplicative labeling.

**Definition 1.3:**

The **union** of two graphs  $G_1 = (V_1, E_1)$  and  $G_2 = (V_2, E_2)$  is a graph  $G = G_1 \cup G_2$  with vertex set  $V = V_1 \cup V_2$  and edge set  $E = E_1 \cup E_2$ .

**Definition 1.4:**

The **corona** of two graphs  $G_1$  and  $G_2$  is the graph  $G = G_1 \odot G_2$  formed by taking one copy of  $G_1$  and  $|V(G_1)|$  copies of  $G_2$  where the  $i^{th}$  vertex of  $G_1$  is adjacent to every vertex in the  $i^{th}$  copy of  $G_2$ .

**2. Square Multiplicative Labeling For Disconnected Graphs**

**Theorem 2.1:**

$C_m \cup P_n$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 2$ .

**Proof:**

Let  $G$  be a graph of  $C_m \cup P_n$ .

Let  $C_m$  be the cycle and  $P_n$  be the path. Let  $\{u_1, u_2, \dots, u_m\}$  be the vertices of  $C_m$  and  $\{v_1, v_2, \dots, v_n\}$  be the vertices of  $P_n$ .

Define a function  $f : V(G) \rightarrow \{1, 2, \dots, p\}$  by

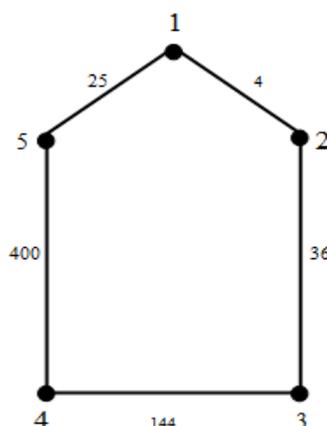
$$f(u_i) = i; \quad 1 \leq i \leq m$$

$$f(v_i) = m + i; \quad 1 \leq i \leq n$$

Then the edge labels are distinct.

Hence,  $C_m \cup P_n$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 2$ .

**Example 2.1**



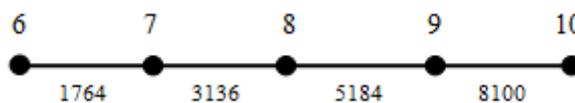


Figure 2.1:  $C_5 \cup P_5$

**Theorem 2.2:**

$C_m \cup (P_n \odot K_1)$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 3$ .

**Proof:**

Let  $G$  be a graph of  $C_m \cup (P_n \odot K_1)$ .

Let  $C_m$  be the cycle and  $P_n$  be the path.

Let  $\{u_1, u_2, \dots, u_m\}$  be the vertices of the  $C_m$  and  $\{v_1, v_2, \dots, v_n\}$  be the vertices of  $P_n$ . Let  $\{w_1, w_2, \dots, w_n\}$  be the vertices which is joined to the vertex  $v_i$ ,  $1 \leq i \leq n$  of the path  $P_n$ .

The resultant graph is  $P_n \odot K_1$ .

Define a function  $f : V(G) \rightarrow \{1, 2, \dots, p\}$  by

$$f(u_i) = i; \quad 1 \leq i \leq m$$

$$f(v_i) = m + 2i - 1; \quad 1 \leq i \leq n$$

$$f(w_i) = m + 2i; \quad 1 \leq i \leq n$$

Then the edge labels are distinct.

Hence,  $C_m \cup (P_n \odot K_1)$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 3$ .

**Example 2.2**

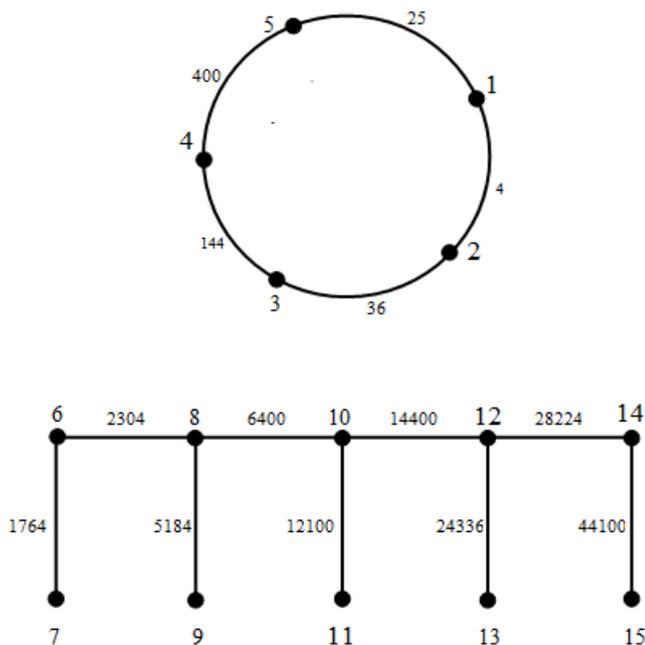


Figure 2.2:  $C_5 \cup (P_5 \odot K_1)$

**Theorem 2.3:**

$(C_m \odot K_1) \cup P_n$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 2$ .

**Proof:**

Let  $G$  be a graph of  $(C_m \odot K_1) \cup P_n$ .

Let  $C_m$  be the cycle and  $P_n$  be the path. Let  $\{u_1, u_2, \dots, u_m\}$  be the vertices of  $C_m$  and  $\{v_1, v_2, \dots, v_m\}$  be the vertex which is joined to the vertex  $u_i$  of the cycle  $C_m$ ,  $1 \leq i \leq m$ . The resultant graph is  $C_m \odot K_1$ .

Let  $\{w_1, w_2, \dots, w_n\}$  be the vertices of  $P_n$ .

Define a function  $f : V(G) \rightarrow \{1, 2, \dots, p\}$  by

$$f(u_i) = 2i - 1; \quad 1 \leq i \leq m$$

$$f(v_i) = 2i; \quad 1 \leq i \leq m$$

$$f(w_i) = 2m + i; \quad 1 \leq i \leq n$$

Then the edge labels are distinct.

Hence,  $(C_m \odot K_1) \cup P_n$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 2$ .

**Example 2.3:**

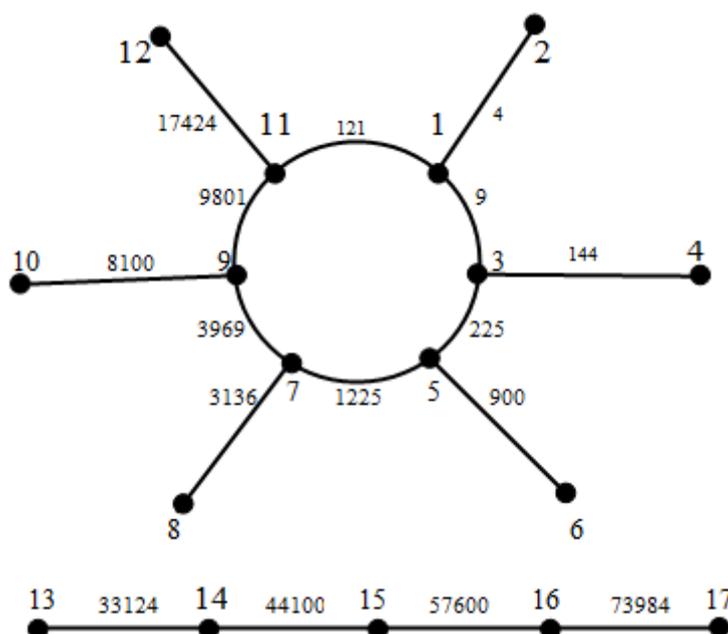


Figure 2.3:  $(C_6 \odot K_1) \cup P_5$

**Theorem 2.4:**

$(C_m \odot K_1) \cup (P_n \odot K_1)$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 3$ .

**Proof:**

Let  $G$  be graph of  $(C_m \odot K_1) \cup (P_n \odot K_1)$ .

Let  $C_m$  be the cycle and  $P_n$  be the path.

Let  $\{u_1, u_2, \dots, u_m\}$  be the vertices of the  $C_m$  and let  $\{v_1, v_2, \dots, v_m\}$  be the pendent vertex joined to the vertex  $u_i$  of  $C_m$ ,  $1 \leq i \leq m$ .

The resultant graph is  $(C_m \odot K_1)$ .

Let  $\{w_1, w_2, \dots, w_n\}$  be the vertices of the  $P_n$  and let  $\{t_1, t_2, \dots, t_n\}$  be the vertex which joined to the vertex  $w_i$ ,  $1 \leq i \leq n$  of the path  $P_n$ .

The resultant graph is  $(P_n \odot K_1)$ .

Define a function  $f : V(G) \rightarrow \{1, 2, \dots, p\}$  by

$$f(u_i) = 2i - 1; \quad 1 \leq i \leq m.$$

$$f(v_i) = 2i; \quad 1 \leq i \leq m.$$

$$f(w_i) = 2m + 2i - 1; \quad 1 \leq i \leq n.$$

$$f(t_i) = 2m + 2i; \quad 1 \leq i \leq n.$$

Then the edge labels are distinct.

Hence,  $(C_m \odot K_1) \cup (P_n \odot K_1)$  is a square multiplicative graph for  $m \geq 3$  and  $n \geq 3$ .

**Example 2.4:**

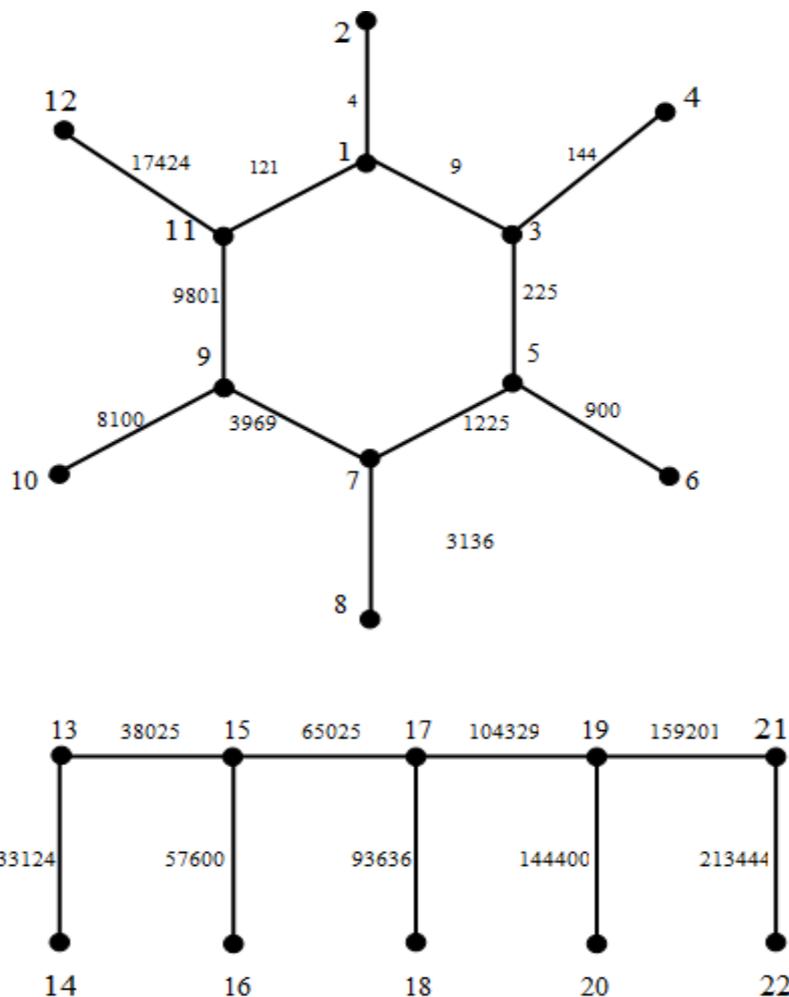


Figure 2.4:  $(C_6 \odot K_1) \cup (P_5 \odot K_1)$ .

### Conclusion

In this paper, we investigated some families of disconnected graphs which satisfies the formula  $f(uv) = f(u)^2 * f(v)^2$ . Finally, we conclude that, the above mentioned disconnected graphs are square multiplicative graphs.

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## **The Reasons Behind Widespread Unemployment Of Engineering Graduates In India 2019**

**Kewal Singh Paneser\***

**Gagandeep Singh\*\***

**Abstract:** Unemployment anywhere is associated with a plethora of factors. Some of these can be: the quality of education, the extent to which the candidates are exposed to real life situations, the economic condition of the country or region, the economic condition of the countries where the candidates can migrate, the emigration laws of the home country, the immigration policy of the countries where the prospective candidate can migrate. One of the factors not mentioned above but in the opinion of the authors is most important is the quality and standard of primary and secondary education of the candidates. Unemployment in India has been growing at an alarming rate for the educated persons of all disciplines. This presentation is an attempt to investigate into the reasons behind vast unemployability of engineering graduates in India in 2019.

**Keywords:** Unemployment, commensurate, underemployment, human resources, inadequate equipment, inept engineers, outdated syllabi, ghost faculty, computerization and digitization, prestige, state of the art practical training, migration to cities, emigration, and statistical data. Aspiring Minds, stakeholders.

Unemployment means a person willing to work but unable to find a job commensurate with his educational qualifications and liking. In India Many graduates, doctors, engineers, scientists are unemployed or underemployed. Due to unemployment our country's human resource are being wasted.

### **A. Broadly Speaking**

1) **Inept engineers:** After obtaining a B.Tech degree many of the engineers are not capable of working without having undergone training for at least 6 months or for one year. This becomes additional expense and tedium for the hiring companies. This results in their leaving the freshers aside with simple words "sorry, no experience".

2) **Inadequate equipment and workshops:** Many of the colleges do not have the workshop facilities for students for imparting practical experience on machines, tools and equipment. Many times the facilities provided by these colleges are not adequate and not of the level/standard adopted in the industry.

3) **Outdated syllabi:** The technology is changing drastically but the syllabus of colleges and universities is not changing in line with present day technologies. It is therefore difficult for engineers to survive with outdated syllabus and compete with shop floor professionals. Nevertheless for some of the courses like mathematics, drastic changes in course contents may not be possible, but imagine how one of the authors felt when he observed that one of the books referred to at the end of the B.A. Maths syllabus had not been re-published for over seventy years. In the age of computerization and digitization computer programming can be incorporated in course contents of many courses.

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4) **Ghost Faculty & Fake colleges:** As a result of the recent raids conducted in the Telangana state in India it has come to be known that there were 878 fake faculties. Also the faculty present was also not competent. We should appreciate Telangana state C.M (K.C.R) for taking a bold step by cancelling the licenses of more than 100 engineering colleges in his state. There were also some colleges affiliated to IGNOU whose recognition was cancelled on coming to light a similar scam.

5) **Prestige issue:** Some of the students feel that a B.Tech degree is more prestigious than other degrees. The parents are also forcing their children to pursue engineering education. In some states some boys undergo engineering education in expectation of good dowry. On the other hand, parents of young girls, feel that engineering education is a means of finding matches without having to give much dowry. Many young women complete a university engineering degree hoping that they can find a marriage partner equally or more qualified than them, in case they themselves cannot find a suitable job.

### **B. Present Scenario Of Engineering Graduates**

1) **Training for jobs:** Engineers are moving to the nearby big cities for preparing for competitive examinations. They are staying there and preparing themselves until they get selected for a suitable job. Big cities like Hyderabad, Bangalore, Chennai and Pune are full of graduate unemployed engineers. Many such centres are exploiting the prospective examinees by charging exorbitant fees taking advantage of their unemployment.

2) **Prepared to do any sort of work:** You can find engineering graduates working as private teachers, bank employees, lecturers at the institute from where they passed. In worst cases you can find them applying for the job of a clerk or a peon.

4) **Craze for Study Abroad:** Most of the 12<sup>th</sup> class pass non-medical students are going abroad for further studies for graduation and for post graduation in engineering programs. They also get employed in foreign countries. This is one of the major reasons for fewer students opting for engineering education in India.

5) **Young people after a long time of unemployment falling prey to drugs and finding wrong means of earning money. For example:-** Young delinquents are taking to drugs and they indulge in wrong illicit habits like snatching of gold chains and most of the teenagers adopt felony crimes like murder, terrorism etc. The question is "Who is responsible for all this: the government, the colleges, the friends or the parents?"

6) **Deficient in knowledge.** Very few engineers actually know *anything* about their fields. The uncle of one of the authors recently hired a CSE graduate as a system administrator. The incumbent could not find his way around a UNIX terminal. He had no clue to the fact that stuff like grep, cut and comm can be piped together to do something useful although he had studied UNIX as part of his coursework. He could not write programs to change the format of a CSV file. He had extremely good grades in at least 3 subjects in which he must have studied different programming languages. Indian engineering education rewards rote learning, not real knowledge or practical. There is no reason why employers should hire such engineers?

### **C. Some Statistical Indices On Engineering Unemployability**

Out of more than 6,00,000 engineers being pushed into the economy each year, only a handful (less than 20%) are ready to be deployed as Software Engineers in the IT Services industry. And the number drops to as low as about 3% for IT product roles. These statistics are revealed in National Employability Report, Engineers by Aspiring Minds. Disturbing as it may sound, but these numbers are a reflection of the current state of employability in the

country. Why does this wide a gap exist between the number of engineers produced and the number that can be readily deployed in jobs? Where does this supply chain break?

India has done a good job in terms of creating capacity - sheer quantity of educational institutions. However the increasing quantity of institutions seemed to be inversely affecting the average quality of education being imparted. It is imperative that the education system takes a fresh look on the situation to understand how and what changes can be made to ensure that the employability of graduates and post graduates passing out each year is increased.

The onus is on the education system to develop curriculum that is focused on imparting skills that are relevant to the industry. Seriousness about education and sincerity in working towards getting a job should be realised by the students at an early stage and not when they have graduated.

#### **D. Demand For Change In Engineering Education**

“We need good teachers, good labs and infrastructure”.

The developer of the curricula and course contents should seek help from industry experts through special seminar or lectures. Students can get a directional feedback on the type of jobs he/she would do good in and also realizes his/her strengths and weaknesses and can immediately get into action to acquire the missing skills. By the time he/she reaches the final year of college when doors are about to open to the job world, they shall be equipped with the right skill set and shall be job ready.

The National and the State Governments should encourage and develop the agriculture based industries in rural areas so that the rural candidates don't migrate to the urban areas. More employment should be generated in rural areas for the seasonal unemployment of people.

The quality of Indian education should be improved. The current education system is not of the level required in industry. The Governments should keep a strict watch on the education system and try to implement new ways to generate skilled labour force. Government should appoint a high committee to look after the schools and universities. The syllabus taught is of no use to the industries. Therefore, the education should be as per the current requirements of the industries. Before completing the education a great deal of practical knowledge should be imparted to the students.

**Summary:** India's youth is very inspirational. It is on the stakeholders - the parents, the mentors, the institutions and the governments to inspire and lead them in the right direction in raising up the employability pyramid. Appropriately structured mechanisms are needed at all levels to impart skills which will make India's demography more employable.

## **An Analytical Study Of Executive Stress Management In Selected Industries Of Thane District**

**Mrs. Saili Satyendra Narvekar**

**Prof.Dr.Anjali Kalse**

**Abstract:** The relationship between gender and stress levels was studied, it was hypothesized that Male executives experienced higher level of stress than female executive in Manufacturing and Service sectors. Job stress scale & Perceived stress scale were used to measure stress levels of Executives of both the sectors. The result was insignificant and did not support the hypothesis, showing almost no difference between stress levels of males & females in both the sectors.

**Key Words:** Gender, Job stress level, Perceived stress level

### **Introduction**

Stress has become a pervading feature of people's life in modern world. The modern world is a world of achievement as well as a world of stress. Stress is everywhere, **whether** it is in the family, business, enterprise, institute or any other social or economic activity.

Stress is universal element & individuals in every walk of life have to face it. Despite tremendous advancement in science and technology and remarkable growth of economy & sources of luxury, people all over the world seem to experience stress in various spheres of their lives. The feelings of frustration & dissatisfaction with life in general reflects the stress being experienced by people.

In the past also the societies were not entirely free from stress however the causes of stress in those societies were episodic in nature, low in severity & frequency but during the last decades the span of psychological stress has drastically increased.

The basic reason being changed. Physical & socio- cultural environment of the people. People's life has become more demanding, complicated, mechanical & dependent running by the clock. Ever increasing needs & aspirations, cut-throat competition, pressure of meeting deadlines, uncertainty of future & weak social support system have made the life of the people stressful in modern societies. Stress never makes distinct between male and female. Every walk of life we need to face it.

### **Objectives**

The main aim of this study is to present the stress management activities in selected industries of Thane district. Apart from this, below are the basic objectives of this study:

**A.** To identify the causes of stress with reference to selected industries.

**B.** To know the factors which are directly responsible in creating stressful situation at the workplace.

### **Literature Review**

Today's workplace is very different than it was years ago..Now a day's stress has become one of the concern of today's world. Workload & time deadlines put employees under pressure & lead to stress. Many researchers such as Spielberg (1979) believe that workplace stress is one of the important factors affecting productivity because of direct relationship between individuals behavior & stress experienced.

Stress is scientific concept but practice of stress management is an art. It says that women can handle stress better as compare to men. Women have much better memory than men, mostly women attach their memories to their emotions and also their defense mechanisms.

**Women's ability to handle stress:** According to Gaur and Dhawan (2000), women experts employed dynamic method to handle stress, light-heartedness and taking the initiative as methods to handle the stress. Furthermore, Aditya and Sen (1993) inferred that women dealt with stress better compared to male executives. The cause behind this could be the fact that women are more open to accepting emotional backing from others while dealing with stress; on the contrary, men attempt to alter the stressor or employ a coping policy which is not as efficient. The sex variation in the extent of the adverse association amongst work related stress and contentment was analysed by Walshok (1981).

According to Deosthalee (2000), male engineers were found to experience more stress compared to female engineers at the managerial level. No crucial variations were discovered by Chattopadhyay and Dasgupta (1999) in the apparent function related stress amongst female executives who were married compared to female executives who were single. Those employed in nationalised banks indicated higher levels of emotional tiredness but did not experience higher levels of burnouts compared to those employed in scheduled banks (Tewari 1995).

#### **Difference between American and Indian women**

A study that contrasted individual and professional stressors encountered by American and Indian executives employed in varied sectors (banks, textile mills, pharmaceutical, engineering, petrochemical and electrical) indicated that the professional stressors in both the nations were more or less similar. Individual stressors, on the other hand, varied in both the nations; in fact, Indian executives complained of encountering more individual stressors (Batliwala 1990). Likewise, a contrast of Indian and American female clerks indicated that the stressors amongst American clerks were absence of control/freedom while amongst Indian clerks, the stressors were related to absence of a framework and clearness of the job at hand (Narayanan, Menon & Spector 1999).

**Coping mechanism of women:** A recent research has shown that women cope differently with stress than men. After analysing data based on numerous behavioural studies of humans and animals, researchers from UCLA concluded that women cope with stress by the means performing behaviour that results in the protection of oneself and one's children. This is more commonly known as the 'Tending and Befriending' coping method, which are assumed to be evolutionary responses, that our ancestors have passed on. Tending refers to the taking care of oneself and others, and befriending refers to creating social networks, so as to reduce stress, by the means of 'social support'. On the other hand, it is suggested that men respond to the stressor by expressing the fight-or-flight response and either confront the stressor or flee from it. To substantiate these assumptions, a study reported by Repetti and Wood (1997) suggested that, mothers are particularly caring and loving to their children, when they experience high levels of stress at work, which stresses nurturing response. Furthermore, in another study conducted by Repetti (1992), it was found that men who experience high levels of stress at work, they tend to keep themselves away from home, and thus expressing the 'flight' response. These findings suggest that women cope with stress differently than men and therefore it can be stated that there are, to some extent, gender differences in the ways of coping with stress between male and females.

A recent study reported that employees in production, sales and service job have higher stress because of their lack of work control. (Bureau of Labor Statistics Sep. Summary 1999) when employee have at least one person from whom they can receive social support (especially emotional support) they will experience lower stress. Female in particular not only place more value on social support but seem to feel more comfortable and capable in providing to others.

### **Purpose of Study**

The main purpose of this study is to identify the causes of stress with reference to Manufacturing and Service sector, analytical study of stress among male and female executives and also the relation between levels of stress will be discussed deeply. Certainly, the result of this study will be beneficial to manufacturing as well as the service sector. This study will serve as the basis for future plans of action by both the sectors.

### **Hypothesis**

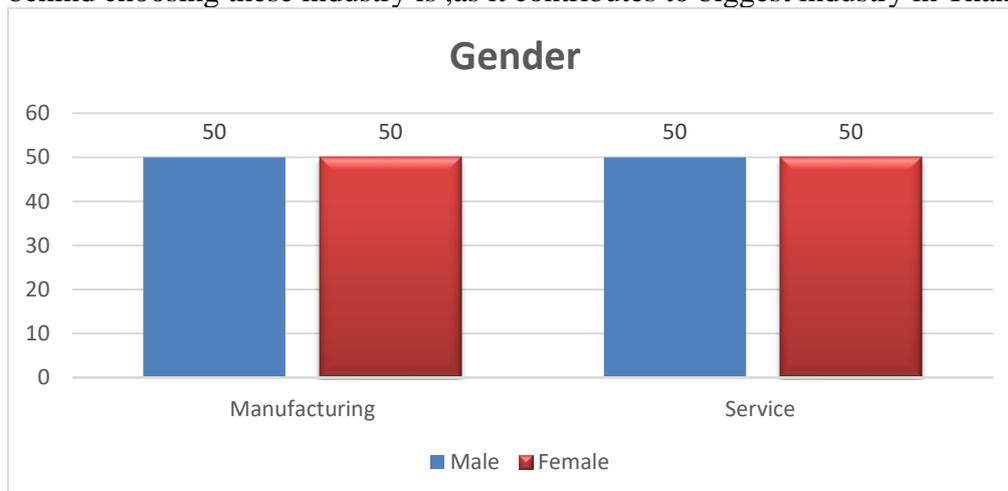
It is hypothesized that 'Male executives experienced higher level of stress than female executive in Manufacturing and Service sectors'.

### **Methods**

This research is based on descriptive method. Primary as well as secondary methods of data collection have been used for research study. In respect of primary data collection, the questionnaires were circulated between the executives of manufacturing & service sector. The secondary data was collected through comprehensive review of existing literature.

### **Sample Design**

The data was gathered using close ended questionnaires that were distributed among the executives chosen from different industries of Thane district. 500 executives were selected from different categories of industries situated in the area. The industries were selected on random basis in Thane district. Out of the total 500 executives the sample of 250 executives are collected from Chemical, Pharmaceutical and power station industry & the remaining sample were collected from service sector industries. The service sector industries that were taken for consideration are Bank, Information Technology and Hotel. The important reason behind choosing these industry is, as it contributes to biggest industry in Thane district.



### **Limitations of the Study**

This work is limited to Thane district only. While conducting study, the influence of mind-set of Executives & working pressure made difficult to conduct interviews. At first

Executives found to be reluctant to disclose any personal information due to confidentiality. Sometimes, it took long time to convince them for interview or sharing details.

**Result**

Manufacturing as well as Service sector are exhibiting clear sign of job related stress. From the following table we can see the major causes of job stress of both the sectors.

**Table**

No.	Major causes of Stress	Manufacturing %	Service %
1.	Inadequate staff	55.2	51.6
2.	Heavy Workload	58.4	55.2
3.	Poor working condition	56.8	49.2
4.	Mismatch between abilities of respondents & demand of work	58.8	49.6
5.	Improper Training	56.4	50.4

Long working hours, inflexible policies, Dual responsibility, Being responsible for the performance of others, having limited power were main causes of stress of male & female executives.

**Not recognized procedure to follow their complaints, unfavorable working conditions(heat, chemical & ergonomics of work environment), burden of responsibilities** are main causes of stress among executives in Manufacturing sector.

**Result & Discussion:**

In this study, the independent samples t-test was used to test the hypothesis, if the data is found as normal. If in case data has not fulfilled the normality and homogeneity conditions then Mann Whitney test is used to test the hypotheses, related to select demographic and stress characteristics in which the independent variable has two groups or categories.

**Hypothesis:** Male executives experienced higher level of stress than female executive in Manufacturing and Service sectors'

**Manufacturing Sector**

**Mann Whitney U test  
Descriptive Statistics**

	N	Mean	Std. Deviation	Minimum	Maximum
Job stress in Manufacturing	250	9.73	2.963	5	20
Perceived stress in Manufacturing	250	22.48	6.654	1	40
Gender in Manufacturing	250	1.50	.501	1	2

**Ranks**

	Gender in Manufacturing	N	Mean Rank	Sum of Ranks
Job stress in Manufacturing	Male	125	126.75	15844.00
	Female	125	124.25	15531.00
	Total	250		
Perceived stress in Manufacturing	Male	125	118.71	14838.50
	Female	125	132.29	16536.50
	Total	250		

**Test Statistics**

	Job stress in Manufacturing	Perceived stress in Manufacturing
Mann-Whitney U	7656.000	6963.500
Wilcoxon W	15531.000	14838.500
Z	-.276	-1.487
Asymp. Sig. (2-tailed)	.783	.137

a. Grouping Variable: Gender in Manufacturing

It is observed that Job stress level in manufacturing sector is higher among male executives (Mean rank= 126.75) compare to female executives (Mean rank = 124.25).  $U= 7656$ ,  $Z= -0.276$  at  $P= 0.783$ ,  $P>0.05$ ) which is not significant.

Hence Job stress in manufacturing sector among male executives is higher than female executives but it is not significant different.

Hence null hypothesis accepted and alternate hypothesis is rejected.

**H<sub>0</sub>2a: There is no significant difference in job stress among male and female in manufacturing sector.**

It is observed that Perceived stress level in manufacturing sector is higher among female executives (Mean rank= 132.29) compare to male executives (Mean rank = 118.71).  $U= 6963$ ,  $Z= -1.487$  at  $P= 0.137$ ,  $P>0.05$ ) which is not significant.

Hence perceived stress in manufacturing sector among female executives higher than male executives but significantly not different.

Hence null hypothesis accepted and alternate hypothesis is rejected.

**Service Sector**

**Ranks**

	Gender in service	N	Mean Rank	Sum of Ranks
Job stress in service	Male	124	128.27	15905.50
	Female	126	122.77	15469.50
	Total	250		
Perceived stress in service	Male	124	122.58	15200.00
	Female	126	128.37	16175.00
	Total	250		

**Test Statistics**

	Job stress in service	Perceived stress in service
Mann-Whitney U	7468.500	7450.000
Wilcoxon W	15469.500	15200.000
Z	-.604	-.634
Asymp. Sig. (2-tailed)	.546	.526

a. Grouping Variable: Gender in service

It is observed that Job stress level in service sector is higher among male executives (Mean rank= 128.27) compare to female executives (Mean rank = 122.77). U= 7468.500, Z= -0.604 at P= 0.546,P>0.05) which is not significant.

Hence Job stress in service sector among male executives is higher than female executives but it is not significant different.

Hence null hypothesis accepted and alternate hypothesis is rejected.

**H02c: There is no significant difference in job stress among male and female in service sector.** It is observed that Perceived stress level in service sector is higher among female executives (Mean rank= 128.37) compare to male executives (Mean rank = 122.58). U= 7450, Z= -0.634 at P= 0.526, P>0.05) which is not significant.

Hence perceived stress in service sector among female executives higher than male executives but significantly not different.

Hence null hypothesis accepted and alternate hypothesis is rejected.

**Suggestions**

- Company should give training through Seminars, now a day's e-learning is an excellent option to deliver international training.
- A newly appointed manager needs to get proper training to handle the staff, to motivate, to manage the people.

- An organization should create a learning & development program that address the training challenges the respective organization and employee face. Inadequate staff is an important cause of job stress, because inadequate staff leads to workload. Organization should hire 'Temporary employee' to fill in when employees are on vacation.
- Especially employees need support system during the period of hospitalized to their family member, organization should provide such support system to needy one.
- Due to changes in hormones after 40 or 40+ especially in woman brings several issues regarding to their physical and mental health, organization may appoint lady counsellor to help lady executive to overcome this delicate Menopausal phase.
- Organization may provide a facility of Yoga room, nap room, meditation room or regular counselling session which can help to eliminate stress among Executives.

#### **Scope for Further Research**

- ❖ Area of present study can be increased from district to state level.
- ❖ Research can be conducted in other sectors also.

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## **Impact Of Hrera On Real Estate Industry In Haryana**

**Padam Singh\***

### **Abstract**

The real estate sector is one of the most globally recognised sectors in India. The Government of India enacted the real estate (regulation and Development) Act 2016 HRERA on 25<sup>th</sup> March 2016 and all its provision came into effect, from May 1, 2017. RERA is an act which is passed by the Indian Parliament. Act to establish the Real Estate Regulatory Authority for regulation and promotion of the real estate sector and to ensure sale of plot, apartment or building, as the case may be, or sale of real estate project, in an efficient and transparent manner and to protect the interest of consumers in the real estate sector and to establish an adjudicating mechanism for speedy dispute redressal and also to establish the Appellate Tribunal to hear appeals from the decisions, directions or orders of the Real Estate Regulatory Authority and the adjudicating officer and for matters connected therewith or incidental thereto.

**Keywords:** HRERA, Real Estate, Industry, Investment, Real Property, Regulations.

### **Introduction**

The Government of India has enacted The Real Estate (Regulation and Development) Act, 2016. The Act has come into force from 1st May 2017. The Preamble to the Act reads, "An Act to establish the Real Estate Regulatory Authority for regulation and promotion of the real estate sector and to ensure sale of plot, apartment or building, as the case may be, or sale of real estate project, in an efficient and transparent manner and to protect the interest of consumers in the real estate sector and to establish an adjudicating mechanism for speedy dispute redressal and also to establish the Appellate Tribunal to hear appeals from the decisions, directions or orders of the Real Estate Regulatory Authority and the adjudicating officer and for matters connected therewith or incidental thereto" Under the Real Estate (Regulation and Development) Act, 2016, Government of Haryana has notified The Haryana Real Estate (Regulation and Development) Rules, 2017 which came into force from 28.07.2017

### **Objective**

- \* To regulate real estate sector for its harmonious growth and development.
- To bring transparency in the dealings between the promoters of real estate projects and buyers of apartments.
- To ensure that the real estate projects are completed within the prescribed time frame
- To resolve disputes relating to the projects expeditiously.
- To enforce the provisions of law and the orders of the Authority.

### **Main Provision of HRERA**

The Real Estate Act 2017 has several significant provisions for the advantage of buyers and ensuring transparency in the sector. Some of these important provisions are:

**1. Deposits:** builders are required to deposit 70% of the funds collected from buyers in a separate bank account in case of new projects. 70 Per cent of unused funds in case of ongoing projects.

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1. **Mandatory Registration:** All projects with plot size of minimum 500 sq.mt or eight apartments needs to be registered with regulatory Authorities.
2. **Penal interest in case of delay:** Both developers and buyers have to pay the same penal interest of SBI's marginal cost of lending rate plus 2% in case of delays.
3. **Liability:** Liability of a developer for structural defects for five years.
4. **Punishment:** Imprisonment of up to three years for developers and up to one year in case of agents and buyers for violation of orders of Appellate Tribunals and Regulatory Authorities.

#### **Impact of HRERA on Real Estate Industry**

- HRERA will impact faced industry positively in terms of accountability, credibility and trust between developers and consumers.
- Developers are required to register all new projects with the regulating authority. They must adhere to the sanctioned plan and specification of the project. Developers are responsible for repair of defects found within 5 years. This means that there will be clear plan sanction and specification laid down for facade and fenestration works of any project which brings a lot of clarity for budgeting, planning and execution.
- HRERA also brings accountability for not only developers but also for material suppliers and contractors to deliver high quality work as per sanctioned plan and specifications
- It is optimistic and hopeful that HRERA would streamline the business activities within the construction industry. Any project coming under the scanner on the timeline of project completion.
- The developers will have to take initiative to get registered themselves first. With the insistence on specifying carpet area, HRERA will give transparency in the actual usable area and thereby the rate.
- The Government is to regulate and streamline the real estate industry. Many states are yet to adopt it. Some states have been lenient on projects started before 2014. The real effect of HRERA will be seen in the few projects currently registered under it. He is hopeful that, since the developer has to maintain the building for 5 years, he would choose products and vendors who have a good track record and offer good quality products.

#### **Impact of HRERA on Investor and End Users:-**

The positive impact on Real estate investor and home buyer by HRERA Act. The Act make favourism for buyer and it is make strict action for protection of right of investors. Some are given below:-

1. Informing allottees about any minor addition or alteration.
2. Consent of 2/3<sup>rd</sup> allottees about any other addition or alteration.
3. No launch or advertisement before registration with HRERA
4. Consent of 2/3<sup>rd</sup> allottees for transferring majority rights to 3<sup>rd</sup> party.
5. Sharing information project plan, layout, government approvals, land title status, sub-contractors.
6. Increased assertion on the timely completion of projects and delivery to the consumer.
7. All increase in the quality of constructions due to a defects liability period of five years.
8. Formations of **RWA** within specified time or 3 months after majority of units have been sold. The most positive aspect of this Act is that it provides a unified legal regime for the purchase of flat; apartments, etc., and seeks to standardise the practice across the country.

### **Impact of Insurance cost for construction and Land Title**

Land and approval costs to be meted out of internal accruals as prelaunch concept may end. It may lead to a shift in equity financing from debt financing prevailing currently. The cost of capital may go up as developers may now have to fund the land and approval cost through equity. With frequent delay in obtaining approvals, debt funding may not be an ideal route for developers.

With entry in the sector made difficult, the sector may witness consolidation. Strong financial and execution capability is required to launch a project. The development model may gain prominence. The project launch time may increase since a lot of time will be involved in finalizing finer details before launching a project. All the details such as complete drawings, utilities layout, etc., needs to be finalized before project starts.

### **Impact of HRERA on Real estate agents**

Under the Haryana Real Estate Regulatory Authority (HRERA), real estate agents will need to register themselves, to be able to facilitate a transaction. The broker segment in India is estimated to be a USD 4 billion industry, with an estimated 5 Lakh to 9 Lakh brokers. However, it has traditionally been unorganised and unregulated. It will bring a lot of accountability in the industry and the ones, who believe in professionals and transparent business will reap all the benefits. Now, the agent will have a much larger and responsible role to perform, as they will have to disclose all the appropriate information to the customer and even help them choose a HRERA –Complaint developers. With HRERA in force, brokers cannot promise any amenities or services that are not mentioned in the Papers. Moreover, they will have to provide all information and documents to the home buyers, at the time of booking consequently, HRERA is likely to filter out the inexperienced, unprofessional, fly-by-night operators, as proper's not following the guidelines will face hefty penalty or Jail or both.

### **Challenge for HRERA**

The HRERA act is all-encompassing and aims to make the sector a fair ground for all stakeholder including buyers, developers, promoters and agents. However, amidst the several positives, the Act is believed to have certain loopholes.

**1. No rules delayed project approvals:** HRERA lays emphasis on penalising developers for untimely projects deliveries. However, a majority of the delay in execution of happens during the process of acquiring approvals and clearance from various authorities. Currently, there are close to 50 odd approvals that developers need to obtain before launching a project. The average time for acquiring all the approvals can range from 1-2 years. The act does not make the government agencies accountable for the delay and places fully responsibility on developers. It lacks stringent policy to force authorities to meet timelines or fasten the process of granting approvals.

**2. No provision for single window Clearance:**

While the act asks for a formation of regularity body, it does not give celerity on establishing a single window clearance mechanism, something that the industry is asking for very long time. Lack of strict deadlines: the centre government lenient with the states regarding the deadline to draft HRERA rules and their compliance with the centre regulations. Of the 14 States that have met the deadline, almost all have diluted certain rules, and thus, defeating the purpose of strengthen the Real-estate sector.

### **3. Ambiguity over state-specific content**

There are certain provisions in the HRERA drafts of various states that lack clarity. For instance, the rules framed by Government of Delhi, Karnataka, **Haryana**, Gujarat, Tamil Nadu, and U.P do not specify the form and content of audit certificate to be issued by architects, engineers, and C.A. This may lead to overlapping and duplication of roles of various stakeholders and might lead to inconsistent verdicts. A few states have also failed to give detailed information about the paperwork and the fees required to be submitted for the registration of real estate agents. A few other points where the Act lacks clarity is the definition of land cost, construction cost and whether garage space can be sold to allottees projects will have their data listed within a single information source- the HRERA website.

#### **Conclusion**

For long, home buyers have complained that real estate transactions were lopsided and heavily in favour of the developers. HRERA and Governments model code, aim to create a more equitable and fair transactions between the seller and the buyer of properties, especially in the primary market. HRERA, it is hoped, will make real estate purchase simpler, by bringing in better accountability and transparency, provided that states do not dilute the provision and the spirit of the central act. The act is activated in different state with different rules. It may be effect the buyer's expectation and their realization as the act has not a single window clearance. It may be consider by government for further diversion of rules of HRERA.

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## **A Study On Sustainable Management Of Fish And Fishery Resources In Andaman & Nicobar Islands**

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### **Abstract**

Fishing has an impact on ecosystems. Targeting and removing biomass from a complex of species feeding on each other is bound to affect the food web. This impact has a direct effect on depletion of stock, juvenile fish and coral reef of the marine ecosystem. Fishery resource is being the major natural resource of these Islands mainly depends on onshore fishing in Zone- A Territorial water surrounding A&N Islands, up to 06 NM from the appropriate baseline by using non-motorized and motorized fishing boats. The fishery resources are exploited by untrained artisanal fishers in the uncontrolled way of fishing within the coral reef and mangroves area, particularly juvenile/ pre-matured fishes. On the other side, due to the tropical climate of these islands, southwest (April/May-September) and northeast (October-December) monsoons / formation of cyclone and the average annual rainfall is between 3,000 and 3,500 mm is also the cause for preferring onshore fishing, which raises excess exploitation of onshore fishery resources particularly small fishes. Illegal use of plastic made the net, ring net, mosquito net and violation of mesh size restriction brings environmental concern as by this juvenile / un-matured fishes are caught which led total depletion of fish species and the threat to the marine ecosystem. Strict implementation and amendment of A&N Islands Marine Fishing Regulation 2003 and Rules 2004 for commercial fishing, as done for regulating sport fishing in A&N Islands Marine Fishing. (Amendment) Rules, 2017. Illegal fishing by poaching by foreign poachers have long been a problem in these Islands; rich marine resources are targeted by poachers, need proper monitoring, surveillance and proper registration of fishing crafts. Lack of modern and inadequate infrastructure facilities for landing, storage, processing, transportation of fish and fishery products and remoteness of the islands from the mainland, constraints of having limitations in marketing and trade, lack of inadequate data of stock, in proper fisheries development action plan, management of fishery resources, pollution steered towards environmental impact and contributed toward inadequate and unorganized development of fisheries. There is a need for up-gradation of fishing crafts and gears, development of deep sea fishing activity like tuna fishing and fixing quota of fish to be caught according to craft with gear mesh size restriction for sustainable management of fishery resources. Bottom trawling through the mechanized vessel and Letter of permit foreign vessels doing uncontrolled exploitation of fish and fishery resources, then issues and challenges of sustainable management emerges and to come out measures need to adopt, to sustain marine environment and resources by effective resource management. In freshwater there exist scope for development of culture fisheries in integrated fish farming and the possibility for mariculture and brackish water aquaculture exists in these islands. The present study highlighted the status of marine fishery resources potential, infrastructure facilities, fish

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catch/yield, various forms of exploitation of fish and fishery resources, management mechanism and measures needs to be adopted for sustainable management of fishery resources in Andaman and Nicobar Islands. The study emphasizes that there is enormous pressure and its impact is increasing due to our expanding population unless we start taking more responsibility for the fish and fishery resource. The fishery resources we take for granted today from coastal seas will not last for our future generation.

**Keywords:** Sustainable Management, Fishery Resources, Marine Environment, Capture, Culture Fisheries, and Fishers

### **Introduction**

Fishing in India is a major industry in its coastal states. The fishery is a developing sector with varied resources and potential, engaging over 14.50 million people at the primary level and many more along the value chain. Transformation of fisheries sector from traditional to commercial scale has led to an increase in fish production from 7.5 lakh tonne in 1950-51 to 107.95 lakh tonne during 2015-16, while the export earnings from the sector registered at around 33,441 crores in 2014-15 billion. The sector registered an overall annual growth rate of about 4% during the 11<sup>th</sup> Five Year Plan period. It has contributed about 0.91% to the National Gross Domestic Production. India has attained the second largest fish producing and second largest aquaculture nation in the world. Blue Revolution, the Neel Kranti Mission 2016 (NKM 2016), being the year in which the vision to achieve economic prosperity of the country. The fishers and fish farmers contribute towards food and nutritional security through full potential utilization of water resources for fisheries development in a sustainable manner, keeping in view the bio-security and environmental concerns.

The Andaman and Nicobar Islands (ANI), a union territory (UT) of India lies in the Bay of Bengal, having a status of the archipelago, lying between 6° 45'N and 13 41' E and longitudes 97° 57' and 93° 57' E longitude. It consists of about 527 islands both only 38 islands are inhabited, having population of 3,80,581 (as per 2011 census) and as per Marine Fisheries Census 2010 - conducted By Fishery Survey of India (FSI) total fishermen population of ANI is 22188 (South Andaman- 10322, North & Middle Andaman-7723 and Nicobar- 4143) and 7326 of active fishermen. The Islands consist of three Districts: South Andaman, North & Middle Andaman and Nicobar. The Nicobar Islands are still inhabited by primitive tribes. The area of the Islands is about 8,249 square kilometers. Of the total land area, 92% of the land is covered with rain forests. The ANI has a coastal length of 1,912 Km, a coral reef of 2000 Sq. Kms, mangrove cover 906 Sq. Kms and the continental shelf area of about 35,000 Sq.Km. The Exclusive Economic Zone (EEZ) around these islands is about 6,00,000 Sq. Kms, forming 28% of the total EEZ area of the country. Fishing as a commercial activity is of a relatively recent origin. Fishery resource is being the major natural resource of ANI. The original inhabitant of these islands consists of six aboriginal tribes who live on their territory from others and occasionally do fishing and shellfish off the reefs surrounding these islands. Fishing practices and grounds varied between the tribes, whose territories covered large areas of the islands and nearshore waters which is for self-consumption, traditionally managed using simple gear like bow and arrows and fishing equipment provided by Department of Fisheries through Tribal Welfare Department. There is no traditional fisher community in these Islands, as to start fishing activity in these islands, fishermen from West Bengal, Andhra Pradesh, Kerala and Tamil Nadu have come to these islands either through settlement schemes of the Government or voluntarily in these islands. In view of the potential

and scope for development, fisheries are considered as a thrust sector for the overall development of the Islands. The crafts and gears used by the fishermen are of the traditional type and of limited capacity with fishing confined to the limited area. Survival for high sea fishing, exploratory and multi-day fishing, fishing for coastal tunas, oceanic tunas and other spanning stocks are not started with the limited capacity of the crafts and gears. The potential annual yield of tunas is estimated to be about 50,000 tonnes and all other fishes against the current yield of 10,000 tonnes, which is only 10% of the harvestable potential. Major exploitation of tuna and commercially important fishes is done by Letter of Permit foreign vessel operating in the EEZ of Indian water.

The seas surrounding these islands are known for their marine fishery resources, with approximately Pelagic 56000(MT), Demersal 3200 (MT) and Oceanic 50000 (MT), but the marine fisheries sector has been largely depending upon inshore fisheries, there are legal limitations on fishers accessing different fishing Zone-A -Territorial water surrounding ANI, up to 06 NM from the appropriate baseline and Zone-B- Territorial waters surrounding ANI up to 06 NM from appropriate baseline and extending up to 12 NM, provided they are not within the islands Marine National Parks or the Jarawa Reserve area. The Administration promoted upgrading fishing crafts from non-motorized to motorized- intermediary boat to mechanized fishing vessel expanding their operation to deep sea fishing (from artisanal - subsistence to commercial fishing) with a change in gear materials from natural to synthetic fiber, hook and line fishing to long lines or multiple hooks fishing and gill net fishing. There are 83 nos. of a mechanized fishing boat registered in these islands using long lines, gill nets and trawl nets with limited eco-sounder or fish finder equipment.

Lack of adequate and modern infrastructure facilities, remoteness of the islands from the mainland, limitations in marketing and trade, underdeveloped culture fisheries, in proper fisheries development action plan and management of fishery resource steered towards environmental impact and unorganized development of fisheries, culminated in depletion of marine resources which bring issues and challenges of sustainable management . On the other side, due to the tropical climate of these islands, southwest (April/May-September) and northeast (October-December) monsoons/formation of cyclone are frequent with average annual rainfall is between 3,000 and 3,500 mm is also the cause of preferring inshore fisheries, which raise uncontrolled and excess exploitation of in-shore fishery resources particularly juvenile or pre-matured fishes, creates environmental concern when fishermen to fulfill the local market and export market demands of fishes, started excess exploiting by use of illegal fishing activities to catch fishes by violation of A&N Islands Marine Fishing Regulation 2003 and Rules 2004 and code for conduct of responsible fisheries.

Further, illegal fishing by poachers both by domestic and foreign poachers has been a problem in the ANI. Rich marine resources are targeted by poachers. Various measures have been adopted to apprehend the poachers.

On the other, the Government of India has granted Letter of permit to foreign vessels for doing fishing in Indian EEZ, these Letter of permit vessels mainly foreign vessels are doing uncontrolled exploitation of fishery resources like tuna and commercially important fishes, were responsible for depletion of marine fish resources which bring issues and challenges of sustainable management and conservation of marine resources. To come with a concrete action plan and measures to sustain the environment through effective natural resource management tools. The study highlighted various forms of exploitation of fish and fishery

resources and measures needs to be adopted for sustainable management of fishery resources in Andaman and Nicobar Islands.

### Objectives

1. The study highlight the status of marine fish and fishery resources potential, infrastructure facilities and fish catch/ yield
2. The study highlight various mode of exploitation of fish and fishery resources with specified area, class of fishing vessel and type of gears used for protection of marine resources and ecosystem.
3. The study emphasis legal measures adopted for the protection of fish and fishery resources and marine ecosystem in the Andaman and Nicobar Islands:
4. The study emphasizes the development of captures and culture fisheries having environment protection measures and schemes for socio-economic development of the fisher community without causing damage to the marine environment.
5. The study highlighted the emerging issues and challenges relates to the marine ecosystem by unregulated/destructive or illegal fishing activity.
6. The study highlighted the steps taken by government agencies to sustain marine resources and environment

### Methodology

The present study highlighted the status of marine fishery resources potential, infrastructure facilities, fish catch/yield, various forms of exploitation of fish and fishery resources, management mechanism and measures needs to be adopted for sustainable management of fishery resources in Andaman and Nicobar Islands. For the study primary data collected through field visit, secondary data has been collected from the Department of Fisheries, A&N Administration and by review of relevant research articles, journals and local newspapers.

#### (1). Status of Marine Fishery resources potential, infrastructure facilities and fish catch

The availability and distribution pattern of marine fishery resources is constituted by a large variety of species under Pelagic-Anchovies, Sardines, Hilsa shad, Chirocentrids, Mackerel, scads, carangids, Ribbon fish, Belonids, Barracuda, Mulletts, Seer fish, tunas and others, Demersal- Elasmobranchs, Silver bellies, Perches, Pomfrets, Catfish, Pomfrets, Catfish, Polynemids,, Sciaenids, Gerrids, Upenoids, Silver grunt, Drift fish Threadfin breams, Lizardfish, Flatfish, Bullseye, Cephalopods, Penaeid shrimps, Crabs, Deepsea lobster, Deepsea shrimps and Deepsea fishes) and Oceanic fishes, Tuna, Billfishes (Marlin, sailfish, swordfish), Wahoo, Pelagic sharks,, Barracuda, Flying fish, Oceanic squids and others) and species of fishes found in ANI (Crustaceans- 580, Mollusks- 900, Echinoderms- 300 and commercially important species-350). Based on the FSI report the potential fishery resources and available infrastructures in comparison with the country are:

**Table-1: Potential fish and fishery resources of India including A &N Islands**

S.No.	Nation/U.T of A & N Islands	Oceanic (MT)	Pelagic (MT)	Demersal (MT)	Total (MT)
1.	India	489200	1357500	458662	2305362
2.	A&N Islands	60000	56000	32000	148000

**Source:** Department of Fisheries, A&N Administration

**Table-2: Continental Shelf, Fish Landing Centers, Coastline length & Resources**

S. No	Nation/U.T of & N Islands	Continental Shelf (*000 Sq. Km)	No. of Beach/Fish Landings Center	Approx Length of Coastline (Km.)	Resource (lakh tonne)
1)	India	506	2,333	8,041	39.21
2)	A&N Islands	35	56	1,912	1.48

Source: Department of Fisheries, A&N Administration

**Table-3: Taxonomic composition of the reported artisanal catch since 1950 to 2010**

Taxonomy		Composition (%)			
		1950-60	1980-90	2000	2010
Ariidae	Arius spp.	0.8	2.0	1.9	0.7
Brachyura	Charybdis cruciata	0.8	0.1	2.7	1.8
Bregmacerotida	Bregmaceros maclellandi	0.0	0.0	0.0	0.0
Carangidae	Caranx spp	7.4	5.3	0.3	0.6
	Scomberoides commersonian	0.8	5.8	2.6	7.8
Carangidae	Parastromateus niger	0.8	0.2	1.8	0.9
Cephalopoda		0.8	0.1	0.3	0.1
Chirocentridae	Chirocentrus dorab	0.8	1.0	0.9	0.2
	Tenulosatoli	15.3	10.7	17.9	16.2
	Other shads	0.8	1.0	0.1	0.0
Dasyatidae		0.4	0.1	0.0	0.0
Engraulidae	Anchoviella	7.4	6.8	3.1	4.4
	Thrissocles	5.5	3.9	1.9	2.7
Exocoetidae	Exocoetus monocirrus	0.8	0.0	0.0	0.0
Istiophoridae		0.8	0.0	0.9	4.4
Leiognathidae		3.1	6.4	5.7	9.2
Mullidae	Liza spp.	3.1	7.3	5.2	3.5
Muraenesocidae		0.4	0.1	0.0	0.0
Myliobatidae		0.8	0.4	1.2	0.8
Palinuridae	Panulirus polyphagus	0.8	0.1	0.1	0.1
Penaeidae		0.8	3.4	1.1	1.6
Non-penaeid prawns		0.8	0.1	0.2	0.3
Pleuronectiforme		0.0	0.0	0.0	0.0
Polynemidae	Eleutheronematetractylum	0.8	0.1	1.6	0.1
Rhinobatidae		0.8	0.4	0.9	0.5
Sciaenidae		0.8	0.2	0.2	2.6
Scombridae		1.2	1.2	0.2	0.3
	Rastrelliger kanagurta	3.7	7.2	5.0	7.1
	Scomberomorus commerson	3.1	2.4	1.6	1.8
	Scomberomorus guttatus	2.5	2.2	1.5	1.7
	Katsuwonus pelamis	0.8	0.4	1.2	0.2

Selachimorpha		1.2	2.8	3.5	8.5
Serranidae	Epinephelus spp	23.5	18.8	20.7	10.9
	Nemipterus spp.	0.0	0.0	0.0	0.0
	Upeneus spp	0.8	2.3	0.6	0.0
Sphyraenidae	Sphyraena spp.	3.1	2.6	1.6	1.5
Stromateidae	Pampus argenteus	0.8	0.4	1.2	0.2
Synodontidae	Saurida spp.	0.0	0.0	0.0	0.0
Trichiuridae	Lepturacanthus savala	0.8	0.6	1.7	0.6
Zenarchopteridae	Hemiramphus spp.	1.8	1.6	3.3	0.4
Marine fishes		0.5	1.7	0.6	2.4

**Source:** Central Marine Fisheries Research Institute (CMFRI)

**Table-4: Fish catch for the last five years (Qty. in Mt)**

S.No.	Resource	2012-13	2013-14	2014-15	2015-16	2016-17
1.	Pelagic	17295	18454	18231	18704	18978
2.	Demersal	15863	17005	16329	15405	16543
3.	Oceanic	3268	1294	2420	3016	3060
Total		36426	36753	36980	37125	38581

**Source:** Department of Fisheries, A&N Administration

The abundance of these stocks varies from region to region and from season to season with large pelagic like tuna being more abundant around island territories and small pelagic like sardines and mackerel supporting a fishery of considerable magnitude.

**(2). Mode of exploitation and Specified area for fishing**

Marine fisheries in the ANI can be classified into (i) coastal fisheries or inshore fisheries (subsistence - artisanal) and (ii) offshore fisheries (industrial). In these islands, country craft (non-motorized), motorized non-mechanical and motorized mechanized fishing boats registered with Department of Fisheries for doing the fishing activity. There exist Andaman and Nicobar Islands Shell Fishing Rules, 1978, having seven shell fishing zones demarcated in the Andaman Islands and two in the Nicobar Islands. The licensee was expected to land his catch at the specified port for inspection by an officer (Dorairaj and Soundararajan 1998). Currently, there are no specifically demarcated fishing grounds for finfish resources. Management and conservation of fisheries up to 12 NM in territorial waters is regulated by A&N Islands Marine Fishing Regulation, 2003 and Rules 2004. The specified area for the class of fishing vessels for plying and type of gear / mesh size to use which are:

**Table-5: Specified area, class of fishing vessel and type of gear used for fishing**

	Specified area for fishing	Class of fishing vessel for plying	Type of gear/mesh size to be used
i.	Fishing Zone- A Territorial water surrounding A&N Islands, up to 06 NM from the appropriate baseline.	All fishing vessels fitted with either inboard engine (s) or outboard motor (s) having engine horsepower below 30 HP	i). Gill net not below 25 mm mesh (knot to knot diagonally) ii). Hook and Line iii). Shore seine/drag net of a mesh size not below 25mm. iv).Fish Traps.
ii.	Fishing Zone-B Territorial waters surrounding A&N Islands up to 06 NM from appropriate baseline and extending up to 12 NM	All fishing vessels fitted inboard engine (s) or outboard motor (s) having engine horsepower of 30 HP and above	i). Gill net not below 25 mm mesh ii) Trawl net of standard mesh size fitted with turtle excluder suitable for the trawl net iii) Long Line, purse seine, squid jigger iv)Hook and Line

**Source:** Department of Fisheries, A&N Administration

Fishing beyond 12 NM is regulated by the Ministry of Agriculture, Government of India under Letter of Permit (LOP). The main gear used a trawl net, drift gillnet and Long Line having multiple hooks.

**Legal measures for the protection of biodiversity in the Andaman and Nicobar Islands:**

Several legal measures are made for the protection of the marine biodiversity of the region. The Regulation of Fishing by Foreign Vessels Act, 1981, Coastal Regulation Zone Notification, 1991 (last amended in 2011), Wild Life (Protection) Act, 1972, etc. coupled with establishment of 9 National Parks and 96 Wildlife Sanctuaries for a conservation initiative, have all strengthened the enforcement regime in the region for protecting the flora and fauna of these islands. Some of these National Parks are exclusively for the protection of the marine species

**(1). Andaman & Nicobar Islands Marine Fishing Regulation 2003 and Rule 2004**

Andaman and Nicobar Marine Fishing Regulation 2003 and Rule 2004, promulgated to provide regulation of sea fishing vessel in the water surrounding the Union Territory of the ANI and for matter connected therewith. Besides this certain species of fishes are protected under the Wild Life Protection Act, 1972

**(2). Management Mechanism**

Management mechanism can only be applied with active participation and awareness among the fishery community about the environment and sustainable management of fish and fishery resources, its habitat. Controlling the activities of individual fisher, it's fishing operation by marine fishing rules and regulation and promoting towards responsible fisheries which are categories as:

- a. Control on input (licensing, regulated access, ownership etc.)
- b. Control on output (imposing catch quotas, the size limit of fish to be caught)
- c. Limited entry control (closed season, prohibited area for fishing)

**d. Technical regulation (mesh size regulation, limitation of fishing gear)**

The first two categories represent indirect methods while the other two categories are direction methods of regulation. For management of government policies and active participation of the fishing community is essential as many of these responsibilities fall upon the community, with involvement and devolution of power to local panchayat raj institution in management to create participation of each member of society to get aware and involve towards sustainable development.

**(3). Fishery Resources protected under the Wild Life Protection Act, 1972**

A total of 61 species of marine fishes including sharks and rays, all species of Syngnathidians or Sea horses and one Giant grouper fish are protected under Wildlife (Protection) Act, 1972 and listed in Schedule-I which prevent its collection and 3 species of sharks and rays are protected under appendix-II which restricted the trade of these fishes in order to avoid unsustainable utilization. The population of turbo seems to have been exploited to levels of extirpation, due to increasing concerns about the plummeting stocks of *Trochus niloticus* and *Turbo marmoratus* as a result of heavy fishing pressure and improper protection from poachers, both species were added to Schedule IV of the Wildlife (Protection) Act, 1972, through the Ministry of Environment and Forests' notification dated December 5, 2001. Fishes Protected under Wildlife Protection Act-1972 are whale shark (Rhincodon Typus), shark and ray (*Anoxypristis cuspidate*), *Carcharhinus hemiodon*, *Glyphis gangeticus*, *Glyphis glyphis*, *Himantura fluvialis*, *Pristimicodon*, *Pristis zijsron*, *Rhynchobatus djiddensis*, *Urogymnas perrinus*, Giant Grouper (*Epinephelus lanceolatus*), Dugong dugong, Dolphin, Sea Horse- All Syngnathidae, *Hippocampus hystrix*, *hippocampus erectus* and catching or collection of all animals covered under Wildlife (Protection) Act, 1972 (Act 53 of 1972), which includes fish, crustacean, shellfish, sea-cucumber (beche-de-mer), Seagrasses and Corals (dead or living) and catching or collection of all marine ornamental fishes. (Explanation Marine Ornamental Fish means and include Butterfly, Scorpion, Damsel, Parrot, Angel, Doctor, Puffer, Cat Fish, Surgeon, Sea anemone, Clownfish, Turbo worm, Sponges and any other fishes.

**Development of captures and culture fisheries having environment protection measures and schemes for socio-economic development of the fisher community without causing damage to the marine environment**

The Department of Fisheries is implementing UT plan schemes for development of capture and culture fisheries, creating infrastructure facilities, welfare schemes, centrally sponsored and accident insurance scheme for fisher community and development of fisheries sector in ANI. There exists sustainable harvesting of underexploited straddling oceanic tuna resources (migratory fish), by developing capacity building in the form of modernized crafts and gears is in the developing stage. The Administration is creating infrastructure facilities like ice plant, cold storage (few by private entrepreneurs) fish landing centers and fish markets at a different location in ANI and 2 modern fish market at South Andaman is in completion stage.

**(1). Registration and licensing of fishing craft**

For the registration and licensing of fishing craft (ReALCraft) is a web-enabled workflow based online application system for issuing Registration Certificate under Merchant Shipping Act, 1958 and Fishing License Certificate to fishing vessels operating along the Indian Coast under MFR Act. With the objective of having a National database of all fishing vessels, monitoring the movement of fishing vessels and crews at any point of time from anywhere, through internet or SMS, strengthen coastal security, for fishermen safety;

facilitate optimum utilization of fishery resources and intelligence to facilitate the decision to strengthen our coast.

## **(2). Recreation /Sportfishing**

ANI is known for natural beauty with the world's best beaches reefs and diving, also offer world-class sport fishing and angling. Varieties of fish species are found around the surrounding territorial waters. Incentives were taken by Administration by published guidelines for sport fishing and notified port Fishing Rules in A&N Islands Marine Fishing (Amendment) Rules, 2017 to regulate the sport fishing activities towards promoting tourism and generate incredible scope for sports fishing activity through fisheries sector without causing damage to marine resources and environment. Islands has vast scope for sport fishing activity, there are 58 nos. of sport fishing boat registered with Department of Fisheries, accordingly granted license and daily online permit provision for undertaking sport fishing activities with allotted notified 22 selected sailing routes having operation beyond 3 Nautical Miles from nearest Port / Jetty of Zone-A and in Zone-B, regulated to maintain 10 knot speed of vessel in coral reef areas in Andaman sea and prohibited in catching or collection of all animals covered under Wildlife (Protection) Act, 1972 (Act 53 of 1972), catching or collection of all marine ornamental fishes, catching or collection of all marine fishes in notified National Parks, Wild Life Sanctuaries and tribal reserved area in the territorial water of these Islands for protection of marine environment. In existence of provisions under Wild Life (Protection) Act, Protection of Aboriginal Tribes and notified Sport Fishing Rules in A&N Islands Marine Fishing (Amendment) Rules, 2017 makes various provisions by imposing a penalty for the unregulated/illegal activities for protecting marine resources and environment.

The use of artificial lures, barbless and circle type hooks minimize the chance of injury to fish. Sailing in modern equipped sophisticated fiber boats, use of modern fishing techniques, catch, hold fish for photographs and release of fish back to sea in live condition (catch and release of fish in live condition) gives tourists a thrill, pleasure and a lifetime experience, without causing damage of marine resources and ecosystem.

## **(3). Installation of Fish Aggregating Device**

The ANA in association with National Institute of Ocean Technology (NIOT) has installed 10 Fish Aggregating Device (FAD) in these islands at the various location is anchored objects that are placed in the ocean to attract fish and designed to have increased fishing efficiency. For islands artisanal fisheries it has many advantages such as food security, vessel efficiency, coastal resource management, climate change adaption and tourism.

## **(4).Blue Revolution**

Creating enabling environment, for integrated development of fisheries with sustainable improvement in the income status of fishers and fish farmers, keeping in view bio-security and environmental concerns. Integrated development and management of Fisheries and by a centrally sponsored scheme of GOI made subsidy pattern, 100% central share for Project/ Activities includes motorization of traditional crafts, procurement of fiber boats up to 10m OAL, assistance for deep sea fishing vessel and providing insurance scheme and safety at sea. Promoting mari-culture, cage culture, seaweed cultivation, pearl culture and inputs for freshwater fish culture for promoting culture fisheries.

## **Steps were taken by government agencies to sustain the marine environment**

### **(1). Cleaning Beach and Fish Landing Centers**

Creating awareness among fisher community about keeping their surrounding neat and clean, the Department of Fisheries conducted cleaning of fish landing centers and municipal council scheme to collect plastic (bottles, bags, wastes and nets) by person participation and awarding Rs.2/- per kg. on deposit to municipal council, this will determine to keep the surrounding free from plastic, this can reduce marine plastic debris are direct measures to sustain marine environment.

### **(2). Protecting Coast**

Earth System Science Organization, NOT an autonomous institute under the Ministry of Earth Science with its mandate to develop and demonstrate technologies to tap the ocean resources such as energy, food, water, minerals and coastal protection. Ocean science and technology has established a state of the art laboratory in Chennai and Port Blair in the fields of marine biology, molecular biology and biotechnology, the aim is to develop and transfer technology in the area of sustainable exploitation of marine bioresources to the coastal fishers.

### **(3) Oil Spill**

Indian Coast Guard (ICG) conducts regional level marine oil pollution response exercise titled Clean Sea- conducted at Sea off Port Blair. The objective was responding to a major oil spill in line with the provisions National Oil Spill Disaster Contingency Plan with resource agencies and stakeholders. ICG Pollution control vessel and Integration of ICG Donier/ Chetak aircraft into the oil spill disaster management system for aerial assessment/delivery of oil spill dispersant for spilled oil. ICG is responsible for marine environment protection in the maritime zone of India and is the coordinating authority for response to oil spills in Indian waters. The force has drawn up and has established three pollution response centers at Mumbai, Chennai and Port Blair. Clean sea validated and reinforced response mechanism for oil pollution incidents and enable ICG. Exercise extends GOI policy of Swachh Bharat Abhiyan to Maritime Zone of India through SwachSagarAbhiyan as 64% of world oil trade pass through the Andaman Sea.

### **(4). Closed season for the fishing / Uniform fishing ban for conservation and effective management of fishery resources**

The Ministry of Agriculture and Farmers Welfare, GOI, pleased to impose a uniform ban on fishing by all fishing vessel in the Indian EEZ beyond territorial water on the East Coast including ANI from 15<sup>th</sup> April to 14<sup>th</sup> June 2018 (both days inclusive) for 61 days and West Coast including Lakshadweep islands from 1<sup>st</sup> June to 31<sup>st</sup> July 2018 for 61 days for conservation and effective management of fishery resources and also for sea safety reason. The traditional non- motorized unit shall be exempted from this uniform fishing ban imposed in the Indian EEZ beyond territorial water. In ANI the period commencing from 15<sup>th</sup> day of April to 31<sup>st</sup> day of May- 2018 shall be a closed season for fishing vessels employing bottom trawling gear and for shark fishing in the territorial waters of ANI. All the registered mechanized fishing boat owners/fishers are directed to comply with the closed season.

### **(5).Awareness and training programmes**

All the nodal department and agencies are regularly conducting awareness programmes with fishers community to follow the responsible fisheries and sensitized about the security measures needs to be adopted while doing fishing.

### **Emerging issues and challenges**

Fishing has an impact on ecosystems. Targeting and removing biomass from a complex of species feeding on each other is bound to affect the food web. This impact has a direct effect on depletion of stock, juvenile fish and coral reef of marine ecosystem particularly when island fishing heavily depends on inshore fisheries. From a conservation point of view ensuring that the exploitation of various resources should not depletion of stock. Fishing impacts on environment includes issues such as availability of fish, overfishing, bycatch pollution and fisheries management; has its direct impact on other elements of the environment and culminated in decline of yield, pollution and other environmental factors that were reducing the fish population, growth and habitat at the same time as their ecosystems were being overwhelmed. Following issues are part of fisheries resource management and conservation.

#### **(1). Overfishing**

Overfishing is a major threat to the decline of marine fish stock, causes population collapse because the survivors cannot produce enough young ones to replace those removed. Overfishing has increases the volume of fishing hauls to feed a quickly growing number of consumers. This has led to the breakdown of some sea ecosystems and depletion of fish stock. Islands fishing is mainly depended or done on inshore fishing Zone- A territorial water surrounding ANI, up to 06 NM from the appropriate baseline by motorized and non-motorized boat. By these in-shore fishery resources is exploited in an uncontrolled way. To fulfill the local market demand, the fisherman now started targeted the smaller fish species/ reef and juvenile fish. This led decreases fish populations as well as the genetic diversity of the species, making them more susceptible to disease.

#### **(2). Bottom trawling**

Bottom trawling is done from mechanized fishing boat having specific area for fishing Zone-B Territorial waters surrounding ANI upto 06 NM from appropriate baseline and extending up to 12 NM. Bottom trawling having the practice of pulling fishing net along the sea bottom behind trawlers, removes around 5 to 25% of an area's seabed life on a single run, for a moratorium on deep-sea trawling, a practice shown to often have harmful effects on sea habitat and on fish populations. By bottom trawling, the sea animal's aquatic ecosystem got collapse due to the destruction in the food chain. The ANA earlier provided a license for bottom trawling and no more license is granted, due report of depletion fish stock and its harmful effect on the environment. In South Andaman as to avoid law taken a license for trawling for pelagic trawler but operates for the bottom, trawling is due to poor monitoring and control. It is also reported by small craft fishermen that bottom trawling crafts use to operate in Zone-A is causing depletion of fish stock and fish catch.

#### **(3). Ghost fishing**

Ghost fishing is a major threat to capture fisheries. Ghost fishing occurs when fishing net such as a gill or trawl nets is lost or discarded at sea and drifts within the oceans which still act to capture marine organisms. According to the Code of Conduct for Responsible Fisheries, States should act to minimize the amount of lost and abandoned gear and work to minimize ghost fishing. Use of plastic made net and ring net is found in ANI, this plastic made nets has more impact as compared to nylon webbing nets.

#### **(4). By Catch**

Bycatch is the portion of catch that is not the target species. By-catch in artisanal fisheries is usually slight, it depends on the type of gear and mesh size used. Hook and line are very

selective and the unwanted catch is often be thrown back with a low mortality rate or utilized as bait. Anchored gill nets and shore seines with small mesh sizes are not selective and catch a wide range of species specially shores seine. The most dangerous form is from trawling. An analysis of FSI's landing data from 2003 to 2010 in Andaman waters by Kar et al. (2011) revealed 30 species from 12 families being caught as bycatch. Varghese et al. (2010) have included sea turtles as, bycatch species, they are often found entangled in trawl and drift nets or hooked onto long lines.

#### **(5). Climate Change after the Tsunami**

The impact of climate change in marine fisheries is visible in the sea. The impact has brought observable change on fish species. Climate change is one of the reasons for the change in fish stock and depletion of fish yields after the Tsunami. Post-tsunami fisheries development is accented to maintain ecological balance, protection of marine fish species and conservative measures for depleting fish stock.

#### **(6). Odors by fish drying, fishy smells and fish waste disposal**

Dry fish has been one of the most common preserved foods used by people of all cultures. Drying process came into being because of both the need to prevent spoilage and to provide a food reserve. Drying species of fish in the open air gives contaminated. Odors are produced mainly by bacterial decomposition, volatilization and chemical reactions during the fish drying process. In ANI, fish drying done at fish landing centers or near to beach landing centers, with the presence of municipal waste pollute surrounding air by generating odors, but the wastes mixed with drying fish affect human health when consumed.

#### **(7). Marine debris**

Marine fishing debris such as nets, buoys, lines and majority of plastic bottles debris found in the sea. Similarly, fishing debris is a major source of debris found on the shores. Marine life interacts with debris in two ways; either through entanglement (where debris entangles or entraps animals), or ingestion of the debris (either intentionally or accidentally), both are harmful. Fishes and tortoise by assuming plastic waste as food consumed it which ultimately resulted in death if this fish consumed by human being resulted in various kinds of disease.

#### **(8). Illegal fishing by poachers**

Poaching by both domestic and foreign has long been a problem in the ANI. Rich and relatively unexploited marine life, numerous uninhabited islands with narrow creeks, sheltered lagoons and proximity to other countries has encouraged poachers to fish in these waters (Ganapathiraju 2012). The Myanmar landmass is roughly 280 km north of landfall Island, with the actual southern extent of Myanmar's territory separated by a few km by the Coco Island. In the south, the distance between Great Nicobar Island and Sumatra is a mere 145 km. A wide variety of fish and invertebrates in the EEZ and territorial water of ANI are targeted by poachers. Burmese target sea cucumbers, trochus and coral, Thai poachers catch crocodiles, tuna, sharks, ornamental reef fish, and sea cucumbers; Sri Lankan and Taiwanese fishers make incursions into Indian territorial waters to catch yellowfin tuna and sharks; Indonesian poachers predominantly catch sharks (Ganapathiraju 2012). Although enforcement agencies routinely apprehend them, it is believed that an even larger number slip away undetected (Rajan 2003). Using small wooden boats escapes easily camouflaged in creeks. With the Indian policy of repatriation after a certain time spent in jail, it has been noticed that some poacher's repeat poaching offend.

### **(9). Letter of Permit foreign vessels fishing in Indian EEZ**

The aforesaid issued and challenges for sustainable management for natural resources, the grant of Letter of Permit (LOP) foreign vessels fishing in Indian EEZ is of greater concern. These foreign vessels not only fishing in Indian waters, causing huge losses to the country's fish resources but also affecting the livelihood of domestic fishermen. The vessels of foreign origin are misusing the LOP scheme of the Indian government to exploit lucrative Indian fish resources. Under the scheme, the permission for the foreign vessel to operate in Indian EEZ is issued once it surrenders its registration in the country of origin and 10 percent of its cost is paid by the Indian firm to the original firm. The vessel is supposed to employ 25 percent Indian crew used operated 70 vessels in Indian EEZ. According to the industry estimates a Tuna long liner LOP vessel catches 200 to 250 tonnes of the fish in one season. The total annual catch of one such vessel thus comes in crore and in return, the public exchequer receives a minuscule proportion through deposition fee of Rs.10,000 and some taxes imposed on the catch. Besides, due to overexploitation of Indian waters by the LOP vessels, the catches of local fishing communities are constantly declining, Indian fishing communities for long have been demanding the LOP scheme to be scrapped especially by Tamil Nadu government has withdrawn its 2014 decision that allowed foreign deep sea trawlers to operate in EEZ of the country.

### **(10). Lack of use of remote sensing, GIS tools used for Fisheries Management**

Remote sensing is a multidisciplinary science of deriving information about an object from the measurement made at distance far from the object without coming in contact with it. It is the identification of earth features by detecting the characteristics of electromagnetic radiation that is reflected /emitted by earth surface. Fisheries have been explicitly managed in some places for hundreds of years. The fish resources and quantity of the fish habitats need conservation. Fisheries management lacks in form of sustainable development infrastructure facilities, marketing facilities, transportation, monitoring fishery resources and management mechanism and in fresh water there exist scope for inland fisheries development in mariculture and brackish water aquaculture which totally non-existent in these islands.

#### **Measures**

Sustainable development is the management and conservation of natural resource and orientation of technological and institutional changes in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generation. Sustainable development should be environmentally non-degrading, technically viable and socially accepted. Sustainability to fisheries development is relevant to both capture and culture, maintaining productivity, usefulness to society and measure to sustain the environment as by:

- The island's fishing mainly depends on inshore fishing Zone- A Territorial water surrounding ANI upto 06 NM from the appropriate baseline by a non-motorized and motorized fishing boat. By these in-shore fishery resources is exploited in an uncontrolled way which resulted in overfishing. There is the need for upgradation of fishing crafts and gears and development of deep sea fishing activity and fixing quota of fish to be caught according to craft and type of gears with mesh size restriction.
- Bottom trawling is done from mechanized fishing boat having a specific area for fishing Zone-B Territorial waters surrounding ANI upto 06 NM from appropriate baseline and extending up to 12 NM. By bottom trawling the sea animal's aquatic ecosystem collapse,

cause destruction in the food chain and depletion of fish stocks. All bottom trawler boat registration should be immediately canceled as a precautionary measure to sustain the marine environment.

- Ghost fishing occurs when a net such as a gill or a trawl net is lost or discarded at sea belt. This practice should be replaced by creating awareness and thereafter strict imposing fines for the violation and for not maintaining the code of conduct of responsible fisheries.
- Bycatch of fish depends on the type of gear and mesh size used such as shore seine, gill net. From mechanized vessels, the unwanted catch is often thrown back into sea having the low surviving possibility, as a measure, it can be utilized as bait.
- Fishing debris in the form of plastic waste found on the seashores. Awareness programmes such as community interaction and participation with cleaning beach will help in curtail the problems. Solar fish dryer needs to set up for replacing open-air fish drying at fish landing and beach landing centers, which make the environment contaminated and affect human health.
- Promoting responsible fishing, non-destructive, improved fishing practices like tuna and deep sea fishing through improved fishing crafts and gears by replacing traditional methods.
- Illegal fishing activity is controlled by monitoring. Strict imposing of A&N Marine Fishing Regulation 2003 and Rules 2004 with implementing a code of conduct for responsible fisheries. Provision of penalty exist in A&N Islands Marine Fishing (Amendment) Rule 2017 meant for regulating sport fishing activities, such provisions should be made for commercial fishing also.
- Creating infrastructure facilities such as ice plant and cold storage, fish market, fish landing centers, installation of the fish aggregating device with proper management.
- A total ban on Letter of Permit vessel for doing fishing in Indian EEZ and bottom trawling vessel for the conservation of fish resources, controlling depletion fish stock and for protecting the marine ecosystem.
- Proper fisheries management and conservation meant to control the activities of individual fishers or fishing operations management categories by control on input (licensing, regulated access, ownership etc.), control on output (imposing catch quota, size limit on fish to be caught), Limited entry control (closed seasons, closing fishing area etc.) and technical regulation (mesh size regulation, limitation of fishing gear).
- Protecting fish habitats (such as coral reef and mangroves area) are essential, as fish depend on habitat for survival and reproduction, it is important to protect the habitats that sustain and enhance species of biological concern, measuring needs in form of controlling pollution and by responsible fishing activities.
- For developing sport fishing activities used of circle fishing hook by replacing barbed J type fishing hooks, by this surviving chance of fishes will be more before been released in the sea.
- In ANI, the closing season for fishing is applied on mechanized vessels. The motorized and non- motorized fishing crafts are exempted. As GOI directions, the closing season should also be applied on motorized crafts.
- Creating and spreading awareness programmes through people and community participation with all do and don't issues and to conserve fishery resource (juvenile) fish for future generation.

- Promoting remote sensing, GIS tool used and ReAL Craft portal for fishery resource management.
- Promotion of culture fisheries in form of freshwater fish culture as there 2605 minor irrigation ponds can be used for integrated fish farming and composite fish culture and on the other, mariculture and brackish water aquaculture is non-existent which has great scopes in ANI.

### **Conclusion**

Fishing has an impact on ecosystems. Targeting and removing biomass from a complex of species feeding on each other is bound to affect the food web. This impact has a direct effect on depletion of stock, juvenile fish and coral reef of the marine ecosystem. Fishery resource is being the major natural resource of these Islands mainly depends on onshore fishing in Zone- A Territorial water surrounding A&N Islands, up to 06 NM from the appropriate baseline by using non-motorized and motorized fishing boats. The fishery resources are exploited by untrained artisanal fishers in the uncontrolled way of fishing within the coral reef and mangroves area, particularly juvenile/ pre-matured fishes. On the other side, due to the tropical climate of these islands, southwest (April/May-September) and northeast (October-December) monsoons / formation of cyclone and the average annual rainfall is between 3,000 and 3,500 mm is also the cause for preferring onshore fishing, which raises excess exploitation of onshore fishery resources particularly small fishes. Illegal use of plastic made a net, ring net, mosquito net and violation of mesh size restriction brings environmental concern as by this juvenile / un-matured fishes are caught which led total depletion of fish species and a threat to the marine ecosystem.

Strict implementation and amendment of A&N Islands Marine Fishing Regulation 2003 and Rules 2004 for commercial fishing, as done for regulating sport fishing in A&N Islands Marine Fishing. (Amendment) Rules,2017. Illegal fishing by poaching by foreign poachers have long been a problem in these Islands; rich marine resources are targeted by poachers, need proper monitoring, surveillance and proper registration of fishing crafts. Lack of modern and inadequate infrastructure facilities for landing, storage, processing, transportation of fish and fishery products and remoteness of the islands from the mainland, constraints of having limitations in marketing and trade, lack of inadequate data of stock, in proper fisheries development action plan, management of fishery resources, pollution steered towards environmental impact and contributed toward inadequate and unorganized development of fisheries.

There is a need for up-gradation of fishing crafts and gears, development of deep sea fishing activity like tuna fishing and fixing quota of fish to be caught according to craft with gear mesh size restriction for sustainable management of fishery resources. Bottom trawling through the mechanized vessel and Letter of permit foreign vessels doing uncontrolled exploitation of fish and fishery resources, then issues and challenges of sustainable management emerges and to come out measures need to adopt, to sustain marine environment and resources by effective resource management. In freshwater there exist scope for development of culture fisheries in integrated fish farming and the possibility for mariculture and brackish water aquaculture exists in these islands.

The present study highlighted the status of marine fishery resources potential, infrastructure facilities, fish catch/yield, various forms of exploitation of fish and fishery resources, management mechanism and measures needs to be adopted for sustainable management of fishery resources in Andaman and Nicobar Islands. The study concludes that there is

enormous pressure on the sustainability of environment and resources; its impact is increasing due to our expanding population unless we start taking more responsibility for the fish and fishery resource. The fishery resources we take for granted today from coastal seas will not last for our future generation.

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## **A Review Of Selected Antecedents And Theories Associated With Customer Satisfaction**

**Dr. R. RAGU PRASADH\***

### **Abstract**

Understanding the antecedents and outcome variables of customer satisfaction becomes an important issue since there are few comprehensive studies conducted related to various antecedents and theories of customer satisfaction as a whole. Therefore, the main aim of this study is to review selected antecedents and theories of customer satisfaction with the various literature supports. Perceived quality, perceived value, and brand image are identified as antecedents of customer satisfaction through the examination of related theories. Importantly, this study uses previous literature in business research, consumer research, professional service marketing, services marketing, service quality with the aim of assisting future studies related to customer satisfaction

### **Introduction**

The service sector is the backbone of the economic growth of a country. The service industry in India has been flourishing for the past two decades with a gradual transformation from the agriculture and manufacturing sectors to the service sector. It is the fastest growing sector chiefly contributing to the nation's economy and providing large-scale employment than other sectors. The development of the service sector can be attributed to privatization, urbanization, greater consumer awareness and rising demand for consumer services. Customer satisfaction symbolizes a progressive tactic for performance and excellence in organizations and contributes to the establishment of customer-centric business culture. It is viewed as a significant area of discussion since it provides instant and objective feedback in terms of customers' preferences and expectations (Mihelis et al., 2001).

Customers are the vital assets of any business and one that lacks this important asset can head to the verge of dissolution. In any business, marketing begins with knowing the customer needs and ends with satisfying them. Hence, marketers need to perfect the art of marketing which is defined as satisfying customer needs (Kotler, 2009). Any business has to listen to its customers. The enduring success of a business is strongly linked to its capacity to adjust to the varying customer expectations and liking. The prime goal of any future-oriented business should be to satisfy the customers (Eklöf and Westlund, 2002). Thus, if the marketer understands the customer needs or expectations, develops products and services of superior customer value and sells them, it will help in satisfying customer needs and build strong, loyal relationships. Loyal and satisfied customers are a revenue-generating asset to the firm and hence, implementing a customer-asset orientation is inevitable for the success of the firms (Anderson et al., 1994). The concept of customer satisfaction is one among the oldest and core concepts of marketing (Kotler, 2009). It plays a pivotal role in the field of marketing research (Churchill and Surprenant, 1982). Customer satisfaction research has been carried out for several decades by various stakeholders including business managers, investors, marketers, government as well as academicians.

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### **Defining Customer Satisfaction**

Customer satisfaction has been diversely defined by various researchers. Some of the earlier definitions revolved around the concept of satisfaction as the discrepancy between the customer's expectation and evaluation after consumption which is popularly accepted even today. Howard and Sheth (1969) state that satisfaction ensures a degree of congruency between aspirations and perceived reality of experiences.

On similar lines, it has been defined as an evaluation of the perceived discrepancy between prior expectations and the actual performance of the product (Oliver, 1980; Tse and Wilton, 1988). Oliver (1997) defined satisfaction as a consumer's pleasurable fulfillment response. This implies that whenever a customer purchases and consumes a product or experiences a service, his need, desire or goal is fulfilled and this fulfillment is pleasurable including the amount of under or over-fulfillment. Thus, satisfaction is a judgment of the degree of pleasure experienced by the customer through consumption or experience of a product or service (Oliver, 1999). This is a remarkable definition of characteristic aspects to be noted. First, this conceptualization focuses on consumer instead of the customer. A customer is somebody who buys the product, while the consumer is the one who consumes the product or service. A customer can also be a consumer. Thus, it is essential to experience the usage of a product or service to perceive satisfaction. Second, satisfaction is a feeling which resides in the consumer's mind and is different from visible behaviors such as complaining or repurchasing. Third, satisfaction has thresholds for lower i.e. under fulfillment and upper i.e. over fulfillment (Hom, 2000). Thus, these aspects sum up the concept of satisfaction based on the popular definition of Oliver (1999; 1997).

According to Hoyer and MacInnis (2001), satisfaction can be related to feelings and emotions of happiness, excitement, acceptance, relief, and delight. Hansemark and Albinsson (2004) explained satisfaction as an overall customer attitude towards a product or service or an emotional response to the disparity between what they expect and what they actually receive, in terms of the fulfillment of certain need or desire. Kotler (2009) describes satisfaction as a person's feelings or attitude resulting from comparing a product's perceived performance in relation to his or her expectations.

Thus, satisfaction can be commonly defined as the measure of the degree to which a product or service meets or exceeds the customer's expectations. After examining the various definitions of customer satisfaction, it is essential to review some of the important theories of customer satisfaction.

The concept of customer satisfaction is traditionally proposed as a relative concept and is evaluated with reference to a standard (Yi, 1990). A number of theories have been proposed by researchers over the years for explaining the formation of customer satisfaction. Some of the well-known theories are the Expectancy-Disconfirmation Paradigm (EDP), the Equity Theory, the Value-Precept Theory and the Attribution Theory (Hom, 2000). Oliver (1980) defines satisfaction as a function of an initial standard and a perceived discrepancy from the initial reference point.

Kotler (2009) describes satisfaction as a person's feelings or attitude resulting from comparing a product's perceived performance in relation to his or her expectations.

In other words, it is an attitude or emotive response to the disparity in terms of what customers expect and what they actually obtain (Hansemark and Albinsson, 2004). From the business perspective, customer satisfaction is the quantification of the extent to which the products and services offered by the firm either fulfills or exceeds the customer expectation.

In their book about marketing metrics, Paul et al. (2009) define customer satisfaction as the number of customers, or percentage of total customers, whose reported experience with a firm, its products, or its services (ratings) exceeds specified satisfaction goals. It is viewed as a Key Performance Indicator (KPI) for any business and is generally an important component of the balanced scorecard (Gitman and McDaniel, 2005). In a survey of around 200 senior marketing managers, it has been found that around 71 percent of them believe customer satisfaction metric to be extremely valuable in managing and monitoring the businesses (Paul et al., 2009). According to Zairi (2000), customers are the reason for the existence of any business and hence, businesses rely on customers rather than customers being dependent on businesses. Customer satisfaction is a significant indicator of customer retention and loyalty (Zairi, 2000; Fornell, 1992; Bei and Chiao, 2001). This was reiterated by Gerpott et al. (2001), who posit that customer satisfaction is a direct determining factor in customer loyalty, which, in turn, is a central determinant of customer retention.

In a competitive marketplace, customer satisfaction serves as a key point of differentiation and is used as a key aspect in designing the business strategy (Gitman and McDaniel, 2005). It helps in improving customer advocacy and the reputation of the business firm. It has a constructive influence on the firm's profitability and market share (Anderson et al., 1994; Hallowell, 1996; Rego et al., 2013). It also has a considerable impact on the long-standing financial metrics, stock prices, market performance and shareholder value (Gruca and Rego, 2005; Aksoy et al., 2008).

As per Fornell et al. (1996), satisfied customers are economic assets generating superior returns at lower systematic risks. They believe that the economic value of satisfied customers is undervalued and the investments based on customer satisfaction produce substantial excess returns and net cash flows with low volatility. Thus, satisfied customers should be regarded as an asset and incorporated as such in the balance sheet (Anderson and Fornell, 2000). The findings of Tuli and Bharadwaj (2009) put forth that consumer based satisfaction measures offer beneficial details to financial markets and further propose that companies should publish their customer satisfaction scores in their annual reports and disclose them in public forums to amplify its impact on stock returns risk. This has again been substantiated by O'Sullivan and McCallig (2009), who state that customer satisfaction scores are of importance to the stock market and the market views the satisfaction data as a reliable indicator of future performance of the firms.

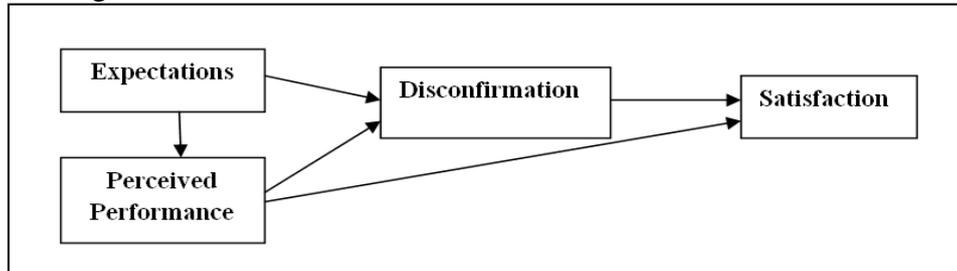
According to Fornell (1992), the firm's ability to satisfy its customers is a gauge of its general health, present, and future performance. Thus, customer satisfaction acts as a pivotal aspect of efficient functioning and growth of any business. Especially, in case of services compared to goods, customer satisfaction plays an important role rather than other indicators like quantity, productivity, etc. (Anderson et al., 1994). Thus, these philosophical stances and empirical evidence from the past demonstrating the eminence of customer satisfaction have driven the interest to explore and measure customer satisfaction over the years. The preceding comprehensive review gives descriptions for various theories and antecedents of customer satisfaction from past studies.

### **Customer Satisfaction Theories**

Since the inception of the concept of customer satisfaction, various theories have been proposed for explaining the same. Some of the theories are the Expectancy-Disconfirmation Paradigm (EDP), the Importance-Performance model, the Value-Precept Theory and the Equity Theory.

### i. Expectancy-Disconfirmation Paradigm

Oliver (1980; 1977) postulated the Expectancy-Disconfirmation Paradigm which is one of the most promising theoretical frameworks for measurement of customer satisfaction as presented in Figure 2.1.



Source: Oliver (1977)

**Figure 2.1: Expectancy-Disconfirmation Model**

The theory states that consumers have some prior expectations about the anticipated performance during the purchase of products or services. This expectation becomes the baseline for judging the performance by the consumer. After consumption, their consequences are weighed against the prior anticipations. If it matches the expectations, there is confirmation; else there is disconfirmation due to differences in actual performance and expectations. A consumer is satisfied or dissatisfied depending on the positive and negative discrepancy between the expectations and perceived performance.

However, there are few limitations in the EDP theory which have been analyzed and criticized by many researchers. The first limitation is that consumers with lesser or nil experience or knowledge may not provide a valid expectation (Haistead et al., 1994). On the other hand, experienced customers may have better awareness and knowledge which may help in forming a more realistic expectation (Day, 1977a; 1977b). The second limitation points to the fact that the post-purchase evaluation might not be on the basis of pre-purchase expectations. According to Whipple and Thach (1988), it is proven that there is a high chance of the evaluating criteria changing over time with learning or circumstances which renders the initial expectation framework illogical. The third limitation is that the meaning of expectation is not the same for everyone and respondents may perceive it differently (Yüksel and Yüksel, 2008). Given these problems, the EDP theory for assessing customer satisfaction has to be used with caution and appropriate assumptions.

### ii. Value-Precept Disparity Theory

Since a number of researchers critiqued the EDP paradigm on the ground that using predictive expectation as a primary determinant of customer satisfaction is not viable, Westbrook and Reilly (1983) proposed the Value-Precept Disparity theory, where values have been used as a better comparative standard than expectations. According to this theory, "Satisfaction is an emotional response triggered by a cognitive evaluative process in which post-purchase perceptions are compared to one's values, needs or desires."

Similar to the Expectancy-Disconfirmation Paradigm, a high discrepancy between one's values and one's perceptions (value-perception) signifies high dissatisfaction. However, this theory was also criticized based on the fact that value alone is not sufficient as it requires realistic expectations (Yüksel and Yüksel, 2008).

### Importance-Performance Model

Although EDP has dominated in terms of the theoretical constructs used to measure satisfaction, researchers have recognized the importance of attributes of a product (Barsky,

1992; Martilla and James, 1977). Barsky (1992) used the Importance-Performance model to measure customer satisfaction which was initially proposed by Martilla and James (1977). This model states that overall satisfaction/dissatisfaction toward a product/service is dictated by the importance of specific characteristics and the degree to which that product provides the specific characteristics.

According to this model, consumers generally have a belief about an attribute and each attribute is assigned importance weight relative to the others. Thus, satisfaction is influenced by the customers' perceived importance of specific characteristics of product or service and how well these characteristics meet their expectations. This can be regarded as a modified version of EDP to measure customer satisfaction. According to Hemmasi et al. (1994), this is an effective futuristic technique which provides a direction to identify areas to be focused for improvement.

### **iii. Equity Theory**

Another popular theory for assessing customer satisfaction is the Equity theory originally proposed by Adams (1963). Equity theory (Oliver and Swan, 1989) states that satisfaction exists when consumers perceive their output-to-input ratio as being fair.

According to this theory, a person feels equitably treated and satisfied if they perceive the ratio of their outcomes to inputs is fair (Oliver and Swan, 1989). The output and input analysis relates to the benefits received compared to the sacrifices made for purchasing the product or service. A consumer feeling equitably treated depends upon a number of factors such as price paid, psychological costs, time and effort spent compared to the benefits obtained (Woodruff et al., 1983).

Some of the popular theoretical frameworks developed to assess customer satisfaction have been discussed. A commonly accepted notion across the theories is that satisfaction is a judgment based on comparison to some standard. Despite several comparison standards being proposed, there is no general consensus on which standard is the most appropriate to predict customer satisfaction (Yüksel and Yüksel, 2008).

### **Antecedents of Customer Satisfaction**

Since every related definition or theory elucidates customer satisfaction in a different manner, bringing forth various factors or variables which cause or affect satisfaction is quite essential. Some of these factors have been selected based on detailed perusal of past research and they have been briefed as follows.

#### **i. Perceived Quality**

An examination of the existing definitions and theories suggest that quality is one of the most commonly accepted and applied antecedents of customer satisfaction in marketing literature. Theoretically, through various customer satisfaction theories have differing ideas, they uniformly agree that the performance of a product or service perceived by the customer leads to his or her satisfaction, i.e. satisfaction is an outcome of customer's perception of performance. This performance is treated as a proxy for quality by many researchers (Fornell et al., 1996; Cronin and Taylor, 1994; Johnson et al., 1995). Hence, perceived quality is considered as a vital driver of customer satisfaction in marketing literature (Fornell et al., 1996; Eklöf and Westlund, 2002; Johnson et al., 2001; Cronin et al., 2000).

In a user-based approach, quality is defined as fitness for use (Juran and Godfrey, 1999); while in a manufacturing-based approach, it is defined as conformance to requirements (Crosby, 1979a; 1979b) [96,97]. Zeithaml (1988) defines perceived quality as the consumer's judgment about an entity's overall excellence or superiority.

This individual perception is subjective in nature which differentiates it from objective quality. Thus, perceived quality is the customer's evaluation of a product or service after purchase experiences. Inspired by this, Yarimoglu (2014) stated that according to the transcendent view, quality means innate excellence. It is a sign of universally recognizable standard and achievement. Depending on the type of business offering, it can be referred to as perceived product quality and service quality for goods and services, respectively. The quality of products which are nearly pure tangible is considered as perceived product quality; while the quality of pure intangible service is known as perceived service quality. There are certain key distinctions between products and services. Unlike products, the nature of services is intangible making the measurement of service quality more complicated (Yarimoglu, 2014). In today's market, there are hardly any businesses without services and most companies fall between both extremes, making both aspects of quality important (Bei and Chiao, 2001).

There are multiple scales established for measuring perceived quality in the past. It is essential to review some of the standard and popular quality scales (both generic and banking industry specific) to develop a theoretical framework for this study. The research on perceived quality can be traced back to earlier works on services marketing by researchers like Grönroos (1984), Parasuraman et al. (1985; 1988; 1994a; 1994b), Cronin and Taylor (1994; 1992), Dabholkar et al. (2000) and Cronin et al. (2000).

Gronroos (1984) conceptualized service quality using two dimensions; namely technical quality and functional quality. The technical quality deals with what the consumer gets i.e. the actual service received during his/her interaction with the service firm; while functional quality deals with how the consumer gets the service i.e. the expressive performance of service. Parasuraman et al. (1988) introduced the SERVQUAL scale which is probably the most well-known, universal scale designed for service quality based on the gap model. It consists of five dimensions: reliability, assurance, tangibility, empathy, and responsiveness. In this scale, service quality is evaluated based on the gap between the performance expected of by the customers and the performance they perceive that they are receiving. This concept was criticized by Cronin and Taylor (1994; 1992) who introduced the SERVPERF scale employing a single measurement of performance relative to expectations rather than two different measures (expected and perceived performance) adopted by Parasuraman et al. (1988). Some of these earlier and pioneer work on quality measurement served as the foundation, based on which other prominent researchers continued the scale development work and added new dimensions over the years.

## **ii. Perceived Value**

The review of definitions and theories on customer satisfaction highlight the point that value is an important antecedent of customer satisfaction. Theories such as Value-Precept theory and Equity theory posit that value of a product or service perceived by the customers play a key role in shaping customer satisfaction. Hence, perceived value is regarded as an antecedent of customer satisfaction in numerous studies (Johnson et al., 2001; Cronin et al., 2000; McDougall and Levesque, 2000; Day and Crask, 2000; Ryu et al., 2012).

Customer perception of value has been a concept of interest to researchers and marketing practitioners. There are multiple terms and meanings owing to the diversity of perceptions about its nature, dimensionality, and features reflecting the complexity of this concept (Sánchez-Fernández and Iniesta-Bonillo, 2006). One of the earlier definitions of perceived

value was presented by Zeithaml (1988) as the consumer's overall assessment of the utility of a product based on the perception of what is received and what is given.

Monroe (1990) [61] defines perceived value as a trade-off between the quality and benefits in the product perceived by the customers relative to the sacrifice perceived by paying the price.

On similar lines, other researchers like Spreng et al. (1993) and Chen and Dubinsky (2003) define perceived value as consumer's perception of net benefits gained in exchange for the costs (sacrifices) incurred in obtaining the benefits.

Sirohi et al. (1998) simply state perceived value as what you get for what you pay. However, according to Zeithaml (1988) [55], consumers do not perceive monetary price as the only sacrifice they make. Time, effort, social and emotional costs also contribute to the sacrifice that consumers perceive while deciding the value (Zeithaml, 1988; Sweeney and Soutar, 2001; Heinonen, 2004a; 2004b; 2006). Similarly, the benefits gained are more than ownership and physical in nature; it includes emotional gains such as happiness, contentment or satisfaction through purchase (Zeithaml, 1988; Broekhuizen, 2006). Thus, the definition of perceived value should ideally present a holistic view of all benefits and sacrifices involved in during purchase or consumption. Perceived value is not an objective assessment, but a subjective valuation which differs with individuals under different circumstances. This subjectivity indicates the multi-dimensional nature of perceived value and makes its measurement a complicated task.

There are very few standard scales established for measuring perceived value. Sheth et al. (1991) offer a broad measure with five dimensions; functional value (quality or performance related, utilitarian benefits), emotional value (emotional benefits), social value (social or symbolic benefits), epistemic value, and conditional value. This classification by Sheth et al. (1991) was criticized by researchers since it only discussed the benefits and did not take into account the costs (Broekhuizen, 2006).

Inspired by the classification by Sheth et al. (1991), Sweeney and Soutar (2001) created a more general measure for perceived value i.e. PERVAL scale for a wider product range by omitting the epistemic and conditional value dimensions. The scale comprised four dimensions with 16 items: functional value (price/value for money), functional value (performance/quality), social value and emotional value. The scale has been tested for consumers' perceptions of consumer durable goods and was found reliable (Broekhuizen, 2006). Later, Walsh et al. (2008; 2014) proposed an abbreviated version of PERVAL scale with 12 items and assessed that the dimensional properties were equally qualified as the original scale.

Sánchez et al. (2006) developed an exclusive scale for the perceived value of tourism products i.e. GLOVAL scale with six dimensions: the functional value of the travel agency, the functional value of the tourism package, the functional value of the contact personnel of travel agency, functional value price, emotional value and social value. Carlos Fandos Roig et al. (2006) adopted the GLOVAL scale to analyze the dimensionality of perceived value in the banking sector. The study partly validated the original scale and proposed a modified version with six dimensions and 22 items.

Heinonen (2007) proposed a theoretical model for measuring perceived value for e-banking services. The scale consisted of four dimensions; technical, functional, temporal, and spatial service value. Technical value and functional value are traditional dimensions dealing with the core service and operational aspects of banking. The temporal value represents customer

perceptions of time issues when the service interaction occurs. It relates to time allocations, time availability, time orientations, opening hours, and punctuality. The spatial value indicates spatial flexibility and restrictions such as choice of service site and service delivery at multiple locations. The findings of Heinonen (2007) suggested that the temporal and spatial dimensions are more significant than the traditional dimensions.

### **iii. Brand Image**

Although there are no formal theories that highlight brand image as a driver of customer satisfaction, it has been established in literature as an important antecedent of satisfaction (Andreassen and Lindestad, 1998a; 1998b; O'Loughlin and Coenders, 2004; Sondoh et al., 2007; Bayol et al., 2000; Koo, 2003; Upamannyu and Sankpal, 2014). Brand image assists consumers to appreciate the brand better and to identify the differentiating, unique features of the brand. This helps consumers to recognize and satisfy their needs and desires with a particular brand. It eventually improves the probability of future purchase and loyalty of the consumers (Hsieh et al., 2004).

Brand image has been appreciated as a significant area in the field of marketing for a long time (Gardner and Levy, 1955). However, there are differing views on its definition. Gardner and Levy (1955) define a brand image as the set of ideas, feelings, and attitudes that consumers have about the brand.

Martineau (1957) described it as a symbol of the buyer's personality. But, a number of researchers such as Newman (1957) [139], Herzog (1963) [140], Dichter (1985) and Gordon (1996) define it as the sum of impressions created in the minds of buyers about the brand.

Reynolds and Gutman (1984) [143], Biel (1993) and Zikmund and d'Amico (1996) concur on the idea that brand image is a set of associations, attributes, and meanings that consumers relate to the brand. It helps to distinguish the firm's offering from its competitors (Reynolds and Gutman, 1984). Consistent with these definitions, the image can be conceptualized as the perceptions about a brand represented by the brand associations held in the consumer memory (Keller, 1993).

Measuring image will help firms to understand the customers' perceptions towards their products and services and to identify the strengths and weaknesses of the brand. Over the years, brand image has been theorized and evaluated in varied forms. It can be classified based on brand associations which can be divided into three main groups i.e. attribute, benefit and overall brand attitude (Wilkie, 1986). A consumer's mind can encompass all these brand associations; however, it might be difficult to incorporate and measure all these aspects given the complexity involved (Hsieh et al., 2004). Hence, researchers over the years have developed and used measures of the brand image based on different criteria depending on the local market and consumers.

Brand image was quantified using attributes i.e. descriptive features of the product or service (Koo, 2003; Kandampully and Suhartanto, 2000; Faircloth et al., 2001). The product-based attributes denote the features required for the functioning of product or service such as appearance, quality, price, etc.; while non-product attributes signify the exterior features during purchase and consumption of product or service such as packaging, delivery channel, etc. Kandampully and Suhartanto (2000) in their study of hotel industry have operationalized the brand image construct using attributes like the hotel location, interior design, physical facilities, price, quality, and staff performance. Brand image has also been measured on the basis of brand benefits or values (Hsieh et al., 2004; Bhat and Reddy, 1998). Benefits can be described as the personalized value attached by the consumers i.e. the perception that what

the product or service can do for them (Keller, 1993). It can be classified as functional benefits, symbolic benefits, social benefits, experiential benefits and appearance enhancements (Sondoh et al., 2007). Apart from these measures, the national customer satisfaction indices like ECSI, NCSB use a standard brand image scale for overall evaluation of the company consisting of five items such as level of trust, opinion on stability, social contribution, concern for customers and innovation (O'Loughlin and Coenders, 2004; Bayol et al., 2000) .

### **Conclusion**

Understanding the antecedents and theories of customer satisfaction is a critical issue for both academics and bank marketers. Many authors view customer satisfaction as one of the variables that have exercised the strongest influence on loyalty. This study has developed a comprehensive understanding of the antecedents of customer satisfaction through the examination of theories, definitions, and past studies. It contributes to the literature in many ways. In fact, this study can be further extended by considering other relevant antecedents of customer satisfaction. Moreover, in the electronic context, customer satisfaction is considered as a critical factor (Anderson & Srinivasan, 2003; Ankit, 2011), and thus, the future studies can be extended by incorporating the antecedents and theories for electronic customer satisfaction.

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## **Evaluation Of Human Resource Development Mechanisms In SKIMS**

**Dr. Qurrat A Hamdani**

### **Abstract**

Human resource developers are involved in facilitating and monitoring learning in the work place. HRD is a process through which employees in an organization are assisted to realize their full potential for their present and future jobs. It involves long term perspective which visualizes change through involvement and ownership of such change by the participants. HRD believes that individual in an organization have unlimited potential for growth and development and that their potential can be built through appropriate and systematic efforts. The present study was conducted in the leading hospital of Kashmir i.e. SKIMS, to study the performance appraisal and training and development. The results revealed that HRD mechanisms in hospital are satisfactory and the Para medical staff has an above satisfactory perception towards HRD mechanisms.

**Keywords:** HRD mechanisms, Performance Appraisal System, Training and Development.

### **Introduction**

Human Resource Development is a field of study and practice responsible for fostering long term work related planning capacity of the individual group and organizational levels. It includes training and development, career development and organizational development. HRD subsystems include performance appraisal, career planning, and organization development, quality of work life, career development, potential appraisal, feedback, performance coaching, training, rewards and employee welfare. Present research paper focused on training and development and performance appraisal system.

Performance appraisal process is a single most important management tool. There is no other management process that has as much influence over individuals' careers and work lives as performance appraisal. If used well, it is the most powerful instrument that organizations have to mobilize the energy of every employee of the organizations towards the achievement of strategic goals. It can also focus every person's attention on the company's mission, vision and values [3]. A well developed performance appraisal system increases the probability of retaining, motivating and promoting productive people although employees charge that the appraisals are often too subjective. Performance appraisal tells the manager and the employees how much they are making progress towards meeting the established goals. It gives the manager an opportunity to reinforce the expectation she/she has for the employees [2]; [8].

Training and development refers to the process of imparting specific skills, abilities and knowledge to an employee. It is short-term process of utilizing a systematic and organized procedure by which non-managerial personnel learn technical knowledge and skills for a definite purpose. An employee who undergoes training is presumed to have some formal education. A program of training becomes essential for the purpose of meeting the specific problems of a particular organization arising out of the new lines of production, changes in design, the demands of changes in economy, the quality of materials processed, individual

adjustments, promotions, career development, and changes in the nature of job and changes in the volume of business [9].

Training and development helps the company to create a workforce that is able to cope with change, meet the increasing demand of the industry, and prepare the future leadership of the company. It is a process that helps companies and employees to cope with the effects of changes in the business world that result from competition, globalization and technological advancement [7]. It is a planned effort to facilitate the learning of job-related knowledge, skills and behavior by employees. It is a planned process to modify attitude, knowledge, skill, behavior etc of executives through learning which leads to effective performance in an activity or range of activities. The purpose of training is to develop the abilities of an individual, to satisfy current and future manpower needs, to supplement education and to train for taking up higher responsibilities. Training and development programs which are sometimes used interchangeably are seen as actively associated with managers. In contrast, training has a more immediate concern and has been associated with improving the knowledge and skill of non management employees in the present job. Such a distinction is too naive in an age characterized by development in human resource management, because now a day, development of all employees is crucial. Such development would facilitate multiskilling and flexible mode of operation. These days' even managers require training as they need current operational skills associated with management development. Training and development may be regarded as interactive and each complementing to other. It as a vehicle, for HRD is concerned with improving skill of employees and enhancing their capacity to cope with ever changing demands of work situation. It makes a positive contribution to empowerment of employees [7].

### **Review Of Literature**

A study on 360 degree Performance Appraisal System in Reliance Life Insurance, Udumalpet by *Banu & Umamaheshwari (2009)*, was carried with the objective to study the effectiveness of an employee's performance based on 360 degree performance appraisal system in Reliance Life Insurance. To evaluate the performance of the employee from the perspective of immediate supervisors and from the perspective of customers and to suggest suitable measures to improve the performance of the individuals based on the analysis. The researcher concluded that the 360 degree performance appraisal system helped to identify training needs, performance of employees, and determination of rewards/incentives and steps to promote communication from the perspective of the employees themselves, superiors and from the customers.

*Kumar (2000)*, focused on the neglected activity i.e. Performance Appraisal of Senior level Managers. The findings indicated that the managers of the companies were by and large aware of the importance of HRD. However, most of them did not fully understand the techniques of HRD and the linkage between HRD and performance appraisal. Of the 20 companies taken up, one did not favour the study in its organization on the ground that it did not have any formal appraisal system while other company did not want the study in the organization due to obvious reasons. Of the balance 18 companies studied, 8 did not have any formal appraisal system. Among the remaining 10, in 8 companies the form for assessing all level managers was the same. Only two companies were having somewhat satisfactory to good systems for managers including a separate format for assessing the performance of senior level managers. It was observed that there was lack of Performance planning, counseling and feedback, non inclusion of potential appraisal, inappropriate factors of

assessment, too many factors of assessment, lack of transparency, limited use of appropriate data, non availability of appraisal manual, non consideration of the views of the executives in designing a suitable appraisal system, even the management of some of the companies were not satisfied with the operation of the system but were continuing with the same system. A fact which emerged clearly was that the proper and formal appraisal of performance of senior level managers was practically non-existent.

Impact of training programs in HRD activities in PSU, a study by *Nath (2011)*, revealed that the employees were aware of the training facilities offered by the company. It also explained that training had impact on workers attitude, which meant that employees felt to work for the benefit of the organization if they found training for their benefit. *Kundu & Handa (2008)*, identified training and development needs a study of Indian and Multinational companies and the results revealed that the Multinational executives seemed to have higher training and development satisfaction comparatively more than National enterprises in identification of training needs. Surprisingly, the same trend maintained by the individual groups i.e. Indian and Multinationals with the three top variables i.e. knowledge, skill and attitude for identification of training needs. *Krishnaveni & Sripirabaa (2008)*, studied whether partnering and financial support had impact on alignment of training and development with strategic goals and the result revealed that there was a positive impact on alignment and on training and development function. A study of KVK trainers in training management by *Kumar (2008)* concluded that there was need for trainers training in the areas of training management.

#### **Sample Organization At A Glance**

The sample organization includes:

Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Srinagar. Sher-i-Kashmir Institute of Medical Sciences is a post graduate Institute for training, research and patient care. By an act of legislature, Institute of Medical Sciences was granted a deemed university status. SKIMS was conceived with the objectives to provide facilities of specialized medical care.

#### **Objective Of The Present Study**

- 1) To study the existing status of HRD Mechanisms in SKIMS Soura, Srinagar,
- 2) To examine the perception of Para medical staff towards HRD mechanisms.

#### **Hypothesis**

In consonance to the above objective, the hypotheses formulated for the present research are as under:

- 1) HRD Mechanisms in the hospitals is satisfactory.
- 2) Para medical staff has a positive perception towards HRD Mechanisms.

#### **Research Approach And Design**

The tool used for obtaining the information was a 'Structured Non Disguised Questionnaire', a questionnaire was designed keeping in view both major and minor objectives of study. A close format questionnaire was used. This questionnaire is proposed by Dr. Udai Pareek. It consisted of two Sections and 39 statements. Sec "A" consisted of 38 statements, the rating for each to be done on a scale from 5 to 1,(5)=Almost always true,(4)=Mostly true,(3)=Sometimes true,(2)=Rarely true,(1)=Not at all true. Sec "B" sought for suggestions and name, gender, age, pay scale, designation of the respondent.

Simple Random Sampling Method (SRSM) was used to cover employees from Medical, Administrative, Supportive and Technical cadres in the sample selected organizations. A sample of 100-125 was targeted from each organization covering doctors, officers,

engineers, nurses and others covering Operators, Attendants, Technicians, Technologists, Drivers, Gardeners and other fourth class employees. Thus the total sample for the study was 100-125.

**Data Analysis And Interpretation**

**Hrd Mechanisms In SKIMS**

Table I reveals that HRD Mechanisms for SKIMS is satisfactory. A total mean score of M.S= 3.1 (52.5%) is scored by the sample study organization. On analyzing T&D and Performance Appraisal system separately, it is found that the overall environment for T&D is satisfactory in the organization. Statement 8 i.e. *“Employees are sponsored for training programs on the basis of genuine training needs in health care sector”*, and statement 6, i.e. *“When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend.”*, scores the largest mean score of 3.6(65%). On the other hand, Performance Appraisal System is found to be unsatisfactory. Statement 2, i.e. *“Performance Appraisal reports in this organization are based on objective assessment and adequate information and not on favoritism”*, scores the highest mean score of 3.1(52.7%) in sample study organization. Statement 4 scores the next comparable mean score of 3.1(52.7%) i.e. *“When behavior feedback is given to employees in health care sector, they take it seriously and use it for development”*. Least mean score of 2.7(42.5%) is scored by statement 1, i.e. *“When an employee in the health care sector does good work his supervising officers take special care to appreciate it”*.

Comparing the two mechanisms, the data reveals that, though both the mechanisms are found to be satisfactory but Training and Development (3.41) is valued and practiced more than PAS (3.00).

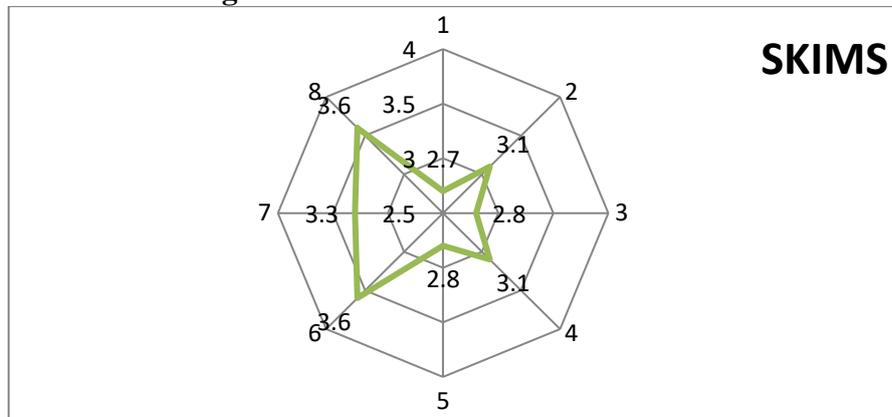
**Table I: HRD Mechanisms in SKIMS.**

St. No	Statements	SKIMS (No. 106)		
		M.S	S.D	%age
1	When an employee in the health care sector does good work his supervising officers take special care to appreciate it.	2.7	1.3	42.5
2	Performance Appraisal reports in this organization are based on objective assessment and adequate information and not on favoritism.	3.1	1.2	52.7
3	Weaknesses of employees in this organization are communicated to them in a non threatening way.	2.8	1	45
4	When behaviour feedback is given to employees in health care sector, they take it seriously and use it for development	3.1	1.1	52.7
5	Employees in this organization take pains to find out their strengths weaknesses from their officers and colleagues.	2.8	1.2	45
6	When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend.	3.6	1.1	65
7	Employees in this organization when returning from training programs are given opportunities to tryout what they have learnt	3.3	1	57.5
8	Employees are sponsored for training programs on the basis of genuine training needs in health care sector.	3.6	1	65
<b>TOTAL</b>		<b>3.1</b>		<b>52.7</b>

Notes

1. M.S: mean score, S.D: standard deviation

Figure I: HRD Mechanisms in SKIMS



**HRD Mechanisms in SKIMS with Z values**

To test the level of significance, Z test was conducted and it is concluded from table II that the mean for the dimension of Performance Appraisal System (PAS) is 2.9 and Training and Development (T&D) is 3.5. Result depicts unsatisfactory PAS in SKIMS and above satisfactory environment of T&D in the sample organization. The P value for PAS (P value= 0.66) i.e. >0.05 and T&D (P value=0.00) < 0.05 (significance level). Thus Ho is accepted at 0.05 level of significance for PAS and Ha is accepted for T&D.

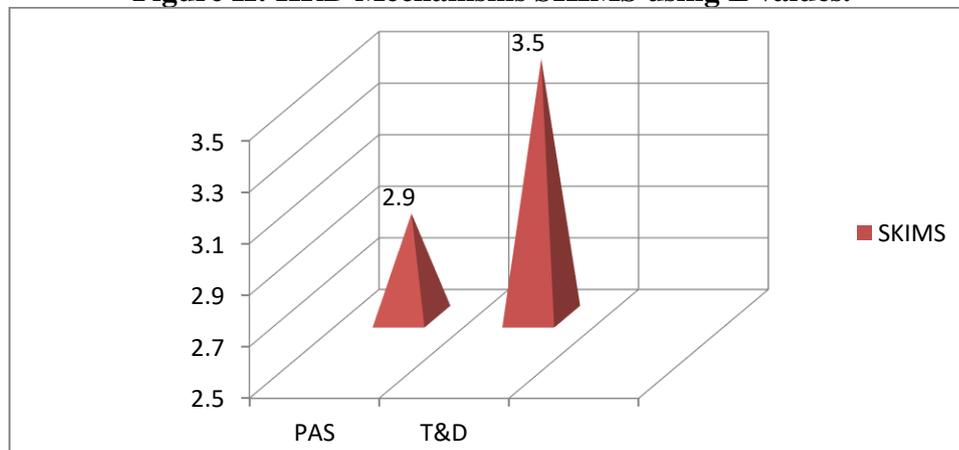
Table II: HRD Mechanisms SKIMS using Z values.

Dimensions	SKIMS (No. 106)		Z value	P Value
	M.S	S.D		
Performance Appraisal System	2.9	0.8	-0.4	0.66*
Training and Development	3.5	0.8	6.8	0.00**

Note

1. Scoring Scale : same as in table 1
2. \*= Ho accepted, \*\*= Ha accepted.

Figure II: HRD Mechanisms SKIMS using Z values.



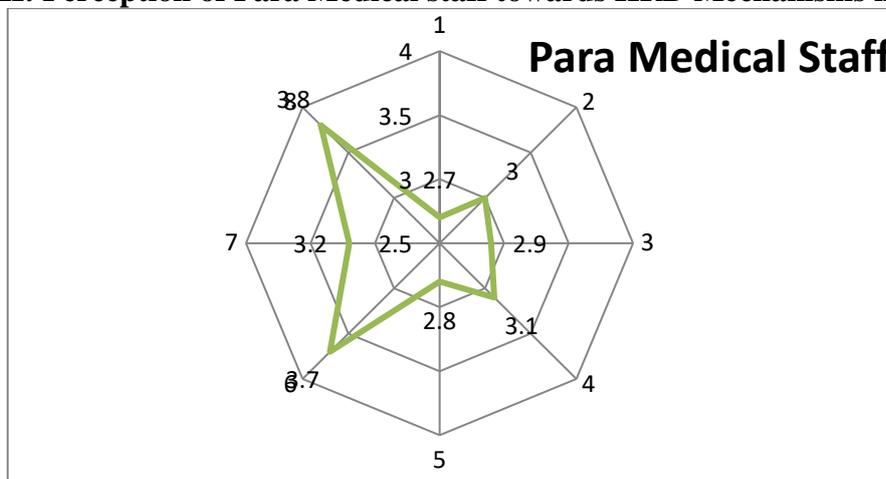
**Perception of Para Medical staff towards HRD Mechanisms in SKIMS.**

Table III reveals that the perception of Para medical staff towards HRD Mechanisms for SKIMS is satisfactory. A total mean score of M.S= 3.1 (52.5%) is scored by the staff. On analyzing T&D and Performance Appraisal system separately, it is found that the overall perception of staff for T&D is above satisfactory in the organization. Statement 8 i.e. *“Employees are sponsored for training programs on the basis of genuine training needs in health care sector”*, and statement 6, i.e. *“When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend.”*, scores the largest mean score of 3.8(70%) and 3.7(67.5%). On the other hand, perception of staff towards Performance Appraisal System is found to be below satisfactory. Least mean score of 2.7(42.5%) is scored by statement 1, i.e. *“When an employee in the health care sector does good work his supervising officers take special care to appreciate it”*.

**Table III: Perception of Para Medical staff towards HRD Mechanisms in SKIMS.**

St. No	Statements	Non Medical Staff (No. 56)		
		M.S	S.D	%age
1	When an employee in the health care sector does good work his supervising officers take special care to appreciate it.	2.7	1.1	42.5
2	Performance Appraisal reports in this organization are based on objective assessment and adequate information and not on favoritism.	3	1.2	50
3	Weaknesses of employees in this organization are communicated to them in a non threatening way.	2.9	1.2	47.5
4	When behaviour feedback is given to employees in health care sector, they take it seriously and use it for development	3.1	1.2	52.7
5	Employees in this organization take pains to find out their strengths weaknesses from their officers and colleagues.	2.8	1.2	45
6	When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend.	3.7	1.2	67.5
7	Employees in this organization when returning from training programs are given opportunities to tryout what they have learnt	3.2	1	55
8	Employees are sponsored for training programs on the basis of genuine training needs in health care sector.	3.8	0.9	70
	<b>TOTAL</b>	<b>3.1</b>		<b>52.5</b>

**Figure III: Perception of Para Medical staff towards HRD Mechanisms in SKIMS.**



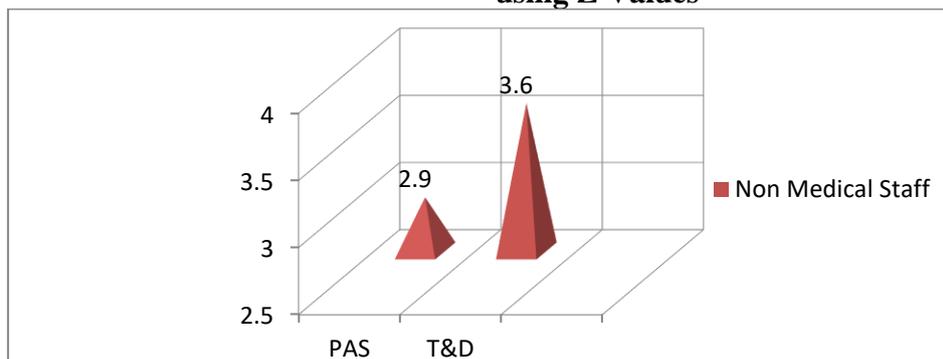
**Perception of Para Medical staff towards HRD Mechanisms in SKIMS using Z Values.** To test the level of significance, Z test was conducted and it is concluded from table IV that the mean for the dimension of Performance Appraisal System (PAS) is 2.9 and Training and Development (T&D) is 3.6. Result depicts unsatisfactory perception of Para medical staff towards PAS in SKIMS and above satisfactory perception of staff towards environment of T&D in the sample organization. The P value for PAS (P value= 0.53) i.e. >0.05 and T&D (P value=0.00) < 0.05 (significance level). Thus Ho is accepted at 0.05 level of significance for PAS and Ha is accepted for T&D.

**Table IV: Perception of Para Medical staff towards HRD Mechanisms in SKIMS using Z Values**

Dimensions	SKIMS (No. 106)		Z value	P Value
	M.S	S.D		
Performance Appraisal System	2.9	0.8	-0.6	0.53*
Training and Development	3.6	0.7	5.7	0.00**

1. Scoring Scale : same as in table 1
2. \*= Ho accepted, \*\*= Ha accepted.

**Figure IV: Perception of Para Medical staff towards HRD Mechanisms in SKIMS using Z Values**



### **Conclusions**

- 1) HRD Mechanisms for SKIMS is satisfactory.
- 2) Overall environment for T&D is satisfactory in the organization.
- 3) Performance Appraisal System is unsatisfactory.
- 4) Para medical staff has an above satisfactory perception towards HRD mechanism in SKIMS.
- 5) Employees in SKIMS are sponsored for training programs on the basis of genuine training needs. The same statement holds true for the Para medical staff.
- 6) When employees in sample study hospital are sponsored for training, they take it seriously and try to learn from the programs they attend especially the Para medical staff.
- 7) Performance Appraisal reports are based on objective assessment and adequate information and not on favoritism.
- 8) When behavior feedback is given to employees in health care sector, they take it seriously and use it for development.
- 9) When an employee in the hospital does good work his supervising officers don't take special care to appreciate it. Para medical staff is also least satisfied with this statement.
- 10) Training and Development is valued and practiced more than PAS.

### **Suggestions**

Though the HRD Mechanisms practiced in the hospitals is satisfactory but there is always a scope for improvement. There should be sincere efforts on the part of whole of human resource to polish the mechanisms and fill up the loop holes if any. When an employee in the health care sector does good work his supervising officers should take special care to appreciate it. Weaknesses of employees in the hospital should be communicated to them in a non threatening way. Employees should take pains to find out their strengths weaknesses from their officers and colleagues.

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## **Digitalisation In India : A Study**

**Manoj Kumar\***

### **Abstract**

The central theme of the recent report on 'Economic Outlook for Southeast Asia, China and India', released by OECD development centre, is fostering growth through digitisation. The report indicates that ICT (information and communication technology) services embodied in manufacturing and services account for a considerable share of the value of exports from China, India and other Asian nations. Improved telecom and Internet penetration, availability of skilled manpower for providing IT services, entrepreneurship exhibited in building ICT start-ups, along with government embracing ICT in its operations and services are enabling India to play a significant role in the digital economy. A digitally knowledgeable and empowered population can transform the whole economy. The automation of the economic sectors will lead to better performance and growth of the sectors, which in turn impact the growth rate of the economy. Digitalisation will lead to cost savings, increased output, better employment, enhanced productivity & literacy, etc. In the agricultural sector and in Industrial sector, digitalisation will help in betterment of all the processes, be it, purchasing, selling, inventory control, trade relations, employment, product innovation & development, etc. Automation of Service Sector will help in growth of the sector by increasing the ease in access to and rendering of the services.

**Keywords:** *Economic, India, digit, India, Economy, Digitalisation*

### **Introduction**

"Digital India" is basically a Programme which was started by the Government of India on **1st July of 2015**. This programme was headed and Planned by the **Department of Electronics and Information Technology under the Ministry of Communication and Information Technology**. The basic Objective of this Programme is to ensure that the Government Services are made available to the Citizens of India electronically in a faster and easy way. In order to give a boost to this Programme, Prime Minister Narendra Modi announced "**Digital India Week**" to be celebrated **From 1st July to 7<sup>th</sup> July** every year. Moreover, Prime Minister Narendra Modi appointed **Ms. Kruti Tiwari, IIT-JEE Topper-2015, Indore girl**, as Brand Ambassador of "**Digital India**" Programme on 1st July 2015. This Programme is scheduled to be completed by **2019**.

**EMPOWER**

**POWER TO**

**DIGITAL INDIA**

\* An Employee in Judicial Department

**Narendra Modi** had a dream of Digital India and this dream may come true only when the youth of this country will take the responsibility upon its shoulders to make that kind of India that our Prime Minister wants. We should not forget the contribution of **Sh. Vijay Shekhar Sharma**, a young Indian Entrepreneur, who founded Paytm to make India Cashless and digital. Similarly, Reliance Industries Chairman, **Mukesh Ambani**, committed to make an investment of Rs.2,50,000 Crore for "**Digital India**" Programme and by introducing Reliance JIO, he has initiated a Step towards Digital India. No doubt, the youth of this country can achieve the impossible and be better than anybody in the world.

### **Objectives Of The Study**

The basic objective of the study is to make an analysis of the Digital India Programme and to study the Nine Pillars and key projects of Digital India Programme.

### **Research Methodology**

The study is completely based on the secondary sources of data. The data used in this study has been collected from various newspapers, journals, magazines, published articles and government websites.

### **Nine Pillars Of Digital India**



### **PILLAR 1 (BROADBAND HIGHWAYS)**

In the inaugural function of Digital India, *Prime Minister Narendra Modi said "I dream of digital India where high speed digital highways unite the nation"*. In pursuance of this dream, 2,50,000 village panchayats would be covered under the National Optical Fibre Network (NOFN) by December 2016.

### **PILLAR 2 (UNIVERSAL ACCESS TO MOBILE CONNECTIVITY)**

In this Pillar, Government of India focuses on network connectivity especially in rural areas. Earlier, there was 2G connectivity which has almost become obsolete. Now, improved technology like 3G and 4G are being used today for better and efficient connectivity. But still there is a need of further more improved technology and the Government is looking for 5G network connectivity in future period.

### **PILLAR 3 (PUBLIC INTERNET ACCESS PROGRAMME)**

The two sub components of Public Internet Access Programme are Common Service Centres and Post Offices as Multi-Service centres. One Common Service Centre would be

establish in each Gram Panchayat. CSCs would be made viable and multi-functional for delivery of government services.

A Total of 1,50,000 Post offices are proposed to be converted into Multi Service Centres. Department of Post would be the Nodal department to implement this scheme.

#### **PILLAR 4 (E-GOVERNANCE)**

E-governance is the application of information and communication technology for delivering government services. Through E-governance, government services will be made available to the citizens in a convenient, efficient and transparent manner.

#### **PILLAR 5 (E-KRANTI)**

E-Kranti means Electronic delivery of Government Services. E-Kranti is one of the important pillars of Digital India Programme. Following facilities have been initiated in this regard:

##### **Technology for Education (E-education)**

All schools will be connected with broadband. Free wi-fi will be provided in all secondary and higher secondary schools. A programme on digital literacy would be taken up at National Level.

##### **Technology for Health (E-Healthcare)**

This facility will cover online medical consultation, online medical records, online medicine supply etc.

##### **Technology for Farmers**

This facility will help the farmers in getting real time price information, online ordering of inputs and online cash payment with mobile banking.

##### **Technology for Justice**

E-Courts, E-Police, E-Jails and E-Prosecution will make the judicial Services easily available to the citizens of the country.

#### **PILLAR 6 (INFORMATION FOR ALL)**

Open data platform and online information would facilitate easy access to information for citizens.

#### **PILLAR 7 (ELECTRONIC MANUFACTURING)**

This Pillar focuses on promoting Electronic manufacturing in the Country with the target of Zero Import by 2020.

#### **PILLAR 8 (IT FOR JOBS)**

This pillar aims at providing training to the youth in the skills required for obtaining employment opportunities in IT Sector. 1 Crore students from smaller towns and villages will be trained for IT Sector jobs over 5 years. 5 Lakh rural work force would be trained by the Telecom Service Providers to cater to their own needs.

#### **PILLAR 9 (EARLY HARVEST PROGRAMME)**

Early Harvest Programme mainly consists of those programmes which are to be implemented within a short timeline like bio-metric attendance, wi-fi in all Universities, Sms Based weather information and disaster alert, national portal for lost and found children etc.

#### **Challenges Before Digital India Programme**

1. **One of the biggest challenges before the "Digital India" Programme is Cyber Security.** In the current scenario, it has been observed that the young minds are fond of involving themselves in hacking activities. Protection of data from hackers and a strong security system is needed. In this regard, the Cyber Laws of the Country will have to be strengthened and updated according to the International Standards.

- 2. Low Internet speed and High Cost of data** is another big challenge before "**Digital India**" Programme. Although the 3G, 4G and upcoming 5G systems have resolved the problem to some extent but still there is a problem of low internet speed especially in Rural areas.
- 3. Another major challenge before "Digital India"** is the **security of the Nation**. Now a day, many communal forces and Terrorist Organizations are using Internet to mis-lead the youth. So, it cannot be denied that Digital India would strengthen the Communal forces.
- 4. Lack of digital literacy** is another big challenge before "**Digital India**" programme. Although, the Digital literacy programme is in progress through NDLM (National Digital Literacy Mission) which makes rural citizens digitally literate by providing various training programmes but yet it has to achieve a lot in this regard.

### **Key Projects Of Digital India Programme**

#### **1. Digi Locker**

This facility will help the citizens to digitally store their important documents like, PAN, Passport and Mark Sheets etc. This facility makes possible to submit their documents and certificates online anywhere which reduces the physical work. Three Key stakeholders of digi Locker are Citizen, Issuer and Requester.

#### **2. Attendance.gov.in**

This facility was launched by Prime Minister Narendra Modi to keep the record of attendance of government employees on real time basis.

#### **3. My Gov.in**

This Portal gives an opportunity to the citizens of the country to participate in governance through a "*Discuss*", "*Do*" and "*Disseminate*" approach.

#### **4. E-Sign Framework**

This facility enables the user to digitally sign a document online by using Aadhar authentication.

#### **5. E-Hospital**

This facility provides important services such as online registration, online appointment, online diagnostic reports, online payment of fee and availability of blood etc.

#### **6. National Scholarship Portal**

This facility has been introduced to make the scholarship process easy. Everything related to Government Scholarships can be done on this single portal online.

#### **7. Bharat Net**

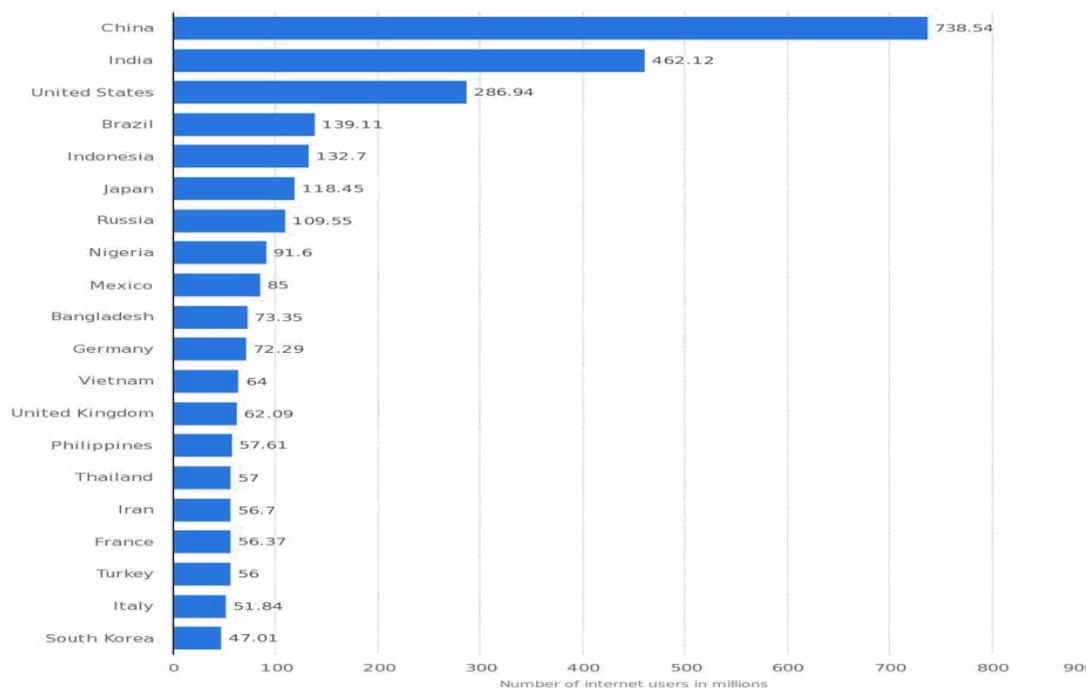
Under this facility, a high speed digital highway will connect all 2,50,000 gram panchayats of the country.

#### **8. Next Generation Network**

This facility has been launched by BSNL. It will replace 30 years old telephone exchange to manage all types of services.

### COMPARISON WITH DEVELOPED COUNTRIES

Countries with the highest number of internet users as of June 2017 (in millions)

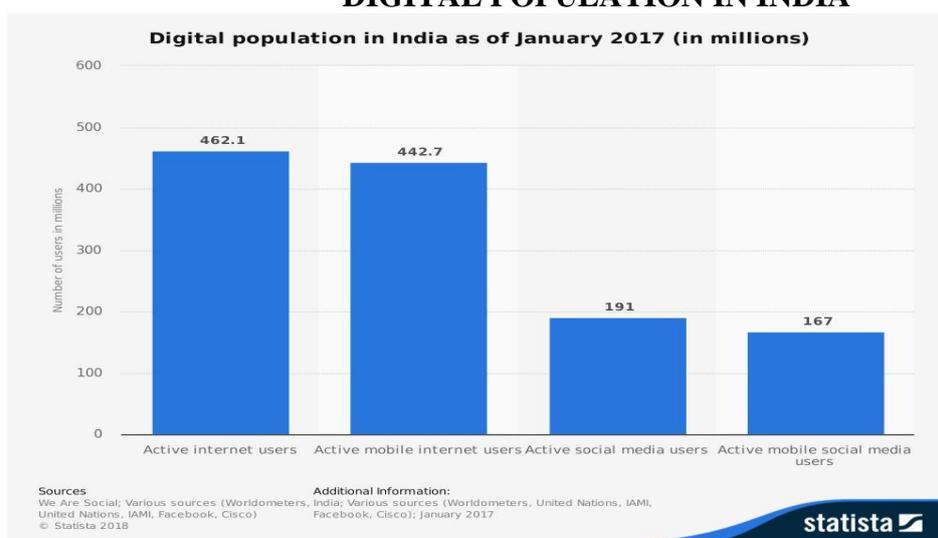


Sources: Internet World Stats; ITU © Statista 2017

Additional Information: Worldwide; Internet World Stats; ITU; June 2017

The above Chart, India has placed at 2nd Position with regard to the number of Internet users in June 2017 with 462.12 Million people whereas China has placed at 1st Position with 738.54 Million People. No doubt India is far behind from China in the matter of Internet Users. But India is far better than United States, Brazil, Japan, Russia, Indonesia etc.

### DIGITAL POPULATION IN INDIA



Sources: We Are Social; Various sources (Worldometers, United Nations, IAMI, Facebook, Cisco) © Statista 2018

Additional Information: India; Various sources (Worldometers, United Nations, IAMI, Facebook, Cisco); January 2017

statista

### Conclusion

Digital India Programme aims to transform our country into a digital economy with the participation of every citizen of the nation. The Digital India Programme is just the beginning

of digital revolution, once implemented properly, it will open new opportunities for the youth of the nation. Digital India is playing an important role in the development of the Country by providing e-services to all. There is no doubt that Digital India Programme is transforming the lives of young people in many ways and it will empower the society in a better way. Digital India Programme is one of the most ambitious Programme of the Government of India with the collaboration of State Governments, Local Governments and Gram Panchayats. If the Government of India is successful in implementing this programme, then it will provide a high pace of growth to our economy. No doubt, our country is far behind in the matter of digital literacy as compared to other countries but now the time has come to prove that India is going to be the world power in the time to come

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## **A Study On Customer Satisfaction In Indian Public Sector And Private Sector Banks**

**Sachin Kumar\***

### **Abstract**

Indian Banking has gone outstanding modifications over time and the entry of non-public quarter banks has transformed the Indian banking each structurally and functionally. In this aggressive banking environment, consumer satisfaction is considered as most imperative issue for the success of banks. To reap the high level of customer pleasure and to hold the purchaser base, it is important for the banks to deliver nice services to its customers. Hence, the find out about analysed relative customer satisfaction levels of private and public area banks. Introduction of new technologies, economic uncertainties, fierce opposition and altering demand of clients created a competitive scenario for banks. This paper attempts to quantify fulfilment dimension of clients of Public and Private Banks and considers in charge of variety clients' fulfilment among Private and Public banks in India. The goal of the examination is to get the fulfilment level, varieties in fulfilment level and reasons in charge of varieties in fulfilment level or disappointment in broad daylight and private banks. This exploration depends on essential information's acquired from clients of Public and Private segments banks in India.

**Keywords:** Customer Satisfaction, Public Sector Banks, Private Sector Banks, Banking Industry, Service Quality, Customer Perception.

### **1. Introduction**

The fulfilment of the clients is vital factor in all administration businesses to upgrade and improve the gainfulness and budgetary execution of the worry. Banking segment is absolutely budgetary administration industry and the consumer loyalty's is substantially more imperative to run banking business effectively. The fulfilments dimension of the clients is fluctuating because of various types of banking administrations and their advantage to the clients. In the organised segment, banking system occupies an important place in nation's economy. It plays a pivotal role in the economic development of a country and forms the core of the money market in an advanced country. The commercial banks in India comprise of both Public sector as well as Private sector banks. Banks have to deal with many customers' every day and render various types of services to its customer. It's a well-known fact that no business can exist without customers. Researchers suggest that increased levels of customer satisfaction and loyalty are frequently attributed or linked to positive outcomes for a firm (Colgate, 1999). Satisfaction is a multidimensional construct which has been conceptualized as a prerequisite for building relationships and is generally described as the full meeting of one's expectations (Oliver, 1980), and is a feeling or attitude of a customer towards a product or service after it has been used (Jhan and Khan, 2008). Anderson and colleagues (1994), found out that firms with higher reported satisfaction levels also show significantly higher returns. They say that an annual 1% increase in customer satisfaction is worth an 11.4% improvement in current return on investment.

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In today's quickly moving life and especially competitive environment, the banking area has to apprehend and analyse the customer's perception and necessities for service quality. To attain the high level of customer delight and to keep the patron base, it is important for the banks to deliver quality services to its customers. In this quick ever-changing state of affairs, it's necessary that banks ought to go for client segmentation and supply reliable, freelance, impartial opinion and tailored treatment that customers currently expect. Customer satisfaction could be an imprecise and theoretical thought and actual expression of the state of satisfaction can vary from person to person and repair to service.

Numerous specialists have started to concentrate more specifically on expanding consumer loyalty as an express objective. Fulfilling and keeping customers is basically more affordable than continually supplanting them. Specialists have too contended that expanding client devotion makes future incomes (Fornell, 1992), decline value versatility (Anderson, 1996) and diminish cost of future collaborations (Reicheld and Sasser, 1990).

## **2. Review of Literature**

Kotler and Armstrong (1999), characterized consumer loyalty as clients' discernment that contrasts their pre-buy desire and post buy discernment. Farriss et al (2008) characterize consumer loyalty as "the quantity of clients, or level of complete clients, whose detailed involvement with a firm, its items, or its administrations (evaluations) surpasses indicated fulfilment objectives." Gonu and Boohene (2016) in their study tried to work out if factors like client trust, client satisfaction, client commitment, service quality and switch barriers were antecedents of client retention in Gold Coast depository financial institution. Caruana (2002) and Kaura V. & Datta S.K. (2012) in their several studies determined that service quality affected client satisfaction that successively had a sway on customer loyalty. Nalini (2006) in her study, "A Service Quality Model for Customers in Public Sector Banks" has opined that entry of new private sector banks in the banking industry of India has led to higher utilisation of technology, improved customer service and better products. Pandit C Bilange (2011) in his examination A Comparative Study of Customer Perception towards Services rendered by Public Sector Banks and Private Sector Bank's concentrated the issues identifying with client administrations in the ICICI Bank and SBI. The investigation uncovers that the ICICI Bank is a long ways in front of the SBI in giving quality administrations to their clients. Puja Khatri and Yukti Ahuja (2010) through their analysis work, a comparative Study of client Satisfaction in Indian Public Sector and personal Sector Banks, compares the general public sector banks and personal sector banks in terms of client satisfaction. The study showed that non-public banks appear to possess happy their customers higher than public sector banks by providing better facilities. Naveen kumar and Gangal (2011) led an examination on consumer loyalty in new age's banks. They discovered that most of India's banks are not enhanced as far as the items and administrations they offer what's more, key center that banks and execute to stay aggressive is hold the same number of clients as conceivable and client maintenance is conceivable through consumer loyalty's as it were. Subsequently, Customer's fulfillment is the key of achievement in the present aggressive period. MajidKaboli, Saeed-Fathi, Marjan Azizi (2011) led their exploration on consumer loyalty of the banking client in Isfahan city. They found that specialized information and condition of the bank are primary factors which make disappointment among the clients.

Researchers have discovered that improved administration quality expanded consumer loyalty in the Indian financial division (Lenka et al., 2009; Bedi, 2010, Kaura and Datta,

2012). Dark colored et al. (1996) and Lemmink and Mattsson (1998) found that positive representative conduct expanded client administration experience fulfillment. An examination directed by Kaura and Datta (2012) found that individuals factor positively affects consumer loyalty in the Indian financial area. An investigation directed by Lenka et al. (2009), Kaura and Datta (2012) found that better unmistakable parts of administration nature of the bank offices upgrade clients' fulfillment. Technology-enabled administrations give consistent, dependable and quality administration and improved specialized parts of administration quality increment consumer loyalty (Bitner et al., 2000; Lenka et al., 2009; Kaura and Datta, 2012).

### **3. Need of the Study**

Fulfilled clients are fundamental to ideal execution and monetary outcomes. As we realize that client is the ruler so the prime obligation of the banks is to fulfill and hold its clients by giving them the best of administrations and items. Consumer loyalty is a significant complex issue and there is a great deal of discussion and disarray about it. In the event that the banks give great administration quality the client will be steadfast and demonstrate their dedication and trust for the bank. The banks need to realize that fantastic and keeping clients is essentially more affordable than continually supplanting them. The bank framework is confronting numerous difficulties with solid rivalry and headway of innovation, so the administrations given to be simple and advantageous.

### **4. Banking scenario in India**

The image of Indian banking was totally diverse as the Government of India started measures to play a functioning job in the monetary existence of the country. Another Work done by Parasuraman, Zeithaml and Berry (Leonard L) between 1985 and 1988 gives the between the clients desire for execution and their apparent encounters of execution. As indicated by Garbrand consumer loyalty breaks even with impression of execution partitioned by desire for execution. The Indian industry is characterized by an oversized range of banks with mixed ownership. The business banking phase includes twenty seven public sector banks within which the govt. has majority ownership, forty non-public sector banks, and thirty three foreign banks. In 1991, by comparison, public sector banks share of the entire assets of the industry was a touch over ninety Percent.

Right now, generally speaking banking in India is considered as genuinely develop as far as supply, item range and reach despite the fact that reach in provincial India still remains a test for the private division and outside banks. Very much automated outside banks are starting to contend truly with the nationalized banks. The bank framework is confronting the difficulties with solid challenge and headway of innovation; the administrations given by banks have turned out to be all the more simple and helpful.

### **5. The banking Industry in India**

Like a few option fiscal administrations is confronting a rapidly changing market, new advances vulnerabilities, savage challenge and more strict clients and along these lines the dynamic atmosphere has blessing an unprecedented set of difficulties. Banking might be a customer bound services industry; therefore, the customer is that the concentration and client administrations are the differentiating factors. Deregulation, relaxation and economic process have created intense competition in banking industry ensuing into declining margins in ancient businesses, exaggerated price pressures and larger risks. Market positioning, price of intervention and repair delivery are doubtless to be determinants of the potency of banks with reference to their aggressiveness. Within the modified setting making new customers

and retentive the existing ones became tough tasks for banks. To satisfy the competition, making satisfaction of customers has become primary objective of every bank.

## **6. Customer Satisfaction in Banking**

Financial easing and freeing has accumulated the competition among banks to draw in potential customers. Each banker tries to produce superior services to stay happy customers. In India, emergence and growing quality of Indian banking merchandise raises competition among Indian banks. Indian banks should face various challenges within the recent age. Firstly, they are competitor with their peers and second they need to address the traditional banks. It is found that satisfied customer repeat his/her experience to buy the products and also creates new customers by communication of positive message about it to others (Dispensa, 1997).

### **6.1. Consumer loyalty in Banking**

According to Juran, Deming and Crosby it's the quality of the product or service, that satisfies a customer. A business term might be a live of anyway item and services prepared by a partnership meet or outperform customer desire. It is seen as a key exhibition marker at interims business. Customer fulfilment is an ambiguous and theoretical idea and in this manner the genuine appearance of the condition of fulfilments can differ from individual to individual and fix to support. The state of fulfilment relies upon assortment of each psychological and physical variable.

Money related progression and deregulation has expanded the rivalry among banks to pull in potential clients. Each financier endeavours to give better administrations than keep fulfilled clients. In India, development and developing prevalence of Indian financial items raises rivalry among Indian banks. Indian banks need to confront various difficulties in the late age. Initially, they are contending with their companions and also they need to adapt to the regular banks. Fulfilled client is the genuine resource for any association that guarantees long haul benefit even in the time of incredible rivalry. It is discovered that fulfilled client rehash his/her experience to purchase the items and furthermore makes new clients by correspondence of positive message about it to other people (Dispensa, 1997). Then again, disappointed client may change to elective items/benefits and impart negative message to other people.

### **6.2. Customers Perceptions and Expectations**

Quality expectation and therefore the valuation of services received are slightly additional within the non-public sector banks as compared with the general public sector banks. Service quality is one in all main parts of client satisfaction and their intention to purchase. However, the shoppers of public and personal sector banks totally different in terms of their perception of service quality. Non-public Banks are determined to be higher on dimensions of service quality: effectiveness and convenient whereas, the nationalized banks are better on the scale of value and consistency (Sachinet, al). Private bank customers are additional happy with the services then public banks. Managers in the banking sector undertake vital efforts to conduct client satisfaction surveys and it are seems that customers are voice communication that they expect sensible product and quality to their banks which might the sole issue necessary to them (Muhammad Naveed)

### **6.3. Service convenience and customer satisfaction**

Distinctive creators have given diverse sorts of administration accommodation. As indicated by Anderson (1971) time and exertion sparing are the two parts of accommodation. Dark colored (1989) proposed five kinds of comfort: time, place, obtaining, use and execution.

Shopping comfort has been inspected by Seiders et al. (2000), who built up a comfort structure identified with buyer shopping velocity and straightforwardness. Berry et al. (2002) conceptualized five elements of administration accommodation: choice comfort, get to accommodation, exchange comfort, advantage accommodation and post-benefit accommodation. Seiders et al. (2007) built up the SERVCON scale and exactly approved the administration comfort develop. Administration comfort measurements as proposed by Berry et al. (2002) were utilized by Colwell et al. (2008) through SERVCON scale in Canadian cell and web administrations. Aagja et al. (2011) likewise utilized SERVCON scale in the Indian composed sustenance and basic supply retail setting. This investigation likewise utilizes SERVCON measurements proposed by Colwell et al. (2008). Administration comfort was observed to be a huge indicator of generally speaking fulfillment (Seiders et al., 2007; Colwell et al., 2008; Aagja et al., 2011).

#### **6.4. Customer satisfaction in public/private banks**

In an examination, Nirmaljeet Virk, Prahjot Kaur Mahal (2012) has distinguished that private division banks are favored by the vast majority of the clients as they underscore relationship working with their customers and are better outfitted with present day framework as compared to open area banks. Surabhi Singh and Renu Arora (2011) have inferred that the clients of nationalized banks are not happy with conduct of representatives and foundation, yet if there should arise an occurrence of private and outside banks, they stressed over high charges, openness and correspondence. Outside banks are driving in giving better administrations and items when thought about to different banks (RBI 2001). A large portion of the scientist's discoveries demonstrates that consumer loyalty in private segments banks is relatively superior to anything open part banks in India. Sushesh (2007) uncovered that poor administration quality in open division's banks is because of insufficiency in substantial quality, absence of responsiveness and compassion however this isn't the situation in private parts banks. The execution of privatized state claimed banks that contrasted and different banks have expanded by 95% after their privatization. This brought about more noteworthy piece of the pie for privatized state – possessed banks than before Lkhodaei et al (2012). Administration quality is an imperative component of client's fulfilment in Indian financial industry regardless of open area banks and private segments banks also, observed to be emphatically connected with affinity to suggest (Monica Bedi 2010). M.J. Vidhyaa (2009) presumed that both SBI and ICICI banks are contending balance with one another however SBI is somewhat underneath the line in client objections taking care of when contrasted with ICICI bank.

#### **7. Conclusion**

Customers' expectation of personal banks is quite the general public banks just in case of all the service dimensions. This indicates that customers expect higher services in private banks than publically banks, and as a result could also be additionally interested in conducting transactions with the non-public banks. Customers believe that the possibility of obtaining satisfactory service is additional with the non-public banks. In order to satisfy customers, the banks ought to give specialised services. The services like the record maintaining procedure of their account, the service quality of the bank. The bank workers ought to be powerfully motivated to render whole hearted services to the shoppers. Service delayed is service denied, the bankers ought to not forget this reality different wise the shoppers can move to other bank. Fulfilment dimension of clients can be expanded by improving the elements, for example, the administrations given by the bank as guaranteed, the lucidity of bank

explanation, the way bank illuminates about when administrations will be played out, the bank's administrations of giving clients best enthusiasm on a fundamental level and so on. To achieve success in banking sector, banks should offer service to their client that a minimum of meets or higher if exceeds their expectations, and also the gift study can offer some form of pointers to the policy manufacturers (managers) of banks to require acceptable call to boost the standard of services in Indian banking. Open segment banks like PNB fall much beneath the impression of their clients on all components of administration quality. Private Banks, for example, HDFC bank are surpassing the impression of their clients on all components of administration quality.

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## **Behavioral aspects of Sales Staffs and its Impact on Integrated Marketing Communications of the Firms**

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### **About the Author/s**



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### **Abstract**

The purpose of this paper is to analyze the link between the behavior of the salesperson at the point of sales and its impact on the overall integrated marketing communication of the firm. It reviews the variables like behavior traits, skill-sets and moralistic approach of the sales person at Point of Sales (POS). It also analyses the causes for which Lead generation is not the sole factor contributing to the revenue and closing of the sales deal at the end channel. There has been a significant relationship observed between control by organization and the performance of the salesperson where perceived organization support through training and guidance has a visible impact. Understanding the management control–POS relationship provides important insights for sales managers attempting to increase desired salesperson behaviors. It also analyzes the extent to which contact personnel trust their supervisors positively influence their willingness to participate in strategic activities. It examines one-on-one relationships between customers and their sales associates on a deeper level considering how much understanding they have between them and how much connect they have developed, which is referred to as relationship selling to differentiate it from relationship marketing, using a qualitative research approach. The impact of perceived salesperson listening behavior on relationship outcomes can be observed significantly on the long-term relationships from the works that have been done earlier. The paper also tries to examine the relationship between performance and specific abilities conceptually related to interpersonal persuasion and indicates that effectiveness in sales interactions is related to the salesperson's ability to develop accurate impressions of customer beliefs about product performance, the salesperson's ability to use these impressions in selecting influence strategies and the salesperson's ability to detect the impact of influence strategies and make adaptations.

**Keywords:** Integrated Marketing Communications; IMC; POS; Behavior Traits; Training; Product Performance; Strategy;

On the basis of preceding literature, this paper represents the link between the behavior of the salesperson at the point of sales and its impact on the overall integrated marketing communication of the firm. It reviews the variables like behavior traits, skill-sets and moralistic approach of the sales person at Point of Sales (POS). These variables are selected according to the previous theories, conceptual, and theoretical models which determine the behavior of sales person.

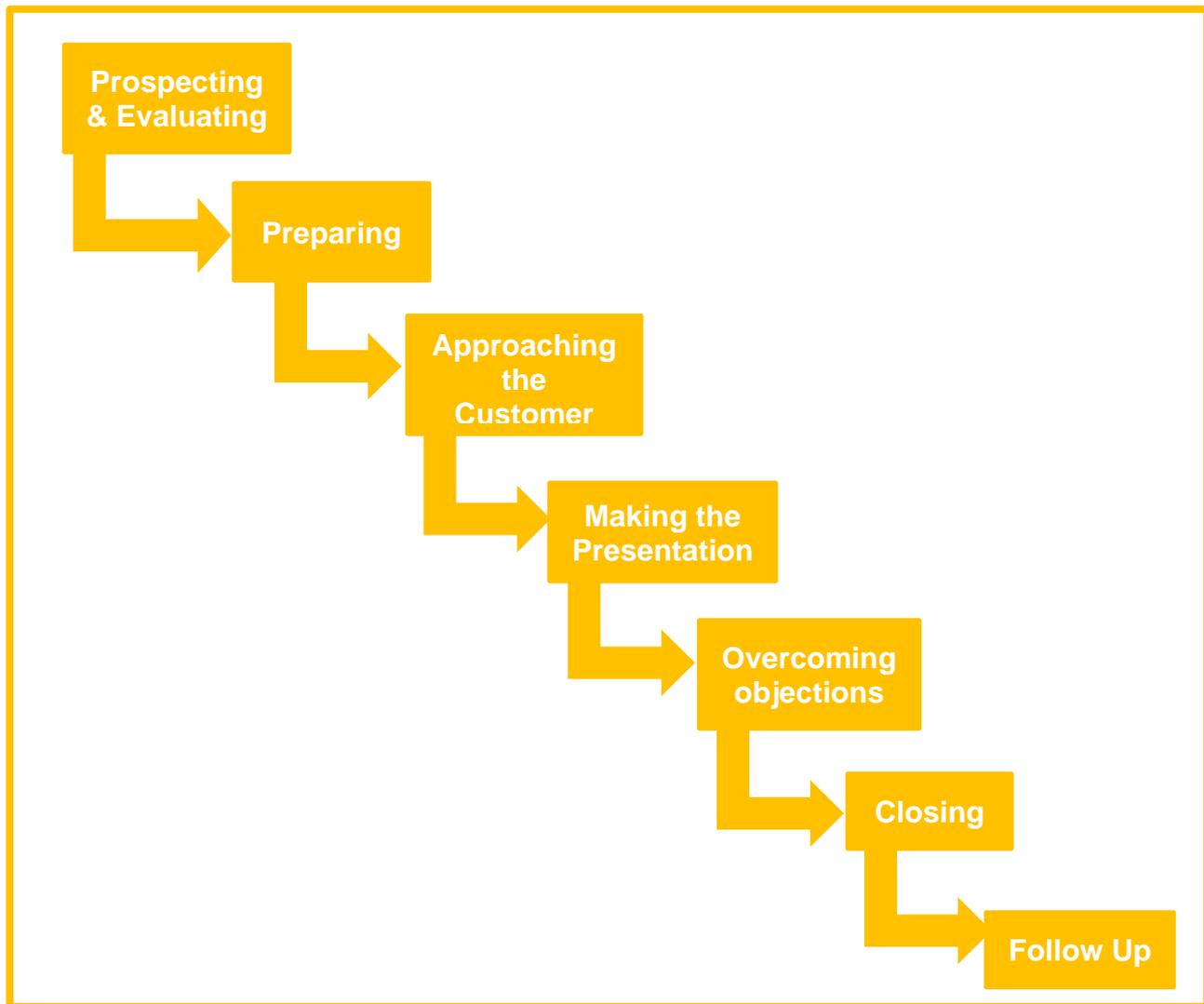
A comprehensive review and survey of related literature forms an important part of research. Literature review is the written and systematic summary of the research that summarizes the background and context of the research. It summarizes, interprets and critically evaluates existing literature in order to establish current knowledge of a subject. It also shows the gap between the researcher's curiosity and knowledge of the subject area. It verifies that the work on the topic has not been already done. Thus, we present the behavioral aspects of sales staffs which have an impact on integrated marketing communication as follows:

**Follow up of Sales lead**

Smith et al. (2006) attempts to fill the gap in literature by adding new dimensions that focuses on defining the role of behavioral aspect of salesperson which determine sales, resale or further recommendation. Firstly, we examine the various components of integrated marketing communication and its interdependence on aspects of sales of the firm.

Secondly, the study presents the consistent disconnect between marketing and sales. This disconnect is examined in detail which could prove to be detrimental. Plethora of leads generated by the effective market campaign can be made futile by poor follow up from the sales up front (Smith et al., 2006) Though marketing and sales function have similar objective of contributing to the revenue of the firm, dissonance has been observed leading to incomplete utilization of the resources. The paper analyses the causes for which Lead generation is not the sole factor contributing to the revenue and closing of the sales deal at the end channel playing an important role.

Both the function in most of the organizations are often at odds even though they have a common goal. The conflict arises considering Marketing complains of poor lead follow-up by sales, and in turn, sales criticizes about the quality of leads generated by marketing team. This disconnect can be harmful; high lead volumes generated through effective marketing campaigns could hurt downstream sales because of wasted effort on poorly qualified leads and/or delays in sales follow-up resulting from constrained capacity of sales team.



**Source:** Traditional stages of selling by Pickton and Broderick (2005), “*Integrated Marketing Communication*”, Second Edition, Prentice Hall

To evaluate the revenue and profit inferences of coordinated communications efforts at the marketing–sales interface, numerous models have been developed like a three-stage model that captures the effects of sequential marketing/sales communications on lead generation, appointment conversion, and sales closure. The results, which are based on a collaborative effort with a large home improvement retailer, suggest a complex interplay among marketing efforts (multiple media that generate leads), delays in follow-up (time lag between inquiry and sales force contact), and sales efficiencies (appointment and sales conversion). The findings underscore the impact of multimedia spending on the timing and effectiveness of subsequent communications, implying that improved internal collaboration between marketing and sales can offer significant upside potential for the firm.

#### **Sales Support and Training & Guidance**

There is a relationship between the impact of training provided by top management to its sales people and its subsequent execution. There has been a significant relationship observed between control by organization and the performance of the salesperson where perceived

organization support through training and guidance has a visible impact (Piercy et al., 2006). Increasing amount of company investment in its salesforces and salespeople (e.g., see Galea 2004), and the rising importance of effectively managing business to-business customer relationships (e.g., see Weitz and Bradford 1999), have directed the interest of scholars and executives in methods toward the objective of achieving better salesperson performance. Many firms have seen a change in resource allocation pattern from marketing to sales as company seeks sales as primary function to garner revenue (Webster, Malter, and Ganesan 2003).

In 1978, the average expenditure for training each industrial salesperson in USA was over \$15,000 (Sales and Marketing Management 1979). Even though annual sales training expenses are well over one billion dollars, there is only limited knowledge about which selling behaviors are most effective in customer interactions. A conceptual idea for exploring this issue is presented in this study. The initial classification is based on whether the variable relates to the salesperson's macro environment or micro environment. Macro environmental variables include territorial characteristics such as potential and workload and the level of effort expended by the salesperson in covering the territory.

However, the objective of the framework presented in this paper is to delineate factors related to the effectiveness of salespeople in influencing customers during Barton A. Weitz is Assistant Professor, Graduate School of Management, University of California at Los Angeles (Winter 1981). Thus, the study focuses on the effectiveness of sales behaviors in the microenvironment of the sales interaction. Variables related to effectiveness in the microenvironment are further classified into those related to the sales situation and those related to the salesperson. Variables related to the salesperson's effort during customer interactions are not treated in the framework.

The fundamental idea behind the framework is that effectiveness in sales interactions can be understood best by examining the interactions between sales behaviors, resources of the salesperson, the nature of the customer's buying task, and characteristics of the salesperson-customer relationship. This framework provides a mechanism for integrating previous research and a direction for future research. In the next section, the shortcomings of prior research on effectiveness in sales interactions are discussed. These shortcomings suggest the need for a contingency approach. After presenting the nature and applications of a contingency approach, the approach is expanded into a framework. The basic postulate of the framework is stated, constructs in the framework are defined, and a set of propositions. Propositions are supported by research in leadership, bargaining, social psychology, and personal selling.

### **Behavior Control**

#### ***a. Exercised by sales manager***

Behavior control, as exercised by sales managers, is expected to have a positive antecedent impact on POS. This relationship has also not been examined in prior research. The importance of sales manager behavior control lies in the logic that salespeople who believe their managers use collaborative management control (monitoring, directing, evaluating, and rewarding activities) are likely to believe that the organization is treating them favorably and supportively, leading to reciprocation by "paying back" through greater exercise of discretionary behavior such as organizational commitment behavior (OCB). Understanding the management control-POS relationship provides important insights for sales managers attempting to increase desired salesperson behaviors.

Beatty et al. (1996) mention that the participation of customer contact personnel in the strategy process is a largely unmapped area in both marketing as well as strategic management. Based on social exchange theory, and in particular, the notion of trust within this area of discussion, we examine the nature and scope of strategy participation exhibited by customer contact personnel. Exploring dyadic associations, we can find the extent to which contact personnel trust their supervisors positively influence their willingness to participate in strategic activities. It also explores other avenues of studies wherein we can poach more on the topic of how contact personnel can influence the sales action if he is involved in the strategic activities.

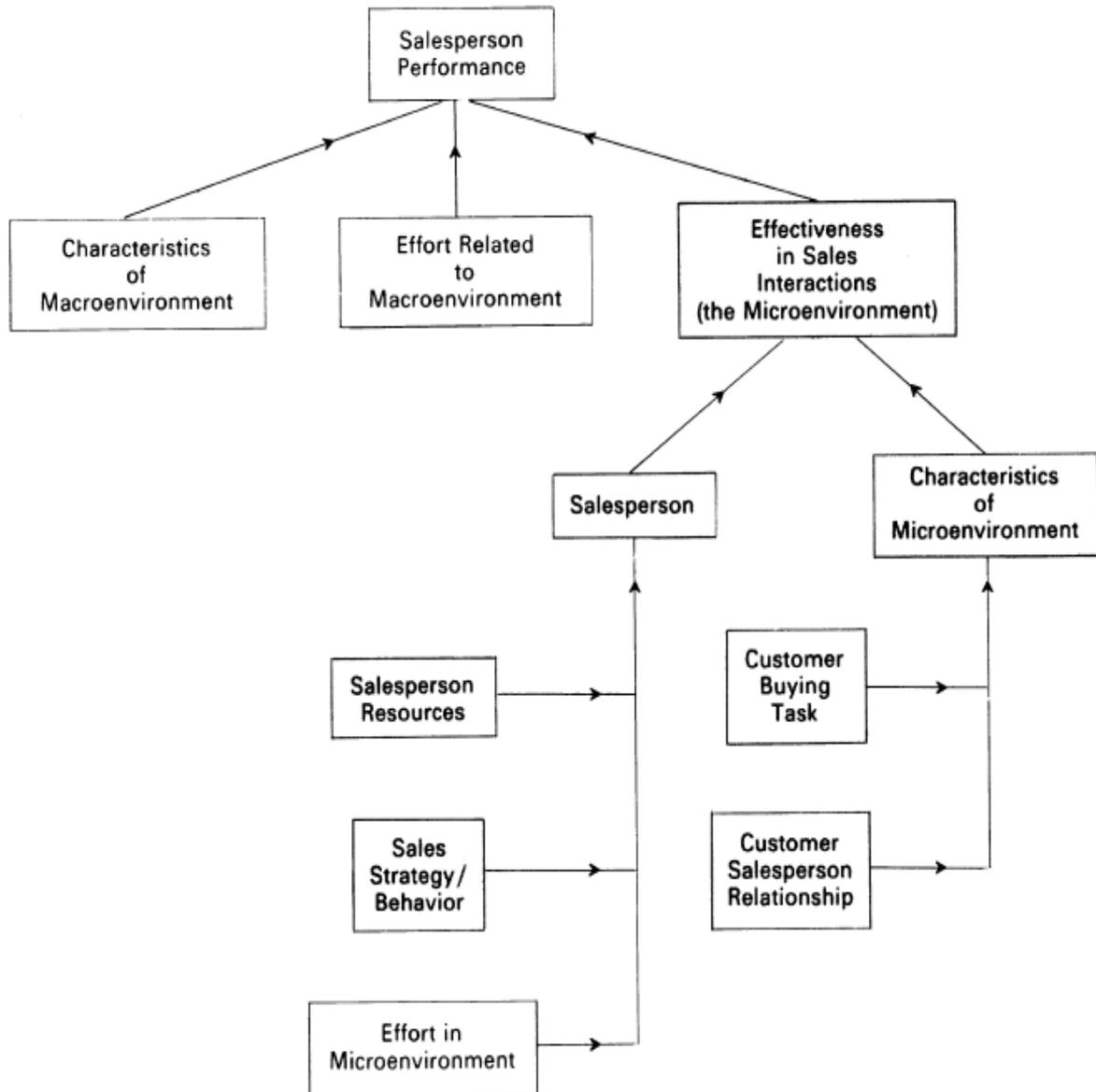
This is useful because not only it helps in using the insights that are accumulated from the customers directly and incorporate them in the firm's strategy but also it makes the contact personnel feel more valuable. More so ever, he will be willing to participate more actively in the actions which are direct results of the brainwork that has been done by him. This also could be an added incentive more employees to make him feel more valuable.

Furthermore, we found that communication and information sharing moderate the relationship between confidence and strategic happenings. Thus, a possible outcome for the involvement could be that the more contact personnel are involved in the strategic process, the more likely supervisors are to rate the contact person's selling performance as high.

***b. Exercised by salesperson***

**(i) Ethical Behavior**

Beatty et al. (1996) find out that while examining the role ethical of salesperson behavior plays in relationship selling emphasizes on four key findings that emerge from plethora of research available. First, ethical salesperson behavior is positively related to trust in the salesperson. Second, the effects of ethical salesperson behavior on buyer commitment and buyer behavior are completely mediated by this trust. Third, ethical salesperson behavior is most influential in driving desirable resource-based and social relationship returns, and least influential in driving desirable economic returns. Fourth, the effects of ethical salesperson behavior are moderated by buyer age such that they become significantly stronger as buyer age increases. Managerial and theoretical implications are discussed, and avenues for future research in the area are provided.



**Figure:** Variables related to salesperson performance, Journal of Marketing, Weitz (1981), “*Effectiveness in Sales Interaction: A Contingency Framework*”.

We examine one-on-one relationships between customers and their sales associates on a deeper level considering how much understanding they have between them and how much connect they have developed., which we refer to as relationship selling to differentiate it from relationship marketing, using a qualitative research approach. This study will explore observations of a successful group of retail sales associates and a set of their “call customers.”

Based on this data, we will be able to focus on following points: (1) commitment and orientation to customer service by senior management and their employees at leadership levels, as well as a desire for a relationship by the customer with their subsequent counterpart; (2) augmented personal service and team playing by employees towards the

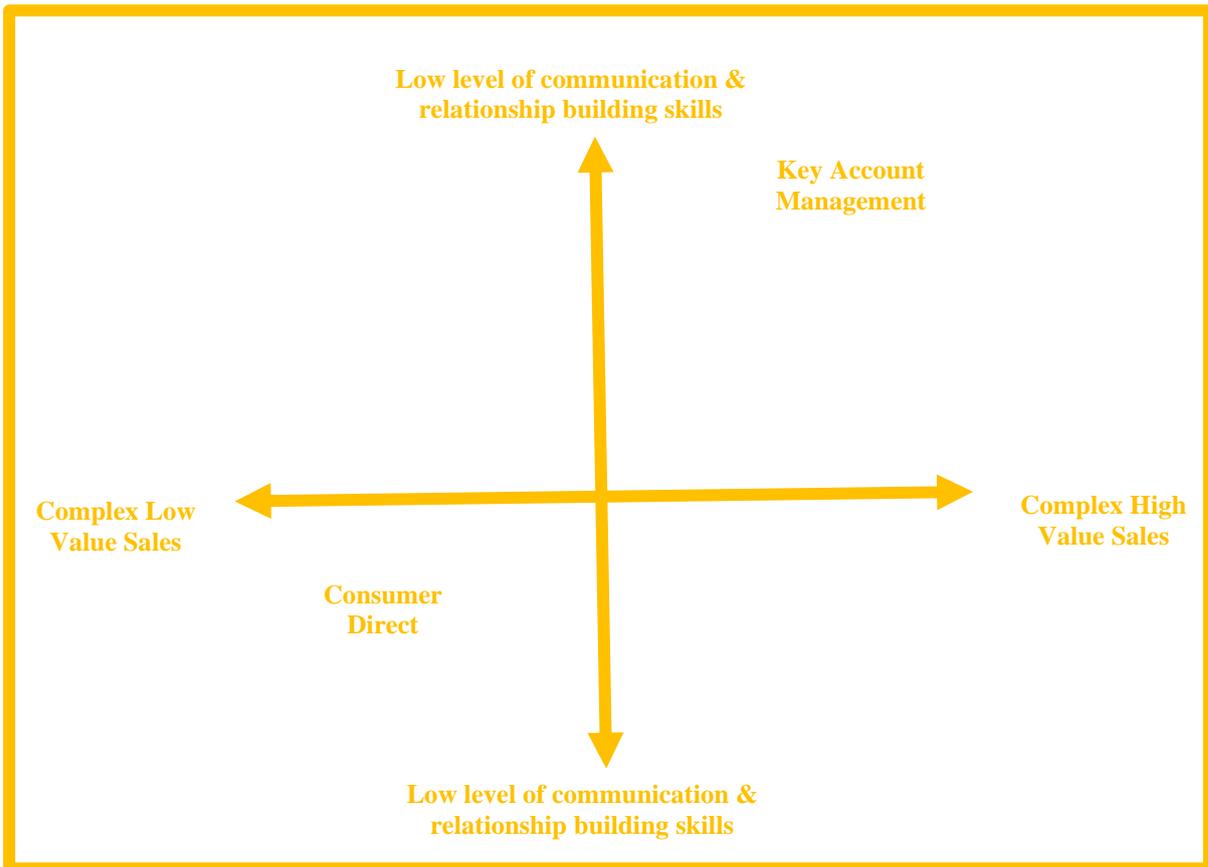
relationship building plays a crucial role; (3) repeat customer-employee interactions is mostly based on three traits developed over time and communication i.e. trust, friendship, and functionality; and (4) development of customer loyalty to the sales associate that is interacting with him and hence representative of firm in front of the customer, and employee reinforcement and faithfulness to the company and the firm under consideration (Beatty et al., 1996).

**(ii) Contact information**

Moving forward from participation of contact personnel in the strategic initiatives, there are other traits that are crucial for a sales personnel to be an effective point of contact when it comes to end sales. Listening to your customers is one of these most important traits. The impact of perceived salesperson listening behavior on relationship outcomes (Ramsey and Sohi, 1997) can be observed significantly on the long-term relationships from the works that have been done earlier.

A thorough understanding of how businesses gain and maintain long-term relationships with clients is critical in today's environment because sustainable business is devised from the long-term relationships that are being forged between client and the customer. This study develops a scale for salesperson listening behavior and investigates the impact of customers' perceptions of salespeople's listening behavior on trust, satisfaction, and anticipation of future interaction. The research will comprise of the various outcomes related to that listening is a higher-order construct composed of three dimensions: (a) sensing, (b) evaluating, and (c) responding.

When customers perceive a high level of listening behavior by a salesperson, it enhances their trust in the salesperson and leads to greater anticipation of future interaction. Implications and future research issues are discussed. Sensing about the customer's wants motives and needs could play a crucial role in the sales process. If the contact personnel is able to devise from the different attributes of the customer, it could greatly help in how is going to steer the conversation with the customer and probably will also have a great impact on the end outcome of the sales cycle. Once the sensing part is done, evaluating the attributes of customer and taking action is also important. Once he is thorough with the motives and requirements, he can use those insights to provide the customer with better service and increase the chances of sales process to have a positive outcome.



**Source:** Sales role by Pickton and Broderick (2005), *“Integrated Marketing Communication”*, Second Edition, Prentice Hall

Markets have been rapidly moving forward from traditional brick and mortar store towards online sales. This has wholly transformed the sales process in many of the sectors. This overhaul has led to new type of service standards that are perceived by the customer as well has had a significant impact on the expectations of the customer. As a new type of word-of-mouth information, online consumer product review is an emerging market phenomenon that is playing an increasingly important role in consumers' purchase decisions. From the different online marketing platforms that are available for one's perusal, number of options has increased considerably. Since, these online platforms lack the ability to provide the touch and feel experience that customer ask for, people rely on the experience of other users to provide some assurance.

This study argues that online consumer review, a type of product information created by users based on personal usage experience, can serve as a new element in the marketing communications mix and work as free “sales assistants” to help consumers identify the products that best match their idiosyncratic usage conditions. Examining these however would be more data reliant. However with recent advents in technology and Internet of Things and Artificial Intelligence becoming a widespread used technologies, it has become easier to gather data and use them for analysis. It will definitely transform one's understanding of how the contact between the customer and sales personnel is happening considering we are talking about virtual sales personnel.

This could variedly alter the odds of how the perception of customer changes and how these virtual sales personnel respond to the customer who behave differently in a significant manner. Apart from the traits of sales personnel, customer attributes will hold a key in the process. Since traditional traits are not involved in this, attributes like listening to the customer will no longer will be valid and a new approach will have to be designed to study the impact of virtual contact personnel.

This study will attempt to address several important strategic issues related to consumer reviews. First, we show when and how the seller should adjust its own marketing communication strategy in response to consumer reviews. It has been observed from previous studies that customers are more prone to give feedback in case negative reviews are observed, however positives are ignored more often. Despite this, the review information is sufficiently informative, the two types of product information, i.e., the seller-created product attribute information and buyer-created review information, will interact with each other. For example, when the product cost is low and/or there are sufficient expert (more sophisticated) product users, the two types of information are complements, and the seller's best response is to increase the amount of product attribute information conveyed via its marketing communications after the reviews become available.

However, when the product cost is high and there are sufficient novice (less sophisticated) product users, the two types of information are substitutes, and the seller's best response is to reduce the amount of product attribute information it offers, even if it is cost-free to provide such information. We can also derive precise conditions under which the seller can increase its profit by adopting a proactive strategy, i.e., adjusting its marketing strategies even before consumer reviews become available.

Second, we can identify product/market conditions under which the seller benefits from facilitating such buyer-created information (e.g., by allowing consumers to post user-based product reviews on the seller's website). Finally, we can also illustrate the importance of the timing of the introduction of consumer reviews available as a strategic variable and show that delaying the availability of consumer reviews for a given product can be beneficial on a long term basis. These key inputs can play a vital role in designing the role and attributes of virtual sales personnel and how it would be different from the attributes of sales personnel that deals with the customer in person.

### **(iii) Influence Behavior**

A stream of research has examined relationships between performance and the salesperson's resources and capabilities. Several studies have examined the relationship between performance and specific abilities conceptually related to interpersonal persuasion. These studies indicate that effectiveness in sales interactions is related to the salesperson's ability to develop accurate impressions of customer beliefs about product performance (Weitz, 1981); the salesperson's ability to use these impressions in selecting influence strategies (Weitz, 1981), and the salesperson's ability to detect the impact of influence strategies and make adaptations (Grikscheit and Crissey 1973).

The result indicates that the relationship between capabilities and performance, like the relationship between performance and behavioral predispositions, is quite inconsistent, and in some cases, even contradictory. In some cases these inconsistencies may be due to variations in methodology across studies. However, several studies have used the same methodology across different sales forces and reported inconsistent results (Dunnette and Kirchner 1960; Howells 1968; Mattheiss et al. 1977; Scheibelhut and Albaum 1973). Even

variables that can be assessed with high accuracy and reliability, such as age, education, and sales experience, are related to performance in some studies and unrelated in others.

Customer Characteristics-The Dyadic Approach, the results from prior research on sales behaviors, behavioral predispositions, and general salesperson capabilities have led to a growing interest in dyadic research approaches. While there are a wide variety of studies associated with the dyadic approach, the unifying theme of these studies is that characteristics of the customer as well as those of the salesperson are considered. This approach is consistent with a contingency approach because it suggests that effectiveness in sales interactions is moderated by or dependent upon characteristics of both the salesperson and the customer. Dyadic similarity studies have not demonstrated a meaningful relationship between similarity and effectiveness. Several correlational studies have either not supported the relationship (Doreen, Emery, and Sweitzer 1979) or found similarity explains a low percentage of the variance (Churchill, Collins, and Strang 1975).

In addition, the correlation studies (Churchill et al. 1975; Evans 1963; Riordan, Oliver and Donnelly 1977) have not controlled for the plausible rival hypothesis that customers who made purchases perceived that they were more similar to the salespeople than customers who did not make purchases (Davis and Silk 1972).

While experimental studies found that similarity is a significant factor in determining sales performance, it has not been as important as expertise (Bambic 1978; Busch and Wilson 1976; Woodside and Davenport 1974). Research exploring the effectiveness of dyadic similarity has not provided the new approach needed for studying effectiveness in sales interactions. These dyadic studies have focused on a single, static property and have not considered the interaction between sales behaviors and dyadic characteristics. The contingency framework presented in this paper expands upon the dyadic approach by describing the relationship between effectiveness, sales behaviors, and a variety of salesperson and customer characteristics.

Salesperson Behaviors while marketers have described salesperson orientations (Blake and Mouton 1970) or general sales approaches (Gwinner 1968), most empirical research on salesperson behaviors have considered micro behaviors such as the effectiveness of specific sales messages. Little though has been directed toward identifying underlying dimensions in which a salesperson's behavior can be assessed.

In the study we discuss in detail about some of these dimensions related to adapting to the Customer. The behavior of salespeople can be characterized by the degree to which they adapt their behavior to the interaction. At one extreme, salespeople are non-adaptive when they deliver the same "canned" presentation (Jolson 1975) to all customers. In contrast to this non-adaptive behavior, salespeople can engage in a unique behavior pattern oriented to each customer. Dimensions on which sales behavior can be adapted are discussed in following sections. It seems reasonable to assume that the effectiveness of influence bases, influence techniques, specific messages and formats, and the degree of control exerted varies across a salesperson's customers. Thus a salesperson could increase effectiveness in a specific interaction by altering behavior along the above mentioned dimensions (Weitz 1980).

Measures of adaptively in sales behavior have not been developed; however, there are some personality measures that indicate a predisposition to engage in adaptive behaviors. For example, one would expect dogmatism and authoritarianism to be negatively related to adaptively while tolerance for ambiguity would be positively related to adaptively. A

dispositional measure that appears to be closely related to adaptive behavior is self-monitoring. Snyder (1974) has developed a scale to measure the degree to which people monitor their environment and use these environmental cues to alter their behavior. One would expect that high self-monitors would be more adaptive in sales situations. Establishing a base of Influence. is another dimension of salesperson behavior which attempts to establish a base of influence.

Wilson (1975) suggests that salespeople need to develop source credibility and legitimacy during the initial stages of an interaction. Without such a base of influence, salespeople cannot effectively influence their customers. In a review of the use of influence bases in organizational setting, McCaU (1979) concluded that "the relevance of a given power base, the appropriateness of various tactics, and the likely impacts of power use are intimately linked with each other and with the situation at hand." (p. 205) Thus, given a set of possible influence bases (French and Raven 1959), salespeople need guidance as to which bases are most effective in specific circumstances. Propositions concerning variables that moderate the effectiveness of these influence bases are presented in the next section. Influence Techniques Used.

Salesperson behaviors can be classified in terms of the influence techniques used. Several studies have been directed toward defining and analyzing a wide variety of influence techniques (Capon and Swasy 1977; Falbo 1977; Spiro and Perreault 1979). These studies suggest that influence techniques can be classified using the following dimensions: (a) open/direct vs. closed/indirect and (b) business /product-related v. emotional/person-related. When open/direct influence attempts are used, the purpose of the influence attempt is not hidden. Closed influence techniques involve the use of deception and hidden purposes.

Product-related influence techniques are defined as business or task-oriented messages-information messages directed toward the product and the purchase decision. In contrast, emotional messages are directed toward the customer with the intent of appealing to psychological needs and improving customer-salesperson relations. Emotional messages attempt to reduce risks associated with the social consequences of the purchase decision, while product messages attempt to reduce risks associated with product performance (Newton 1967).

Influence techniques can also be classified by the target and format of the messages delivered. The target can be defined as the specific cognitive element, belief, or value toward which the message is directed. Message formats include comparative v. non-comparative messages and one-sided v. two-sided appeals. The final dimension of sales behavior to be considered is the extent to which the salesperson controls the sales interaction. This behavioral dimension is closely related to the dominant-submissive dimension proposed by Buzzota, Lefton, and Sherberg (1972), the salesperson-oriented dimension proposed by Blake and Mouton (1970), and the traditional salesperson behavior of using high or low pressure. The use of control or pressure is a method of aggressively directing the flow of the interaction toward making a sale. Several researchers have attempted to assess the degree of control exercised by salespeople by analyzing recordings of sales interactions (Willett and Pennington 1966, Olshavsky 1973).

Some insights into control behaviors of salespeople can be gained by examining leader control behaviors. Autocratic and "initiating structure" leader behaviors are associated with a high degree of leader control. In the context of a sales interaction, autocratic behavior is related to the use of high pressure tactics. Initiating structure behavior is related to the

salesperson aggressively structuring the customer's problem so that the solution involves purchasing the salesperson's product.

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## **A Review Of The Emerging Nanotechnology Applications In Medicine Treatment**

**Mrs. Sangita Gupta\***

**Abstract:** Current modalities of determination and treatment of different diseases, especially cancer have significant impediments, for example, poor affectability or specificity and Medicine toxicities separately. Fresher and enhanced techniques for cancer detection in light of nanoparticles are being produced. They are utilized as contrast agents, fluorescent materials, molecular research tools and Medicines with targeting antibodies. Paramagnetic nanoparticles, quantum dabs, Nano shells and Nano some are few of the nanoparticles utilized for diagnostic purposes. Meds with high dangerous potential like cancer chemotherapeutic Medicines can be given with a superior security profile with the utility of nanotechnology. These can be made to act particularly at the objective tissue by dynamic and additionally aloof means. Different modalities of therapy, for example, warm prompted removal of cancer cells by Nano shells and gene therapy are likewise being produced. This review discusses the different stages of nanotechnology being utilized as a part of various perspectives of medicine like diagnostics and therapeutics. The potential toxicities of the nanoparticles are likewise portrayed notwithstanding speculative plans, for example, responds and micro biomes. The safety of Nano medicine isn't yet completely characterized. In any case, it is conceivable that Nano medicine in future would assume an essential part in the treatment of human diseases and furthermore in improvement of ordinary human physiology.

**Keywords:** Nanotechnology, Applications, Medicine Treatment, diseases, limitations, improved, nanoparticles, cancer cells, therapeutics.

**Introduction:** Nano medicine includes use of nanotechnology for the benefit of human health and wellbeing. The utilization of nanotechnology in different areas of therapeutics has changed the field of medicine where nanoparticles of measurements running between 1 - 100 nm are outlined and utilized for diagnostics, therapeutics and as biomedical tools for research. It is presently conceivable to provide therapy at a sub-atomic level with the assistance of these apparatuses, in this way treating the disease and aiding investigation of the pathogenesis of disease. Conventional Medicines experience the ill effects of real constraints of unfriendly impacts happening because of non-specificity of Medicine action and absence of viability because of dishonorable or ineffectual measurements detailing (e.g., cancer chemotherapy and ant diabetic operators). Outlining of Medicines with more noteworthy level of cell specificity improves viability and limits adverse effects. Diagnostic methods with more noteworthy level of affectability help in early identification of the disease and give better prognosis. Nanotechnology is being connected widely to give focused on Medicine therapy, diagnostics, tissue regeneration, cell culture, biosensors and different devices in the field of molecular biology. Various nanotechnology stages like fullerenes, nanotubes, quantum dots, Nano pores, dendrites, liposomes, magnetic Nano probes and radio controlled nanoparticles are being developed.

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**Review Of Literature:** The major factors impacting the treatment outcome in a patient are the adequacy and safety profile of the Medicine all the more so when utilized for cancer chemotherapy. These Medicines have poor cell specificity and high lethality like bone marrow suppression, gastric erosion, hair loss, renal toxicity, cardiomyopathy, and a few impacts on other systems. Correspondingly treatment for diabetes faces challenges with the course of conveyance and deficient glycemic control. Accessibility of non-parenteral measurements types of insulin would be an achievement and improvement of a suitable Medicine delivery device can help in this approach. Much of the time, the affectability and specificity of different diagnostic methods as in radio imaging and different examines for discovery of harm are not sufficiently adequate for early identification and treatment.

**Nanotechnology And Medical Applications:**Development of fresher Medicine delivery frameworks in view of nanotechnology methods is being striven for conditions like cancer, diabetes, fungal infections, and viral infections and in gene therapy. The main advantages of this methodology of treatment are focusing of the Medicine and upgraded wellbeing profile. Nanotechnology has additionally discovered its utilization in diagnostic medicine as complexity operators, fluorescent colors and magnetic nanoparticles (Table 1).

**Table.1- Some nanoparticles used for medical applications**

Study phase	Product	Description	Use	Manufacturer
Preclinical	MRX 952	Nanoparticle preparation – to encapsulate camptothecin analogues	Tumours	IMA Rx Therapeutics
Preclinical	Targeted Nano Therapeutics (TNT) <sup>TM</sup> system	TNT with polymer coated iron oxide magnetic particle	Solid tumours	Triton Biosystems
Preclinical	AuroLase <sup>TM</sup>	Gold nanoshell	Head and neck cancer	Nanospectra Biosciences Inc
Preclinical	Dendrimer-Magnevist <sup>*</sup>	PAMAM dendrimer	MRI imaging agent	Dendritic Nanotechnologies Inc
Phase 1	VivaGel <sup>®</sup>	Dendrimer based microbicide gel	HIV prevention	Starpharma Pty Ltd
Phase 1	INGN 401	Nanoparticle formulation of tumour suppression gene FUS1	Lung cancer	Introgen Therapeutics Inc
Phase 1&2	Cycloset-Camptothecin – IT 101	β-Cyclodextrin polymer drug delivery system	Solid tumours	Calando Pharmaceuticals
Phase 2	VivaGel <sup>®</sup>	Dendrimer based microbicide gel	HSV prevention	Starpharma Pty Ltd
Phase 2	MRX 815	Nanobubble technology	Treatment of intravascular clot	IMA Rx Therapeutics
Phase 3	Combidex <sup>®</sup> / Ferumoxtran 10	Iron oxide nanoparticle	MRI contrast agent	AMAG Pharmaceuticals
Marketed	Abraxane <sup>®</sup>	Albumin bound taxane particles	Non small cell lung cancer	Abraxis Oncology
Marketed	AmBisome <sup>®</sup>	Liposomal preparation of amphotericin B	Fungal infection	Astellas Pharma US
Marketed	Doxil <sup>®</sup>	Liposomal doxorubicin	Ovarian tumour	Ortho Biotech

**Liposomes:**Liposomes discovered in mid 1960s were the first models of Nano scaled Medicine delivery devices. They are round nanoparticles made of lipid bilayer layers with a watery inside however can be Unilamellar with a solitary lamella of film or multilamellar

with multiple membranes. They can be utilized as viable Medicine delivery frameworks. Cancer chemotherapeutic Medicines and different toxic Medicines like amphotericin and hacking, when utilized as liposomal Medicines produce much better viability and security when contrasted with customary arrangements. These liposomes can be stacked with Medicines either in the watery compartment or in the lipid membrane. Usually water soluble Medicines are stacked in watery compartment and lipid soluble Medicines are joined in the liposomal membrane. The major limitation of liposome is its quick corruption and leeway by the liver macrophages, hence diminishing the length of activity of the Medicine it conveys. This can be decreased to a specific degree with the appearance of stealth liposomes where the liposomes are covered with materials like polyethylene which avoids of the liposome and their take-up by macrophages. Different methods for dragging out the dissemination time of liposomes are consolidation of substances like cholesterol, polyacrylamide lipids and high transition temperature phospholipids.

**Nano pores:** Nano pores composed in 1997 by Desai and Ferrari comprise of wafers with high density of pores (20 nm in diameter). The pores permit passage of oxygen, glucose and different items like insulin to go through. In any case, it doesn't allow immunoglobulin and cells to go through them. Nano pores can be utilized as devices to protect transplanted tissues from the host immune framework, in the meantime, using the benefit of transplantation.  $\beta$  cells of pancreas can be encased inside the Nano pore device and embedded in the recipient's body. This tissue sample gets the supplements from the surrounding tissues and in the meantime stays undetected by the immune system and consequently don't get rejected. This could fill in as a fresher methodology of treatment for insulin subordinate diabetes mellitus. Nano pores can likewise be employed in DNA sequencing. Brinton's group at Harvard University has been taking a shot at changed Nano pores that can separate DNA strands in view of contrasts in base pair sequences. Nano pores are additionally being produced with capacity to separate purines from pyrimidines. Further, fuse of electricity conducting electrodes is being intended to enhance longitudinal resolution for base combine distinguishing proof. Such a technique could read a thousand bases for every second per pore. These can be utilized for minimal effort high throughput genome sequencing which would be of extraordinary advantage for application of pharmacogenomics in Medicine development process.

**Nanotubes:** Carbon nanotubes found in 1991<sup>34</sup> are tubular structures like a sheet of graphite moved into a cylinder capped at one or the two finishes by a Bucky ball. Nanotubes can be single walled carbon nanotube (SWCNT) or multiwall carbon nanotube (MWCNT) in concentric design. Single walled nanotube has an internal measurement of 1-2 nm and multiwall nanotube has a diameter of 2-25 nm with 0.36 nm distance between layers of MWCNT. These change in their length extending from 1  $\mu$ m to a few micrometers. These are described by more prominent quality and solidness henceforth can be utilized as steady Medicine carriers. Cell specificity can be accomplished by conjugating antibodies to carbon nanotubes with fluorescent or radiolabelling. Passage of nanotubes into the cell may be mediated by endocytosis or by addition through the cell membrane. Carbon nanotubes can be made more solvent by fuse of carboxylic or ammonium gatherings to their structure and can be utilized for the vehicle of peptides, nucleic acids and different Medicine molecules. Indium-111 radionuclide named carbon nanotubes are being researched for killing cancer cells selectively.

An Amphotericin B nanotube has demonstrated expanded Medicine delivery to the inside of cells thought about to amphotericin B organization without nanotubes. The adequacy of amphotericin B nanotubes was more noteworthy as an antifungal specialist contrasted with amphotericin B alone and it was powerful on strains of fungi which are typically safe to amphotericin B alone. Further, there was lessened lethality to mammalian cells with amphotericin B nanotubes. The capacity of nanotubes to transport DNA across cell membrane is utilized as a part of studies including gene therapy. DNA can be joined to the tips of nanotubes or can be consolidated inside the tubes. Prato et al indicated more noteworthy articulation of the  $\beta$  galactosidase marker gene through nanotubes compared to exchange of naked DNA. This gives the preferred standpoint of non-immunogenicity in difference to viral vectors utilized for gene transfer. Gene silencing contemplates with little interfering RNA (siRNA) have been done as a methodology of cancer therapy where tumor cells will be specifically adjusted. Functionalized single walled carbon nanotubes can be utilized with siRNA to hush focused on gene expression.

**Nano shells:** Nano shells were developed by West and Halas<sup>45</sup> at Rice University as a new modality of targeted therapy. Nano shells consist of nanoparticles with a core of silica and a coating of thin metallic shell. These can be targeted to desired tissue by using immunological methods. This technology is being evaluated for cancer therapy. Hirsh et al used Nano shells which are tuned to absorb infra-red rays when exposed from a source outside the body to demonstrate the thermo ablative property of Nano shells. The Nano shells when exposed to NIR region of the electromagnetic spectrum get heated and cause destruction of the tissue. This has been studied in both in vitro and in vivo experiments with HER 2 expressing SK-BR-3 human breast carcinoma cells. The control cells did not lose their viability even after treatment with Nano shells with non-specific anti IgG or PEG and NIR ablation.

Nano shells can also be embedded in a hydrogel polymer containing the Medicine. After directing the Nano shells to the tumour tissue by immunological methods, with an infrared laser, these can be made to get heated up, melting the polymer and releasing the Medicine at the tumour tissue. Targeting the Medicine release avoids the toxicity of cancer chemotherapy Medicines. Nano shells are currently being investigated for micro metastasis of tumours and also for treatment of diabetes. Nano shells are also useful for diagnostic purposes in whole blood immunoassays. Gold Nano shells can be coupled to antibodies and the size can be modulated so that it responds to NIR wavelength, which has the ability to penetrate whole blood specimens. With this method it is possible to detect immunoglobulins at a concentration range of Nano grams per millilitre in plasma and whole blood.

**Nano bubbles:** Cancer therapeutic Medicines can be incorporated into nanoscale bubble like structures called as Nano bubbles. These Nano bubbles remain stable at room temperature and when heated to physiological temperature within the body coalesce to form microbubbles. These have the advantages of targeting the tumour tissue and delivering the Medicine selectively under the influence of ultrasound exposure. This results in increased intracellular uptake of the Medicine by the tumour cells. It also provides an additional advantage of enabling visualisation of the tumour by means of ultrasound methods. Rapaport et al have demonstrated the utility of Nano bubbles in delivery of Medicines like doxorubicin based on in vitro and in vivo experiments using breast cancer cells MDA MB231 and mice with breast cancer xenograft respectively. On administration of Nano bubble loaded doxorubicin, these reach the tumour tissue through leaky vasculature and get accumulated at the site of tumour. This is followed by formation of microbubbles by coalescing of Nano

bubbles which can be visualized by ultrasound techniques. When the site is focused with high intensity focused ultrasound (HIFU), it causes disruption of the microbubbles resulting in release of the Medicine. The microbubbles retained the Medicine in a stable state until stimulated by HIFU. This results in attainment of higher levels of Medicine in the target cells and hence reduced toxicity and increased efficacy. This method needs further exploration for its utility in treatment of various malignancies. Liposomal Nano bubbles and microbubbles are also being investigated for their role as effective non-viral vectors for gene therapy.

**Nano-Technology In Gene Therapy:** Gene therapy is a more up to date methodology of approach for treatment of numerous genetic disorders including diabetes mellitus, cystic fibrosis, and alpha 1 antitrypsin inadequacy. Viral vectors utilized for gene transfer have the impediments of security concerns and incitement of immune system with generation of antibodies against the viral vectors. Further, bare DNA cannot cross the contrarily charged cell membrane as these are likewise negatively charged. Thus, there is a requirement for different methods of exchange of genetic material such as nanoparticle based gene therapy. Liposomes measuring less than 100 nm can be utilized for conveyance of genetic material into cells. Liposomes incorporated with polyethylene glycol and galactose target liver cells effectively because of their fast take-up by liver Chuffer cells. Hence gene therapy might be attempted with such liposomal nanoparticles for different liver disorders, for example, Wilson's disease and inherited hemochromatosis. Niu et al utilized human insulin gene in chitosan nanoparticles to transfect STZ diabetic rat through gastrointestinal tract. They found a noteworthy abatement in fasting blood glucose level, increment in plasma insulin levels and articulation of human insulin gene mRNA in the investigation rats. This investigation may prompt the improvement of a more up to date methodology of therapy for sort 1 diabetes mellitus. A "mixture Nano device" outlined by laborers of Northwestern University and Argonne National Laboratory comprises of a titanium dioxide (TiO<sub>2</sub>) semiconductor nanoparticle of measurement 4.5 nm connected covalently to oligonucleotide DNA. The oligonucleotide sequence can guide the half breed Nano device to the comparing DNA segment inside the cell nucleus. At the point when fortified with light or X beams, TiO<sub>2</sub> incites nucleic acid endonuclease which separates off the particular DNA fragment. This gadget is yet to be tried in a laboratory model. In any case, it might have a potential utility in treatment of different malignancies in the future.

**Regulatory Challenges With Nano Medicines:** Regulatory issues assume a noteworthy part in the development of Nano formulation Medicines. These incorporate, the kind of Nano Medicine created and the different administrative necessities that the makers must take after amid the assembling of Nano Medicines. A Nano formulation of a Medicine which depends on a formerly approved Medicine in micro formulation can experience a shorter endorsement pathway by methods for contracted new Medicine application if bioequivalence can be exhibited to its micro formulation Medicine. However, if bioequivalence cannot be illustrated, it would require endorsement of the considerable number of stages of new Medicine application. Further, when a Nano Medicine is designed as another chemical entity, the assessment technique turns out to be more stringent.

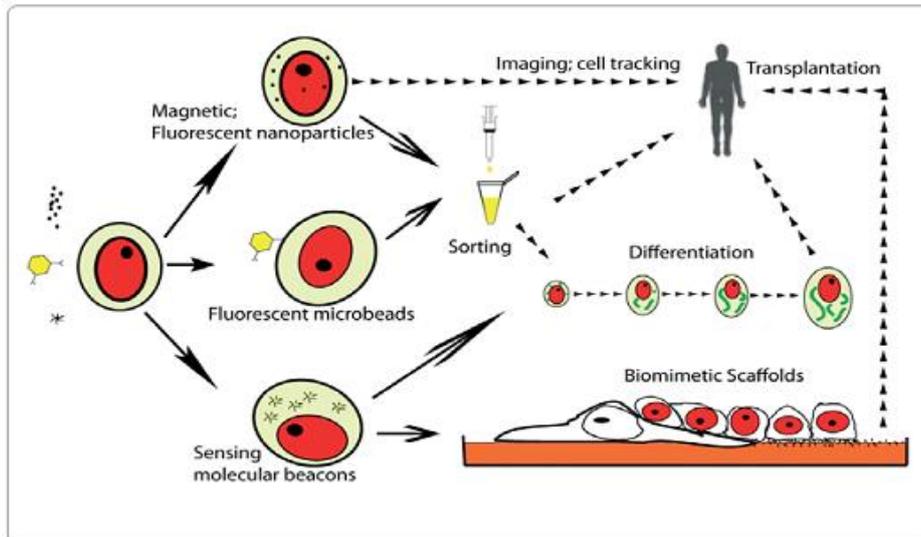
Nano Medicinemanufacturers must consent to FDA's Current Good Manufacturing Practices (CGMP) and Quality System Regulations (QSR). Noncompliance with these regulations would warrant authorization activities by the FDA. For example, 21 CFR 211.25 of FDA's CGMP requires that the faculty associated with the manufacturing process, in giving

preparing to the workers and the staff directing the manufacturing process have satisfactory training, education and experience. Further, the preparation must be led at satisfactory frequency and there must be sufficient number of qualified staff for the relegated obligations. ANanoMedicine manufacturer must contribute significant measure of financial resources to have such qualified faculty in the working unit. Maintenance of hardware for manufacture of Nano Medicines and control of pollution are additionally administrative necessities for manufacturers. TheMedicine products are refined by the utilization of channels and CGMP requests that the channels don't release fibers. Be that as it may, when liquid filtration is utilized, Nano Medicinemanufacturers will not have the capacity to agree to CGMP; since the littlest filtration level accessible is around 15 nm and Nano Medicines could be at the scope of 5 to 6 nm long. The FDAcenters in particular, the Center for Medicine Evaluationand Research (CDER), the Center forDevices andRadiological Health (CDRH) and the Center for Biologics Evaluationand Research (CBER) regulate Medicines, devices, andbiologics respectively and are in charge of managing Nano medical products.FDA arranges medicinal products as Medicine, device or biologics according to their essential method of activity to allot middle for their primary jurisdiction amid the evaluation process. In the event of a Nano Medicine it is hard to order it as a Medicine, device or biologics since it has a tendency to have a blend of the above. Thus, the assignment of the Center winds up noticeably troublesome. Further, the Medicine has to go through every one of the Centers of FDAowing to its complexity.This result in more noteworthy day and age for endorsement of the Medicine The staff offFDA should likewise be adequately instructed and prepared in nanotechnology in the field of medicine toevaluate NanoMedicine products.

### **Nanotechnology In Health And Medicine**

Even today various disease like diabetes, cancer, Parkinson's disease, Alzheimer's disease, cardiovascular diseases and multiple sclerosis as well as different kinds of serious inflammatory or infectious diseases (e.g. HIV) constitute a high number of serious and complex illnesses which are posing a major problem for the mankind. Nano medicine is an application of nanotechnology which works in the field of health and medicine. Nano-medicine makes use of nano materials, and nano electronic biosensors. In the future, nano medicine will benefit molecular nanotechnology. The medical area of nano science application has many projected benefits and is potentially valuable for all human races. With the help of nano medicine early detection and prevention, improved diagnosis, proper treatment and follow-up of diseases is possible. Certain nano scale particles are used as tags and labels, biological can be performed quickly, the testing has become more sensitive and more flexible. Gene sequencing has become more efficient with the invention of nano devices like gold nano particles, these gold particles when tagged with short segments of DNA can be used for detection of genetic sequence in a sample. With the help of nanotechnology, damaged tissue can be reproduced or repaired. These so called artificially stimulated cells are used in tissue engineering, which might revolutionize the transplantation of organs or artificial implants. Advanced biosensors with novel features can be developed with the help of Carbon nano tubes. These biosensors can be used for astrobiology and can throw light on study origins of life. This technology is also being used to develop sensors for cancer diagnostics. Though CNT is inert, it can be functionalized at the tip with a probe molecule. Their study uses AFM as an experimental platform.

- i. Probe molecule to serve as signature of leukemia cells identified.
- ii. Current flow due to hybridization will be through CNT electrode to an IC chip.
- iii. Prototype biosensors catheter development.



**Figure 1: Nanotechnology applications in stem cell biology and medicine**

Nanotechnology has made excellent contribution in the field of stem cell research. For example, magnetic nanoparticles (MNPs) have been successfully used to isolate and group stem cells. Quantum dots have been used for molecular imaging and tracing of stem cells, for delivery of gene or Medicines into stem cells, nano materials such as carbon nano tubes, fluorescent CNTs and fluorescent MNPs have been used. Unique nanostructures were designed for controllable regulation of proliferation and differentiation of stem cells is done by designed unique nano structures. All these advances speed up the development of stem cells toward the application in regenerative medicine [3]. The recent applications of nanotechnology in stem cell research promises to open new avenues in regenerative medicine. Nanotechnology can be a valuable tool to track and image stem cells, to drive their differentiation into specific cell lineage and ultimately to understand their biology. This will hopefully lead to stem cell-based therapeutics for the prevention, diagnosis and treatment of human diseases [4]. Nano devices can be used in stem cell research in tracking and imaging them. It has its applications for basic science as well as translational medicine. Stem cells can be modulated by mixing of nano carriers with biological molecules (Figure 6). Nano devices can be used for intracellular access and also for intelligent delivery and sensing of biomolecules. These technologies have a great impact in stem cell microenvironment and tissue engineering studies and have a great potential for biomedical applications [5].

**Conclusion:** Although the desires from nanotechnology in medicine are high and the potential advantages are interminably enrolled; the security of Nano medicine isn't yet completely characterized. Utilize of nanotechnology in medical therapeutics needs sufficient assessment of its hazard and wellbeing factors. Notwithstanding, it is conceivable that Nano medicine in future would assume a vital part in treatment of human diseases and furthermore in improvement of ordinary human physiology. With concurrent application of nanotechnology in different fields, its utility is probably going to broaden promote into diagnostics, molecular research techniques and devices. Nano materials have expanded surface region and Nano scale impacts, henceforth utilized as a promising apparatus for the

headway of Medicine and gene delivery, biomedical imaging and diagnostic biosensors. Nano materials have novel physicochemical and biological properties when contrasted with their larger counterparts. The properties of Nanomaterials can incredibly impact their connections with biomolecules and cells, because of their exceptional size, shape, chemical composition, surface structure, charge, dissolvability and agglomeration. For example, nanoparticles can be utilized to create exceptional images of tumor destinations; single walled carbon nanotubes, have been utilized as high-productivity conveyance transporters for biomolecules into cells. There is a brilliant future to nanotechnology, by its converging with other technologies and the consequent development of perplexing and inventive hybrid technologies. Biology based technologies are interweaved with Nanotechnology is as of now used to control genetic material, and Nano materials are now being assembled utilizing biological components. The capacity of Nanotechnology to design matter at the littlest scale is altering zones, for example, information technology subjective science and biotechnology and is prompting new and interlinking these and different fields. By additionally look into in Nanotechnology; it can be helpful for each part of human life. Medicine, regenerative medicine, stem cell research and nutraceuticals are among the main parts that will be changed by Nanotechnology innovations.

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## **Risk And Return Analysis Of Stocks In India: A Study Of Pharmaceutical Industry**

### **SMRITI\***

#### ***Abstract***

"Higher the Risk, Higher the profit"

Every economy needs savings and investment as a fuel for its smooth functioning. There are lots of investment avenues that are available to park the surplus funds and its conversion into a more profitable bundle. One of such alternative is the investment of funds in the financial instruments issued by various industries in the stock market. A potential investor invests his funds in the market on the basis of a critical risk return analysis. So the present paper will focus on the risk and return analysis of the selected stocks of pharmaceutical industry and correlation analysis of the returns of the selected stocks with benchmark index. Monthly data have been used for 4 years i.e. 2015-2018. The research reveals that the returns of the Piramil Enter were the highest and the total risk of the Divis Labs was the maximum. Systematic risk of the Piramil Enter was also the highest and there was a positive correlation between the returns of the selected stocks and BSE Sensex.

**Keywords:** Risk, Return, Investment, Pharmaceutical, Benchmark.

#### **Introduction**

Every market is dependent upon the mobilization of funds for its growth and development. Stock exchange is the most desirable place for the investment of surplus savings held by any investor. But before investing their precious amount in any stock investor must go for risk return analysis to be sure and secured regarding his investment. Stocks of various industries are listed and trade in a stock exchange and now a day's pharmaceutical sector is the most lucrative one. Pharmaceutical industry plays a very crucial role in terms of economic and social inclusion and growth of this sector leads to not just an increment in national income and GDP but it will also have a forward multiplier effect for social well being also. Investor is said to be rational and make decisions according to risk and return analysis of the stocks. Mostly the investment is directly proportional to the risk bearing capacity of the investor and their objectives. The investors who want regular returns with less risk will have some different bundle of stocks in his basket in comparison to the one who can bear high risk and want higher returns. Today, Tailor-made portfolios are constructed on the basis of their preferences in terms of returns and risk bearing. So in order to add more securities, an investor should analyze them and it is the central theme of this paper.

#### **Literature Review**

1. **Prameela S. Shetty and Devaraj K. (2017)** analyzed selected group stock listed on BSE of Indian Pharmaceutical industry on the basis of their returns and risk over the year 2011-2015 and on the basis of Alpha and Beta value they have depicted the market volatility and investor's preference. Further the returns of the selected stocks over the period are very good and can be varied as preference according to the risk bearing capacity of the investor.

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2. **M. Mutthu Gopalakrishnan and Amal Vijay AK (2017)** analyzed the equity shares of NSE listed ten pharmaceutical companies of India for the period of 2012-17 and found that the mean return of all the companies is negative and there is high degree of correlation exists between the selected stocks and Nifty 50.

### Statement of the problem

Country's economic development is dependent upon the growth of its industries and there are certain industries which are even more significant due to their social relevance, one of them is pharmaceutical industry. So the major concern of this paper is to analyze whether the stocks of this industry are performing better than the market or not.

### Objectives of the study

- To analyze risk and return of selected stocks and compare it with market index.
- To study the relation of selected stock returns with the returns of market index.

### Research Methodology

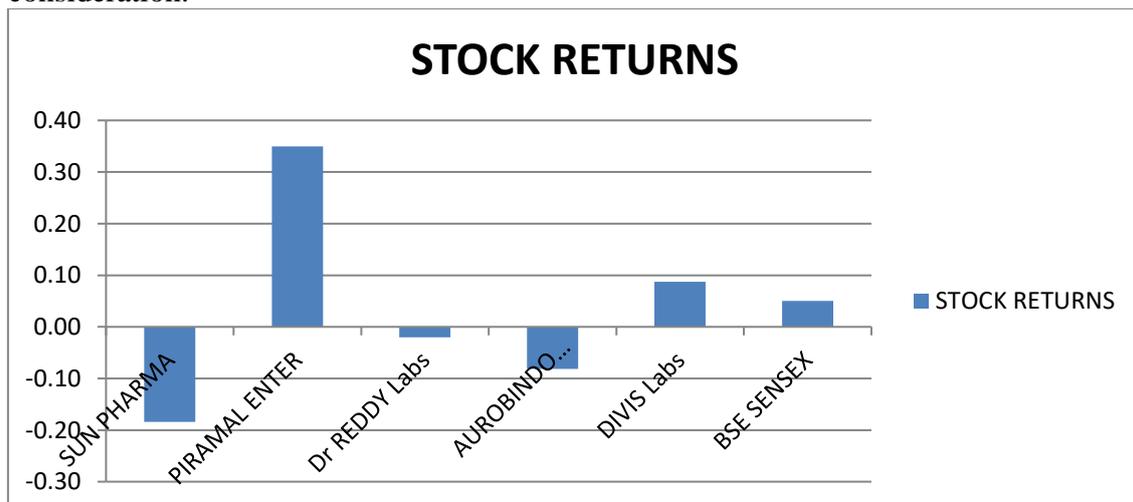
In the present paper stocks of top five pharmaceutical companies have been selected on the basis of market capitalization i.e. Sun Pharma, Piramal Enter, Dr Reddy Labs, Aurobindo Pharm and Divis Labs. Listed on BSE have been taken into consideration and BSE Sensex have been used as the benchmark index. Secondary data of monthly stock prices have been taken from the official website of BSE for 4 years i.e. 2015-2018 have been used for the study. Tools like Average returns, Standard deviation, Beta and Correlation analysis have been used for this study.

### Analysis and Interpretation

1. To analyze risk and return of selected stocks and compare it with market index.

#### • Analysis of Stock Returns

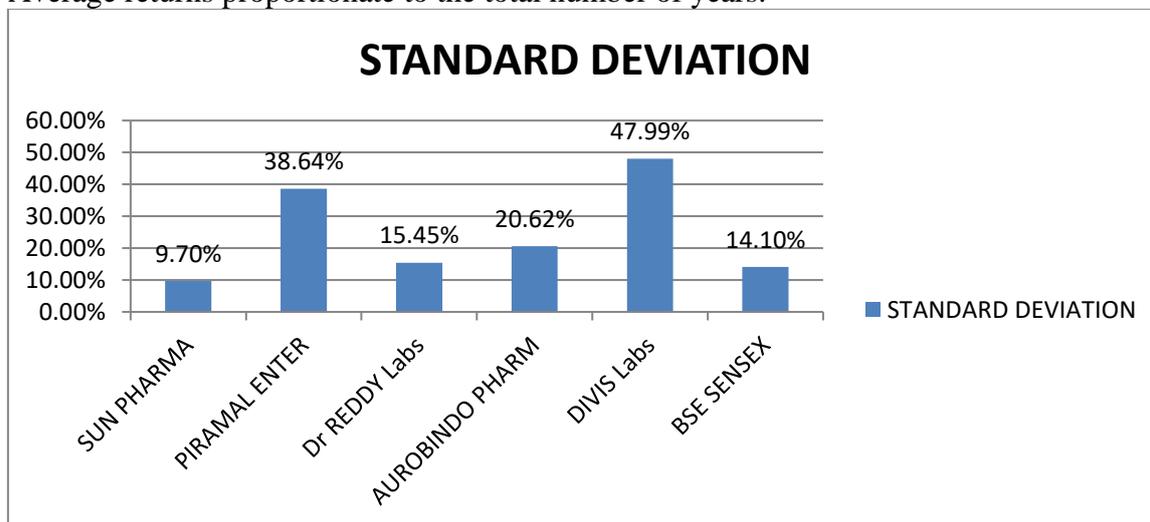
Returns of the selected five pharmaceutical stocks are depicted below. Returns are calculated as the Difference between the opening and closing price in proportion to original price. The average annual returns of each stock from the year 2015-18 have been taken into consideration.



It has been analysed from the above bar diagram that returns of the Piramal Enter limited were the highest followed by Divis Labs as compared to other stock as well as BSE Sensex. Further the returns of Dr Reddy Labs, Aurobindo Pharm and Sun Pharma were negative.

• **Analysis of Total risk of Stocks**

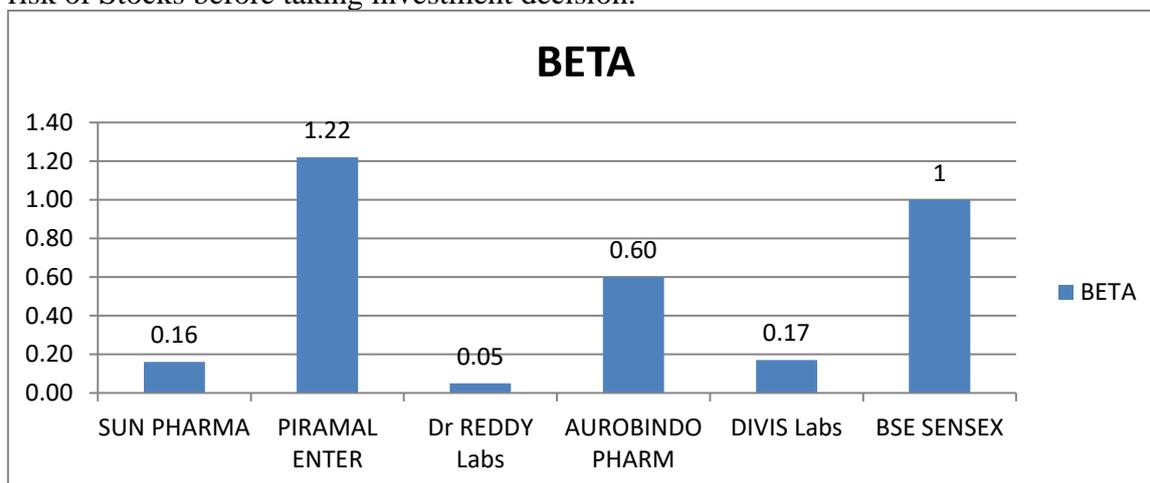
Selected stocks are analysed on the basis of the total risk as denoted by standard deviation and standard deviation is calculated as square root of deviation of actual returns from the Average returns proportionate to the total number of years.



It has been analysed from the above bar diagram that the total risk of Sun Pharma was the minimum in comparison to all other stocks as well as BSE Sensex. Whereas Divis Labs was having the highest risk followed by Piramal Enter, Aurobindo Pharm and Dr Reddy Labs.

• **Analysis of stocks on the basis of systematic risk**

Risk is basically classified as Systematic risk and unsystematic risk, former is uncontrollable whereas latter is controllable. This justifies the fact that investor must consider systematic risk of Stocks before taking investment decision.

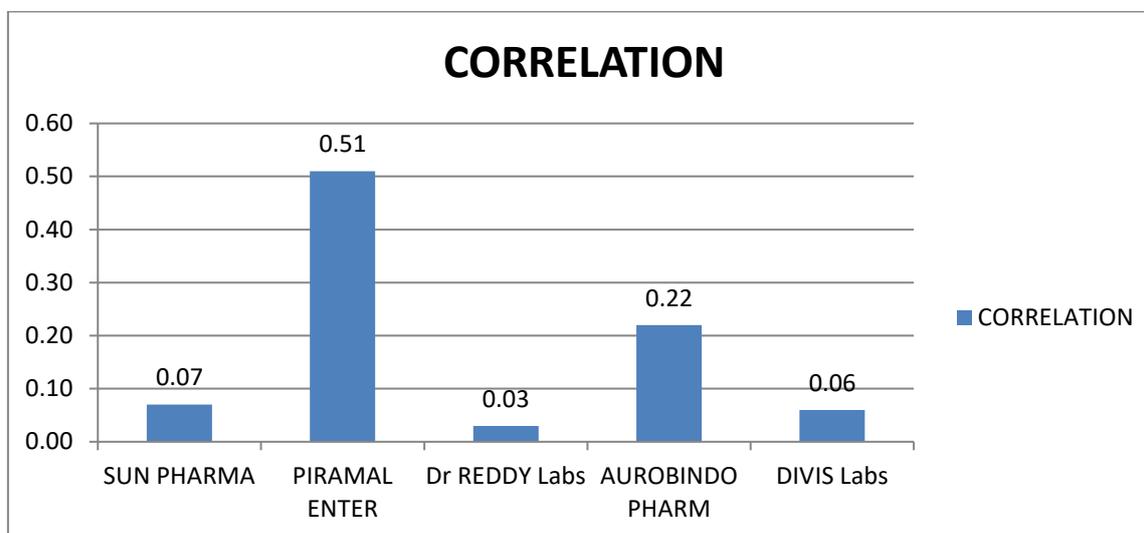


It has been analysed from the above bar diagram that Dr Reddy Labs had the minimum systematic risk where as Piramal Enter had the highest systematic risk followed by Aurobindo, Divis Labs and Sun Pharma and all the stocks except Piramal Enter had less volatility as compared to BSE sensex.

2. To study the relation of selected stock returns with the returns of market index.

• **Correlation Analysis of stocks and BSE Sensex**

The correlation analysis is done to analyze the interrelationship between the stock returns and the bench mark BSE Sensex.



The above bar diagram discloses that though there was a positive correlation between the two but the responsiveness is of low to moderate degree. Piramal Enter stated moderate degree of positive correlation followed by Aurobindo Pharm, Sun Pharma, DivisLabs and Dr Reddy Labs.

### Conclusion

Hence in a nutshell, it can be said that for any investor risk and return analysis plays an utmost significant role because it helps them to recognize the riskier and the fruitful stocks among the all available for investment. Market is said to be volatile in nature and it's volatility brings risk and make the returns endangered. So, it becomes the prior requisite for any investor to analyze the various components of risk and their impact on the probable returns. Risk and returns are the two poles which can act either as an opportunity or as a threat for investors and there analysis will act as a tool for savior to the investors.

### Suggestions

- As there is a basic rule " Higher the risk, higher the returns". In accordance to this rule Piramal Enter limited should be the appropriate stock for investment for the risk takers because it offers the highest return but that too with the highest risk.
- For the moderate risk takers Divis Labs can be appropriate because it has the high total risk but minimum systematic risk which signifies that the major part of the risk is unsystematic which can be controlled and the returns for this stock is also positive and moderate.

### Limitation of study

The study can be further generalized and explored as this study is restricted to pharmaceutical industry only and BSE listed top five stocks on the basis of market capitalization are taken for study. The study is also limited to the 4 years i.e. 2015-18.

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## **Job Satisfaction Of Employees In Regional Rural Banks- A Study Of Andhra Pragathi Grameena Bank, YSR Kadapa District**

**Shaik Rehana Banu.\***

**Dr. B.Gangaiah\*\***

**Dr Shaik Balkhis Banu.\*\*\***

### **Abstract**

The contributing role of financial institutions towards stabilization and growth of an economy cannot be overlooked. Employees play a pivotal role in achieving organizational goals. Gaining employee satisfaction and commitment is a gnawing concern facing banking industry of Regional Bank of Andhra Pragathi Grameena Bank. This paper aims to investigate the impact of factors such as work–family balance, Nature of the job, use of skills and knowledge, perceived job security and Economic -environment on employee satisfaction working hours, preference and importance, working conditions, motivation or encouragement, remuneration in the banking sector of Regional Rural bank, Andhra Pragati Grameena bank. Using systematic sampling technique, a sample of 100 employees from various branches of Andhra Pragathi Grameena bank was surveyed using a structured and standardized questionnaire. perceived values items developed by the researcher on Job satisfaction items developed and scale reliability tool the study observe the reliability (Cronbach's Alpha), the inter- item correlation between Job satisfaction of employees and few dimension's, were applied to analyze the data. The results supported the study objectives, hypotheses, revealing that work-family balance, perceived job security and person-environment fit the impact of employee satisfaction in the banking sector.

**Key Words:** Job satisfaction, banking sector, work employees, job security environment

### **Introduction**

The fundamental duty of the management is to direct the employees and to observe their work. Creating nations have a huge natural and Human Resources however because of inappropriate management economic progress is less. The management is a group action of human strength and material things. Management is not the administrators but rather specialists of changes. The task of the management is to keep up good conditions in all sectors so that employees can work together to achieve common goals with efficiency.

Now- a- days, nearly in all areas the services of employees are being used in the most ideal approach to winning mighty tasks, there is no sector in which services of employees are not taken. At the point when their work is so important, their Job Satisfaction is also important. In this manner, the researcher needs to peer inside the Job Satisfaction dimension of employees of Regional Rural Bank Sectors.

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Regional Rural Bank Sectors predictable a key place in the Indian economy as far as work and speculation. Throughout the years, Regional Rural Bank Sectors have become both in number and size and spread to the greater part of the indispensable areas of the economy. They have been considered as integral assets during the time spent monetary advancement. Regional Rural Bank Sectors are expected to fulfill the social and also financial commitments to guarantee all-round development of the economy. But unfortunately, due to many reasons, a large portion of the occasions the guarantees of many Regional Rural Bank Sectors have not been fulfilled for which these Rural Bank Sectors have been established.

### **Concept Of Job Satisfaction**

In any organization, 5Ms are essential, i.e. Men, Machine, Money, Method and Materials. At the point when an organization is equipped with the wonderful machine, material and has a great potential market, utilizing great strategies yet doesn't have very much prepared, fast and qualified men control at that point, its business never contacts the peak of achievement. Nowadays every organization is giving much significance to their men control (human resource). The chances of the organization failure are less if that organization owns good, clever and prepared human resource. Without great human resource, all resources can't be worked adequately. It is demonstrated by this sentence of Andrew Carnegie he is cited and saying: "Take away my people, yet leave my manufacturing plants, and before long grass will develop on the industrial facility floors. Take away my factories, yet leave my people, and soon we will have another and better factory".

Andrew Carnegie characterizes the significance of men power in an organization. Along these lines, people are very important in the management, at present their conduct is likewise getting more significance in organizations. For effective management, it is important to understand people's conduct at work place. As we realize that human conduct is uncontrollable, unpredictable and regularly changing, so it is very difficult to predict about it.

In today's scenario, the management can't disregard human behavior. The management must think about their expectations, their desires from the organization. On the off chance that workers are satisfied with the organizations, then surely they work effectively. On the off chance that organization neglects to make work job satisfaction, then it may suffer many problems from employees like regular absenteeism on job venue, they may quit the job, may spread negative publicity of organization and improper work etc.

For the success of any organization job satisfaction is of essential significance. The employees who are fulfilled are the biggest resources for an organization where as the dissatisfied employees are the greatest liabilities. The organization can't accomplish its objectives and targets except if its workforce which comprises the organization is happy with its job. Employment job satisfaction assumes an important role in the happiness and prosperity of the individuals and the organization that has employed them.

A lack of personal satisfaction is an incessant reason numerous individuals talk about when they choose to stop their jobs. What is personal satisfaction? What can a supervisor do to develop dimensions of satisfaction in people on jobs? Luckily, there are numerous things that should be possible to give working conditions where the level of satisfaction can be developed. There are no assurances that it will develop but at least conditions empowering the development of satisfaction can be maintained in work place.

Employees should be able to understand where they fit into the business. They should know the significance of their work nature, how would they perform with their function, how can

it influence on other people, parts of the business and the consequences on other individuals of both great and bad performances of their duties. This can be cultivated by asking for them to work multi-day or more at an assortment of assignments as a component of an introduction procedure. Some production units require a person to work one day every month in some other piece of the business other than their normal duties.

### **Review Of Literature**

**Ramon Bastida, Frederic Marimon, Lluís Carreras (2017):** In this study, the purpose of this study is to establish a measurement scale for human resource management human resource management practices in nonprofit organizations and to analyze their impact on employee job satisfaction. An exploratory factor analysis (EFA) using principal components was performed. The analyzed sample is composed of 62 organizations with 2,030 employees. The results demonstrate that 8 out of 20 analyzed variables determine the measurement scale of HRM practices in these organizations. These variables are related to psychological demands, active work and development possibilities, social relations and leadership, and the degree of coherence in the organization with its principles. According to the results, these practices have an impact on employee job satisfaction. We believe that these results are relevant due to the lack of similar studies and the relevance of nonprofit organizations as job creators in the European.

**K. Nath Gangai, R. Agrawal (2015):** The purpose of this study is to examine the relationship between components of organizational commitment and job satisfaction among employee at EN Reality solution Pvt.Ltd.in Lucknow, UP, therefore this study could make an important contribution to extend research in management and organizational behavior. There is a highly significant correlation among factors of organizational commitment, including both genders. But there is no significant correlation between job satisfaction and organizational commitment and among three dimensions, only continuance commitment and normative commitment is a significant correlation with job satisfaction at 0.5 level. Similar finding is shown in the case of gender (male and female) that there is no correlation between organizational commitment components and job satisfaction.

**Beham & Drobnic (2010)** examined the relationship of work-family balance and satisfaction of 716 office workers working in banking and information technology firms in Germany. Multivariate regression analysis was used to test the study hypothesis. Results of the hypothesis indicated that social support was positively associated with work-family balance and due to overload of work and tight schedules employees were not able to fulfil their family responsibilities, which resulted in dissatisfaction at work. This study also showed that if employees spent more time in an organization due to heavy workload and it had negative consequences on satisfaction of employees.

**Carlson (2013)** observed the relationship between family balance and organizational citizenship behavior. Sample of the study consisted of 75 supervisors and 205 subordinates. Correlation test was applied. The results of the study revealed that work-family balance could build positive behavior among employees in their workplace. If there was positive behavior among employees then the organization would also benefit as the employees would give their best and help organization achieve its goals.

**Mafini & Poee (2013)** conducted a research in public sector of South Africa. The research examined the relationship between employee satisfaction and organizational performance. Data were collected from a sample of 272 members of government department using survey technique. Pearson Correlation and regression analysis were applied. The results of study

demonstrated that there was positive association between organizational performance and all employee satisfaction factors i.e. ability utilization, working conditions, teamwork, creativity and autonomy. Teamwork had greater association with organizational performance. Higher organizational performance could be achieved by increasing each of five factors.

### **Research Methodology**

#### **Research Design**

The current study was descriptive in nature and It transformed raw data into information and also revealed new facts and information.

#### **Population**

The target population of the study included all employees of Andhra pragathi grameena bank in kadapa.

#### **Sampling**

Systematic sampling technique was used in the study. The data were collected directly from the employees of Andhra pragathi grameena bank. For purpose of data collection head offices of the banks from kadapa were selected. Systematic sampling was incorporated to select the respondents. Sample for this research was 100 respondents

#### **Scales And Measures**

Structured questionnaire was used for this study. All the questions were assigned 5 point Likert scale ranging from 1 to 5, where 1 represented strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 represented strongly agree. Job satisfaction was measured 3.5

#### **Statistical Technique And Statistical Tool**

Inferential statistics are used for hypothesis testing. Validity and reliability of data is checked to ensure that there is accuracy of measures through Cronbach's Alpha. The techniques applied for Reliability tests, Inter-Item Correlation Matrix Item-Total Statistics analysis are done through through Statistical Package for the Social Sciences (SPSS).

### **Results**

#### **Reliability Test**

Cronbach alpha is used to measure the reliability of scales. The values of reliability analysis are in the table below. The overall value of Cronbach's alpha for all variables indicates that all the items of measurement used are accurate and reliable.

#### **Research Question**

To measure the job satisfaction of employees scale appropriateness of the present research study

#### **Objectives**

- ❖ To study the existing facilities and services provided to the employees working in Regional Rural Bank of APGB
- ❖ To examine the social aspect of job satisfaction as regards to relationship with colleagues, team work and working conditions.

#### **Hypothesis**

- ❖ There is no significant differences exist between the different variables regarding the facilities and services provided to the employees working in regional rural bank of Andhra pragathi grameena bank kadapa district.
- ❖ There is no significant differences exist between the different variables in the social aspect of job satisfaction as regards to relationship with colleagues, team work and working conditions.

**Need For The Study**

The present study checks the reliability and develop Multiple-Item Scale for Assessing Job Satisfaction Of Employees In Rural Banks- A Study Of Andhra Pragathi Grameena Bank, Ysr Kadapa District

**Data Analysis & Interpretation**

**Frequency Table**

**Frequency Analysis on Gender**

1. Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	68	68.0	68.0	68.0
	Female	32	32.0	32.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of respondents were males (68%) and (32%) are female.

2.Age in years					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25- 30 Years	29	29.0	29.0	29.0
	31- 35 years	35	35.0	35.0	64.0
	36 - 40 years	36	36.0	36.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of respondents are in the age group of 36-40 years (36%) and least age group is 25-30 years (29%).

3. Educational Qualification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Graduates	52	52.0	52.0	52.0
	Post Graduates	31	31.0	31.0	83.0
	others	17	17.0	17.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Most of the respondents of education qualification is employees (52%), and remaining are post graduates (31%), others are (17%),

4.Marital Status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	91	91.0	91.0	91.0
	Un-Married	9	9.0	9.0	100.0
	Total	100	100.0	100.0	

From the Table shows The Demographic profile of the respondents. Most of the respondents of Marital status of employees (91%), and remaining least unmarried employees are ( 9%).

<b>5.Type Of Family</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Joint	26	26.0	26.0	26.0
	Nuclear	74	74.0	74.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Most of the respondents of Type of Family of employees (74%), off employees are from nuclear and remaining respondents are from joint family (26%),

<b>6. No of Dependents</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0- 2	63	63.0	63.0	63.0
	2- 3	21	21.0	21.0	84.0
	3 - 4	13	13.0	13.0	97.0
	above 5	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents of number of dependents of employees (63%), off employees are from 0-2 and most of the respondents are from 2-3 remaining respondents are from 3-4 and the least respondents from above 5 (3%),

<b>7. Designation (Please Specify)</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Officer Scale-I	21	21.0	21.0	21.0
	Officer Scale-II	19	19.0	19.0	40.0
	Officer Scale-III	10	10.0	10.0	50.0
	Officer Scale-IV	50	50.0	50.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents of Designation of employees (50%), off employees are from officer scale –IV and most of the respondents are from officer scale – I (21%) remaining respondents are from officer scale –II (19%) and the least respondents from officer scale -III (10%),

<b>8. Monthly Salary</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 25000	21	21.0	21.0	21.0
	26000- 35000	25	25.0	25.0	46.0
	36000-45000	1	1.0	1.0	47.0
	Above 46000	53	53.0	53.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents of Monthly salary (53%), of the employees are from above 46000 and most of the respondents are from 26000-35000 (25%) remaining respondents are from below 25000 (21%) and the least respondents from 36000-45000 (1%),

<b>9. Location of job</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	City	48	48.0	48.0	48.0
	Urban	29	29.0	29.0	77.0
	Semi-Urban	17	17.0	17.0	94.0
	Village	6	6.0	6.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents of Location of job (48%), of the employees are from city and most of the respondents are from urban (29%) and the least respondents from semi urban (17%),

<b>10. Type Of Accommodation</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Own	30	30.0	30.0	30.0
	Rented	70	70.0	70.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents of Type of accommodation (70%), of the employees are from rented house and the least respondents from own (30%),

<b>11. Length of Service</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 - 5 years	41	41.0	41.0	41.0
	6 - 10 years	28	28.0	28.0	69.0
	11 - 20 years	3	3.0	3.0	72.0
	Above 21 years	28	28.0	28.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents of length of service (41%), of the employees are from 0-5 years and most of the respondents are from 6 -10 and above 21 years (28%) and the least respondents from 11-20 years (3%),

<b>12. Nativity</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Urban	92	92.0	92.0	92.0
	Rural	8	8.0	8.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents are from Urban (92%), and the least respondents from rural (8%).

13. Number of children					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One	41	41.0	41.0	41.0
	Two	26	26.0	26.0	67.0
	Three	13	13.0	13.0	80.0
	Above four	20	20.0	20.0	100.0
	Total	100	100.0	100.0	

From the above Table shows The Demographic profile of the respondents. Majority of the respondents have (41%), of the employees have one child and most of the respondents have (26%) of the employees have two children and the least respondents have three children (13%).

Descriptives				
			Statistic	Std. Error
total	Mean		3.5905	.03734
	95% Confidence Interval for Mean	Lower Bound	3.5164	
		Upper Bound	3.6646	
	5% Trimmed Mean		3.6297	
	Median		3.6323	
	Variance		.139	
	Std. Deviation		.37340	
	Minimum		2.11	
	Maximum		4.12	
	Range		2.01	
	Interquartile Range		.39	
	Skewness		-2.173	.241
Kurtosis		7.006	.478	

Tests of Normality						
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
total	.154	100	.000	.791	100	.000

a. Lilliefors Significance Correction

**1.Nature of the Job and use of Skills and Knowledge**

<b>Reliability Statistics</b>		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.840	.822	6

<b>Item Statistics</b>			
	Mean	Std. Deviation	N
My present Job gives sense of Accomplishment.	3.5000	1.17670	40
Iam very much satisfied that my job is very much secured.	3.6750	1.11832	40
The place where i work is very much interesting.	3.8250	.98417	40
The work which i do needs patience and is highly challenging.	4.1250	.64798	40
The job which i do is very much suitable accordingly my work and skills.	3.4500	1.21845	40
I experience personal growth such as updating skills and learning different jobs.	3.7750	.89120	40

<b>Inter-Item Correlation Matrix</b>						
	My present Job gives sense of Accomplishment.	Iam very much satisfied that my job is very much secured.	The place where i work is very much interesting.	The work which i do needs patience and is highly challenging.	The job which i do is very much suitable accordingly my work and skills.	I experience personal growth such as updating skills and learning different jobs.
My present Job gives sense of Accomplishment.	1.000	.731	.697	.017	.662	.648
Iam very much satisfied that my job is very much secured.	.731	1.000	.390	.022	.543	.414
The place where i work is very much interesting.	.697	.390	1.000	-.005	.516	.860

The work which i do needs patience and is highly challenging.	.017	.022	-.005	1.000	.447	.006
The job which i do is very much suitable accordingly my work and skills.	.662	.543	.516	.447	1.000	.568
I experience personal growth such as updating skills and learning different jobs.	.648	.414	.860	.006	.568	1.000

Summary Item Statistics							
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.725	3.450	4.125	.675	1.196	.060	6
Item Variances	1.050	.420	1.485	1.065	3.536	.162	6

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
My present Job gives sense of Accomplishment.	18.8500	12.797	.810	.768	.770
Iam very much satisfied that my job is very much secured.	18.6750	14.635	.598	.577	.819
The place where i work is very much interesting.	18.5250	14.820	.688	.789	.800
The work which i do needs patience and is highly challenging.	18.2250	19.820	.132	.368	.879
The job which i do is very much suitable accordingly my work and skills.	18.9000	12.964	.747	.676	.785
I experience personal growth such as updating skills and learning different jobs.	18.5750	15.276	.708	.768	.799

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<b>Scale Statistics</b>			
Mean	Variance	Std. Deviation	N of Items
22.3500	21.003	4.58286	6

Cronbach's Alpha value above 0.7 suggests good reliability .Cronbach's Alpha of efficiency is 0.840 and inter item correlation shows that all items were correlated each other.inter item Value are also satisfactory. Item 1 has high correlation with item 5 and low correlation with item 4.

Since corrected item –total correlation is above 0.3 for all items, we conclude that all 6 items fit well into the Nature of the Job and use of Skills and Knowledge

## **2.Job Security and Working Hours**

<b>Reliability Statistics</b>		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.792	.796	6

<b>Item Statistics</b>			
	Mean	Std. Deviation	N
How satisfied you are with your involvement in decisions that affect your work?	3.3250	1.04728	40
How much satisfied you are with the insurance?	3.1500	1.05125	40
Until I do my duties correctly, I do not have any stress to lose my job.	3.8500	.92126	40
Iam very much satisfied by the securities provided by employer?	3.5250	.93336	40
How much satisfaction do you have with your working hours?	3.0750	.99711	40
Employees get Reasonable break time during working hours.	3.5000	.98710	40

<b>Inter-Item Correlation Matrix</b>						
	How satisfied you are with your involvement in decisions that affect your work?	How much satisfied you are with the insurance?	Until I do my duties correctly, I do not have any stress to lose my job.	I am very much satisfied by the securities provided by employer?	How much satisfaction do you have with your working hours?	Employees get Reasonable break time during working hours.
How satisfied you are with your involvement in decisions that affect your work?	1.000	.211	.371	.424	.614	.186
How much satisfied you are with the insurance?	.211	1.000	.474	.545	.209	.321
Until I do my duties correctly, I do not have any stress to lose my job.	.371	.474	1.000	.631	.320	.508
I am very much satisfied by the securities provided by employer?	.424	.545	.631	1.000	.260	.431
How much satisfaction do you have with your working hours?	.614	.209	.320	.260	1.000	.404
Employees get Reasonable break time during working hours.	.186	.321	.508	.431	.404	1.000

<b>Summary Item Statistics</b>							
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.404	3.075	3.850	.775	1.252	.080	6
Item Variances	.982	.849	1.105	.256	1.302	.012	6

<b>Item-Total Statistics</b>					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
How satisfied you are with your involvement in decisions that affect your work?	17.1000	12.554	.495	.497	.773
How much satisfied you are with the insurance?	17.2750	12.666	.475	.333	.778
Until I do my duties correctly, I do not have any stress to lose my job.	16.5750	12.251	.656	.495	.736
I am very much satisfied by the securities provided by employer?	16.9000	12.195	.654	.539	.736
How much satisfaction do you have with your working hours?	17.3500	12.746	.504	.484	.770

Employees get Reasonable break time during working hours.	16.9250	12.789	.505	.385	.770
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<b>Scale Statistics</b>			
Mean	Variance	Std. Deviation	N of Items
20.4250	17.328	4.16264	6

Cronbach's Alpha value above 0.7 suggests good reliability .Cronbach's Alpha of System availability is 0.792 and inter item correlation shows that all items were correlated each other. inter item Value are also satisfactory. Item 1 has high correlation with item 3 and low correlation with item 1.Since corrected item –total correlation is above 0.5 for all items, we conclude that all 6 items fit well into the Job Security and Working Hours.

**3.Working conditions and Preference and importance**

<b>Reliability Statistics</b>		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.726	.736	6

<b>Item Statistics</b>			
	Mean	Std. Deviation	N
Branch has enough staff to discharge the work.	2.6000	1.03280	40
Branch has comfortable seating lighting, ventilation and toilet facilities.	3.8000	.79097	40
In our organization Assignment of work load is reasonable.	3.1750	.98417	40
My colleagues are so important for me.	3.8500	.80224	40
Iam satisfied with the banks people programs, such as birthday announcements, valuable employee of the month, bulletins and newsletter, etc.	2.6750	1.02250	40
Customer satisfaction is so important for me.	4.1500	.53349	40

<b>Inter-Item Correlation Matrix</b>						
	Branch has enough staff to discharge the work.	Branch has comfortable seating lighting, ventilation and toilet facilities.	In our organization Assignment of work load is reasonable.	My colleagues are so important for me.	Iam satisfied with the banks people programs, such as birthday announcements , valuable employee of the month, bulletins and newsletter, etc.	Customer satisfaction is so important for me.
Branch has enough staff to discharge the work.	1.000	.402	.600	.235	.165	.344
Branch has comfortable seating lighting, ventilation and toilet facilities.	.402	1.000	.507	.234	.552	.194
In our organization Assignment of work load is reasonable.	.600	.507	1.000	.067	.262	-.002
My colleagues are so important for me.	.235	.234	.067	1.000	.283	.593
Iam satisfied with the banks people programs, such as birthday announcements, valuable employee of the month, bulletins and newsletter, etc.	.165	.552	.262	.283	1.000	.327
Customer satisfaction is so important for me.	.344	.194	-.002	.593	.327	1.000

<b>Summary Item Statistics</b>							
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.375	2.600	4.150	1.550	1.596	.428	6
Item Variances	.772	.285	1.067	.782	3.748	.095	6

<b>Item-Total Statistics</b>						
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	
Branch has enough staff to discharge the work.	17.6500	7.669	.524	.504	.668	
Branch has comfortable seating lighting, ventilation and toilet facilities.	16.4500	8.305	.614	.464	.647	

In our organization Assignment of work load is reasonable.	17.0750	8.122	.471	.511	.686
My colleagues are so important for me.	16.4000	9.323	.360	.368	.715
Iam satisfied with the banks people programs, such as birthday announcements, valuable employee of the month, bulletins and newsletter, etc.	17.5750	8.097	.445	.383	.696
Customer satisfaction is so important for me.	16.1000	10.041	.416	.483	.708

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
20.2500	11.731	3.42502	6

Cronbach's Alpha value above 0.7 suggests good reliability .Cronbach's Alpha of Fulfillment is 0.726 and inter item correlation shows that all items were correlated each other. inter item Value are also satisfactory. Item 1 has high correlation with item 2 and low correlation with item 6.

Since corrected item –total correlation is above 0.3 for all items, we conclude that all 6 items fit well into the Working conditions and Preference and importance

**4.Motivation/ Encouragement**

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.810	.739	5

Item Statistics			
	Mean	Std. Deviation	N
Iam rewarded for the quality of my efforts.	3.3750	.92508	40
Does your organization recognize and acknowledge your work.	3.5000	.87706	40
If you get Promotion, and salary increases does it motivates you more?	3.7500	.77625	40
Customer satisfaction motivates me more.	4.1750	.38481	40
Promotion goes to those who most deserve it.	3.4500	1.06096	40

<b>Inter-Item Correlation Matrix</b>					
	Iam rewarded for the quality of my efforts.	Does your organization recognize and acknowledge your work.	If you get Promotion, and salary increases does it motivates you more?	Customer satisfaction motivates me more.	Promotion goes to those who most deserve it.
Iam rewarded for the quality of my efforts.	1.000	.743	.777	-.045	.581
Does your organization recognize and acknowledge your work.	.743	1.000	.791	-.114	.799
If you get Promotion, and salary increases does it motivates you more?	.777	.791	1.000	-.107	.514
Customer satisfaction motivates me more.	-.045	-.114	-.107	1.000	-.323
Promotion goes to those who most deserve it.	.581	.799	.514	-.323	1.000

<b>Summary Item Statistics</b>							
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.650	3.375	4.175	.800	1.237	.106	5
Item Variances	.700	.148	1.126	.978	7.602	.131	5

<b>Item-Total Statistics</b>					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Iam rewarded for the quality of my efforts.	14.8750	5.651	.780	.663	.709
Does your organization recognize and acknowledge your work.	14.7500	5.474	.900	.851	.668

If you get Promotion, and salary increases does it motivates you more?	14.5000	6.359	.760	.754	.726
Customer satisfaction motivates me more.	14.0750	10.225	-.178	.208	.896
Promotion goes to those who most deserve it.	14.8000	5.600	.639	.743	.768

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
18.2500	9.936	3.15213	5

Cronbach's Alpha value above 0.7 suggests good reliability. Cronbach's Alpha of Privacy is 0.810 and inter-item correlation shows that all items were correlated each other. Inter-item Value are also satisfactory. Item 1 has high correlation with item 2 and low correlation with item 4. Since corrected item –total correlation is above 0.3 for all items, we conclude that all 5 items fit well into the Motivation/ Encouragement

**Findings :** The study discloses that job satisfaction of employees in Regional Rural Bank of Andhra Pragathi Grameena Bank data is valid Cronbach's Alpha value above 0.7 suggests good reliability. Cronbach's Alpha of Nature of the Job and use of Skills and Knowledge, is 0.884, System availability is 0.0.874, Fulfillment is 0.840, Job Security and Working Hours is 0.792 , Working conditions and Preference and importance - is 0.726, Motivation/ Encouragement is 0.810 All Job satisfaction factors, Perceived value and job satisfaction Item-Total Statistics were correlated each other. Inter item Value are also satisfactory. Since corrected item –total correlation is above 0.3 for all items; we conclude that job satisfaction of employees factor's, perceived value and job satisfaction fit well for the further research.

**Uniqueness/assessment** – The study supports the researcher to do further research on job satisfaction of employees in regional rural banks of Andhra pragathi grameena bank.

**Conclusion:** So the Job satisfaction of employees A Multiple-Item Scale for Assessing banking sector employees of Andhra Pragathi Grameena Bank perceived by different factors and dimensions were tested using pilot study. Researcher found that the reliability for the scale is high with response to my present study, with this finding .researcher may confidently to use this scale for the researcher final study.

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## **Measures Of Supply Chain Performance In Manufacturing Sector**

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**Abstract:** In today's world supply chain management (SCM) plays an important role in the achievement of organisational performance. Also now a days the competition not among the organisations but among the supply chain of organisations. Hence to improve the effectiveness and efficiency of supply chain it is important to measure its performance. Through an empirical research an attempt has been made to find out the various factors that can be considered for measuring the performance of supply chain.

**Keywords:** supply chain management, supply chain performance

**Introduction:** In today's ever changing and booming economy every business is facing severe competition in local as well as international market. In the new economy, customers require business enterprises to offer better and cheaper products, shorter response time, more product lines and higher service levels. Business executives and managers recognize that the ultimate success of any enterprise is built on supply chain capability and capacity. To respond to these challenges, it is important to integrate supply chain processes and listen to the voice of customers. Supply chain management plays a pivotal role in adding value to the product delivered to the customer and also helps the business units in existing challenging environment to attain competitive advantage.

Business success is no longer a matter of analysing only the individual firm, but rather a chain of delivering and supplying organizations, the individual firm is only a part of supply chain. Therefore companies are focusing on supply chain strategies, boosting plant's productivity, improving product quality and reducing manufacturing cost. In this digital age, internet is challenging the traditional supply chain structures. Market has become more transparent, customer demands are met in more customized manner and the rate of change in business world keep increasing. All these reasons have led companies to employ technology in their supply chains because now a days competition is not among the companies, but among the supply chains of companies.

There are various ways to look at supply chain. One can say that it starts from the raw material vendor and ends with the customer; thus, it includes purchasing, marketing and even consumer buying the product. Therefore all the processes involved in the entire spectrum from demand generation to demand satisfaction can be called as supply chain management. Today, in some advanced companies supply chain extend right from the vendor procuring his raw material to the point of sale where the last sale of the product takes place. This implies that there is transparency and information flow in the entire chain resulting in appropriate action at each point. This action by each entity contributes to the smooth functioning of supply chain.

Supply chain deals in improving the whole performance of business by managing the relationships with other members of supply chain. Executives of companies who want to

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implement SCM feels the necessity of integrating the business activities throughout the organisation (Lambert et al., 1996). The managing of three flows i.e. goods, information and cash will lead to higher customer service. Hence, improving both efficiency (reduction of cost), effectiveness (customer service) will lead to achieve competitive advantage, thus improving the profitability too (Mentzer et al., 2001).

Therefore, the performance of a supply chain depends not only on improving the operational capability and other functional area of the firm rather the managers need to achieve competitive advantage through high customer service and satisfaction. Hence, the manufacturing companies in India need to find strategic ways to improve the performance of their supply chain and to develop some benchmark in order to perform better than their competitors.

### **Literature Review**

**Saad and Patel (2006)** attempted to identify a set of measures for supply chain performance in Indian automotive firms. The results show that the concept of supply chain performance was not fully adopted and also highlighted the difficulties in implementation of the same. **Chae (2009)** measured supply chain performance through key performance indicators (KPIs). Author suggested that companies should focus on less KPIs which are critical for their organisation such as customer service, financial viability etc. Potential KPIs should be developed for each of the supply chain operations-reference (SCOR) model's four processes (plan, make, source, deliver). **Chin et al (2010)** examined the relationship among SCM practices and their impact on firm's financial and non-financial performance. The results show that external customer-firm-supplier relation management positively impacts firm internal contextual factors, which in turn have positive effects on firm performance. The findings suggest that a successful implementation of SCM not only directly improves operational performance but also has indirectly enhances customer satisfaction and financial performance. The operational performance metric measures a company's relative performance with its main competitors on the three competitive priorities of speed, delivery and quality items commonly used to represent the operational excellence of an organisation. On the other hand the financial performance is measured using company's cost and profit – related aspects compared with its direct competitors (**Sengupta et al., 2006**). **Arawati (2011)** analysed the importance of incorporating SCM in Malaysian manufacturing companies. The results suggest that SCM has significant correlations with supply chain flexibility and business performance. Specifically, supply chain flexibility and business performance have high correlations with strategic supplier partnership, lean production postponement concept and technology and innovation.

### **Research Methodology, results and discussion**

#### **Factor Analysis**

The factor analysis was applied for the identification of the core factors which are important to measure the performance of supply chain. In the following section the factors for the same have been evaluated and after that the impact of information technology on supply chain performance has been studied. After extensive study of literature on the different studies done in the different parts of the world, a questionnaire was developed with 35 statements that are considered important measures of supply chain performance in manufacturing units. The EFA will define the main constructs and factor loadings to calculate the reliability of measures used. According to results, all the factors which were loading highly on a factor are merged thereby giving five major constructs.

**Test Adequacy Of Sample**

The Kaiser-Meyer-Olkin is the measure of sampling adequacy, which varies between 0-1. The values closer to 1 are better and the value of 0.6 is suggested minimum. The Bartlett's Test of Sphericity is the test for null hypothesis that the correlation matrix has an identity matrix. Taking this into consideration, these tests provide the minimum standard to proceed for Factor Analysis.

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.875
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.
	6222.427
	561
	.000

If  $KMO > 0.6$ , the sample size is adequate. Here,  $KMO = 0.875$  which indicates that the sample is adequate and we may proceed with the Factor Analysis.

**BARLETT'S TEST OF SPHERICITY:** Taking a 95% level of significance,  $\alpha = 0.05$ . The p-value (sig.) of  $.000 < 0.05$ , therefore the Factor Analysis is valid as in table

**COMMUNALITIES:** The lowest value of communality is 0.513 which is more than the desired value of 0.50. Hence the appropriate variance was retained in the variables by the factors extracted.

**Communalities**

	Initial	Extraction
SCP1	1.000	.681
SCP2	1.000	.552
SCP3	1.000	.598
SCP4	1.000	.547
SCP5	1.000	.674
SCP6	1.000	.769
SCP7	1.000	.878
SCP8	1.000	.873
SCP9	1.000	.801
SCP10	1.000	.866
SCP11	1.000	.695
SCP12	1.000	.740
SCP13	1.000	.787
SCP14	1.000	.693
SCP16	1.000	.586
SCP17	1.000	.684
SCP18	1.000	.653
SCP19	1.000	.807
SCP20	1.000	.792
SCP21	1.000	.799
SCP22	1.000	.769
SCP23	1.000	.769
SCP24	1.000	.718

SCP25	1.000	.660
SCP26	1.000	.666
SCP27	1.000	.644
SCP28	1.000	.579
SCP29	1.000	.626
SCP30	1.000	.643
SCP31	1.000	.513
SCP32	1.000	.524
SCP33	1.000	.772
SCP34	1.000	.726
SCP35	1.000	.734

Extraction Method: Principal Component Analysis.

**Eigen Values And Total Variance Explained**

Eigen values  $\geq 1$ . The initial components are the number of variables used in the Factor Analysis. The Eigen values are the variance of the factors. The total column contains the Eigen values. The first factor will always account for the most variance and hence have highest Eigen value. The next factor will account for as much of the left over variance as it can and the same will continue till the last factor. The percentage of variance represents the percentage of total variance accounted by each factor and the cumulative percentage gives the cumulative percentage of variance account by the present and preceding factors.

The five factor solution was found to be very good. After rotation, the percentage of variance explained by each factor was different from what it was before rotation. The rotation changed the position of the points with respect to the axis, which altered the variance explained.

In the present research, the first 5 factors explain 70.052% of variance. The varimax rotation tries to maximise the variance of each of the factor.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.322	33.300	33.300	11.322	33.300	33.300	7.598	22.347	22.347
2	5.180	15.236	48.536	5.180	15.236	48.536	5.023	14.775	37.122
3	3.822	11.240	59.776	3.822	11.240	59.776	4.800	14.119	51.241
4	1.922	5.652	65.428	1.922	5.652	65.428	4.016	11.812	63.053
5	1.572	4.624	70.052	1.572	4.624	70.052	2.380	6.999	70.052
6	1.236	3.636	73.688						
7	.908	2.671	76.359						
8	.781	2.296	78.655						
9	.685	2.013	80.668						
10	.647	1.901	82.570						
11	.569	1.672	84.242						
12	.522	1.534	85.776						

13	.460	1.352	87.128					
14	.443	1.303	88.431					
15	.409	1.204	89.635					
16	.371	1.091	90.726					
17	.332	.976	91.702					
18	.314	.924	92.627					
19	.300	.882	93.508					
20	.264	.776	94.284					
21	.236	.695	94.979					
22	.213	.628	95.607					
23	.204	.601	96.208					
24	.179	.527	96.735					
25	.173	.509	97.244					
26	.157	.462	97.706					
27	.151	.445	98.151					
28	.140	.412	98.563					
29	.120	.352	98.914					
30	.107	.316	99.231					
31	.096	.281	99.512					
32	.083	.243	99.754					
33	.054	.158	99.912					
34	.030	.088	100.000					

Extraction Method: Principal Component Analysis.

**ROTATED COMPONENT MATRIX:** The Rotated Component matrix represents the rotated factor loadings, which are in correlations between the variables and the factors. The factor column represents the rotated factors that have been extracted out of the total factor. These are core factors, which have been used as the final factor after data reduction. According to the grouping of the factors, each group of factors is names which will represent the grouped factor and represent the factors.

The following table demonstrate the values of factor loading of each item of the construct which have the satisfactory values of  $\geq \pm 0.7$

Rotated Component Matrix						
Supply chain performance measures	Component					
	SCP Supplier Performance	SCP Operational Performance	Delivery Performance	Customer Service Performance	SCP Cost Performance	
Supplier cost saving initiatives	.931					
Supplier ability to respond to quality problems	.927					
Supplier rejection rate	.922					
Supplier order entry method	.889					
Supplier assistance in solving	.870					

technical problems					
Order lead time	.819				
Buyer-supplier partnership level	.668				
Level of suppliers defect free deliveries	.656				
Capacity utilisation		.871			
Total cash flow time		.778			
Effectiveness of master production plan		.774			
Planned process cycle time		.719			
Quality of deliver documentation		.698			
Distribution planning schedule		.639			
Responsiveness to urgent deliveries			.784		
Delivery performance			.748		
Achievement of defect free deliveries			.738		
Delivery lead time			.715		
Frequency of delivery			.703		
Customer query time				.718	
Range of products and services				.677	
Flexibility of service system to meet particular customer needs				.667	
Customer perceived level of value of product				.623	
Information carrying cost					.884

Total transportation cost					.876
Manufacturing cost					.871
Inventory carrying cost					.837
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 5 iterations.					

**Psychometric Checks**

In this study, the questionnaire was administered on 200 respondents and the impact of various factors affecting IT adoption with respect to supply chain management were identified. In this process the psychometrics checks were investigated by applying partial least square structural equation modelling in SmartPLS software version 3.0 (Hair et al., 2017). The focus was to check reliability, validity of the model where second order construct of IT adoption with respect to cost and operational benefits, collaboration and information visibility, innovation benefits, quick response and better customer service was conducted.

In PLS-SEM the measurement model is assessed by composite reliability (CR) for internal consistency and validity (discriminant and convergent validity) (Hair, Hult, Ringle, & Sarstest, 2013)

**Reliability Measures**

Reliability is termed as consistency and reproducibility of the instrument toward the results which are consistent over a period of time on repeated trials. These are the tests which are considered to be the best measure of inter item consistence reliability measure, that is, Cronbach's Alpha( $\alpha$ ) (Cronbach,1951; Nunnally,1979). The Cronbach alpha will be measured in this study for internal consistency of the scales used in the questionnaire, which is conducted on summated scales and not for individual items. The value of Cronbach alpha will be in the range of 0-1 where the internal reliability of the scale is said to be maximum when it is closer to 1. In this study, we are investigating IT adoption as a second order construct where the value will always be 1. Mathematically the formula for cronbach alpha is

$$\alpha_{standardized} = \frac{K \cdot \bar{r}}{(1 + (K - 1) \cdot \bar{r})}$$

Where,

K= number of variables

r= average correlation among all pairs of variables

In addition to this, composite reliability as a benchmark value of 0.7 is considered to be adequate where SEM is applied (Werts et al., 1978). Also, Joreskog's (1971) composite reliability is studies along with Dijkstra-Henscler's rho as a reliability estimate for reflective sonstruch with multiple indicators in investigated ( Dijkstra and Henscler 2015). The findings of reliability are mentioned in table below

Table

<b>RELIABILITY TEST</b>	<b>Cronbach's Alpha</b>	<b>rho_A</b>	<b>Composite Reliability</b>
Customer Service_Performance	0.752	0.755	0.844
Delivery_Performance	0.768	0.762	0.843
SCP Cost_Performance	0.936	0.937	0.954
SCP Operational_Performance	0.807	0.818	0.861
Supplier_Performance	0.895	0.939	0.892

**Validity measures**

After investigating the reliability measures of the instrument, the next step is to establish the validity of the questionnaire where the following types of validity were checked.

**Convergent Validity**

The next step was to consider the convergent validity of the constructs in the study. The convergent validity measures the degree of association of multiple items towards their constructs as per the theoretical background and review of literature. (Hair et al 2017)

The convergent validity is primarily assessed with average variance extracted (AVE) for all the items related with their construct, and is calculated as the mean of the square loadings of all variables associated with the construct, which must be higher than the acceptable value of 0.50 on an average in order to explain at least fifty per cent variance of the items in their construct.

In this study the AVE is fully established in the measurement model and is in accordance to the suggestions by Hair et al., (2010, 2013), and mentioned in table below

<b>CONVERGENT VALIDITY</b>	<b>Average Variance Extracted (AVE)</b>
Customer Service_Performance	0.576
Delivery_Performance	0.521
SCP Cost_Performance	0.838
SCP Operational_Performance	0.511
Supplier_Performance	0.508

In addition to this, the composite reliability, AVE and standardised factor loadings were found to be above the desired cut off values and benchmarks in the leading researches (Chin 2010; Hair et al., 2017b) and mentioned in table below

Measurement item	Standard factor loading	AVE	CR
<b>1. Customer service performance</b>			
SCP31	0.785	0.576	0.844
SCP32	0.797		
SCP33	0.781		
SCP35	0.665		
<b>2. Delivery performance</b>			
SCP12	0.779	0.843	0.521
SCP13	0.79		

SCP25	0.627		
SCP28	0.664		
SCP30	0.732		
<b>3. SCP cost performance</b>			
SCP19	0.933	0.838	0.954
SCP21	0.911		
SCP22	0.92		
SCP23	0.897		
<b>4.SCP operational performance</b>			
SCP26	0.661	0.511	0.861
SCP27	0.638		
SCP16	0.802		
SCP17	0.819		
SCP20	0.727		
SCP34	0.616		
<b>5. Supplier performance</b>			
SCP4	0.745	0.508	0.892
SCP6	0.738		
SCP7	0.727		
SCP8	0.727		
SCP9	0.684		
SCP10	0.721		
SCP11	0.664		

**Discriminant Validity**

An empirical investigation of discriminant validity of the constructs was conducted in the study to find out as to how much distinct one construct is, from one another in the path model. In major studies conducted by the researchers in the past, Fornell and Larcker (1981) criteria was used to compare each constructs square root of AVE, with their inter construct correlation of all other constructs in the measurement model. Statistically, the square root of AVE must be higher than the inter construct correlations to establish discriminant validity of the variables under the study. In the present study, the Fornell and Lacker (1981) is fully acceptable to establish discriminant validity as mentioned in table...

<b>FORNELL AND LARCKER CRITERIA</b>	<b>Customer Service Performance</b>	<b>Delivery Performance</b>	<b>SCP Cost Performance</b>	<b>SCP Operational Performance</b>	<b>Supplier Performance</b>
Customer Service_Performance	<b>0.759</b>				
Delivery_Performance	0.747	<b>0.721</b>			
SCP Cost_Performance	0.309	0.523	<b>0.916</b>		
SCP Operational_Performance	0.607	0.686	0.757	<b>0.715</b>	
Supplier_Performance	0.3	0.391	0.406	0.416	<b>0.713</b>

**Note: diagonal elements are the square root of AVE; non diagonal elements are inter-construct correlations; Fornell and Lacker criteria 1981**

In less regrous approach to assess discriminant validity to examine the cross loadings in the study which means that indicator variable must exhibit a higher loadings on its own construct than on any other construct included in the measurement model (Hair et al., 2014). Table .. Demonstrate the cross loadings in the study.

<b>CROSS LOADINGS</b>	<b>Customer Service_Performance</b>	<b>Delivery_Performance</b>	<b>SCP Cost_Performance</b>	<b>SCP Operational_Performance</b>	<b>Supplier_Performance</b>
SCP31	0.785				
SCP32	0.797				
SCP33	0.781				
SCP35	0.665				
SCP12		0.779			
SCP13		0.79			
SCP25		0.627			
SCP28		0.664			
SCP30		0.732			
SCP19			0.933		
SCP21			0.911		
SCP22			0.92		
SCP23			0.897		
SCP26				0.661	
SCP27				0.638	
SCP16				0.802	
SCP17				0.819	
SCP20				0.727	
SCP34				0.616	
SCP4					0.745

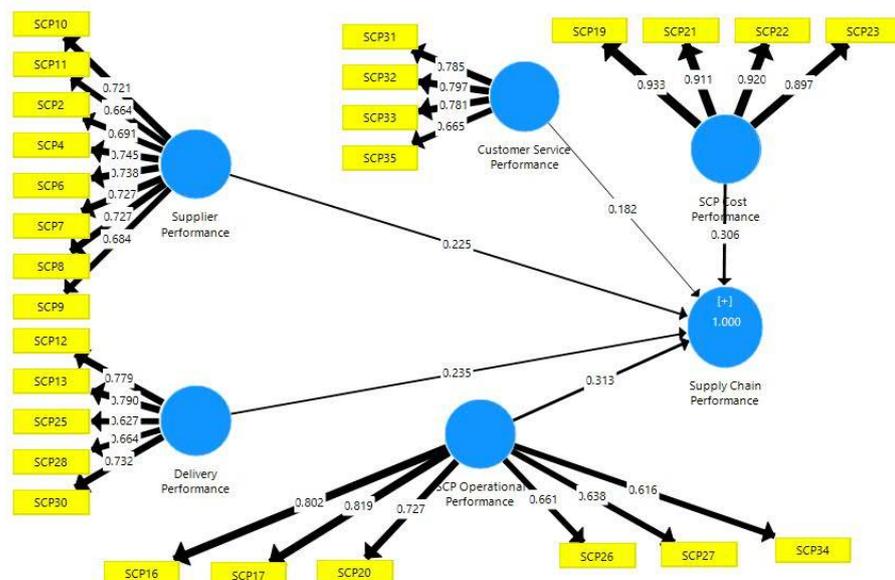
SCP6				0.738
SCP7				0.727
SCP8				0.727
SCP9				0.684
SCP10				0.721
SCP11				0.664

Even though the Fornell and Lacker criteria and cross loadings are established in the study, still they are considered to be insufficiently sensitive to establish discriminant validity problems. Therefore, a new criterion for establishing discriminant validity is used in the study Heterotrait-Momotrait ratio of correlations (HTMT), as proposed by Henseler, Ringle and Sarstedt, (2015). The HTMT ratio must be less than 0.90 (Gold, Malhotra and Srgars, 2001) or less than 0.85 (Kline, 2011) to establish the disattenuated correlation between two constructs (Henseler, Ringle, and Sarstedt, 2015). Findings of HTMT criteria is mentioned in table... as below:

HTMT RATIO	Customer Service Performance	Delivery Performance	SCP Cost Performance	SCP Operational Performance
Delivery_Performance	0.886			
SCP Cost_Performance	0.365	0.575		
SCP Operational_Performance	0.801	0.859	0.828	
Supplier_Performance	0.279	0.327	0.257	0.331

**Measurement Model Assessment**

The measurement model in this study after reliability and validity checks is summarised in figure below:



According to the measurement model of Supply Chain Performance, the highest value of Beta accounts for SC Operational performance (0.313), followed by SC Cost performance (0.306), Delivery Performance (0.235), Supplier performance (0.225) and Customer service performance (0.182).

The results of measurement model reveal that the most important criteria to measure the performance of supply is by measuring its operational performance. Implementing information technology in supply chain performance will help in improving the effectiveness of distribution planning schedule, quality of deliver documentation, planned process cycle time, effectiveness of master production plan improved, capacity utilisation etc.

Next important performance measurement is SC cost performance. Minimising the cost is the ultimate aim of implementing IT in supply chain thus improving its performance by reducing various types of costs involved in supply chain such as information carrying cost, total transportation cost, manufacturing cost, inventory carrying cost etc.

Improving the delivery performance is also one of the important criteria to measure the performance of supply chain. Reducing the delivery lead time shows how effective the delivery performance is. Other criteria are responsiveness to urgent deliveries, improvement in frequency of delivery, defect free deliveries etc.

Supplier performance is also one of the criteria to measure the performance of supply chain. Since the supply chain starts from the suppliers it is important to measure the performance of suppliers through looking at the level of defect free deliveries, their assistance in solving technical problems, their ability to respond to problems, their initiatives for saving costs, supplier order entry method, supplier rejection rate, improving the order lead time etc.

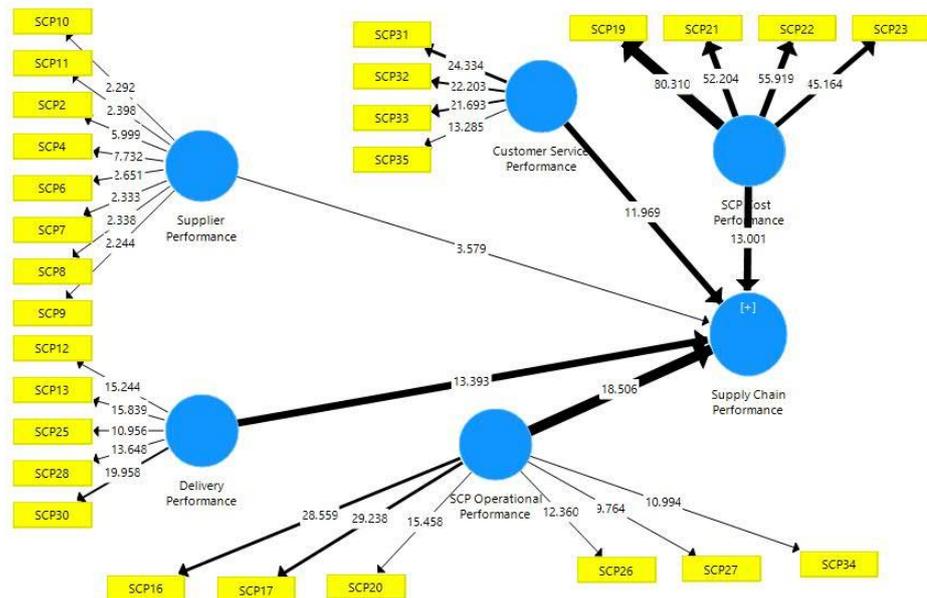
The performance of supply chain is also measured through measuring the customer performance in terms of adding the value to the product, flexibility in service system to meet particular customer needs, maximising the range of products and services, reducing the customer query time etc.

### **Structural Model Assessment**

After the constructs are confirmed as reliable and valid, the next step is to assess the structural model results. However, a thorough examination of structural model for collinearity was also established to see whether the path coefficients based upon ordinary least square regression is free from the bias of collinearity (Hair et al 2014). The problem of multicollinearity does not exist in the structural model since all the VIF values are less than 5.

<b>VIF VALUES</b>	<b>Supply Chain Performance</b>
<b>Customer Service_Performance</b>	2.705
<b>Delivery_Performance</b>	2.994
<b>SCP Cost_Performance</b>	2.758
<b>SCP Operational_Performance</b>	3.774
<b>Supplier_Performance</b>	1.272

The collinearity diagnostics revealed that all the constructs in the structural model are not negatively affected by the problem by multicollinearity. The detailed examination of endogenous constructs predictive power has a substantial  $R^2$  of 1 because SCP is a second order construct in the objective of the study where we identified various factors that are important in measuring supply chain performance. The results from PLS using SmartPLS software 3.0 version is shown in figure 4.2 whereby the Beta co-efficient of SCP construct are significant at 1% during the bootstrapping process.



**Hypothesis Testing And Discussion Of Results**

Ha1: Customer service performance is a significant measurement of supply chain performance.

Ha2: Delivery performance is a significant measurement of supply chain performance.

Ha3: SC Cost performance is a significant measurement of supply chain performance.

Ha4: SC Operational performance is significant measurement of supply chain performance.

Ha5: Supplier performance is significant measurement of supply chain performance.

The entire five hypotheses were supported and accepted. Following table exhibits the estimated path coefficients of hypothesis in the structural model. SCP operational performance is the most important measurement of supply chain performance (Ha4) (b=0.313, t=18.506, p<.01). Followed by SCP cost performance (Ha3) (b=0.306, t=13.001, p<.01), delivery performance (Ha2) (b= 0.235, t=13.393, p<.01), supplier performance (Ha5) (b=0.225, t=3.579, p<.01), customer service performance (Ha1) (b=0.182, t=11.969, p<.01).

Test of relations between variables	Original Sample (O)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Hypothesis	Result
Customer Service_Performance -> Supply Chain Performance	0.182	0.015	11.969	0.000***	Ha1	Accepted
Delivery_Performance -> Supply Chain Performance	0.235	0.018	13.393	0.000***	Ha2	Accepted
SCP Cost_Performance -> Supply Chain Performance	0.306	0.024	13.001	0.000***	Ha3	Accepted
SCP Operational_Performance -> Supply Chain Performance	0.313	0.017	18.506	0.000***	Ha4	Accepted
Supplier_Performance -> Supply Chain Performance	0.225	0.063	3.579	0.000***	Ha5	Accepted

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## **Evaluation Of Post-Merger Efficiencies Of Airline Companies In India**

**Dileepa S Hari\***

### **Introduction**

The Indian economy has experienced a major structural transformation following the introduction of economic reforms by the Government of India in 1991. The forces of Liberalization, Privatization and Globalization unleashed by these reforms have brought about a sea change in the traditional Indian business mindset. Indian business leaders started thinking in terms of inorganic growth both within and beyond the borders of the country. In this backdrop, M&A presented a viable alternative for the businesses aspiring to grow quickly and gain the benefits of sustainable competitive advantage by realizing the benefits of scale and scope economies, fast changing technologies for effectively facing rapidly intensifying domestic and international competition. Many corporate embarked upon several corporate restructuring activities like M&As, Joint Ventures, Spin-offs and Divestitures. The major industry sectors influenced by the forces of consolidation in India, though varied from time to time, were mostly in the realm of infrastructure sectors like cement, power and steel, drugs, telecommunications, media & entertainment and banking. A major change evident after 2002 in the corporate restructuring activity in India is that of Indian companies making forays into developed foreign markets through acquisitions and joint ventures (JVs). During this period India also became an attractive destination for foreign direct investment (FDI) as the inbound acquisitions also gained considerable momentum. Merger and Acquisition activity in India comes under the purview of the various provisions of the Companies Act, Securities Exchange Board of India (SEBI) and Competition Commission Act of India, 2002.

### **Mergers and Acquisitions**

Business Combinations are a critical part of the fabric of doing business in a free market economy and are deeply ingrained in the business strategy the world over. Such combinations include mergers, acquisitions and other forms of corporate restructuring undertaken both within a country and across international boundaries. The intensity of M&A activity, in US in 1990s was unlike any other year in US history. Following a drop in both the number of transactions and the total dollar volume during the 1990 recession, M&A activity rebounded sharply in 1992. Deals during the nineties were prompted more by strategic considerations and used less debt as compared to 1980s. The financial environment which was quite favorable in terms of vibrant stock markets and relatively low interest rates facilitated the resurgence of M&A activity in US. According to the data furnished by Thomson Financials, the global M&A activity jumped by 30 per cent in the year 2006 to hit an all time record of \$3.7 trillion surpassing the year 2000 high of \$3.4 trillion. The USA which accounted for over 40 per cent global M&A activity was the most targeted country for acquisitions. The UK was the most targeted European country for acquisitions, accounting for cross border and domestic transactions valued at \$339 billion.

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In the meantime according to the data released by Dealogic, a deal tracking firm, Europe had overtaken the United States of America (USA) as the most targeted region, accounting for \$1.34 trillion or about 40 per cent of the total deal value compared with the USA share of 36 per cent, or \$1.22 trillion. This increase in M&A activity in Europe was caused by demographics and economic changes which were the major factors driving M&A activity as an integral part of the overall corporate restructuring activity in Europe according to experts. The cash surplus held by private equity firms (PEs) and public companies, the interest rates which touched their historic lows and the willingness of banks to provide financing were found to be the key factors for the global surge in M&A activity in 2006. The year 2007 was again a record year for global M&A volumes which were estimated at a record figure of around \$4.4 billion according to Thomson Financials and \$ 4.7 billion according to Dealogic. Volumes in Europe were higher than in the US for the first time in five years and only the second time ever: \$1.78 trillion vs. \$1.57 trillion according to Thomson Financial. This has been partially attributed to the lag in Europe being affected by the credit markets.

#### **M&As in the Indian Airline Sector**

The forces of globalization, deregulation and liberalization unleashed by the economic reforms, set in motion in 1991, have transformed the face of the Indian services sector landscape, including that of the Indian Airline sector in a big way. There has been a paradigm shift from a regulated to a deregulated environment. The larger developments in the economies across the globe, the economic crisis in 1991 & more recently the sub-prime crisis and the changing outlook of the policy makers in India have forced the pace of change of the Indian Airline industry. The economic liberalization and deregulation measures initiated in the 1990s have opened up the doors to foreign competition and made the markets more efficient and competitive. Continuous innovation and keeping pace with technological change have become a must for survival of the firms in the services industry including the Airline sector. The developments in the Indian Airline sector have witnessed quite a few mergers and acquisitions (M&A's).

The Indian airline sector has undergone massive upheaval in terms of the sophistication and innovation in the product and service mix, technological up gradation, customer reach and sectoral coverage fully exploiting the opportunities which help increasing revenues while optimizing on costs. At the same time, the expectations of the consumers of airline services have increased many folds. The entry of private and foreign airlines has changed the competitive landscape and ushered in an era of intense competition. As a result, the customer has become the focal point in the decision making process of a bank and factoring his views/expectations in designing or developing various airline services is a must for achieving sustainable competitive advantage.

Businesses feel the need to merge when they exhaust possibilities of organic growth, or when they want to achieve increased market share in good time. In the era of globalization, airlines will have to be financially strong and competitive to face the challenges and leverage the opportunities. Grant Thornton (2006) conducted a survey of Indian corporate managers across various sectors. Their findings revealed that M&A's continued to be a significant form of business strategy for Indian corporate. The results of the survey are furnished below:

**Objectives of Indian Corporate For Mergers (In percentage)**

Objective behind the Mergers & Acquisition Transaction	Responses
To improve revenues and profitability	33
Faster growth in scale and quicker time to market	28
Acquisition of new technology or competence	22
To eliminate competition and increase market share	11
Tax shields and investment savings	3
Any other reason	3

Source: Grant Thornton (India), The M&A and Private Equity Scenario, 2006.

**Airline Mergers & Acquisitions**

Airlines consider mergers and acquisitions as a means to increase their profitability and financial viability, but at the same time they must consider the operational and regulatory challenges to consummating a combination. Intended financial benefits stem from both cost reductions and increased revenues.

**Major Mergers in Indian Aviation Sector**

**1. Jet -Sahara Merger**

Jet Airways acquired Sahara, in the April of 2007, after a long round of negotiations that lasted for almost two years. It all began with a shown interest in taking over the ailing airlines (Sahara Airlines), by the then leader of the skies (Jet Airways). The combined duo formed a formidable opposition to the growing competition. It also promised to see the ailing Sahara Airlines out of the blue and black to being profitable. Naresh Goyal (CEO, Jet Airways) was determined to be the leader in Indian Civil Aviation Industry. The two years long tussle for the deal saw many ups and downs, and almost seemed to fall out. Following look at the events as they progressed with the passing time, as that will give the real picture of how the deal was finally linked after a two year long tussle.

**2. Air India – Indian Airlines Merger**

The largest domestic as well as international airways of India till the early 21<sup>st</sup> century saw some tough competition after the opening up of the skies for the private airlines. They were no more dictating the terms and were loosing market share very soon. Thus the long awaited merger of these two public sector airlines was one of the biggest events in Indian civil aviation sector. This deal also was the victim of poor decision making and negotiation skills of the Government. Following look into the events going into the deal as it went along.

**3. Acquisition of Air Deccan by Kingfisher Airlines**

The acquisition of largest low cost airlines of India, Air Deccan, by the Full service airlines, Kingfisher Airlines, was one of the much awaited deals in the civil aviation sector of India. But the main question at that time to be asked was how Vijay Mallaya is going to integrate the two airlines, operating with almost opposing Business Models in the Aviation Industry.

**Studies to evaluate the impact of Mergers and Acquisitions (Global scenario)**

M&A is one of the hotly debated topics from the perspective of finance or strategy. M&A's, as a strategy for speedier growth and increased market share among other things, has been researched intensively across the globe over the last two decades or so. One interesting and pertinent question that engages the attention of any researcher is "Does M&A Pay"? To evaluate acquisition success, financial economists have used a number of measures. Studies of post-merger performance usually follow either of the two approaches. i) Change in the value of the company at the time of the announcement ii) Accounting based studies, which

look at the change over time(usually 1 to 5 years) in some measure of earnings, operating cash flows, margins or productivity. Both approaches have their strengths and limitations. In the former approach, the analysis assumes that the acquisition event is completely unanticipated by investors and Efficient Market Hypothesis (EMH) holds good. The aggregate returns to the acquisition understate its true impact to the extent that the acquisition is partially anticipated. Researchers control for this by stretching the event window chosen for measuring the returns, over a number of days before the acquisition announcement. The empirical evidence finds that the announcement returns do convey information about the acquisition's subsequent success. Kaplan and Weisbach (1992) found that combined acquisition announcement returns to be significantly positively related to success (Kaplan, 2006).

This method of analysis, popularly known as event-studies, has employed market-based measures to capture gains from synergy which in turn impact valuation of the combined firm. According to these studies, the value generated by mergers and acquisitions is reflected in the stock prices (Singh and Montgomery, 1987). This in turn is based on the theory of efficient market hypothesis. But there are critical commentaries on whether announcement returns are meaningful. The fact remains that there is noise in the announcement returns and the information which the acquisition announcement itself releases may not completely reflect the value of acquisition alone. It is an empirical question as to whether the noise and other information are great enough to mask the information about the acquisition itself (Kaplan, 2006). The empirical research in this field suggests that the shareholders of the target firm enjoy returns that are significantly and materially positive but when it comes to acquiring firms, the conclusion is that in the aggregate, abnormal(or market-adjusted) returns to buyer(acquirer) shareholders from M&A activity are essentially zero(Bruner,2004).

#### **Indian scenario**

Despite substantial studies conducted regarding the efficiency of airline services industry in the US, Europe and Asia-Pacific airlines industries, such comprehensive studies in the Indian context are rare to come by especially in the area of commercial airlines mergers. This is partly attributable to the non-availability of data sources and the small sample of airlines that have undergone mergers.

**Bhattacharyya, Lovell & Sahay (1997)** examined the productive efficiency of 70 Indian commercial airlines between 1986 and 1991 using DEA and technical efficiency scores. Their finding revealed that public sector airlines were the most efficient when compared to foreign-owned and privately-owned Indian airlines. Another interesting finding of the study was that though foreign airlines were the least efficient at the beginning of the sample period, they became as efficient as public sector airlines by the end of the study period, possibly through efficient adaptation to an increasingly competitive environment. **GunjanM.Saneev (2008)** analyzed the efficiency of Indian public sector airlines for the period 2003-2007 using Data Envelopment Analysis (DEA) approach. His findings revealed that the efficiency of these airlines had not increased over the study period.

A plethora of information is available about the financial and human resource implications of mergers in general and airline mergers in particular from various sources. Many studies talk about the scale and scope economies, diversification benefits, and growth in market share, impact on valuation and other financial performance parameter improvements. A good number of studies have also investigated into the HR and cultural conflict related issues in the context of airline mergers. However, there is very little quantitative information available

about the impact of these mergers on consumers of airline services and on their perceptions of airline services in India. So there is a need for the evaluation in the area of service quality of the customers of Airline sector after the merging.

It is very important to focus especially on the side of ground handling area of airline as they are the most important affected area of post merger evaluation. Ground handling functions plays 70 percent of the airline activities as it contributes the major revenue of Airline Management. As the technology improves, the scope of the digitalization is also on focal point. The major ground handling areas in airports have been a playing a significant role in mergers synergy process. It affects the managerial, financial, marketing and operational areas.

### **Conclusion**

The Indian airline sector has undergone massive upheaval in terms of the sophistication and innovation in the product and service mix, technological up gradation, customer reach and sectoral coverage fully exploiting the opportunities which help increasing revenues while optimizing on costs. At the same time, the expectations of the consumers of airline services have increased many fold. The entry of private and foreign airlines has changed the competitive landscape and ushered in an era of intense competition. As a result, the customer has become the focal point in the decision making process of an airline and his views/expectations in designing or developing various airline services is a must for achieving sustainable competitive advantage.

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## Network Security

**Dr. Sunil Kumar\***

### **Abstract**

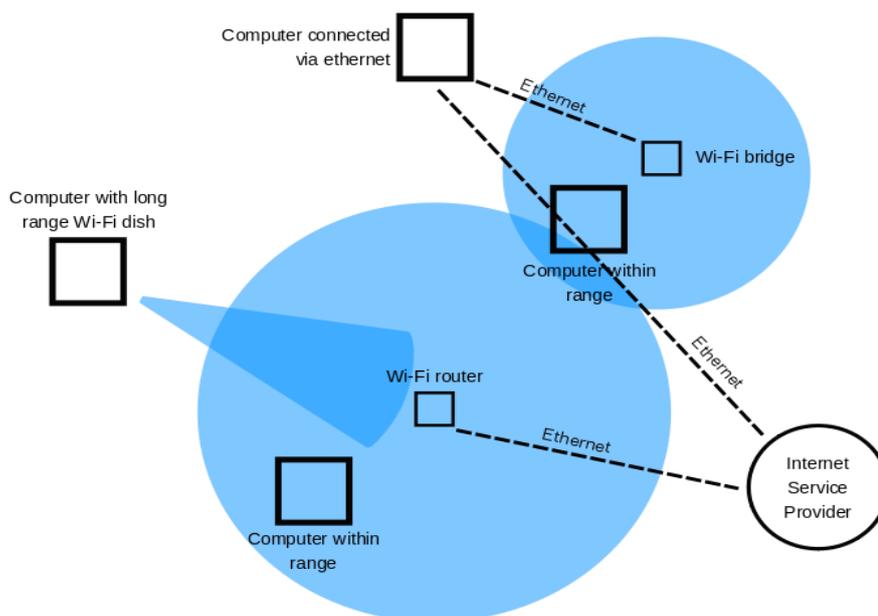
Recent work in security has illustrated that solutions aimed at detection and elimination of security threats alone are unlikely to result in a robust cyberspace. As an orthogonal approach to mitigating security problems, some have pursued the use of cyber. Wireless network is a most popular technique now days. Wireless Sensor network is one of the popular applications of wireless network . The sensor network uses some kind devices. There are number of devices are used in the network area.

### **Introduction**

Wireless telecommunications is the transfer of information between two or more points that are not physically connected. Distances can be short, such as a few metres for television remote control, or as far as thousands or even millions of kilometres for deep-space radio communications. It encompasses various types of fixed, mobile, and portable two-way radios, cellular telephones, personal digital assistants (PDAs), and wireless networking. Other examples of wireless technology include GPS units, Garage door openers or garage doors, wireless computer mice, keyboards and Headset (audio), headphones, radio receivers, satellite television, broadcast television and cordless telephones.

What is a wireless network?

In a few simple words, a basic home wireless network means connecting an Internet access point, such as a cable from your Internet Service Provider, to a (wireless) router in order to allow multiple devices to connect to the network very quickly.



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In many cases, once a Wireless router has been installed, we find a place in our home for it and forget about it. As long as all our devices are set up and connected via the Wi-fi network, that's all that matters, right? Wrong!

Probably many of you don't realize, but the Internet router is one of the most important devices in our home. It's the gateway to our Internet access and also prone to exploits by cybercriminals who can sneak into our devices and get access to our system.

Let's not forget that we live in the age of data breaches, ransomware attacks, and many other online threats. Thus, you should be worried about the security of your home network and take all the needed security measures to increase Wifi security.

- ***Increase your Wi-Fi security by activating network encryption***

Wireless networks come with multiple encryption languages, such as WEP, WPA or WPA2. To better understand this terminology, **WPA2** stands for Wi-Fi Protected Access 2 and is both a **security protocol** and a current standard in the industry (WPA2 networks are almost everywhere) and encrypts traffic on Wi-Fi networks. It also replaces the older and less secure **WEP (Wired Equivalent Privacy)**, and is an upgrade of the original **WPA (Wi-Fi Protected Access)** technology. Since 2006, all Wi-Fi certified products should use WPA2 security.

WPA2 AES is also a standard security system now, so all wireless networks are compatible with it. If you want to enable WPA2 encryption on your Wireless router, use these six steps. If you are using a TP-Link wireless router, here's how to secure your wireless network.

The good news is that the WPA3 is already here and will replace WPA2. The Wi-Fi Alliance recently announced its next-generation wireless network security standard which aims to solve a common security issue: open Wi-Fi networks. More than that, it comes with security enhancements and includes a suite of features to simplify Wi-fi security configuration for users and service providers.

- Turn off the wireless network when Not in use

In order to secure your network, we strongly recommend you to **disable the wireless home network**, in case of extended periods of non use. You should do the same thing with all your devices that are using Ethernet cables or when you won't be at home.

By doing this, you are closing any windows of opportunity malicious hackers might attempt to get access to it while you are away.

Here are a few advantages of disabling your wireless network:

- **Security reasons** – Turning off your network devices, it minimizes the chances of becoming a target for hackers.
- **Surge protection** – When you power off your network device, you also lower the possibility of being damaged by electric power surges;
- **Noise reduction** – Although the modern home networks are much quieter these days, disabling your wireless home network can add calmness to your home.
- ***Change your default IP address on the Wireless router***

Changing the default IP address to a less common one is another thing you should consider doing to better secure your home network and make it more difficult for hackers to track it. To change the IP address of a router, you should follow these steps:

1. Log into your router's console as an administrator. These basic steps will teach you how to easily connect to your home network as an admin. Usually, the address bar type looks like <http://192.168.1.1> or <http://192.168.0.1>
2. Once you are there, insert the username and password on the login page;

**3.** Then select **Network > LAN** which is in the menu of the left side;

**4.** Change the IP address to preference, then click **Save**.

**Note:** After you've changed the IP address, you'll need to type the new IP address into the web browser bar.

You can also change the DNS server that your Wireless router is using to filter the Internet traffic and this guide will show how to do it.

### **Conclusions**

Securing the network should be a top priority for each of us interested in keeping the data safe and secure. These steps can be really useful even for the non-tech savvy person to apply. Also, do not forget that your wireless network security can be sometimes weak, and prone to exploits. It almost doesn't matter how strong your password is or if your software is up to date if cybercriminals can just hijack your Wi-Fi data.

So this is why we've written this guide on how to secure a wireless network. You still have to keep an eye out for **insecure Wi-Fi routers out there**, however, since most will probably still use WEP and not follow these safety procedures.

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## **A Review on Digital Steganography**

**Raj Shree, Ashwani Kant Shukla & Vivek Anand Sharma\***

### **Abstract**

Digital steganography is an art and science of hiding information or messages in digital files such as image, audio, text and other digital form. It's holding the hidden information may appear to be inoffensive, and it cannot be detected by casual observer. The method which is use to hiding the digital information has grown undoubtedly since the 1990s. In comparison of cryptography where the information is encrypted and decrypted, the aim of steganography is to hide the information with digital files. The salient prons of steganography over cryptography is that the transmit information do not attract attention to messengers, or to recipients. Modern information technology enables beginners to create steganographic messages, transmit, and unhide without applying special expertise.

**Keywords:** Digital Steganography, Steganalysis, Encryption, Digital Forensic, Computer Crime.

In the recent digital world the steganography is being used all over the world on computer systems for various purposes. There are many tools and techniques have been designed with the help of old steganographic techniques such as null ciphers, coding in images, audio, video and microdot (McDonald, A.D., Kuhn, 2000). The great changes and enhanced the services of internet the users has connected to internet globally and its very challenging task to send the data over the public network to maintain the confidentiality, integrity of data that required to be secured from the attackers on public network and this proficient through masking of informations (White, W. 1989). It is a most popular technique to masking the important informations into a cover medium so that attackers will not be able to access the conceal information by steganography method (Swanson, M.D., Zhu, Twefik, 1996). The most common salient approach between steganography and cryptography is that, both are used to mask the data but the main difference between both, steganography does not acknowledge any fishy stuff about the masked information to the user. Therefore the attackers will not try to attempt to decrypt information (Collberg, C., Thomborson, 1998). This paper reviews the various methods of steganography such as image, audio, video, text, to hide the information.

### **Steganography and Encryption**

The salient objectives of steganography are not to keep users from acknowledgeable the concealed information; it is to keep others from considering that the set of data even present (Busch, Funk, Wolthusen, 1999). If the steganography technique defines anyone to identify the medium through which data is transmitting, then the method has failed. Encryption and steganography both have different objectives. Encryption is encrypts the data into cipher text such that attackers or unauthorized user cannot determine their real meaning. Steganography does not modify the data and meaning itself to make it non-usable to unauthorized user (Andreasson, O., 2006). Instead, the steganographer tries to prevent unauthorized user from suspecting that the real information is there. For private communication to achieving the

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maximum security by using encryption and steganography methods together (Backbone Security, 2010). Encrypted data is very difficult to differentiate from actual possible way that can suspect the plain text is in the carrier medium. There are many existing steganography tools available that can encrypt data before hiding it in the carrier medium (Lu, Chen, Fan, 2005).

### **Methods of Digital Steganography**

There are many techniques available in the field of digital steganography. The most common techniques are discussed below:

#### **Images Steganography**

Images are a quite good way for masking the data. The more spacious an image, the less restriction there are to know that how much information it can conceal before it get suspected. The JPHide/JPSeek package uses the factors in a JPEG to mask information (Chang, Chin-Chen., Lin, Iuan-Chang, YU., 2007). An advanced method inserts information in optically irrelevant details of an image. Both of these techniques modify the image; however, you can analyze image depravity using different images and information of increasing length (Cheddad, Condell, Curran, McKeivitt, 2010). The other, particular to GIF images, is to employ an image's palette in order to conceal information. Gifshuffl does not modify the image itself in any detectable way; moderately, it inverts a GIF image's color map, leaving the real image exactly perfect. Hiding the data by taking the cover object as image is referred as image steganography and used pixel intensities method to conceal the information. In digital steganography, images are widely used cover source because there are number of bits presents in digital representation of an image (Cole, E., 2003).

#### **Audio Steganography**

There are many way for masking information in audio files. MP3-Stego not only the perfect method to hides irrational information, but also application to be not completely robust method of watermarking MP3 audio files (Diquin, Rangding, Liguang, 2009). The Windows Wave pattern lets users mask information by using StegoWav or Steghide. Steghide modifies the least significant bits of data in the transmitting medium. Although nearly equal in hiding data promising the maximum size of essential audio files makes them less important than image set of data as a steganographic medium (Garfinkel, S.L., Shelat, 2003).

This method hides the data in WAV, AU and MP3 sound files. There are also some different methods of audio steganography following as:

- Low Bit Encoding
- Phase Coding
- Spread Spectrum

#### **Text Steganography**

It is a method that uses to hiding the information inside the text files and the most important data is concealed to trailing every  $n^{\text{th}}$  word of every words of text message. Some other methods also exist to hiding information in text file (Halderman, J.A., Schoen, Heninger, Clarkson, 2009) are following as:

- Format Based Method
- Random and Statistical Method
- Linguistics Method

#### **Video Steganography**

It is a method of masking any kind of data or set of information into digital video pattern. In the combination of pictures is used to transmitting for masking the data or set of information.

Usually discrete cosine transform (DCT) round off the values (e.g., 2.667 to 3) which is used to conceal the information in each of the pictures in the video, which is not detectable by the human eye. H.264, Mp4, MPEG, AVI are the patterns used by video steganography method (Mazurczyk, W., Szczypiorski, 2008).

### **Network or Protocol Steganography**

The method uses for hiding the information by taking the network protocol e.g. TCP, UDP, ICMP, IP etc, as cover medium. In the OSI layer network model the hidden carrier present where steganography technique can be used (Kulhandjian, Pados, Li, Batalama, Medley, 2013).

### **Method Comparison**

Comparison of Steganography, Cryptography, and Watermarking are following as:

**Table 1: Method Comparison (Morkel, T., Eloff, Olivier, 2005)**

Technique	Objective	Remark
Steganography	Masking information to prevent unauthorized access	Content usually of short time span Needs carrier file
Cryptography	Interpretation the digital content inaccessible to outsiders	Content usually of short time span No need for carrier file
Watermarking	Used to verify the identity and authenticity	May or may not be readily detectable Durability is essential

### **Factors Affecting a Steganographic Method**

The efficiency of any steganographic technique can be determined by comparing stego-image with the mask image. There are some coefficients that determine the effectiveness of methods is following as:

**Robustness:** It refers to the capability of inserted set of information to remain flawless if the stego-image go through complete change for example linear and non-linear filtering, sharpening or blurring, addition of random noise, rotations and scaling, cropping or decimation, lossy compression (Moulin, P., O'Sullivan, 2003).

**Imperceptibility:** It means invisibility of a steganographic algorithm because it is the first and foremost need, since the durability of steganography exists in its capability that not be identified by the human eye (Warkentin, Bekkering, Schmidt, 2008).

**Payload Capacity:** It refers to the amount of important set of information that can be masked in the medium. Watermarking usually inserted only less copyright information, whereas, the steganography technique target at concealed communication and therefore have enough inserting volume (Wang, H., Wang, 2004).

**Peak Signal to Noise Ratio:** It is defined the ratios of maximum permute power of a signal and power of noxious noise that degrades the loyalty of its descriptions. This ratio finds out the precision between the real and compressed data. The maximum value of PSNR shows the better precision of compressed data (Chung, Fei Xu., 2006).

**Mean Square Error:** It is defined as the average squared difference of a reference image and a distorted image. The smaller MSE is more effective the image steganography method. MSE is calculated to pixel-by-pixel by adding the squared differences of all the pixels and dividing by the total pixel count (Yang, Chunfang., Liu, Fenlin., Luo, Xiangyang., Zeng, Ying., 2013).

Signal to Noise Ratio: Its ratio of signal and noise power and compares the level of a specified signal to the level of background noise (Zander, Armitage, Branch, 2007).

### **Conclusions**

As steganography becomes more widely used in computing, there are issues that need to be resolved. There are a wide variety of different techniques with their own advantages and disadvantages. Many currently used techniques are not robust enough to prevent detection and removal of embedded data. The use of benchmarking to evaluate techniques should become more common and a more standard definition of robustness is required to help overcome this. For a method is to deliberate robust it must have certain following properties:

- a) The precision of the media should not decrease by adding the secret data.
- b) Important data should not be identified without important knowledge, typically the key.
- c) If more than one data are present they should not hamper with each other.
- d) The secret data should survive attacks that don't degrade the perceived quality of the work.

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## 'अकाल में उत्सव' : क्रियाकर्म बनाम कार्यक्रम

### सत्यवान\*

#### सारांश

पंकज सुबीर का उपन्यास 'अकाल में उत्सव' किसान जीवन पर केन्द्रित है। 'अकाल में उत्सव' उपन्यास में दो कथाएँ समान्तर रूप से चलती हैं। एक तरफ गरीब किसान रामप्रसाद और उनकी पत्नी कमला तथा दूसरी तरफ भ्रष्ट सरकारी तंत्र में श्रीराम परिहार कलेक्टर व उनकी पूरी टीम है। 'अकाल में उत्सव' उपन्यास में एक तरफ किसान का क्रियाकर्म चल रहा है और दूसरी तरफ भ्रष्ट सरकारी तंत्र का कार्यक्रम चल रहा है। अपने देश का किसान पता नहीं अपनी जिन्दगी में कितनी बार मरता है। कभी उसको प्राकृतिक आपदा मारती है, कभी भ्रष्ट सरकारी तंत्र मारता है। बस सीमान्त किसान का तो क्रियाकर्म ही चलता रहता है। कभी उसकी फसल का क्रियाकर्म, कभी उसकी आशाओं का क्रियाकर्म तथा अन्त में उसका खुद का क्रियाकर्म हो जाता है। दूसरी तरफ भ्रष्ट सरकारी तंत्र में साल भर कार्यक्रम चलते रहते हैं। सरकारी पैसे को कैसे ठिकाने लगाना है, उनकी योजनाएँ बनती रहती हैं। श्रीराम परिहार जैसे कलेक्टर पता नहीं कितने नगर उत्सव के कार्यक्रम करवाते रहते हैं।

**मूल शब्द:**— किसान, कर्ज, सरकार, भ्रष्टाचार।

#### प्रस्तावना

पंकज सुबीर 21वीं सदी के महत्वपूर्ण कथाकारों में स्थान रखते हैं। उन्होंने विभिन्न कहानी संग्रहों और उपन्यासों की रचना करके हिन्दी साहित्य जगत में अपनी विशिष्ट पहचान बनाई है। उन्होंने सन् 2016 में 'अकाल में उत्सव' नामक उपन्यास की रचना करके नया कीर्तिमान स्थापित किया है। आजकल ग्रामीण जीवन को केन्द्र में रखकर बहुत ही कम उपन्यास लिखे जा रहे हैं। इसलिए 'अकाल में उत्सव' जैसे उपन्यासों का महत्व और भी बढ़ जाता है। 'अकाल में उत्सव' उपन्यास किसान जीवन को केन्द्र में रखकर लिखा गया है। आज किसान की आर्थिक स्थिति बहुत दयनीय हो गई है। गरीब किसान की तरफ बहुत ही कम लोगों का ध्यान जाता है। 'अकाल में उत्सव' उपन्यास में दो कथाएँ समान्तर रूप से चलती रहती हैं। एक तरफ गरीब किसान अपनी जिन्दगी से जंग लड़ रहा है और दूसरी तरफ भ्रष्ट सरकारी तंत्र नगर उत्सव मनाने में लगा हुआ है।

#### किसान जीवन

किसान जीवन जन्म से लेकर मृत्यु तक विपदाओं और कष्ट में व्यतीत होता है। एक विपदा जाती है तो दूसरी आ जाती है। कभी खत्म नहीं होती हैं बस एक का जाने का इंतजार करती रहती है। भारत में छोटी जोत के किसानों की हालत तो बहुत दयनीय है। आज किसान खेती को छोड़कर मजदूर बन रहा है। किसान जीवन तो हमेशा संकटों से घिरा रहता है। पंकज सुबीर के उपन्यास 'अकाल में उत्सव' में रामप्रसाद और कमला की कहानी ही समूचे भारत के किसानों की ही कहानी है। छोटी जोत के किसानों का सभी का यही हाल है।

“गाँवों में आज भी विवाह और मृत्यु दोनों ही, परिवार को समान रूप से कर्जे में डुबा कर चले जाते हैं। विवाह में भी वही होता है, मेहमान जुटते हैं, पूरे गाँव को और आसपास के रिश्तेदारों को खाना दिया जाता है और मृत्यु होने पर भी वही होता है। अंतर सिर्फ इतना होता है कि विवाह के अवसर पर एक उल्लास होता है मन में और मृत्यु के अवसर पर दुःख होता है।”<sup>1</sup>

किसान और कर्ज दोनों का रिश्ता बहुत पुराना है। दोनों साथ-साथ चलते हैं। किसान मर जाता है लेकिन कर्ज जिंदा रहता है। किसान के मरने के बाद किसान का बेटा उस कर्ज का साथ निभाता है। कब तक? जब तक किसान के खेत नहीं बिक जाते हैं और वह किसान से मजदूर नहीं बन जाता है तब तक। किसान से तो मजदूर की जिन्दगी अच्छी है। मजदूर को तो फिर भी मजदूरी मिल जाती है और परिवार का पेट भर जाता है लेकिन किसान के परिवार को तो कई बार अन्न भी नसीब नहीं होता है। यह देश की कितनी बड़ी विडम्बना है कि एक अन्नदाता अन्न पैदा करने के बाद भी भूखा सो जाता है और उसके द्वारा पैदा किया गया अन्न पर अन्य लोग स्वादिष्ट व्यंजन बना कर अपनी थाली सजाते हैं।

किसान के पास जब गुजारा करने के लिए कुछ नहीं बचता है तो अंत में वह अपनी पत्नी के गहने बेच कर काम चलाता है और जब सब गहने बिक जाते हैं तो अंत में उसका खेत बिकता है और वह किसान से मजदूर बन जाता है। “जब परिवार की महिला के पास इन धातुओं का अंत हो जाता है, तब यह तय हो जाता है कि किसानी करने वाली बस यह अंतिम पीढ़ी है, इसके बाद अब जो होंगे, वह मजदूर होंगे। यह धातुएँ बिक-बिक कर किसान को मजदूर बनने से रोकती हैं। तब तक, जब तक यह समाप्त नहीं हो जाती हैं। इसे हम यँ भी समझ सकते हैं कि धातुएँ नहीं

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बचती, तो फिर खेत बिकने शुरू होते हैं। यदि धातुएँ नहीं होती तो खेत तो पहले ही बिक जाते। किसान की जेब से जो सब्सिडी, समर्थन मूल्य के आँकड़ों का खेल करके हम सबके हिस्से में डाली जाती है, उस सब्सिडी से होने वाले घाटे को पूरा करने के लिए बिकते हैं यह जेवर। हमारी थाली के अन्न सस्ते रहें, इसलिए किसान की पत्नी के जेवर बिकते हैं।<sup>2</sup>

किसान जीवन में कितने कष्ट हैं यह सिर्फ वही जान सकता है जिसने कभी खेती की हो। बाकी लोगों को तो बहुत आसान सा कार्य लगता है खेती करना। उपन्यास का पात्र रमेश चौरसिया कहता है कि “मैं खुद भी किसान हूँ, मुझे पता है कि किसानी आज की तारीख में कितना मुश्किल काम हो गई है। बाहर से दिखता है कि खूब अच्छा काम है, एक बार जाकर बीज डाल आए, खाद डाल दी, पानी फेर दिया और फिर काट ली फसल। असलियत में क्या होता है यह केवल वही जानता है, जो किसानी करता है।<sup>3</sup>

### **प्राकृतिक आपदा का संकट**

जब तक फसल पक कर किसान के घर नहीं आ जाती, तब तक किसान अपनी फसल की चिंता में रहता है क्योंकि मौसम का पता नहीं होता कि कब करवट बदल ले। रामप्रसाद अपनी फसल को लेकर और अपने बच्चों के भविष्य की चिंता में डूबा हुआ है और उसकी पत्नी कमला उसके दुःख को कम करने का असफल प्रयास कर रही है। “यदि इस घर की छत हटा दी जाए और फिर इस दृश्य को अंतरिक्ष से देखा जाए, इसकी ध्वनियों को सुना जाए, तो यह अपने समय का सबसे करुण शोकगीत और सबसे मार्मिक दृश्य होगा। थक कर, हार कर, टूट कर, सोया हुआ किसान, उसके पैरों के तलवों में पड़े हुए छालों को छू-छूकर दर्द की शिदधत को महसूस करती तथा उसको कम करने के असफल प्रयास में लगी एक स्त्री, उसकी पत्नी। चाहती है कि उसकी उँगलियाँ उन छालों का पूरा दर्द पी जाएँ, उनकी सारी टीस को हर ले लेकिन उँगलियाँ महसूस ही कर पा रही हैं, कुछ भी कम नहीं कर पा रही। अगर गाँव के सारे छोटे किसानों के घर से छत हटा दी जाए तो अंतरिक्ष से देखने पर यही पुरुष और यही स्त्री आपको हर छोटे किसान के घर में मिलेंगे। ऐसे ही।<sup>4</sup>

किसान के सिर पर प्राकृतिक आपदाओं का संकट हमेशा ही मंडराता रहता है। कभी बारिश नहीं हुई तो सूखा पड़ गया और कभी बारिश ज्यादा हो गई तो बाढ़ ने फसल को बर्बाद कर दिया। कभी बेमौसम बारिश या ओले पड़ गये तो भी फसल का क्रियाकर्म हो जाता है। ‘अकाल में उत्सव’ में जब बूँद गिरने लगी तो रामप्रसाद का दिल धक-धक करने लग गया। “टप्प.....आँगन में पहली बूँद गिरी। बूँद की आवाज ने उसे छोटे से टूटे-फूटे मकान के अंदर दहशत भर दी उस साधारण सी आवाज में कितनी दहशत भरी थी। आवाजें या दृश्य अपने आप में दहशत नहीं होते, वह स्थितियाँ, जिनमें वह पैदा हो रहे हैं, उनके साथ मिलकर वह दहशत पैदा करते हैं। वरना तो इसी टप्प की आवाज पर जाने कितने गीत, कितनी कविताएँ रच दी गई हैं। कहीं इस आवाज को पायल की रुनझुन बताया गया, तो कहीं बूँदों की छम-छम। इनकी आवाज में जिंदगी की संगीत ढूँढ़ा जाता है और आज इसी आवाज में मौत का शोक गीत है।<sup>5</sup>

“ कट्ट.....कट्ट..... आवाज की तीव्रता बढ़ती जा रही है, जैसे कंकरो का आकार बढ़ता जा रहा हो। .....जमीन पर सफेद गोलियाँ पड़ी हुई हैं, इधर-उधर छितरी हुई। मौत की गोलियाँ, विनाश की गोलियाँ। सपने, उम्मीदें, आशाएँ, योजनाएँ..... सब एक-एक कर ओले की मार में गिर कर मर रहे हैं।<sup>6</sup>

थोड़ी देर की बारिश और ओलों ने रामप्रसाद की फसल और आशाओं का क्रियाकर्म कर दिया था। अपनी मेहनत पर पानी फिरा देख कर बेचारा रामप्रसाद शोक में डूब गया है।

### **किसान का अर्थशास्त्र**

पंकज सुबीर भी एक अन्वेषी उपन्यासकार हैं। उन्होंने अपने उपन्यास में तुलनात्मक विधि का प्रयोग करते हुए किसान के अर्थशास्त्र की रचना कर डाली है। उन्होंने अपने उपन्यास में सन् 1975 में किसान की फसल की कीमत और उस समय सोने जैसी अन्य वस्तुओं की कीमत तथा अधिकारियों-कर्मचारियों की आय की तुलना सन् 2015 में किसान की फसल का समर्थन मूल्य और अन्य वस्तुओं का मूल्य तथा अधिकारियों-कर्मचारियों की आय से की है।

उन्होंने अपने उपन्यास में आँकड़ों के साथ बताया है कि सन् 1975 में गेहूँ का समर्थन मूल्य 100 रुपये प्रति क्विंटल था और सोने का मूल्य 540 रुपये प्रति दस ग्राम था तथा चाँदी की कीमत 1200 रुपये प्रति किलो थी। जबकि सन् 2015 की बात करें तो सन् 2015 में गेहूँ का समर्थन मूल्य 1500 रुपये प्रति क्विंटल हो गया था और सोने के भाव बात करें तो सोना 30000 रुपये प्रति दस ग्राम हो गया था। चाँदी का भाव भी 38000 रुपये प्रति किलो हो गया था। इस प्रकार पिछले 40 वर्षों में किसान की फसल के समर्थन मूल्य में 15 गुना वृद्धि हुई है और सोने के भाव में लगभग 55 गुना की वृद्धि हुई है। चाँदी की कीमतों में भी लगभग 32 गुना की वृद्धि हुई है।

सन् 1975 में एक सरकारी अधिकारी को लगभग 400 रुपये प्रति महीना के हिसाब से वेतन मिलता था जबकि सन् 2015 में 40000 रुपये प्रति महीना हो गया था और सातवें वेतन आयोग की अनुसंशा के बाद तो लाखों में चला गया। यदि हम सन् 1990 में डीजल के रेट की तुलना करें तो सन् 1990 में साढ़े तीन रुपये प्रति लीटर का रेट था और उस समय गेहूँ का समर्थन मूल्य था लगभग 250 रुपये प्रति क्विंटल लेकिन सन् 2015 में डीजल का रेट बढ़कर 65 रुपये प्रति लीटर हो गया था और गेहूँ का रेट 1500 रुपये प्रति क्विंटल हो गया था। डीजल का रेट में लगभग 20 गुना जबकि गेहूँ का समर्थन मूल्य में 6 गुना की ही वृद्धि हुई।

पंकज सुबीर ने अपने उपन्यास 'अकाल में उत्सव' में पिछले 40 वर्षों की तुलना करके बताया है कि एक गरीब किसान की तरफ किसी भी सरकार ने कोई ध्यान नहीं दिया है। यदि किसान की एक एकड़ में फसल उगाने का खर्च और फसल की उपज का हिसाब-किताब लगाया जाये तो छोटी जोत के किसानों को अपनी मजदूरी भी नहीं बचती है। "गेहूँ की फसल लेने के लिए एक एकड़ में करीब चालीस किलो बीज बोना पड़ता है, जिसका सरकारी दाम होता है लगभग बारह सौ रुपये। बोने से पहले खेत तैयार करने का खर्च करीब दो हजार रुपये प्रति एकड़ बैठता है। एक एकड़ में खरपतवार नाशक, कीट नाशक और खाद का खर्च होता है लगभग पाँच हजार रुपये। पलेवा और सिंचाई पर बिजली या डीजल का खर्च करीब तीन हजार रुपये प्रति एकड़ होता है। और लगभग सात आठ सौ रुपये प्रति एकड़ मंडी तक की दुलवाई। एक हजार रुपये अन्य सभी प्रकार का खर्च होगा। इस प्रकार मोटा-मोटा हिसाब लगाया जाये तो प्रति एकड़ पन्द्रह हजार का खर्च तो तय ही है। एक एकड़ में यदि सब कुछ बिल्कुल ठीक-ठाक रहा, तो लगभग सोलह से बीस कि्वटल के बीच गेहूँ का उत्पादन होता है। यदि हम अठारह कि्वटल के आँकड़े को ही औसत मान कर चलें, तो एक एकड़ का किसान अपने परिवार के साल भर खाने के लिए कम से कम सात-आठ कि्वटल तो बचाएगा। बाकी बचा दस कि्वटल के हिसाब से बेचने पर मिलेगा पन्द्रह हजार रुपये, और लागत? वही पन्द्रह हजार रुपये। यदि किसान का समर्थन मूल्य भी पिछले पच्चीस सालों में बढ़े सोने के हिसाब से बढ़ता, तो उसे आज पन्द्रह नहीं साठ हजार मिलते और अगर अधिकारियों-कर्मचारियों, सांसदों-विधायकों के पैशाचिक वेतन आयोगों के हिसाब से सौ गुना बढ़ता, तो उनको आज दस कि्वटल के एक लाख मिलते। मगर नहीं, उसे मिलता है केवल वह आठ कि्वटल प्रति एकड़ गेहूँ, जो उसका परिवार साल भर खाएगा।"7

अपने देश में छोटे से छोटे समान का उत्पादन करने वाले उद्योगपति अपने समान की किमत खुद तय करते हैं और एक गरीब किसान की फसल का मूल्य सरकार या व्यापारी तय करते हैं। "कितना बड़ा मजाक है कि गरीब किसान की मक्का का तो न्यूनतम समर्थन मूल्य तय है मगर उस मक्का से कॉर्न-पलैक्स बनाने वाली बहुराष्ट्रीय कंपनी के लिए कोई भी न्यूनतम समर्थन मूल्य नहीं है। डेढ़ रुपये किलो की मक्का को बहुराष्ट्रीय कंपनी कॉर्न-पलैक्स बना कर तीन सौ रुपये किलो बेचती है।..... क्या यह बीस गुना आज तक किसी वित्त या कृषि मंत्री को दिखाई नहीं दिया। क्या एक सीधा-सा लॉजिक किसी को नहीं दिखता कि जो किसान धूप, बरसात, ठंड में, खेतों में अपनी जिन्दगी को झोंकते हुए पाँच महीने में जो फसल पैदा करता है, उसे केवल 1500 रुपये कि्वटल मिल रहा है और जो वातानुकूलित चैम्बर में बैठ कर मशीन से उस मक्का को केवल पाँच मिनट में चपटा कर कॉर्न-पलैक्स बना रहा है, उसे बीस गुना, तीस हजार रुपये?"8

### **भ्रष्ट सरकारी तन्त्र**

अपने देश में बहुत योजनाएँ बनती हैं। आप क्या सोच रहे हो कि योजनाएँ तो जनता की भलाई के लिए और देश का विकास के लिए बनती हैं। लेकिन अपने देश में योजनाएँ जनता की भलाई के लिए नहीं बल्कि सरकारी पैसे को हड़पने के लिए बनती हैं। यह सरकारी पैसे को लुटने का एक जरिया है। अपने देश में सबसे पहले केन्द्र में बैठे मगरमच्छ सरकारी पैसे का बहुत बड़ा हिस्सा हड़प लेते हैं उसके बाद राज्य सरकारों की बारी आती है तथा अंत में जो बचा-कुछ होता है वो जिला कलेक्टर जैसे अधिकारी हड़प जाते हैं। इस प्रकार योजनाओं का अंत हो जाता है। जिनके लिए योजनाएँ बनती हैं उनकी स्थिति तो बद से बदतर होती जा रही है।

श्रीराम परिहार कलेक्टर को अपने नगर उत्सव की तो चिंता है जबकि गरीब किसानों के साथ क्या हो रहा है उसकी कोई चिंता नहीं है। जब शहर में बारिश नहीं हुई और गाँवों में बारिश ने फसल को बर्बाद कर दिया तो कहता है कि "गुड, वेरी गुड। यह भी अच्छा हुआ कि रात की बरसात जो उधर गाँवों में हुई, वह यहाँ नहीं हुई। यहाँ हो जाती तो, सब कुछ चौपट हो जाता। आप लोगों की इतने दिनों की मेहनत सब बेकार हो जाती। थैंक्स गॉड, यहाँ पर बस बूँदा-बाँदी ही होकर रह गई।"9

पंकज सुबीर ने भ्रष्ट सरकारी तन्त्र की एक और तस्वीर सामने रख दी कि जब प्राकृतिक आपदा या मौसम की मार के कारण किसानों की फसल बर्बाद हो जाती है तो किसानों पर हमदर्दी दिखाते हुए सरकार मुआवजे की घोषणा कर देती है। किसानों की फसल कितनी बर्बाद हुई है इसकी जाँच करवाने के लिए सरकारी आदेश हो जाते हैं ताकि जिस-जिस किसान की फसल का नुकसान हुआ है उनको मुआवजे के पैसे मिल जाए, लेकिन सरकारी जाँच यहाँ भी किसान का खून चुसने में पीछे नहीं हटती है। जो पटवारी गाँवों में फसलों का नुकसान की गिरदावरी करने आता है, वह बिना पैसों के रिपोर्ट भी नहीं लिखता है। जो पैसा देता है उसकी रिपोर्ट अच्छी लिखी जाती है और जो पैसा नहीं देता उसकी रिपोर्ट हीं लिखी जाती है। अचानक बारिश के कारण रामप्रसाद की फसल भी बर्बाद हो गई थी। उसके घर पर खाने के लिए अन्न भी नहीं था तो ऐसी हालत में वो पटवारी को घूस कहाँ से दे। अंत में वह आत्महत्या कर लेता है और सरकारी तन्त्र उस हालात को नहीं देखता है कि उसने आत्महत्या क्यों की है बल्कि पुरा प्रशासन उसको पागल घोषित करके मामले को दबाने में लगा हुआ है। ऐसे पता नहीं कितने रामप्रसाद अपनी जान गवाँ देते हैं। इस प्रकार एक तरफ क्रियाकर्म जारी रहता है तो दूसरी तरफ कार्यक्रम जारी है।

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## कृषि क्षेत्र में कार्यरत महिलाओं की स्थिति, परिस्थिति एवं सहभागिता (सामाजिक परिप्रेक्ष्य में)

जयश्री शुक्ला\*

डॉ सुजीत कुमार\*\*

### संक्षिप्तिका

आज देश की कुल आबादी में से लगभग आधी आबादी महिलाओं की है। इसके बावजूद भी वे अपने मूलभूत अधिकारों से भी वंचित हैं, खासकर बात करे दो ग्रामीण क्षेत्रों में। अधिकारों के अतिरिक्त देखा जाये तो जिन क्षेत्रों में महिलाएँ पुरुषों के समान्तर पद पर हैं, वहाँ पर भी उनकी गिनती पुरुषों की अपेक्षा कमतर ही आँकी जा रही है। ऐसा ही एक क्षेत्र है "कृषि"। जिसमें महिलाओं को अधिकतर मजदूर का दर्जा ही प्राप्त है, कृषक का नहीं। विशेषज्ञों की माननी जाये तो कृषि में महिलाओं को पुरुषों के समान बराबर का दर्जा मिले तो कृषि कार्यों में महिलाओं की बढ़ती संख्या से उत्पादन में बढ़ोत्तरी हो सकती है। इसके अलावा पारिवारिक आजीविका में सुधार होगा, इसका लाभ पुरुष और महिलाओं दोनों को होगा। जिससे वह अपनी सामाजिक एवं आर्थिक स्थिति में सुधार कर सकेगी। समाज में फैली भूखमरी और कुपोषण को भी रोका जा सकता है। महिलाओं को अच्छा अवसर तथा सुविधा मिले तो वे देश की कृषि को द्वितीय हरित क्रान्ति की तरफ ले जाने के साथ देश के विकास का परिदृश्य भी बदल सकती हैं। इसी विचार को दृष्टिगत रखते हुए आज 15 अक्टूबर को संयुक्त राष्ट्र द्वारा "ग्रामीण महिला अंतर्राष्ट्रीय दिवस" और भारत में "राष्ट्रीय महिला किसान दिवस" के रूप में मनाया जाता है।<sup>(1)</sup> वर्ष 2016 में कृषि एवं किसान कल्याण मंत्रालय ने कृषि के प्रत्येक स्तर (बुआई से लेकर रोपण, जल निकासी, सिंचाई, उर्वरक, पौध संरक्षण, कटाई, खरपतवार हटाने, और भंडारण तक) के कार्यों में महिलाओं द्वारा निभाई जा रही अग्रणी भूमिका के महत्त्व को रेखांकित करने के लिये इस दिन को राष्ट्रीय महिला किसान दिवस के रूप में मनाने का फैसला किया गया।

**मुख्य बिन्दु**— कृषि, महिला किसान, नारीवाद, महिला कृषिक साक्षरता।

### प्रस्तावना

भारत में कृषक की पहचान उसकी जमीन से होती है। परन्तु बाजार की परिभाषा में अनुकूल कृषक होने की पहचान इस बात से तय होती है कि जमीन का मालिकाना हक किसके पास है, इस बात से नहीं कि उसमें श्रम किसका और कितना लग रहा है। इसे विडम्बना ही कहा जाएगा कि भारत में महिलाओं को भूमि का मालिकाना हक ना के बराबर है। इन सबके अतिरिक्त अगर महिला कृषकों के प्रोत्साहन की बात की जाये तो देश में केन्द्र और राज्य सरकार द्वारा कृषि क्षेत्र को बढ़ावा देने हेतु अनेक प्रकार की योजनाएँ, नीतियाँ व कार्यक्रम का क्रियान्वयन समय-समय पर किया जाता रहता है। परन्तु उन सबकी पहुँच महिलाओं तक या तो कम है या बिल्कुल नहीं है। यही कारण है कि देश की आधी आबादी देश के सबसे बड़े कृषि क्षेत्र में हाशिए पर है।

कृषि जनगणना (2010-11) की रिपोर्ट के मुताबिक भारत में मौजूदा स्थिति में केवल 12.78 प्रतिशत कृषि खेत महिलाओं के नाम पर हैं। यही कारण है कि 'कृषि क्षेत्र' में उनकी निर्णायक भूमिका नहीं है। कृषि भूमि पर मालिकाना हक महज एक प्रशासनिक पहलू नहीं है, बल्कि इसका सामाजिक-आर्थिक निहितार्थ भी है। इस एक हक से व्यक्ति की पहचान, उसके अधिकार, निर्णय की क्षमता, आत्मनिर्भरता व आत्मविश्वास जुड़ा हुआ है। महिलाओं के पास जमीन पर अधिकार न होने से उनका सर्वांगीण विकास और सशक्तीकरण प्रभावित हो रहा है। साथ ही गम्भीर और आपदा की स्थिति में अपने पैतृक भूमि का उपयोग करने में भी अक्षम होती हैं। अतः जरूरी है कि पैतृक कृषक भूमि में पत्नी व पुत्र के साथ-साथ पुत्री का नाम भी दर्ज हो, ऐसा कानून में प्रावधान किया जाना चाहिए। यह भी समझने की आवश्यकता है कि पुरुषों के पलायन के कारण कृषि कार्य पुरुषों से ज्यादा महिलाओं के हाथ में चला गया है, इसके बावजूद महिलाएँ कृषक नहीं हैं, क्योंकि उनके पास कृषि के मालिकाना हक का दस्तावेज नहीं है अर्थात् वह खेत की वास्तविक मालिक नहीं हैं।<sup>(2)</sup> कृषि क्षेत्र में उनकी सहभागिता का दूसरा पहलू भी है, अधिकतर घरेलू काम जैसे— जलावन की लकड़ी, पशुओं के लिये चारा, परिवार के लिये लघु वन उपज, पीने का पानी, परिवार का भरण-पोषण समेत हर काम में महिलाओं की केन्द्रीय भूमिका है, किन्तु उनकी पहचान श्रमिक अथवा पुरुष सहायक के रूप में ही होती है। मातृसत्तात्मक परिवारों को छोड़ दिया जाये तो वे सामान्य परिवारों में कभी घर की मालिक नहीं बन पाती हैं। जिसकी वजह से परिवार सम्बन्धी निर्णय, कृषि सम्बन्धी निर्णय, नियंत्रण के साथ-साथ किसानों को मिलने वाली समस्त सुविधाओं एवं 65 प्रतिशत

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कृषि कार्य का भार अपने कंधों पर उठाने वाली महिलाएं अपने अधिकारों से वंचित रह जाती हैं। इस सबके कारण उन्हें किसान का दर्जा नहीं मिलता पाता है।<sup>(3)</sup>

### **कृषि क्षेत्र में कार्यरत महिलाओं की स्थिति एवं परिस्थिति**

विश्व खाद्य एवं कृषि संगठन के अनुसार भारतीय कृषि में महिलाओं का योगदान करीब 32 प्रतिशत है, जबकि कुछ राज्यों (जैसे कि पहाड़ी तथा उत्तर-पूर्वी क्षेत्र तथा केरल राज्य) में महिलाओं का योगदान कृषि तथा ग्रामीण अर्थव्यवस्था में पुरुषों से भी ज्यादा है। भारत के 48 प्रतिशत कृषि से सम्बन्धित रोजगार में महिलाएं कार्यरत हैं, जबकि करीब 7.5 करोड़ महिलाएं दुग्ध उत्पादन तथा पशुधन व्यवसाय से सम्बन्धित गतिविधियों में सार्थक भूमिका निभा रही हैं। ऑकड़ों के मुताबिक कृषि उत्पादनों में महिलाओं का योगदान 20 से 30 प्रतिशत ही है। विशेषज्ञों का मानना है कि अगर कृषि क्षेत्र में महिलाओं को पुरुषों के बराबर का दर्जा मिले तो कृषि कार्यों में महिलाओं की बढ़ती संख्या से उत्पादन में बढ़ोत्तरी हो सकती है। भूख और कुपोषण को भी रोका जा सकता है। इसके अलावा ग्रामीण आजीविका में सुधार होगा, इसका लाभ पुरुष और महिलाओं, दोनों को होगा। सरकार की विभिन्न नीतियों जैसे जैविक खेती, स्वरोजगार योजना, भारतीय कौशल विकास योजना इत्यादि में महिलाओं को प्राथमिकता दी जा रही है। विभिन्न क्षेत्रों में महिलाओं की सहभागिता से उनकी स्थिति में परिवर्तन देख जा सकता है। यदि महिलाओं को अच्छा अवसर तथा सुविधा मिले तो वे देश की कृषि को द्वितीय हरित क्रान्ति की तरफ ले जाने के साथ देश के विकास का परिदृश्य भी बदल सकती हैं।<sup>(4)</sup> यही वजह है कि महिलाओं को कृषि क्षेत्र के प्रति जागरूक करने और उन्हें इस क्षेत्र में सम्मानजनक स्थान दिलाने के उद्देश्य से पिछले वर्ष कृषि एवं किसान कल्याण मंत्रालय द्वारा प्रति वर्ष 15 अक्टूबर को "राष्ट्रीय महिला किसान दिवस" के रूप में मनाने का निर्णय लिया गया था। निर्णय का आधार संयुक्त राष्ट्र संगठन द्वारा 15 अक्टूबर को "अन्तर्राष्ट्रीय महिला दिवस" के रूप में मनाना था। 15 अक्टूबर, 2017 को देश भर के समस्त कृषि विश्वविद्यालयों, संस्थानों एवं कृषि विज्ञान केन्द्रों में 'राष्ट्रीय महिला किसान दिवस' मनाया गया। इस दिवस का उद्देश्य कृषि में महिलाओं की सक्रिय भागीदारी को बढ़ाना है। इसके अलावा, कृषि और सम्बद्ध क्षेत्रों में महिलाओं को और अधिक सशक्त बनाने के लिये तथा उनकी जमीन, ऋण और अन्य सुविधाओं तक पहुँच को बढ़ाने के लिये कृषि एवं किसान कल्याण मंत्रालय ने किसानों के लिये बनी राष्ट्रीय कृषि नीति में उन्हें घरेलू और कृषि भूमि दोनों पर संयुक्त पट्टे देने जैसे नीतिगत प्रावधान किये हैं। इसके साथ कृषि नीति में उन्हें किसान क्रेडिट कार्ड जारी करना, फसल, पशुधन पद्धतियों, कृषि प्रसंस्करण आदि के माध्यम से जीविका के अवसरों का सृजन करवाए जाने जैसे प्रावधानों का भी जिक्र है।

कृषि एवं किसान कल्याण मंत्रालय का लक्ष्य कृषि उत्पादन और उत्पादकता बढ़ाने के साथ-साथ किसानों के कल्याण के लिये उपाय करना है। साथ ही अपने समग्र जनादेश लक्ष्यों और उद्देश्यों के भीतर यह भी सुनिश्चित करना है कि महिलाएं कृषि उत्पादन और उत्पादकता में प्रभावी ढंग से योगदान दें। उन्हें बेहतर जीवनयापन के अवसर मिले। इसलिये महिलाओं को सशक्त बनाने और उनकी क्षमताओं का निर्माण करने और इनपुट प्रौद्योगिकी और अन्य कृषि संसाधनों तक उनकी पहुँच को बढ़ाने के लिये उचित संरचनात्मक, कार्यात्मक और संस्थागत उपायों को बढ़ावा दिया जा रहा है और इसके लिये कई प्रकार की पहल की जा चुकी है। इसी तरह की पहल में एक महत्वपूर्ण पहल है, कृषि में महिलाओं की अहम भूमिका।

### **कृषि सम्बन्धी अनुसंधान संस्थाएं**

महिलाओं की भागीदारी को ध्यान में रखते हुए कृषि एवं किसान कल्याण मंत्रालय ने वर्ष 1996 में भारतीय कृषि अनुसंधान परिषद के अन्तर्गत केन्द्रीय कृषि रत महिला संस्थान की स्थापना भुवनेश्वर में की। यह संस्थान कृषि में महिलाओं से जुड़े विभिन्न आयामों पर कार्य करता है। इसके अलावा, भारतीय कृषि अनुसंधान परिषद के 100 से अधिक संस्थानों ने कई तकनीकों का सृजन किया ताकि महिलाओं की कृषि सम्बन्धी कठिनाइयों को कम कर उनका सशक्तिकरण किया जा सके। देश में 680 कृषि विज्ञान केन्द्र हैं। हर कृषि विज्ञान केन्द्र में एक महिला वस्तु विशेषज्ञ हैं। वर्ष 2016-17 में महिलाओं से सम्बन्धित 21 तकनीकियों का मूल्यांकन किया गया और 2.56 लाख महिलाओं को कृषि सम्बन्धित क्षेत्रों जैसे सिंचाई, गुदाई इत्यादि से उत्पाद बढ़ाना, वैल्यू एडिशन, ग्रामीण हस्तकला, पशुपालन, मधुमक्खी पालन, पोल्ट्री, मछली पालन आदि का प्रशिक्षण दिया गया। इन सबके साथ कृषि और सम्बद्ध गतिविधियों में महिलाओं की भागीदारी को सुदृढ़ बनाने के लिये, केन्द्र सरकार द्वारा उचित संरचनात्मक, कार्यात्मक और संस्थागत उपायों द्वारा महिलाओं को सशक्त, क्षमता निर्माण और इनपुट प्रौद्योगिकी तक उनकी पहुँच बढ़ाई जा रही है।<sup>(6)</sup>

### **सरकार द्वारा संचालित विभिन्न योजनाएं एवं कार्यक्रम**

सरकार द्वारा विभिन्न योजनाओं, कार्यक्रमों और विकास सम्बन्धी गतिविधियों के अन्तर्गत महिलाओं के लिये कम-से-कम 30 प्रतिशत धनराशि का आवंटन सुनिश्चित किया गया है। साथ ही विभिन्न लाभार्थी-उन्मुखी कार्यक्रमों, योजनाओं और मिशनों के घटकों का लाभ महिलाओं तक पहुँचाने के लिये महिला समर्थित गतिविधियाँ शुरू की गयी हैं। साथ ही महिला स्वयं सहायता समूहों के गठन पर ध्यान केन्द्रित करना ताकि क्षमता निर्माण जैसी गतिविधियों के माध्यम से उन्हें सूक्ष्म ऋण से जोड़ा जा सके और जागरूकता के द्वारा विभिन्न सूचनाओं एवं सरकार द्वारा प्रदत्त लाभांश तक उनकी पहुँच बढ़ सके। साथ ही विभिन्न स्तरों पर निर्णय लेने वाले निकायों में उनका प्रतिनिधित्व हा सके। इसके अलावा कृषि मंत्रालय द्वारा कई महिला समर्थित कदम भी उठाए गए हैं जो काफी महत्वपूर्ण हैं।

महिला सशक्तिकरण के लिये सरकार द्वारा इतना ही काफी नहीं है। सशक्तिकरण के लिये तो वैश्विक-स्तर पर भी तमाम प्रयास किये गए हैं। किन्तु इसका समग्र रूप में अब तक लाभ महिलाओं द्वारा नहीं लिया जा सका है। अब आधुनिक समय में यदि इस तरह की पहल की जाती है, जिसमें इन समस्याओं से मुक्ति का रास्ता निकलता है तो इसे सामाजिक रूप से स्वीकार्य बनाने की चुनौती प्रकट हो सकती है। महिला सशक्तिकरण और महिला शिक्षा की दिशा में किये जा रहे प्रयासों का भी यही हाल है। किन्तु इसके विपरीत सामाजिक रुझान भी यह है कि लड़कियों के प्रति तमाम अंकुश और शोषण के बावजूद आज महिलाओं के बीच अपने पैरों पर खड़े होने की जिद भी समाज में देखने को मिलती है। वास्तविक भारत यानी ग्रामीण क्षेत्र की जो तस्वीर है उसे बदलने की भी जरूरत है। वैसे महिलाओं की शिक्षा, आर्थिक- सामाजिक सशक्तिकरण के लिये काफी प्रयास सरकार द्वारा किये गए हैं। किन्तु जरूरत इस बात की है कि बदलते समय के अनुकूल उनके हक में समुचित विधान बनाए जाएँ। महिला कृषक को वैधानिक आधार मिले, तब जाकर हम समाज में वास्तविक बदलाव ला सकते हैं। इसके साथ ही उनको सामाजिक स्वीकृति भी मिलनी प्रारम्भ होनी चाहिये।<sup>(6)</sup>

भारत सरकार ने राज्यों को विधवा, अबला, परित्यक्त और निराश्रित महिलाओं की पहचान करने की सलाह दी है। जिन्हें मनरेगा के तहत 100 दिन का रोजगार प्राप्त होगा। जब कृषि क्षेत्र और महिला के उत्थान की बात आती है, तो बागवानी की भूमिका को भूलना नहीं चाहिए। ये भारतीय अर्थव्यवस्था में महत्वपूर्ण भूमिका निभाते हैं। बागवानी कृषि गहन श्रमसाध्य क्षेत्र है। इस कारण ये महिला रोजगार के अवसरों को बढ़ाते हैं। फलों और सब्जियों का इस्तेमाल घरेलू उपभोग के लिये ही नहीं किया जाता है, बल्कि ये विभिन्न उत्पादों- जैसे अचार, संसाधित सॉस, जैम, जेली स्क्वैश आदि के लिये भी जरूरी हैं। वास्तव में, देश के कई राज्यों जैसे- पूर्वी क्षेत्र में सिक्किम, मेघालय, त्रिपुरा, मिजोरम, नागालैंड, अरुणाचल प्रदेश सहित हिमाचल प्रदेश, जम्मू और कश्मीर उत्तर प्रदेश में ग्रामीण महिलाओं के लिये बागवानी एक प्रमुख व्यवसाय है। राष्ट्रीय-स्तर पर देखें तो 28.2 लाख टन फल और 66 लाख टन सब्जियों के उत्पादन के साथ भारत विश्व में फलों और सब्जियों का दूसरा सबसे बड़ा उत्पादक है।<sup>(7)</sup>

महिला रोजगार और ग्रामीण विकास के क्षेत्र में यदि देखें तो झारखण्ड राज्य ने महत्वपूर्ण उदाहरण पेश किया है। राज्य सरकार ने लीक से हटकर स्थानीय भावनाओं के प्रति संवेदनशीलता दिखाते हुए एक योजना बनाई है जिसके तहत हर गाँव में एक पानी और स्वच्छता समिति शामिल होगी। जिसमें अनिवार्य रूप से गाँव की एक महिला सदस्य होगी। समिति के उस विशेष सदस्य को "जल सहिया" (जल मित्र) के रूप में पहचाना जाएगा। उस समिति में महिला सशक्तिकरण सुनिश्चित करने के लिये यह भी अनिवार्य किया गया है कि उक्त महिला सदस्य समिति की कोषाध्यक्ष होगी। अधिकारियों के मुताबिक, यह समिति गाँवों में जल आपूर्ति योजनाओं के कार्यान्वयन के लिये जिम्मेदार है। इससे निश्चित रूप से सामुदायिक भागीदारी सुनिश्चित हुई है और बेहतर परिणाम भी सामने आये हैं। महिलाओं को कृषि की मुख्यधारा में लाने के लिए मंत्रालय द्वारा निम्नवत् कार्य किए गए हैं-

- 1- विभिन्न प्रमुख योजनाओं/कार्यक्रमों और विकास संबंधी गतिविधियों के अंतर्गत महिलाओं के लिए कम से कम 30 प्रतिशत धनराशि का आबंटन
- 2- विभिन्न लाभार्थी-उन्मुखी कार्यक्रमों/योजनाओं और मिशनों के घटकों का लाभ महिलाओं तक पहुंचाने के लिए महिला समर्थित गतिविधियां शुरू करना तथा
- 3- महिला स्वयं सहायता समूहों (एसएचजी) के गठन पर ध्यान केंद्रित करना ताकि क्षमता निर्माण जैसी गतिविधियों के माध्यम से उन्हें माइक्रो क्रेडिट से जोड़ा जा सके और सूचनाओं तक उनकी पहुंच बढ़ सके एवं साथ ही विभिन्न स्तरों पर निर्णय लेने निकायों में उनका प्रतिनिधित्व हो।<sup>(8)</sup>
- 4- केन्द्रीय कृषि एवं किसान कल्याण मंत्रालय ने पिछले वर्ष से प्रतिवर्ष 15 अक्टूबर को महिला किसान दिवस मनाने का फैसला किया है। यह महिला सशक्तिकरण की दिशा में बढ़ते कदम का प्रतीक है।

#### कृषि क्षेत्र में कार्यरत महिलाओं के समक्ष चुनौतियाँ

मंत्रालय ने इस वर्ष फसल की खेती, पशुपालन, डेयरी और मत्स्यपालन में महिला किसानों के सामने आने वाली चुनौतियों पर चर्चा करने के लिये विचार-विमर्श का प्रस्ताव दिया है। इसका उद्देश्य क्रेडिट, कौशल विकास और उद्यमी अवसरों तक बेहतर पहुँच का उपयोग करके एक कार्य-योजना पर काम करना है। लेकिन केवल यह कह देने से खेतों में उन महिलाओं के सामने आने वाली कठिनाई कम नहीं होने वाली। ऑक्सफैम इंडिया के अनुसार, खाद्य उत्पादन के लिये 60 से 80 प्रतिशत तथा डेयरी उत्पादन के लिये लगभग 90 प्रतिशत महिलाएँ जिम्मेदार हैं।<sup>(9)</sup> चाहे फसलों की खेती की बात हो, पशुधन प्रबंधन या फिर घर पर काम करने की बात हो, महिला किसानों द्वारा किये जाने वाले काम पर कभी किसी का ध्यान नहीं जाता है। हालाँकि सरकार द्वारा इन महिलाओं को मुर्गीपालन, मधुमक्खी पालन और ग्रामीण हस्तशिल्प में प्रशिक्षण देने के प्रयास किये गए हैं लेकिन सरकार के ये प्रयास महिला किसानों की इतनी बड़ी संख्या के सामने मामूली हैं। कृषि में महिलाओं की रुचि को बनाए रखने और

उनके उत्थान के लिये एक ऐसी दूरदर्शिता की आवश्यकता है जो उचित नीति और कार्यवाही वाली कार्य-योजनाओं द्वारा समर्थित हो सकती है।

कृषि जनगणना (2010-11) के अनुसार, अनुमानित 118.7 मिलियन किसानों में से 30.3 प्रतिशत महिलाएँ थीं। इसी प्रकार, अनुमानित 144.3 मिलियन कृषि श्रमिकों में से 42.6 प्रतिशत महिलाएँ थीं। परिचालन संपत्ति के स्वामित्व के मामले

में नवीनतम कृषि जनगणना (2015–16) चौकाने वाली है। कुल 146 मिलियन परिचालन संपत्ति में से महिला परिचालन संपत्ति धारकों का हिस्सा 13.87 प्रतिशत (20.25 मिलियन) है, जिसमें पाँच वर्षों में लगभग एक प्रतिशत की वृद्धि हुई है। जबकि कृषि में महिलाओं की संख्या तेजी से बढ़ रही है, सरकार को महिला किसानों और मजदूरों के सामने आने वाली चुनौतियों का समाधान करने के लिये तैयार होना शेष है।<sup>(10)</sup>

#### **कृषि क्षेत्र में कार्यरत महिला किसानों की अधिकारहीनता**

महिला किसानों की अधिकारहीनता का मुख्य कारण उनमें अधिकांश के साथ-साथ उनका सामाजिक परिवेश में जिम्मेदार है। कुछ महिलाएँ जो शिक्षित हैं तथा अपने अधिकारों के प्रति कुछ सजग हैं, वे समाज के भय से कुछ कह नहीं पाती हैं। इसके अतिरिक्त पुरुष किसानों की तुलना में लंबे समय तक अधिक काम (वैतनिक तथा अवैतनिक) करने के बावजूद महिला किसान न तो उत्पादन पर कोई दावा कर सकती हैं और न ही उच्च मजदूरी दर की माँग कर सकती हैं।<sup>(11)</sup> खेत पर काम करने के अलावा, उनके पास घर और पारिवारिक जिम्मेदारियाँ भी हैं। कम मुआवजे के साथ बढ़े हुए काम का बोझ उन्हें हाशिये पर ले जाने के लिये जिम्मेदार एक महत्वपूर्ण कारक है। अभी तक, महिला किसानों का समाज में शायद ही कोई प्रतिनिधित्व है और किसानों के संगठनों या समयदूसमय पर किये जाने वाले आंदोलनों में उनका कहीं भी स्पष्ट प्रतिनिधित्व नहीं है। वे ऐसी अदृश्य श्रमिक हैं, जिनके बिना कृषि अर्थव्यवस्था में वृद्धि करना मुश्किल है। इसी को ध्यान में रखते हुए हमें उन्हें शिक्षा से जोड़ना होगा और उन्हें अपने अधिकारों के लिए सजग भी करना होगा। तभी उनके अधिकारों का हनन रोका जा सकता है।

#### **कृषि क्षेत्र में कार्यरत महिला किसानों के समक्ष समस्याएँ**

##### **1. भूमि स्वामित्व—**

महिला किसानों के सामने सबसे बड़ी चुनौती यह है कि जिस भूमि पर वे खेती कर रही हैं, उस पर स्वामित्व का दावा करने के मामले में वे शक्तिहीन हैं। कृषि जनगणना 2015 के अनुसार, लगभग 86 प्रतिशत महिला किसान इस संपत्ति से शायद इसलिये वंचित हैं, क्योंकि हमारे समाज में पितृसत्तात्मक व्यवस्था स्थापित है। विशेष रूप से भूमि पर स्वामित्व की कमी महिला किसानों को संस्थागत ऋण के लिये बैंकों से संपर्क करने की अनुमति नहीं देती, क्योंकि बैंक आमतौर पर जमीन के आधार पर ही ऋण स्वीकृत करते हैं। दुनिया भर में किये गए शोधों से पता चलता है कि जिन महिलाओं की पहुँच सुरक्षित भूमि, औपचारिक ऋण और बाजार तक है, वे फसल-सुधार, उत्पादकता में वृद्धि और घरेलू खाद्य सुरक्षा तथा पोषण में सुधार करने के लिये अधिक निवेश कर पाती हैं।<sup>(12)</sup>

##### **2. भूमि अधिग्रहण—**

पिछले वर्षों में भूमि अधिग्रहण दोगुना हो गया है जिसके परिणामस्वरूप खेतों का औसत आकार घट गया है। इसलिये, अधिकांश किसान छोटे और सीमांत वर्ग (एक श्रेणी जो निर्विवाद रूप से महिला किसानों को शामिल करती है) के अंतर्गत आते हैं, इनके पास 2 हेक्टेयर से कम भूमि होती है।

##### **3. कृषि अनुकूल मशीनरी—**

महिला किसान और मजदूर आमतौर पर श्रम-केंद्रित कार्य (कुदाल या फावड़े की मदद से गड्ढा खोदना, घास काटना, खरपतवार हटाना, कटाई करना, बेंत का संग्रह, पशुधन की देखभाल) करती हैं। विभिन्न कृषि परिचालनों के लिये महिला-अनुकूल उपकरण और मशीनरी रखना महत्वपूर्ण है। अधिकांश कृषि मशीनरी ऐसी है, जिनका संचालन करना महिलाओं के लिये मुश्किल है। इस समस्या के बेहतर समाधान के लिये निर्माताओं को प्रोत्साहित किया जाना चाहिये।<sup>(13)</sup>

##### **4. उपयोगी संसाधनों तक पहुँच—**

कृषि की अधिक उत्पादकता को बनाने के लिये संसाधनों और आधुनिक उपकरणों (बीज, उर्वरक, कीटनाशक) तक महिला किसानों की पहुँच आमतौर पर पुरुषों की तुलना में कम होती है। खाद्य और कृषि संगठन के अनुसार, महिला और पुरुष किसानों के लिये उत्पादक संसाधनों तक समान पहुँच सुनिश्चित हो जाने से विकासशील देशों के कृषि उत्पादन में 2.5 प्रतिशत से 4 प्रतिशत की वृद्धि हो सकती है।<sup>(14)</sup>

#### **समाधान**

कृषि और ग्रामीण विकास के लिये नेशनल बैंक के माइक्रो-फाइनेंस पहल के तहत किसी आनुवांषिक के बिना ही दिये जाने वाले ऋण प्रावधान को प्रोत्साहित किया जाना चाहिये। क्रेडिट, प्रौद्योगिकी और उद्यमशीलता क्षमताओं के प्रावधान तक बेहतर पहुँच महिलाओं के आत्मविश्वास को और बढ़ावा देगी और उन्हें किसानों के रूप में मान्यता प्राप्त करने में मदद करेगी। महिलाओं को आत्मनिर्भर बनाने के लिये सामूहिक खेती की संभावना को प्रोत्साहित किया जा सकता है। कुछ स्वयं-सहायता समूहों और सहकारी-डेयरी गतिविधियों (राजस्थान में सरस और गुजरात में अमूल) द्वारा महिलाओं को प्रशिक्षण तथा कौशल प्रदान किया गया है। इन्हें किसान निर्माता संगठनों के माध्यम से और अधिक विकसित किया जा सकता है। इसके अलावा, राष्ट्रीय खाद्य सुरक्षा मिशन, बीज और रोपण सामग्री पर उप-मिशन तथा राष्ट्रीय कृषि विकास योजना जैसी सरकारी प्रमुख योजनाओं में महिला केंद्रित रणनीतियों और समर्पित व्यय को शामिल किया जाना चाहिये। महिला किसानों को सब्सिडी वाली सेवाएँ प्रदान करने के लिये राज्य सरकारों द्वारा प्रचारित कृषि मशीनरी बैंक और कस्टम भर्ती केंद्रों को तैयार किया जा सकता है। प्रत्येक जिले में कृषि विज्ञान केंद्रों को विस्तार सेवाओं के साथ-साथ अभिनव प्रौद्योगिकी के बारे में महिला किसानों को शिक्षित और प्रशिक्षित करने का एक अतिरिक्त कार्य सौंपा जा सकता है।<sup>(14)</sup>

### निष्कर्ष

जब महिलाएँ कृषि के क्षेत्र में प्रवेश कर रही हैं, तो इस कार्य में उनकी निरंतरता को बनाए रखने के लिये सबसे महत्वपूर्ण कार्य है, उनको भूमि संपत्ति का अधिकार दिया जाये। ये अधिकार उन्हें समाज में एक उचित पद एवं प्रतिष्ठा दियाने में सहायक होंगे। एक बार महिला किसानों को प्राथमिक अर्जक और भूमि परिसंपत्तियों के मालिकों के रूप में सूचीबद्ध कर दिया जाए, तो उनके लिये बैंकों से ऋण प्राप्त करना आसान हो जाएगा। साथ ही महिला किसान तकनीक और मशीनों का उपयोग करके फसल उगाने और गाँव के व्यापारियों या थोक बाजारों में उपज का निपटान करने का निर्णय ले सकेंगी। इसके कारण वह अपनी पारिवारिक एवं आर्थिक स्थिति में सुधार के साथ वास्तविक और दृश्यमान किसानों के रूप में उनकी पहचान सुनिश्चित हो सकेगी।<sup>(15)</sup> साथ ही वह देश की प्रगति में भी अपना पूर्ण सहयोग दे सकेगी। वह दिन दूर नहीं है जब वे देश की कृषि को द्वितीय हरित क्रान्ति की तरफ ले जाने के साथ देश के विकास का परिदृश्य भी बदल देगी।

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- 15-भारतीय बागवानी अनुसंधान संस्थान: रिपोर्ट 2018।

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## **Factors Influencing Customer's Perception Towards Internet Banking - A Study**

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### **Abstract**

*Internet banking also known as online banking is an electronic mode of payment system used by financial institutions to render their services to its customers. Internet banking began in the year 1981 in New York. . It was in 1983 that the Bank of Scotland had introduced the first internet banking service in the United Kingdom called "Home link", in which the customers had access to the internet through telephones and television for payment and transfer of money. Internet banking has now emerged as one of the main concept regarding to customer satisfaction. The emergence of the internet banking facilities has also led to a competition between the banks of the country as to which bank offers the best internet banking facility. This paper tries to study the factors influencing customer's perception towards internet banking.*

**Keywords: Internet banking, customer perception demonetization,**

### **Introduction**

Internet banking is also known as online banking, web banking, virtual banking or e-banking. It is a mode of electronic payment system used by banks and other financial institutions to deliver its financial service to its customer. Net banking enables the customers to manage their bank account and carry out financial transactions. The journey of online banking began in 1981 in New York, in the United States. It was these four major banks in New York- Citibank, Chase Manhattan, Chemical and Manufacturers Hanover which made banking facility available at home for its customers. It was in 1983 that the Bank of Scotland had introduced the first internet banking service in the United Kingdom called "Home link", in which the customers had access to the internet through telephones and television for payment and transfer of money. In 1994, Stanford Federal Credit Union in the United States became the first financial institution to offer online banking service to its customers. In India, ICICI bank was the first to offer online banking services in the year 1994.

Nowadays, internet banking is growing faster than internet. It is mainly because of its convenience. With the arrival of online banking, there is no need for the customers to go to the bank to access their accounts. Net banking helps the customers to access their bank accounts from anywhere at any time. Banks offer facilities like payment of bill, transfer of money, check account balance etc. via internet. Transfer of funds and payment are faster through net banking

Technology has had a huge impact on people's life. Majority of the people deal with all the transactions with the use of internet. Internet banking has now emerged as one of the main

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concept regarding to customer satisfaction. The emergence of the internet banking facilities has also led to a competition between the banks of the country as to which bank offers the best internet banking facility. Online banking has changed the face of transactions across the country and also plays a major role in trading. This study is conducted to know about the different perceptions that the common people have towards internet banking, the factors responsible and the awareness and knowledge the people have about the same.

### **Review Of Literature**

- Pranjali. A. Shendge, Bhushan. G. Shelar(2017), in their study “Impact and Importance of Cashless Transaction in India” focuses on the implications of the cashless policy in India. It also depicts the impact of information technology on the cashless society. Also, it is inferred from the study that cashless transactions are increasing day by day in India and the consumers prefer E-wallet payment methods over the other methods of payment.
- Mathangi. R, Lata Sri. O. T. V, Isiah Onsarigo Miencha (2017), in their study “Improving Service Quality through Digital Banking- Issues and Challenges”, highlights the recent technological changes coming about through digital banking. It has been observed that there has been an overall increase in digital transactions after demonetization. Measures are also being taken to provide the benefits of the same to the rural and remote areas.
- Kesh Surya Pratim (2017), in his study “Usage of Plastic Money and Virtual Wallet as Modes of Payments in and around Bengaluru City”, makes an assessment of the level of awareness among the new line banking customers pertaining to the use, spend and awareness of plastic money and virtual wallets; its use and benefits to the customers. The study reveals that over 50 per cent of the customers are not clearly aware about the uses and benefits of cards and virtual wallets and it is observed that the users share their cards with their relatives. The main uses are restricted to money transfer, mobile recharge and banking transactions.
- Abhani Dhara. K (2017), in his study “A Study on the Impact of Demonetization over the Banking sector with reference to Veraval City”, investigates the impact of demonetization over the banking sector with respect to the city of Veraval. The analysis of the data collected from bank employees reveal that almost 55 per cent of the employees agree with the positive impact of demonetization and also stated that the current accounts and savings accounts were the most affected ones from this. According to them, a good per cent of customers were moving towards online banking and were willing to keep their money with the bank.
- Syamsundar. P (2017), in his study “Demonetization- A Comparative Study” with special reference to India, provides a comparison and analysis of the impact and significance of demonetization towards the economic development of India, by making a comparison with other countries. It is inferred from the study that demonetization will create a huge positive impact in the long run and that India will achieve a significant growth by adapting the demonetization strategy.
- Koushik Halder (2016), in his study “Online Banking of India”, makes an overview of carrying out banking transactions via the internet. From the primary survey conducted, it is found out that, out of 114 respondents; about 100 of them use internet banking services and a majority of the respondents using this is within the age group of 20-35 years. Being aware about the security threats, they have secured their net banking and mainly use it for ATM banking, online shopping, online recharge, bills payment, balance enquiry etc.

- EH Arunkumar(2015), in his study“Retail Banking and Online Services” focuses on the attitude of the customers towards these services. According to this study 48 per cent of the respondents are using ATM twice a week. Almost half of the respondent are using debit card than other type of card. 85 per cent of the respondents are having accounts in more than one bank. Majority of the respondents use savings bank account. Majority of the respondent use individual account when compared to other accounts.
- Kadalarasane T (2015) in his study “Acceptance of Mobile Banking Services antecedence and consequences” explains that mobile payment services are developed and operated by National Payment Corporation of India which enables cashless rupee transfers between customers account using mobile phones. Almost every commercial bank has implemented mobile banking services from May 2013. 100 per cent of the public sector banks are providing mobile banking services. 35.53 million people in India are using mobile banking. There is a hike in usage of mobile banking transaction in private sector in India during a period of May 2009 to May 2013.
- Mirsath Begum M (2015) in her study “Adoption and Usage of Innovative Techniques- A Study on Mobile Banking in Coimbatore city” reveals that people prefer mobile banking because it is easy to learn, reliable, available 24 hours per day, complete banking task more quickly and reasonably priced. About 63 per cent from the sample use smart phones and others have basic mobile phones. According to this study state bank of India has the highest number of mobile banking customers among public sector banks.
- Mishra Suyash (2015), in her study “E- banking in Public and Private Sector in India- an Analogy” analyses that the growth of NEFT/EFT indicates the growth electronic banking system in India. The public sector bank has more on- site ATM facility. While the private sector bank have more off- site ATM facility. There has been an increase in the usage of mobile banking, usage of debit card and credit card at ATMs and at POS, NEFT, and RTGS etc.

### **Need And Importance Of The Study**

Digital India programme has been launched by the Government of India to transform the nation into a digitally empowered society and knowledge economy. The main aim of the Digital India programme is to transform the nation into a cashless economy. India is standing very behind as compared to other economies, with regard to cashless transactions. After the demonetization step was taken on Nov 8, 2016, there has been a slight increase in the use of internet for transactions due to the exhaustion of cash in the economy. The expected number of internet users is 650 million by 2020 and nearly half i.e., 325 million being net banking users. This study is expected to be very useful for the banking industry, as the factors that are concerning the customers with regard to internet banking are looked into.

### **Statement Of The Problem**

Demonetization has made people, those who do not have a bank account to the date, to open one and increased the usage of digital banking transaction. But, there is still confusion in the minds of people when it comes to cashless transaction and cash transaction. Mainly, in the rural area, the number of people using smart phone is still less and the availability of internet is also low. Lack of knowledge about the usage of smart phones and internet facilities in the rural area, makes the people to rely on cash transaction; especially the senior citizens, who are not familiar with the smart phone and internet usage, prefer traditional mode of payment only. The cost per transaction via internet is sometimes not affordable by many of the people.

Bank customers are mainly worried about giving their account number during online transaction. They are mainly concerned about the security problems that they may face during the transaction. At present, the net capacity to handle all the transactions is not sufficient, when everyone starts using net banking. So, in some cases, net banking is also time-consuming. This made us to conduct a study on customer's satisfaction and awareness regarding net banking and factors influencing the customer's adoption of net banking before and after demonetization.

### **Objectives Of The Study**

The main objectives of the study are as follows:

- To understand the concept of Internet Banking.
- To evaluate the factors influencing the customers for the adoption of Internet Banking.
- To study the impact of Demonetization on Internet Banking.
- To analyse the level of satisfaction of net banking users.
- To evaluate the awareness of customers towards Internet Banking.

### **Research Methodology**

**Sources of Data:** The data for the study has been collected from both primary and secondary source. The primary data has been collected by way of well-structured questionnaires and the secondary data has been collected with reference to various online websites.

**Population:** The sample for the study has been selected from the banking customers in the city of Ernakulam. With the advent of technology and political reforms, more number of people are on the verge of availing banking services.

**Sample Size:** In order to get a complete picture of the topic, data has been collected from both the users and non-users of Internet Banking. To facilitate the same, a sample of 100 respondents are taken, out of which 70 respondents are net banking users and the remaining 30 are non-users.

**Tool for analysis:** Analysis of the data, which has been collected, is an important aspect of any study. This can be done using various statistical tools. In this study, the tool used for analysing the collected data is Percentage Analysis.

**Presentation:** The collected data is, primarily, presented in the form of tables, to provide a better understanding of data. After tabulation, a pictorial representation of the tabulated data is made with the help of Graphs, Pie Diagrams and Bar Charts etc. This provides ease in analysis of data.

### **Limitations Of The Study**

Although the study is based on the data collected from both internet banking users and non-users, the findings cannot be generalised. The limitations of this study are as follows:

- The study was conducted within a short span of time.
- The sample for the study is restricted to only 100 respondents. The findings may vary for a larger sample size.
- The data collection for the study is restricted to the city of Ernakulam.

**Analysis And Interpretation**

**TABLE 1: AGE GROUP OF THE RESPONDENTS**

Sl. No.	Age group	Frequency	Percentage
1	18- 25 years	56	56
2	25- 35 years	20	20
3	35- 50 years	15	15
4	Above 50 years	9	9
	<b>Total</b>	<b>100</b>	<b>100</b>

**Source: Primary Data**

**Interpretation**

From the table , it can be seen that 56% of the respondents belonged to the age group of 18-25 years, 20% belonged to 25-35 years age group, 15% belonged to 35-50 years age group and the remaining 9% belonged to age group of above 50 years.

**TABLE 2: GENDER OF THE RESPONDENTS**

Sl. No.	Gender	Frequency	Percentage
1	Male	50	50
2	Female	50	50
	<b>Total</b>	<b>100</b>	<b>100</b>

**Source: Primary Data**

**Interpretation**

From the table, it can be noted that there are equal number of respondents from both the male and female categories.

**TABLE 3: USERS AND NON-USERS OF INTERNET BANKING**

Sl. No.	Category	Frequency	Percentage
1	Users	70	70
2	Non-Users	30	30
	<b>Total</b>	<b>100</b>	<b>100</b>

**Source: Primary Data**

**Interpretation**

From the above table 6.6, out of the 100 respondents, 70 were users of Internet banking and the remaining 30 were the non-users.

**TABLE 4: REASONS FOR CHOOSING THE BANK FOR INTERNET BANKING**

Sl. No.	Reasons	Frequency	Percentage
1	Brand name of the bank	12	17.1
2	Services offered by the bank	40	57.1
3	Traditional bank account with same bank	13	18.6
4	Others	5	7.1
	<b>Total</b>	<b>70</b>	<b>100</b>

**Source: Primary Data**

**Interpretation**

From the above table, out of the 70 net banking users, 57.1% select their internet bank account based on the service offered by the bank.18.6% choose their net bank account on the basis of their traditional bank account with the same bank and 17.1% choose their internet bank account by the brand name of the bank. The remaining 7.1% prefer other factors for selecting their Internet bank account.

**TABLE 5: VISITS TO BANKS BY THE INTERNET BANKING USERS**

Sl. No.	Visit to Branch	Frequency	Percentage
1	Daily	1	1.4
2	Weekly	4	5.7
3	Monthly	43	61.4
4	Never	22	31.4
	<b>Total</b>	<b>70</b>	<b>100</b>

Source: Primary Data

**Interpretation**

From table, it can be noted that 61.4% of the respondents visits the bank branches monthly, 31.4% of the respondents never visit the bank, 5.7% of the respondents visits the bank weekly and the remaining 1.4% visits the bank daily.

**TABLE 6: VISITS TO BANK BY INTERNET BANKING USERS AFTER USING INTERNET BANKING**

Sl. No.	Visit to bank after use of Internet Banking Service	Frequency	Percentage
1	Visitors	36	51.4
2	Non- Visitors	31	44.3
3	Not Applicable	3	4.3
	<b>Total</b>	<b>70</b>	<b>100</b>

Source: Primary Data

**Interpretation**

From the table, it can be seen that 51.4% visit the bank after using internet banking services, 44.3% do not visit the bank and the remaining 4.3% chose the option not applicable.

**TABLE 7: USAGE OF INTERNET BANKING**

Sl. No.	Usage of Internet Banking Service	Frequency	Percentage
1	Daily	8	11.4
2	Weekly	30	42.86
3	Monthly	30	42.86
4	Never	2	2.87
	<b>Total</b>	<b>70</b>	<b>100</b>

Source: Primary Data

**Interpretation**

From the table, it can be seen that 42.86% of the respondents use internet banking weekly, another 42.86% use internet banking monthly, 11.4% of the respondents use internet banking daily and 2.87% never use Internet Banking service.

**TABLE 8: SATISFACTION LEVEL REGARDING ONLINE BANKING SERVICES**

Sl. No.	Satisfaction	Frequency	Percentage
1	Highly Satisfied	24	34.29
2	Satisfied	40	57.14
3	Neutral	4	5.71
4	Unsatisfied	1	1.43
5	Highly Unsatisfied	1	1.43
	<b>Total</b>	<b>70</b>	<b>100</b>

Source: Primary Data

**Interpretation**

From the table, it can be noted that 57.14% of the respondents are satisfied, 34.29% are highly satisfied, 5.7% have chosen the option neutral and 1% are unsatisfied as well as highly unsatisfied with online banking service.

**TABLE 9: RESPONSE REGARDING EFFECT OF DEMONETIZATION ON INTERNET BANKING**

Sl. No.	Effect of Demonetization	Frequency	Percentage
1	Strongly Agree	16	22.9
2	Agree	27	38.6
3	Neutral	16	22.9
4	Disagree	18	11.4
5	Strongly Disagree	3	4.3
	<b>Total</b>	<b>70</b>	<b>100</b>

Source: Primary Data

**Interpretation**

From the table, it can be noted that 38.6% of the respondents agree, 22.9% of the respondents strongly agree, another 22.9% of the respondents disagree and the remaining 4.3% strongly disagree that demonetization has affected the banking sector.

**TABLE 10: RESPONSE REGARDING USAGE OF INTERNET BANKING POST DEMONETIZATION**

Sl. No.	Usage of Internet Banking Service Post- Demonetization	Frequency	Percentage
1	Users	33	47.1
2	Non- Users	37	52.9
	<b>Total</b>	<b>70</b>	<b>100</b>

Source: Primary Data

**Interpretation**

From the table, it can be seen that 52.9% of the respondents did not start using internet banking post demonetization and the remaining 47.1% started using internet banking post demonetization.

**TABLE 11: VARIATION IN THE USAGE OF INTERNET BANKING POST DEMONETIZATION**

Sl. No.	Usage of Internet Banking Service Post- Demonetization	Frequency	Percentage
1	Increase	26	37.1
2	No Increase	21	30
3	Not Applicable	23	32.9
	<b>Total</b>	<b>70</b>	<b>100</b>

**Source: Primary Data**

**Interpretation**

From the table, it can be inferred that 37.1% of the respondents have increased the usage of Internet Banking service Post- Demonetization. There was no increase in usage of 30% of the respondents and the remaining 32.9% of the respondents chose the option Not Applicable.

**TABLE 12: VISITS TO THE BANKS BY NON- USERS OF INTERNET BANKING**

Sl. No	Visit to Bank Branch	Frequency	Percentage
1	Daily	1	3.3
2	Weekly	1	3.3
3	Monthly	18	60
4	Never	10	33.33
	<b>Total</b>	<b>30</b>	<b>100</b>

**Source: Primary Data**

**Interpretation**

From the table, it can be noted that 60% of the respondents visit the bank branch monthly, 33.33% of the respondents do not the visit the bank branch and the remaining 3.3% visit the bank branch daily as well as weekly.

**TABLE 13: RESPONSE TOWARDS OPENING OF AN INTERNET BANK ACCOUNT BY THE NON- USERS**

Sl. No	Opening of Internet Bank account	Frequency	Percentage
1	Very Likely	2	6.7
2	Likely	11	36.7
3	Unlikely	9	30
4	Very Unlikely	3	10
5	Not at all	5	16.7
	<b>Total</b>	<b>30</b>	<b>100</b>

**Source: Primary Data**

**Interpretation**

From the table, it can be noted that 36.7% of the respondents are likely to open an internet banking account, 30% are unlikely to open an internet banking account, 16.7% have no

chance of opening an internet banking account, 10% are very unlikely to open an internet banking account and remaining are very likely to open an internet banking account.

**TABLE 14: RESPONDENTS PREFERNCE TOWARDS INTERNET BANKING OVER TRADITIONAL BANKING**

<b>Sl. No.</b>	<b>Preference of Internet Banking over Traditional Banking</b>	<b>Frequency</b>	<b>Percentage</b>
1	Favourable	14	46.7
2	Unfavourable	16	53.3
	<b>Total</b>	<b>30</b>	<b>100</b>

**Source: Primary Data**

### **Interpretation**

From table, it can be seen that 53.3% prefer traditional banking over internet banking and remaining respondents prefer internet banking over traditional banking.

### **Findings And Suggestions**

#### **Findings**

1. Out of the 100 respondents, 56% belongs to the age group of 18-25 years.
2. There was an equal response from the male and female category for the survey.
3. Out of the 100 respondents, 70% were users of Internet banking.
4. Among the users of online banking, 57.1% choose their Internet bank account on the basis of the service offered by the bank.
5. According to the users of online banking, 61.4% of them visit their bank branches monthly.
6. Even after availing the Internet banking services, 51.4% users of online banking visit their bank branches.
7. Demonetization has a strong impact on the banking sector and this was agreed by 38.6% of the respondents.
8. Even after demonetization, 52.9% of the users are not using online banking.
9. After demonetization, 37.1% of the users have increased the usage of Internet banking.
10. According to 70% of the non-users of Internet banking, time consumption is the disadvantage of visiting the bank branch.
11. Among the non-user respondents, 36.7% is likely to open online bank account within the next 12 months.
12. Out of the total non-users of Internet Banking, 53.3% prefer traditional mode of banking over Internet banking.

#### **Suggestions**

1. The people are to be made aware of Internet Banking and the facilities provided by it in a better way of organizing training programmes for them.
2. The people are more conscious about the security of transactions through Internet Banking. So, the banks are to make their security policies stringent to create a trust in the minds of the customers towards the same.
3. The online portals of the banks are to be made user- friendly in order to attract more customers.
4. By providing access to different accounts at a time without extra charges, customers may switch over to Internet Banking.

5. Internet Banking should not be confined to urban areas. Proper marketing is to be done by the banks to ensure that the Internet Banking facilities are available in rural areas too.

### **Conclusion**

Internet Banking, being a significant part of Digitalization, has influenced the customers to a great extent. Unlike traditional banking, Internet Banking is not at all time consuming. They have access to their bank accounts at their fingertips, thereby making it more convenient for them to carry out transactions. The use of internet banking has also increased significantly after demonetization. This study has helped to analyse the various perceptions of the customers towards internet banking and the factors affecting the same.

Nowadays internet banking is utilized by both male and female customers. It has made transactions much easier and hence most of the youths are inclined towards online transactions. The banking sector must provide more awareness and assistance to all the banking customers to bring about greater customer satisfaction. The success of internet banking is not only dependent on the technology, the customer perceptions, satisfaction and the benefits acquired from it also play a very important role. The renowned phrase "Customer is the king" prevails here also.

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## **Hemodynamics indicators of pulsatile unsteady flow of blood through stenosed artery filled with porous medium under the influence of magnetic field and slip velocity**

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**Dr. Seema Bansal\*\***

**Sanjay Kumar\*\*\***

**Abstract:** The present paper deals with the pulsatile flow of blood through a stenosed artery under the influence of static magnetic field and slip velocity. Numerical solution is found by Frobenius method. The effect of non-dimensional parameters on hemodynamics indicators are discussed through graphs.

**Keywords:** Newtonian fluid, Stenosed artery, Slip velocity, Frobenius method.

**Introduction:** Many researchers Mazumdar(1992), Halder and Ghosh(1994), Layek and Mukhopadhyay (2008), Sharma and Bansal (2012, 2014) studied the blood flow through stenosed artery under the various physiological conditions. Sanyal *et al.* (2007) studied the characteristic of blood flow in a rigid inclined circular tube with periodic body acceleration under the influence of a uniform magnetic field and conclude that velocity increases with acceleration due to gravity, inclination and Womersley parameter and decreases with magnetic number. Mwanthi *et al.* (2017) considered the unsteady, incompressible, viscous and Newtonian blood flow through an inclined circular tube under MHD effects and concluded that with the increase of Hartmann number leads to decrease the axial velocity of the blood. incompressible, viscous and Newtonian. Singh *et al.* (2018) dealt with the velocity profiles of blood flow through stenosed artery under magnetic effects and slip condition. El-Shahed (2003) studied pulsatile flow of blood through stenosed porous medium in the presence of periodic body acceleration.

In the present paper we considered the blood flow through a narrow stenosed artery filled with porous medium subject to a slip velocity at arterial wall. Effects of various non-dimensional parameters on hemodynamic indicators are discussed and shown by graphs.

### **Formulation of Problem**

We dealt with axially symmetrical cylindrical tube (stenosed artery) with axis coinciding with z-axis. Blood is taken as Newtonian, incompressible and viscous. A transverse magnetic field is applied and a slip velocity is considered at arterial wall. The basic equations of motion in the cylindrical co-ordinate system( $r, \theta, z$ ) are given by

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$$\rho \frac{\partial u}{\partial T} = -\frac{\partial p}{\partial z} + \frac{1}{r} \frac{\partial}{\partial r} \left( \mu r \frac{\partial u}{\partial r} \right) - \sigma B_0^2 u - \frac{\mu}{K} u \quad (1)$$

Where,  $u$  is the axial velocity of blood,  $p$  is the pressure of blood,  $\rho$  is the density of blood.

The viscosity of blood is Hematocrit concentration dependent given by Einstein as

$$\mu = \mu_0 [1 + \beta h(r)]$$

where,  $\mu_0$  is coefficient of viscosity of plasma,  $\beta$  is a constant and  $h(r)$  is the hematocrit concentration which is govern by the equation

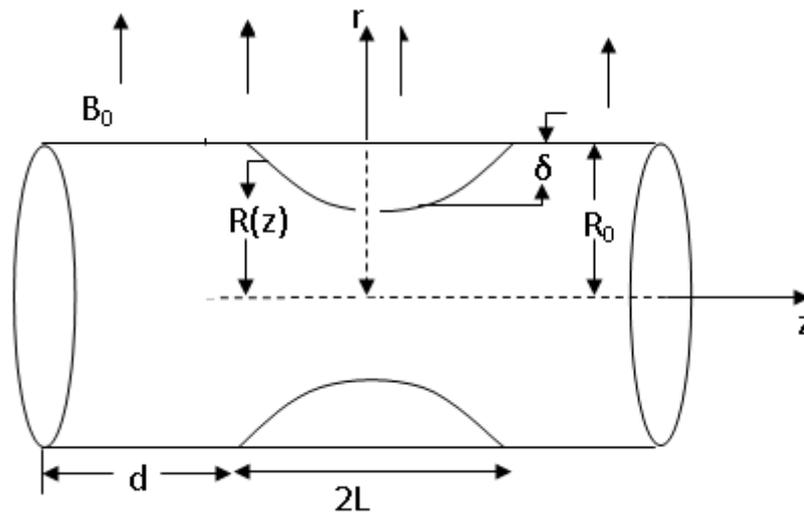
$$h(r) = H_m \left[ 1 - \left( \frac{r}{R_0} \right)^n \right] \quad (2)$$

Here,  $H_m$  is maximum hematocrit concentration at the center of tube. The shape of the stenosis is shown in Figure 1. and is determined as

$$R(z) = \begin{cases} R_0 - \frac{\delta}{2} \left( 1 + \cos \frac{\pi z}{L} \right) & -L \leq z < L \\ R_0 & \text{otherwise} \end{cases} \quad (3)$$

Where,  $R_0$  is the radius of normal tube,  $2L$  is the length of stenosis and  $\delta$  is the maximum thickness of the stenosis

**Geometry of the Model**



**Figure 1**

The boundary conditions are

$$\begin{aligned} \frac{du}{dr} &= 0 & r &= 0 \\ u &= u_s & r &= R(z) \end{aligned}$$

(4)

Where,  $-\sigma B_0^2 u$  is the magnetohydrodynamic force.

Putting the values of  $v$ ,  $\mu$  and  $h(r)$  in the equation and using the length and time scaling parameter, the governing equation reduced to

$$\frac{\rho R_0^2}{t_0 \mu_0} \frac{\partial u}{\partial t} = -\frac{R_0^2}{\mu_0} \frac{\partial p}{\partial z} + \frac{1}{y} \frac{\partial}{\partial y} \left[ (a - ky^n) y \frac{\partial u}{\partial y} \right] - \frac{R_0^2 \sigma B_0^2 u}{\mu_0} - \frac{(a - ky^n)}{Da^2} u \tag{5}$$

Where,  $t = \frac{T}{t_0}$ ,  $y = \frac{r}{R_0}$ ,  $\beta H_m = k$ ,  $a = 1 + k$

Taking  $u(y, t) = U(y) e^{i\omega t}$  (6)

and  $-\frac{R_0^2}{\mu_0} \frac{\partial p}{\partial z} = c e^{i\omega t}$

where,  $c$  is the amplitude of the pulsatile flow.

Then the equation reduced to

$$\frac{1}{y} \frac{d}{dy} \left[ (a - ky^n) y \frac{dU}{dy} \right] - (\alpha^2 i + H^2 + \frac{a}{Da^2}) U + \frac{ky^n}{Da^2} U = -c \tag{7}$$

With  $\frac{R_0^2 \sigma B_0^2}{\mu_0} = H^2$ ,  $\frac{K}{R_0^2} = Da^2$ ,  $\alpha^2 = \frac{\rho R_0^2 \omega}{t_0 \mu_0}$

The corresponding boundary conditions (10) and (11) are transformed to

$$\begin{aligned} \frac{dU}{dy} &= 0 & y &= 0 \\ U &= u_s & y &= \frac{R(z)}{R_0} \end{aligned} \tag{8}$$

**Method Of Solution**

**Calculation for Hemodynamics parameters**

We have used Frobenius method for the solution of differential equation (7) under the boundary condition (8) and is given by [16]

$$u = \frac{\left( \alpha^2 i + \frac{1}{Da^2} \right) \left( \frac{c}{4a} \sum_{m=0}^{\infty} \lambda_m \left( \frac{R(z)}{R_0} \right)^{m+2} + u_s \right) \sum_{m=0}^{\infty} A_m y^m - \frac{c}{4a} \sum_{m=0}^{\infty} A_m \left( \frac{R}{R_0} \right)^m \sum_{m=0}^{\infty} \lambda_m y^{m+2}}{c_0 \sum_{m=0}^{\infty} A_m \left( \frac{R}{R_0} \right)^m \left( 1 - \frac{I_0 \left( \sqrt{\alpha^2 i + \frac{1}{Da^2}} y \right)}{I_0 \left( \sqrt{\alpha^2 i + \frac{1}{Da^2}} \right)} \right)} \tag{9}$$

**Calculation for Hemodynamic Indicator Volumetric Flow Rate (Q)**

The volumetric flow rate  $Q$  of the fluid in the stenotic region is given by

$$Q = 2\pi R_0 \int_0^{R/R_0} uy dy$$

Let  $Q_0$  denotes the flow rate of plasma fluid in unconstricted tube ( $M=0$  and  $H=0$ ) which is given by

$$Q_0 = -\frac{\pi R_0^3}{8\mu_0} \left( \frac{\partial p}{\partial z} \right)_0$$

where,  $\left( \frac{\partial p}{\partial z} \right)_0$  being the pressure gradient of the fluid in unconstricted uniform tube.

Thus non-dimensional flow rate  $Q = \frac{Q}{Q_0}$  is given by

$$Q = \frac{4 \frac{\partial p}{\partial z} \sum_{m=0}^{\infty} \left( \lambda_m \left( \frac{R}{R_0} \right)^{m+2} + 4au_s \right) \sum_{m=0}^{\infty} \frac{A_m}{m+2} \left( \frac{R}{R_0} \right)^{m+2} - \sum_{m=0}^{\infty} A_m \left( \frac{R}{R_0} \right)^m \sum_{m=0}^{\infty} \frac{\lambda_m}{m+4} \left( \frac{R}{R_0} \right)^{m+4}}{a \left( \frac{\partial p}{\partial z} \right)_0 \sum_{m=0}^{\infty} A_m \left( \frac{R}{R_0} \right)^m}$$

(10)

The expression for the relative pressure gradient can be obtained by

$$P = \left( \frac{\partial p}{\partial z} \right) / \left( \frac{\partial p}{\partial z} \right)_0$$

$$P = \frac{a}{4} \frac{Q}{Q_0} \frac{\sum_{m=0}^{\infty} A_m \left( \frac{R}{R_0} \right)^m}{\sum_{m=0}^{\infty} \lambda_m \left( \frac{R}{R_0} \right)^{m+2} \sum_{m=0}^{\infty} \frac{A_m}{m+2} \left( \frac{R}{R_0} \right)^m - \sum_{m=0}^{\infty} A_m \left( \frac{R}{R_0} \right)^m \sum_{m=0}^{\infty} \frac{\lambda_m}{m+4} \left( \frac{R}{R_0} \right)^{m+4}}$$

### Calculation for Hemodynamic Indicator Wall Shear Stress (WSS)

The shear stress at the surface of stenosis is described by

$$\tau_s = - \left[ \mu(r) \frac{du}{dr} \right]_{r=R}$$

$$= -\mu_0 \left[ a - k \left( \frac{R}{R_0} \right)^n \right] \left[ \frac{\sum_{m=0}^{\infty} \left( \lambda_m \left( \frac{R}{R_0} \right) + 4au_s \right)^{m+2} \sum_{m=0}^{\infty} (m+1) A_{m+1} \left( \frac{R}{R_0} \right)^m}{\sum_{m=0}^{\infty} A_m \left( \frac{R}{R_0} \right)^m \sum_{m=0}^{\infty} (m+3) \lambda_{m+1} \left( \frac{R}{R_0} \right)^{m+2}} \right]$$

Also, if  $\tau_N$  is the shear stress at the wall in the absence of stenosis, then

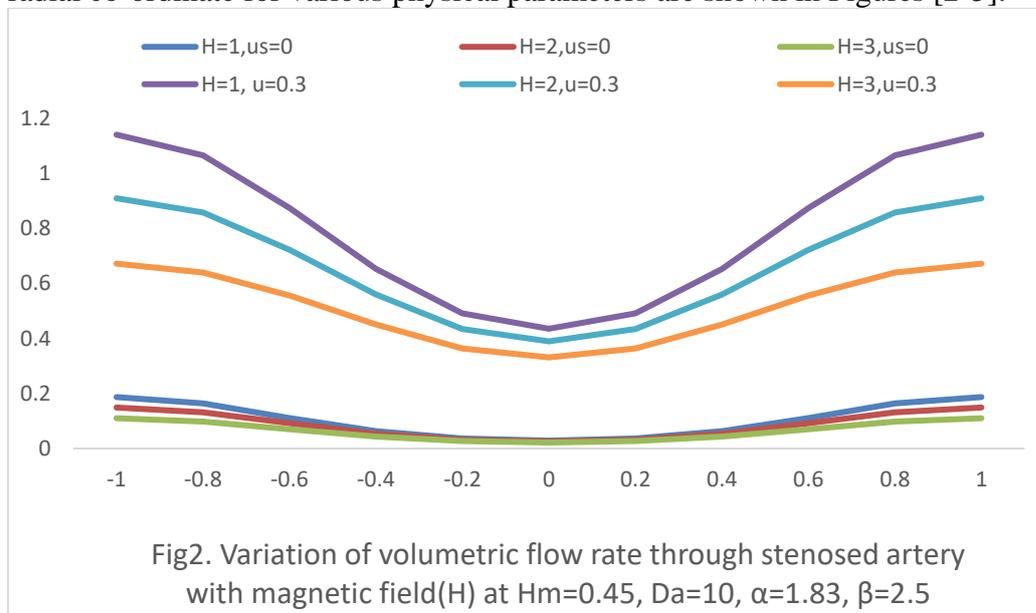
$$\tau_N = \frac{\mu_0 c_0 e^{i\omega t}}{R_0} \frac{I_1\left(\sqrt{\alpha^2 i + \frac{1}{Da^2}} y\right)}{I_0\left(\sqrt{\alpha^2 i + \frac{1}{Da^2}}\right)}$$

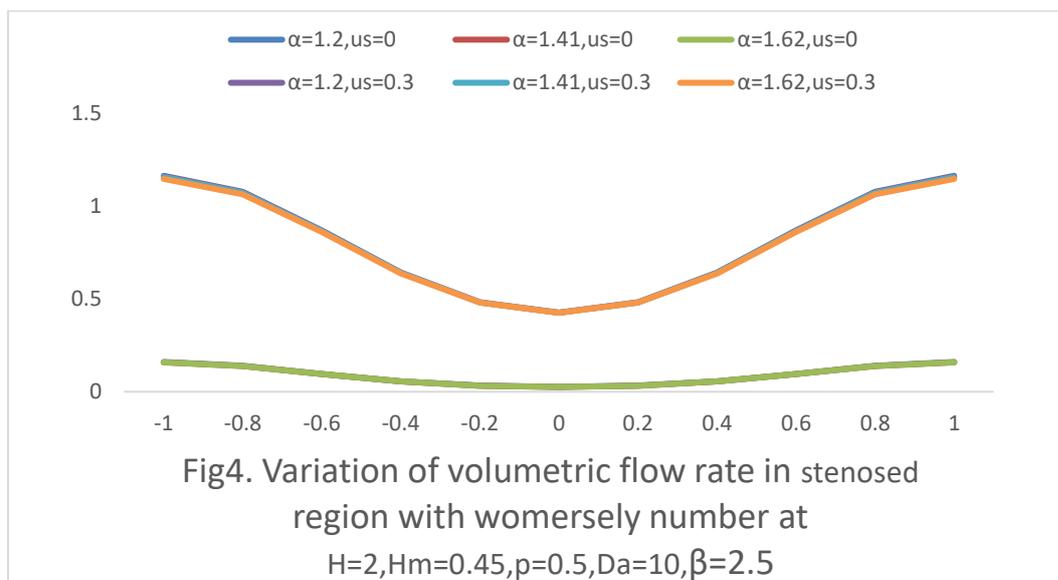
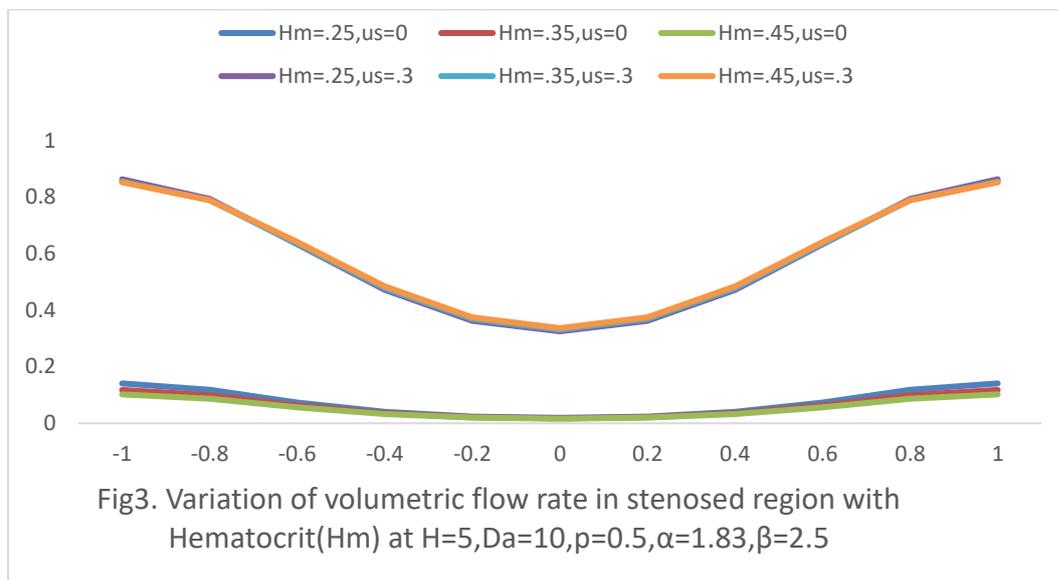
The non-dimensional form of shear stress is now obtained as

$$\tau = \frac{\tau_s}{\tau_N} = \frac{c I_0\left(\sqrt{\alpha^2 i + \frac{1}{Da^2}}\right)}{4ac_0 I_1\left(\sqrt{\alpha^2 i + \frac{1}{Da^2}} y\right)} \left[ a - k \left(\frac{R}{R_0}\right)^n \right] \left[ \frac{\sum \left( \lambda_m \left(\frac{R}{R_0}\right) + 4au_s \right)^{m+2} \sum (m+1) A_{m+1} \left(\frac{R}{R_0}\right)^m}{-\sum A_m \left(\frac{R}{R_0}\right)^m \sum (m+3) \lambda_{m+1} \left(\frac{R}{R_0}\right)^{m+2}} \right]$$

data are

**Results and Discussion:** The expression of volumetric flow rate is found and the plotted for different values of Hartmann number (H), Darcy number (Da), Wormersley number ( $\alpha$ ) and Hematocrit concentration(Hm). The profiles of volumetric flow rate versus radial co-ordinate for various physical parameters are shown in Figures [2-5].





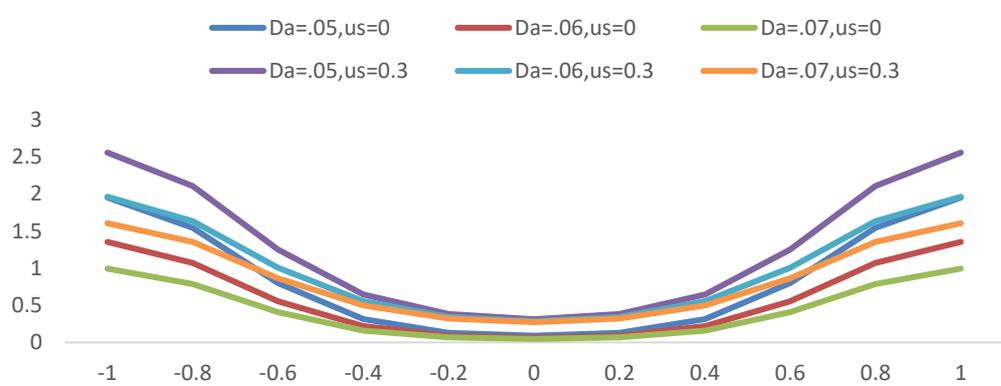


Fig5. Variation of volumetric flow rate in stenosed region with Darcy number at  $n=2$ ,  $Hm=0.45$ ,  $\alpha=1.83$ ,  $H=2$ ,  $\beta=2.5$

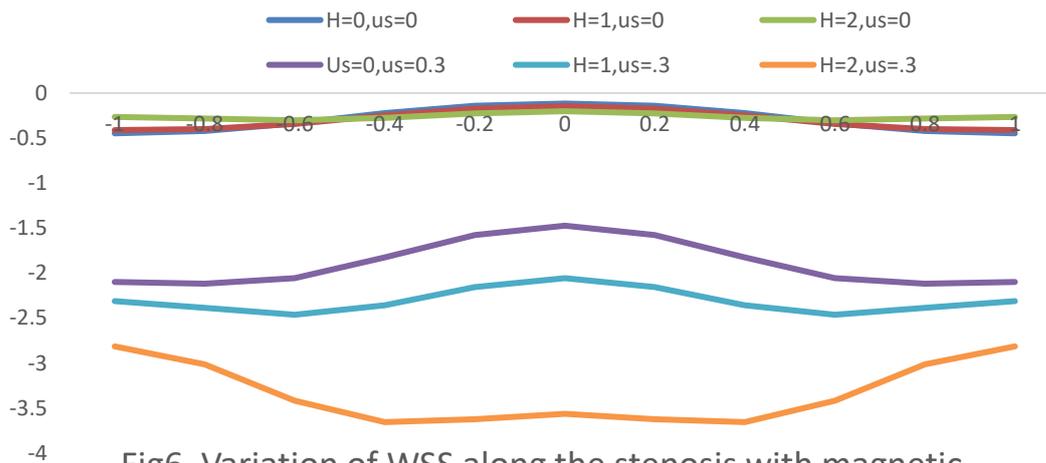
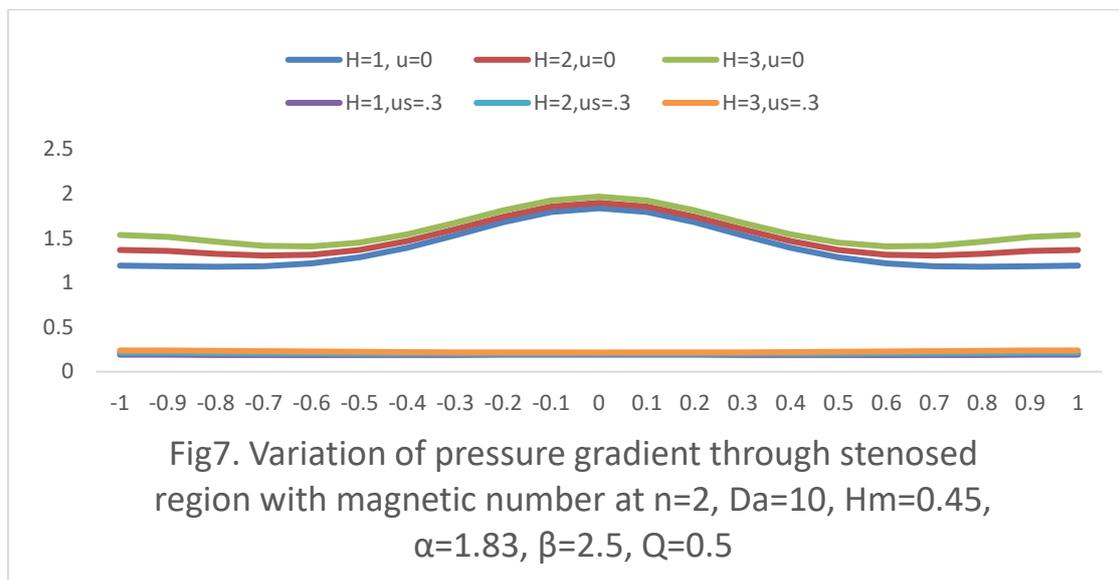


Fig6. Variation of WSS along the stenosis with magnetic field at  $n=2$ ,  $Da=10$ ,  $Hm=0.45$ ,  $\alpha=1.83$ ,  $\beta=2.5$ .



In figures 2 to 5, it is observed that volumetric flow rate decreases with the increase of magnetic field, Hematocrit concentration, Womersley number and Darcy number in both the cases, with slip or without slip at arterial wall. The Slip velocity fairly increase the volumetric flow rate as compare to the no-slip at the wall of artery. WSS and WSSG increases with the increase of magnetic field which is in good agreement with earlier results.

### Conclusion

The magnetic field, Hematocrit concentration and Darcy number is more effective than Womersley number in volumetric flow rate.

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## बलदेव वंशी के काव्य में राजनीतिक युगबोध

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राजनीतिक अंग्रेजी शब्द पोलिटिक्स का हिन्दी रूपांतरण है। जो इस प्रक्रिया का द्योतक है। जिसके माध्यम से सामाजिक नीतियों, नियमों व कानूनों को दृढ़ीभूत किया जाता है। दूसरे शब्दों में यह कहा जा सकता है कि राजनीतिक किसी भी समाज में उन सभी शक्तियों, संस्थाओं और संगठनात्मक प्रकारों से संबंधित होती है जो किसी समाज की अंतर्विरोधात्मक स्थितियों में सामंजस्य स्थापित करते हुए समाज में सुव्यवस्था की स्थापना करती है। तथा तात्कालिक समस्याओं एवं प्रश्नों का समाधान भी करती है। सामाजिक व्यवस्था को बनाए रखने के लिए राजनीति में प्रत्येक उस कार्य को अपराध माना जाता है। जो सामाजिक प्रगति में बाधक हो। अतः ऐसा व्यवित जो सामाजिक नियमों व कानूनों का उल्लंघन करता है। उसे राज्य द्वारा दंड दिया जाता है। तात्पर्य यह है कि राजनीति मनुष्य की पाश्विक वृत्तियों पर अंकुश लगाते हुए समाज में नैतिकता प्रतिष्ठित करती है। इस संदर्भ में डॉ. राजपाल का मत अवलोकनीय है— “यह राजनीति सार्थक है जहां उनमें केवल स्वहित की भावना ही नहीं वरन् परहित की भावना भी हो।”<sup>1</sup> लेकिन समकालीन संदर्भ में नैतिकता का कोई विशेष महत्व लक्षित नहीं होता, क्योंकि राजनीति आज लोक मंगल की भावना को भूलकर आत्मपोषी और आत्मकेंद्रित होकर सुकीर्ण दायरों में कैद हो गई है। मानव का धन के प्रति इतना मोह हो गया है कि वह राजनीति में आने के लिए सारे हथकंडे अपना रहा है। कई बार तो यहां तक देखा जाता है कि कई लोग राजनीति के चक्कर में आकर एक दूसरे के प्राण लेने को तैयार हो जाते हैं।

डॉ. ओमप्रकाश ग्रेवाल लिखते हैं, “वर्ग विभक्त समाज में साहित्य क्योंकि वर्ग-संघर्ष में विभक्त नहीं रह सकता, सौंदर्याभिरुचियाँ इत्यादि समाज में जारी वर्ग संघर्ष के विशिष्ट रूप से प्रभावित होती है। अतः साहित्य और राजनीति के कार्य क्षेत्र यद्यपि भिन्न होते हैं फिर भी उनकी भिन्न-भिन्न भूमिकाएं एक समान लक्ष्य की दिशा में समाज को प्रेरित करने वाली होती हैं।”<sup>2</sup>

राजनीति ने मानव जीवन को इतना प्रभावित किया है कि इससे तटस्थ रहना ईमानदारी नहीं है। यदि राजनीति को साहित्य से अलग कर दिया जाए तो उसका परिणाम होगा, साहित्य को जीवन से अलग कर देना। अर्थात् जो साहित्यकार संघर्षरत जनता से जितना, अधिक नजदीक रहेगा, उसकी समस्याओं को पैनी दृष्टि से देखेगा, अनुभव करेगा, वह अपने लेखन में उतना अधिक राजनीतिक होगा। विश्व राजनीति में प्रचलित समाजवाद, गांधीवाद, साम्यवाद, मानववाद एवं पूंजीवाद, इत्यादि विचारधाराओं का प्रभाव साहित्य में स्पष्ट रूप से लक्षित होता है। हिन्दी साहित्य में गांधीवादी और मार्क्सवादी विचारधारा को लेकर विपुल मात्रा में साहित्य सृजन हुआ है।

### बलदेव वंशी के काव्य में राजनीतिक युगबोध के विविध रूप

यदि वर्तमान समय को देखा जाए तो भारत विस्फोटक स्थितियों के क्रम से गुजर रहा है। कई क्षेत्रों में संक्रमण लहारियाँ उठ गिर रही हैं। तो कहीं उताल तरंगे हैं किन्हीं क्षेत्रों में बहुत धीमी जीवन गति है तो कहीं तीखा वेग, जिसका अवरोध कठिन ही नहीं पड़ रहा, बल्कि दुर्घनात्मक खतरों तक बढ़ा है। समकालीन कविता का मुख्य सरोकार राजनीतिक युगबोध रहा है। वास्तव में लोकतांत्रिक शासन प्रणाली जब आम आदमी की आवश्यकताओं आकांक्षाओं को पूरा करने में असफल रही तो उसका जनतंत्र से मोह भंग होने लगा। जनता राजनीति के असली चेहरे को पहचानने लगी।

स्वतन्त्रता प्राप्ति के बाद के वर्षों में भारतीय समाज के इन दो पक्षों में अंतर इतना अधिक बढ़ा है कि अब क्रान्ति तक की परिकल्पनाएं लोग करने लगे हैं। कारण यह है कि अग्र भाग इतनी तीव्रता से आगे बढ़ा है कि उसने पिछले भाग को साथ ले चलने, की तनिक भी चिंता नहीं की और इसका परिणाम यह हो रहा है कि धड़ ही टूटकर अलग हो जाने तक की स्थिति आ गयी लगती है।

भारत की राजनीति देश और सिद्धांतों पर निर्भर न होकर विदेशी निर्देश पर निर्भर है और सुविधानुसार बदलती रहती है। दूसरी ओर कबीर, तुलसी, प्रेमचंद, निराला, मुक्तिबोध आदि साहित्यकारों ने अपने चिंतन के माध्यम से मृत प्रायः हो चुके समाज तथा भ्रष्ट हो चुकी राजनीति को उसके दायित्व से अवगत कराया। बलदेव वंशी जी ने अपने काव्य के माध्यम से राजनीतिक युगबोध के अनेक रूपों का वर्णन किया है।

### 1. वर्तमान राजनीति का चित्रण

समकालीन कविता का मुख्य सरोकार राजनीतिक चेतना रहा है। समकालीन वैचारिकता के चिंतक कवि बलदेव वंशी ने व्यवस्था विद्रोह को अपने रचनात्मक फलक पर अभिव्यक्त करते हुए समकालीन बोध को नए आयाम दिए हैं। इनकी रचनाओं में स्वातंत्र्योत्तर भारतीय राजनीति की कुछ अत्यंत भयावह वास्तविकताओं और त्रासद स्थितियों की संवेदनशील पहचान मिलती है। इनके व्यवस्था विरोध में सपाट कहने की अपेक्षा संश्लिष्ट रूपाकारों के द्वारा कविता को अधिक

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सार्थक और महत्वपूर्ण पहचान मिलती है। इतना ही नहीं इनकी पूरी रचना धर्मिता में व्यवस्था में पिस रहे आदमी से लेकर सभी वर्गों के जनसमुदाय की यथार्थ स्थिति को सार्थक अभिव्यक्ति दी गई है।

कवि वंशी जी की रचनाओं ने व्यवस्थागत विसंगतियों, अंतर्विरोधात्मक नीतियों, षडयंत्रिक चालों की पहचान अनेक धरातलों पर की गई है। उन्होंने व्यवस्था की उन अमानवीय नीतियों पर व्यंग्यात्मक प्रहार किए हैं। जिन्होंने पूरे देश को यातना घर में तब्दील कर दिया है। ये आम आदमी के जीवन के तनाव, यंत्रणा, वेदना और अहसासों के द्वारा उसके धिनौने कृत्यों की ओर संकेत नहीं करते बल्कि अपराध के असली मुकाम को तह दर तह भेदने का प्रयास भी करते हैं। आम आदमी की लड़खड़ा रही जिन्दगी के प्रति व्यवस्था वर्ग की उदासीनता 1970 ई. के आसपास थी जो अब तक त्यों की त्यों बरकरार है। कवि की इस चेतना का साक्षात्कार 'दर्शक दीर्घा से' की अनेक कविताओं में बीज रूप में होता है।

मेरे धैर्य के लड़खड़ाते पाँव

छाती के सफेद होते बाल

आँखों में निराशा, पीड़ा, हताशा के

मिले जुले रंगों की आँधी

गहरे उतरते जड़ता के बिम्ब

आसपास अभिनय में व्यस्त है गूंगे बहरे लोग।<sup>3</sup>

'अंधेरे के बावजूद' नामक पूरा काव्य-संग्रह सामाजिक बोध तथा राजनीतिक बोध का अहसास करवाता है। इस संग्रह की पिरामिड कविता में व्यवस्था की संवेदना शून्यता, स्वार्थ परकता और अत्याचारी प्रवृत्तियों पर कारगर ढंग से वार किया गया है। जिससे उसका वास्तविक धिनौना चेहरा पूरी तरह नंगा हो जाता है— सिर्फ राजा जानता है कि यह पिरामिड बन रहा है।

होगा

सिर्फ राजा जानता है

कि इस पिरामिड का नक्शा कैसा है।

होगा सिर्फ राजा जानता है

कि पिरामिड के ऊपर एक चेहरा होता है।

'होगा'

सिर्फ राजा को खबर है

कि वह चेहरा इंसान का और धड़ शेर का है

'होगा'

सिर्फ राजा को ही पता है

सदियों उधर सिर्फ राजा ही यह सब जानता है

सदियों इधर।<sup>4</sup>

प्रस्तुत पंक्तियों में स्पष्ट संकेत है कि आत्मीयता और सहानुभूति का प्रदर्शन करने वाले लोकतन्त्र के रहनुमा भीतर से सिंह की भांति नृशंस और अत्याचारी है। सदियों से चले आ रहे इस कम में भोली-भाली जनता को छला जा रहा है। ऐसी विषम परिस्थितियों का सामना करते हुए जन सामान्य समझने लगा है कि देश के कर्ण धारों द्वारा उनके जीवन को सुखमय बनाने की ईमानदार कसमें टिटुरते गीदड़ों की हुआंक हो गई है। इतना ही नहीं गीता कुरान, बाईबल की कसमें खाकर मानवतावाद का अभिनय कर रहे नेता व्यवस्था विरोधी मनुष्य के जीवन को बदतर परिस्थितियों में पहुँचा देते हैं।

"जब जब ली जाती है राजसी कसमें

हाथों में कुरान, गीता या बाईबल उठा

शांति भवन हो या युद्ध शिविर

हिंसक इच्छाएं लेती है जन्म

और अदा की जाती है आरंभिक रसमें।<sup>5</sup>

यहां पर कवि ने वर्तमान समय की शासन व्यवस्था द्वारा प्रसारित आतंक रेखांकित किया है कि इस समय की व्यवस्था कितनी निर्दयता से कांतिकारी आंदोलनों को कुचल देती है। वह आम जनता के बुनियादी मनोवर्गों को समाप्त कर उन्हें गूंगा बना देती है। कवि समाज और परिवेश के यथार्थ को व्यंग्य द्वारा अनाहत करता है। स्वतंत्रता के बाद भारत की स्थिति को देखकर कवि अपनी चिंता को इन शब्दों में व्यक्त करता है—

एक ऐसे देश की पृष्ठभूमि पर खड़ा हूँ

जो यौवन में भी रेंग रहा है घुटनों के बल

आत्मविश्वास को दाँव पर लगाये

धिधियाता/परमुखापेक्षी।<sup>6</sup>

आजादी के पश्चात् राज नेताओं ने अपनी स्वार्थ लिप्सा को पूरा करने के लिए देश के हित को ही दांव पर लगा दिया। जिसके परिणाम स्वरूप देश यौवन में ही रेंगने लगा। नेताओं की शोषक, भ्रष्ट अवसरवादी और देशद्रोही मनोवृत्तियाँ उभर कर सामने आने लगी।

## 2. राजनीतिक निरंकुशता एवं भ्रष्टाचार

यदि हम पिछले वर्षों की राजनीति और राजनेताओं की छानबीन करे तो हमें यही लगने लगेगा कि इस देश में या तो राजनेताओं की चली या फिर राजनेताओं ने राजनीति का गलत फायदा उठाया है। वर्तमान भारतीय राजनीति भी अपने नैतिक दायित्व को भूलाकर अमानवीय संवेदनहीन, अन्यायी एवं हिंसक हो गई है। कवि ने अधिकांश कविताओं में हिंसा, हत्या, और अधिनायकवादी ताकतों के खिलाफ अपनी आवाज को बुलंद किया है—

यह देश के अधिकांश हिस्से में बहता

अधिकांश लोगों का

बूंद-बूंद, रिसता-सूखता खून है

निर्धन खामोशी में दहाड़ता

जो अपनी गरज में कुछ नहीं कहता

पर तुम्हारे हाथों, वस्त्रों, और चेहरों पर

चमक रहा है। डॉक्टर या गुण्डा न होकर भी

तुम खून में क्यों सने हो?"<sup>7</sup>

इन पंक्तियों में कवि ने आकांक्षी लोगों के विद्रोह और आक्रोश के प्रति सहमति प्रकट करते हुए सफेद पोश नेताओं की हिंसक प्रवृत्तियों पर प्रश्नचिन्ह लगाया है।

'मानसून' कविता में कवि राजनेताओं की स्वार्थ लिप्सा तथा समाज में बढ़ रही लूट-खसोट की नीति का वर्णन करता है—

"स्वार्थ दिन की तरह झनझनाता हुआ

देश पर बिछा रहा है रात की खामोशी

और लूट-खसोट पढ़ रही है।

जनतंत्र का संविधान

बाढ़ के होने वाले नुकसान के ठीक विपरीत

एक नई उक्ति के साथ

नेता लेट जाता है सोफे पर।"<sup>8</sup>

'खतरनाक कल' नामक कविता में कवि ने वर्तमान समय की परिस्थितियों, राजनीतिक माहौल, हिंसात्मक गतिविधियों का वर्णन बच्चे के माध्यम से किया है।

"वह बच्चा जो माँ के गर्भ में

गुलाब-सा खिल रहा है पंखुड़ी पंखुड़ी

कल बम विस्फोटों में उड़ रहा होगा

चिंदी-चिंदी।"<sup>9</sup>

## सत्ता व्यवस्था की अमानवीय स्थिति

भारतीय राजनीति में आजादी से होकर अब तक चाहे जो भी दल सरकार में आया हो, चाहे वह भारतीय जनता पार्टी हो या फिर कांग्रेस की सरकार हो, आम आदमी की नब्ज को नहीं पकड़ पाया। गरीबी, बेरोजगारी, बेकारी, अनपढ़ता, और भ्रष्टाचार आज भी बरकरार है। अर्थात् सत्ता में चाहे जो भी आया हो आम जनता के लिए क्रूर और आतंकवादी ही सिद्ध हुआ है।

'कौन है ये लोग' कविता में जलियावाला बाग की घटना का वर्णन किया है। वंशी जी ने इस कविता में बताया है कि इस बाग की दीवारों पर आज भी गोलियों के निशान हैं जो समय रूपी चक्र का संकेत देते हैं। सत्ता व्यवस्था की अमानवीय स्थिति में अनेक निर्दोष लोगों को गोलियों से झुकाया गया—

"चारों ओर से, ऊँचे उठे इन भवनों के घेरे में

इस बाग में वे लोग कौन थे।

जो गोलियों से झुकायें, गये संदेह राजतंत्र में

एक दूसरे की ओट लेते घिरे-घिरे मरे।

इस बाग में दीवारों पर आज भी गोलियों के निशान हैं।

जो भुरभरा रही है कालचक्र में।"<sup>10</sup>

अवसर और सुविधा ने नेताओं को दायित्वहीन बना दिया है। नेता लोग लंबे चौड़े भाषण के दौरान जनता की शोषण की नीतियाँ भी तैयार करते हैं।

#### 4. युद्ध और आम आदमी

वंशी जी की विचार कविताएं आज भी असलियत का अन्वेषण करती हैं। और समकालीन व्यक्ति का उसके आसपास का और उसकी सही हालत का बोध कराती हैं और उसे सक्रिय करती हैं। इस बोध की वाचकता वैचारिक मनः स्थितियों में से छनकर आयी है।

'युद्ध-प्रेत', कविता आज की साम्राज्यवादी युद्ध-पिपासु शक्तियों पर प्रहार करती है। 'उपनगर में वापसी' संग्रह की कविता 'युद्ध-प्रेत' चक्र सुंदर रचना है।

इस कविता में कवि दो बिंब दिखाता है- हंसते, किलकते, खुशी से चीखते और खेलते बच्चे। दूसरे बिंब में कवि बच्चों को डरे, सहमें और छुपे बच्चे दिखाता है। असल में इस कविता में युद्ध का प्रतीक एक जहाज का वर्णन वंशी जी अपने शब्दों में करते हैं-

"अभी थोड़ी देर पहले

यहां बच्चे थे

बच्चे हँसते किलकते

खुशी में चीखते

आकाश में एक जहाज गुजर गया है

इधर से उधर

अब। बच्चे कहीं नहीं दीखते।"<sup>11</sup>

कविता में युद्ध की संभावना, असुरक्षा का डर बच्चों के मनो में विद्यमान है। किसी भी समय कही पर भी कुछ भी हो सकता है। साम्प्रदायिक दंगे, हड़ताल, नगरबंद, और युद्ध की संभावना हमेशा व्यक्ति को डराती रहती है।

#### 5. चुनाव प्रक्रिया

देश आजाद होने के बाद आम लोगों की इच्छाएं और अपेक्षाएं बढ़ी। देश का नया संविधान बना, जनता की चुनी हुई सरकार बनी। देश के विकास की योजनाएं बनी। शिक्षा के प्रचार की योजनाएं बनी। शिक्षा के प्रचार के लिए विभिन्न शिक्षा, संस्थाएं खोली गईं। दूसरी और विसंगतियाँ और विडम्बनाएं भी एक के बाद एक फन उठाए सांपों की तरह बढ़ती ही चली गईं। चोर-बाजारी, लूट-खसूट, घूसखोरी, नरसंहार, अत्याचार आदि का नग्न रूप देखने को मिला। पुलिस चोर, उचक्कों, डाकूओं, लुटेरों का रक्षण और भोले - भाले नागरिकों का भक्षण करने लगी।

'मैं ही हूँ साक्षी' कविता में कवि ने नेताओं की गुंडागर्दी से बदरंग होती दुनिया को स्वयं अपनी आँखों से देखा है-

मैं ही हूँ साक्षी

हजारों नरकों के वक्ष पर उगे

इस रंगमहल की रंगीन रातों का द्रष्टा

यह सक्रिय है

वृक्षों में फूटे नये कल्लों के कातिल

इन्सानी सांसों को डुबोने वाले मददगार

नापाक इरादों भरे पुन्हुन के आज्ञाकारी जल्लाद

हाथों में फरमान बरदारी की तलवार पकड़े अंधे सिपहसालार.....।"<sup>12</sup>

कैसी बिडम्बना है कि भारतीय जनता और जनतंत्र चुनावों के भँवर में उलझ कर डूब रहे हैं। एक आम आदमी राजनीतिज्ञों के आश्वासनों पर भरोसा करता हुआ अपना जीवन-जी रहा है। भारतीय चुनाव प्रक्रिया भी अंधी स्वार्थमयी राजनीतिक की गिरफ्त में आ गई है। वंशी जी ने भारतीय चुनाव प्रणाली की वास्तविकता को जनता के सामने उजागर किया है। कवि की कविताएं समाज को जागृत करके उसमें सामूहिक क्रांति लाने के लिए साहस प्रदान करती हैं।

#### 6. साम्प्रदायिकता और अलगावाद

बलदेव वंशी जी की कविताएं पढ़ने के बाद मैं तो क्या हर व्यक्ति यही कहेगा कि उन्होंने साम्प्रदायिकता और अलगावाद के बारे में यथार्थ चित्रण किया है-

'हरिजन-बस्ती' कविता में मनुष्य के निचले हालातों को दिखाया गया है और बताया गया है कि उन्हें समानता का अधिकार न देकर उसकी विवशता को भुनाने की कोशिश राहत राशि देकर की जा रही है-

"आकाशवाणी हो रही है कि हरिजन बस्ती में

पैसे बाँट रही है सरकार

हरिजन बस्ती में हर रोज आग लग रही

हर रोज राहत राशि बाँट रही है

मुफ्त के कम्बलों के साथ

सरकार खुद आ रही है चलकर

हर रोज हरिजन जल रहे हैं जिंदा।।"<sup>13</sup>

‘खेतों की सभ्यता’ कविता में कवि ने बताया है कि बेचारा बच्चा समाज के व्यवहार से दुःखी तो जन्म होते ही हो जाता है और माता पिता के पास समय न होने के कारण किताबों को ढोता ढोता ही अपने बचपन को नीरस ढंग से गुजार रहा है—

“दीवार—दर—दीवार

आदमी दर आदमी

सभ्यता दर सभ्यता

वे पर्दा हो चुके हो

और भीतर चल रहा व्यापार

खुली सड़क के भाव से उतर चुका हो नीचे।”<sup>14</sup>

‘बच्चे की दुनिया’ काव्य संग्रह की कविताओं में अलगाववाद है। वर्तमान समय में माता—पिता बच्चे को आया से पलवाते हैं। वह बच्चा माता—पिता के प्यार के अभाव में, स्पर्श के अभाव में अपने माता—पिता से दूरी बना लेता है।

बच्चा माँ बाप के पास दुःखी

किंतु आया के पास क्यों किलकिला रहा है?

बच्चे के लिए माँ—बाप और माँ—बाप के लिए बच्चा।

फालतू बनता जा रहा है।”<sup>15</sup>

“किसका है यह बच्चा”, कविता में गरीबी में पैदा हुए बच्चे, लावारिस और बेसहारा बच्चों के लिए कवि के हृदय में संवेदना है। फुटपाथों पर पैदा होने वाला बच्चा अपनी जिंदगी को घसीटता हुआ जैसे तैसे बड़ा हो रहा है। इस प्रकार वंशी जी की अनेक कविताओं में साम्प्रदायिकता और अलगाववाद के दर्शन होते हैं।

उपर्युक्त विवेचन के आधार पर हम कह सकते हैं कि वंशी जी ने राजनीतिक व्यवस्था पर अपनी कलम खुलकर चलाई है। वंशी जी ने आम आदमी की त्रासद स्थितियों की अभिव्यक्ति सटीक ढंग से की है। कवि की कविताओं के माध्यम से पता चलता है कि हमारी राजनीतिक व्यवस्था ठीक नहीं है।

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## रांगेय राघव के जीवनीपरक उपन्यासों में प्रधान नारी पात्र

### डॉ० सुनीता देवी\*

नारी भगवान की अद्भुत कृति नहीं है वरन् मानवों की अद्भुत सृष्टि है। मनुष्य निरंतर अपने अन्तरतम से नारी को सौंदर्य की विभूति से विभूषित करता है। कविगण स्वर्णिम कल्पना के धागों से उसके लिए एक जाल-सा बुनते रहते हैं। चित्रकार उसके स्वरूप को उसके बाह्य सौन्दर्य को अमरत्व प्रदान करते हैं। मानव हृदय की वासना ने सदैव नारी के यौवन को ऐश्वर्य प्रदान किया है। नारी अर्द्ध नारी और स्पन्। सृष्टि के उषाकाल से ही नारी पुरुष की कोमल भावनाओं में चेतना फूंकती और उसकी कल्पनों में रंग भरती आई है। कदाचित् इसी कारण वह शास्त्रों में भी वर्णित है। ऋग्वेद कालीन गृह संस्था में स्त्री को पुरुष से अधिक सम्मान दिया जाता था। उन दिनों लोगों की यह धारणा थी कि विवाह उपरान्त जब स्त्री घर में प्रवेश करती है तब उसके कटाक्षों से ही घर का वातावरण विकसित और सुवासित हो जाता है। इसी कारण ऋग्वेद में नारी को साम्राज्ञी और युजर्वेद में पुरिन्ध आदि कहकर पुकारा गया है।

### रांगेय राघव के जीवनीपरक उपन्यासों के प्रधान नारी-पात्र

#### यशोदा

देवकी का बेटा उपन्यास के सशक्त तथा प्रमुख स्त्री पात्र के रूप में यशोदा उल्लेखनीय है। यशोदा के विविध रूपगुणों का परिचय उपन्यास द्वारा हो जाता है। यशोदा नंदगोप की पत्नी, श्री कृष्ण की माता, गोकुल के प्रजा की पालिका, आर्य वसुदेव की तेरह पत्नियों तथा उनके अनेक पुत्रों को आश्रय देने वाली स्नेहित नारी के रूप में वहां चित्रित है। दया, ममता, करुणा, और सहानुभूति आदि स्त्री सुलभ गुणों की वह मूर्ति थी। इसलिए बलराम और श्रीकृष्ण की ममत्व तथा अपनापन दे सकी। उनके सुख दुःख को अपना मानती थी। कृष्ण की भी लीलाओं का वह रसास्वादन करती हैं। वह त्यागी तथा संयमी होने के कारण अपनी कन्या को देवकी के हवाले तथा मौत के हवाले करके भी बेटी के बदले मिले कृष्ण पर अपनी संतान जैसा ही व्यवहार करती है। यह पर उसके असमान्यत्व के दर्शन होते हैं। सामान्य नारी होती तो अपनी संतान की बलि चढ़ाकर दूसरों की संतान को पालने के लिए कभी तैयार नहीं होती। डॉ. रांगेय राघव ने यशोदा के मातृत्व का बड़ी सूक्ष्मता से अध्ययन किया है। और लिखा है, "माँ सुनती है चाहे कितनी भी छोटी बात क्यों न हो, क्योंकि मां तो जब पूरी बात सुन लेगी तब ही उसे तृप्ति होगी। वह इतनी व्यापक संवेदना कहां से ले आती है। सबके लिए ना कर देती है। परन्तु अपनी संतान के लिए ना क्यों नहीं कर पाती?"<sup>1</sup>

इस प्रकार यशोदा के स्नेह रूप का चित्रण प्रस्तुत उपन्यास में प्रभावी ढंग से किया है। अपनी पुत्री की बलि चढ़ाकर कृष्ण को नचाने वाली तथा उसे ममत्व से पाल-पोस कर अंत में देवकी के हवाले करने वाली त्यागमयी मूर्ति के रूप में यशोदा का चित्रण किया गया है। जो अत्यंत मार्मिक बन गया है।

#### देवकी

देवकी कंस की सबसे छोटी बहन है और वसुदेव की चौदहवीं पत्नी है। तथा कृष्ण की माता है। वह बड़ी सुंदर है। उसका वैवाहिक जीवन आरंभ से ही संघर्षपूर्ण रहा है। इसका कारण उसका भाई कंस है। जो बहुत ही अत्याचारी है। वसुदेव उसके अत्याचार को बंद करके गणराज्य की स्थापना करना चाहता था। इसमें देवकी भी अपना योगदान देती है। उसके इस कार्य से क्रोधित होकर कंस वसुदेव को मार डालना चाहता है। परन्तु देवकी उससे प्रार्थना करती है कि वह उसके सुहाग को नष्ट न करे। देवकी की प्रार्थना के अनुसार कंस वसुदेव को जीवनदान देता है। किंतु बंदी बनाकर कारागृह में डाल देता है। इसके बाद एक ज्योतिषी आकर कंस को यह बताता है कि देवकी का आठवां पुत्र उसका वध करेगा। तब अपनी रक्षा हेतु वह देवकी के पुत्रों की हत्या करने लगता है। जब देवकी के पहले पुत्र की हत्या की जाती है तो देवकी मूर्च्छित हो जाती है। इस तरह वह अपनी आंखों के सम्मुख अपनी संतान की हत्या होती देखती है। एक पुत्र कृष्ण को बचाने में वह सफल होती है। कंस के भय से वह उससे मिल भी नहीं सकती थी। यह बात छिपी हुई थी कि कृष्ण देवकी का बेटा है।

मां का हृदय सदा अपने बच्चे का सुख देखना चाहता है। देवकी भी कृष्ण के लिए यही सोचती है, "वहां वह सुखी है यही मेरे लिए बहुत है। वह यशस्वी बने तो यशोदा ही उसका सुख भोगे। मैं तो बस सुन लूं और कुछ नहीं चाहती।"<sup>2</sup> इस तरह वह अपने पुत्र के यश की कामना करती है। और जब सुनती है कि उसका पुत्र वीर बन गया है वह ब्रजभूमि के जनहित के सत्कार्य में लग गया है तब वह उसके पिता से कहती है कि तुम्हारी वीरता के कारण ही तो वह कितना वीर है। वह पुत्र के इस यश को परंपरागत तथा वंशानुगत वीरता का कारण मानती है।

देवकी पति परायण और विरही माता के रूप में चित्रित हुई है। मातृत्व से वंचित रहकर भी यह यशोदा मैया के सुख में अपना सुख मानती है। यशोदा की कन्या की हत्या की जिम्मेदारी स्वयं को मानते हुए कृष्ण प्रेम का अधिकार अंत में यशोदा को ही देना पसंद करती है। माता होकर मां भी मातृत्व से सदैव उपेक्षित रही, देवकी का मार्मिक चित्रण किया

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गया है। आज तक के उपन्यासों में देवकी का इतना सम्मान कभी नहीं हुआ था जितना कि लेखक ने किया है। इतना ही नहीं उपन्यास का शीर्षक भी इस उपेक्षित माता के नाम पर देकर देवकी के चारित्रिक गौरव की श्री वृद्धि की है। अंत में हम कह सकते हैं कि देवकी का जीवन अपने लिए न होकर अन्यों के लिए ही रहा है। वह त्याग और सहनशीलता के कारण महा चरित्र की स्त्री बन सकी।

### यशोधरा

डॉ. रागेय राघव जी ने यशोधरा को एक विद्रोहिणी, स्वाभिमानी तथा सशक्त नारी के रूप में चित्रित किया है और उसमें वे सफल भी रहे हैं। यशोधरा के विविध रूपों के दर्शन हमें यशोधरा जीत गई उपन्यास में होते हैं। कोलियकन्या, नवयौवना, गोपा, सिद्धार्थ की पत्नी, राहुल की माता, परित्यक्ता रानी, स्वाभिमानी तथा विद्रोहिणी स्त्री, प्रजावत्सल, कर्त्तव्यपरायणा स्त्री और अंत में अपराजिता ऐसे कितने रूप प्रस्तुत उपन्यास में उभरे हैं।

कपिलवस्तु नगरी की राजरानी भद्राकापिलायिनी सुंदर तन और मन वाली हैं। अपने पति के सुख दुःख में शामिल होकर सहारा देती रहती हैं। वह व्यवहार चतुर तथा कुशल राजनीतिज्ञ भी हैं। इसलिए सिद्धार्थ जब उससे पूछता है, "ये क्षत्रिय दासों पर दया नहीं कर सकते? तब भद्रा कहती है— "दया! दया तो स्वामी सबके मन में आती है परन्तु क्या दया से यह राज्य, यह धर्म, यह सब चल सकता है? कहिए गण व्यवस्था अच्छा नहीं है? एकराट अच्छा है।"<sup>4</sup> यशोधरा अपने आपको अबला नहीं समझती वह पति और पत्नी के समन्वय से ही सांसारिक बातों में पूर्णता मानती हैं। एक के बिना दूसरा अधूरा है। जब सिद्धार्थ उसे बिना कहे घर से चले जाते हैं तब उसे गहरी वेदना होती है। तब वह महाप्रजापति गौतमी से कहती है, "माना कि वे स्त्री से दूर रहते हैं उनमें स्त्री को देखकर वासना भी नहीं जगती, परंतु पानी और अन्न के बिना तो नहीं रह सकते वे लोग.....? बाकि सृष्टि की रक्षा बड़ी है कि अपनी रक्षा.....।"<sup>5</sup> विद्रोहिणी स्त्री के रूप में वह अपने विचार प्रकट करते हुए आवेश में कहती हैं, "संसार को जन्म देकर पुरुष के अहं को जीवित रखने वाली नारी हैं। मूर्खा! जो अपमान और प्रताड़ना सहकर भी भ्रूणहत्या नहीं करती या आयर्ये। जो प्रसव करती हैं। देवी यदि संसार की स्त्रियां गर्भ धारण करना छोड़ दें तो पुरुष का यह गर्व एक ही ठोकर में चकनाचूर हो जाए।"<sup>6</sup> छंदक द्वारा सिद्धार्थ के गृहत्याग की बात सुनकर वह क्रोध, आवेश, विवाद, अपमान और आत्मग्लानि से व्याकुल होकर अपने विक्षोभ में सिमट गई थी, "क्रोध था कि पुरुष उसे घृणित समझकर त्याग गया था, आवेश था कि वह उसे अपना मानती थी और उसके विषय में जानना चाहती थी किंतु इनमें भी बड़ा विवाद था जिसमें रिक्त हुआ जीवन अतलांत महासागर की—ती तृष्णाओं लहरों के दुर्दमनीय वेग से गर्जन करके महा शून्य को टूक टूक कर अपने भीतर डुबा लेने के प्रयत्न में था। उसका पुरुष उसके भार से झूल नहीं सका, यह कथा उसका कम अपमान था और फिर भी वह जीवित थी।"<sup>7</sup>

स्वाभिमानी यशोधरा गौतम बुद्ध के दर्शन के लिए नहीं जाती परंतु जब स्वयं बुद्ध उसके महल में आते हैं तब उचित सम्मान देकर राहुल को दे देती हैं। इसमें ही उसकी महानता है। इसलिए सब कुछ खोकर भी यशोधरा अंत में जीत गई हैं। वह उदारहृदया, संपन्ना स्त्री पाठकों पर अपना अमीट प्रभाव छोड़ती हैं।

### लोई

लोई का ताना उपन्यास के सशक्त पात्र के रूप में लोई प्रस्तुत है। यशोधरा की तरह लोई के भी अनेक रूपों के दर्शन होते हैं। कबीर की प्रेयसी, कमाल की माता, स्पष्ट तथा निर्भिक स्त्री, व्यवहार कुशल आदि। लोई में नारी के सभी आदर्श गुण हैं वह पंद्रह वर्ष की थी तभी से कबीर के प्रेम बंधन में फंसी हुई थी। उनके प्रेम को सामाजिक बंधन था। इसलिए एक दिन लोई एकांत में कबीर से कहती हैं, "अब मैं तब ही आऊंगी जब कबीर तुम मुझे दिन दहाड़े हजार जुलाहों के बीच सामने से बाजे बजवाकर लाओगे।"<sup>8</sup> इस प्रकार से लोई कबीर की समाज सम्मत पत्नी बनना चाहती हैं। वह अपने कर्त्तव्य को जानते हुए पति को प्रगति के मार्ग की ओर बढ़ाती हैं।

लोई पति की अनुगामी रही हैं, उसके दुःख सुख में समसहभागी रही हैं। उसके समर्पण पर कबीर प्रसन्न हो उठता है। लोई को अपने पति पर पूर्ण विश्वास है। इसलिए एक बार उनके घर से बिना बताये चले जाने पर वह नाराज नहीं होती। बल्कि विश्वास के साथ कहती हैं, "वे अवश्य लौटेंगे बेटा। जरूर आएंगे। वे क्या वहाँ शांति पा सकते हैं। नहीं, कभी नहीं।"<sup>9</sup> अपने पति की महानता से प्रभावित वह नारी अपने पति द्वारा सुनाये गए अनमोल विचारों एवं वक्तव्य को अपने बेटे की सहायता से लिपिबद्ध करती हैं। अपने जीवन का हर क्षण वह पति के लिए समर्पित कर देती हैं।

लोई परंपरावादी और पति परायण नारी हैं। पति ने कमाकर लाना और उसने गृहकार्य करना तथा पति को स्नेह देकर प्रसन्न रखने का कार्य करने वाली वह आदर्श गृहिणी हैं। अपने उत्तरदायित्व एवं कर्त्तव्य का उसे ज्ञान है। इसलिए वह अपने पति से कहती हैं, "तू कमा के गेहूँ, चना जो ला। मैं पीस के रोटी करूंगी। तू खा और मुझे खिला। अपने काम तू कर, अपना काम मैं करूंगी। मैं ताना डालूंगी तू बाना डाल।"<sup>10</sup>

इतिहास के अनुसार कबीर और लोई की दो संतान थी परंतु उपन्यास में केवल पुत्र कमाल का ही वर्णन किया है। लोई अपने पुत्र कमाल को समझाते हुए कबीर की महानता का परिचय देती हैं। कबीर के पदों को लिखकर संग्रहित करने की सलाह को देकर कबीर वाणी को जीवित रखने का प्रयत्न करती हैं। इसलिए कमाल आदरपूर्वक कहता है, "वह कितनी करुण थी मेरी माँ, मेरा अम्मा, मेरा वह पेड़ जिसने धूप में जल—जलकर भी मुझ पर छाया कर रखी थी। तथा आज मुझे याद आने पर लगता है कि वह तो माता धरती थी, खूदी गई सूरज ने तपाया, पवन ने धूँ—धूँ करके अंग—अंग की चीम को धार धार कर दिया।

इस प्रकार लोई का चरित्र निर्भिक परंतु उदारहृदयी, कुशलकर्मी सफल पत्नी तथा माता, आदर्श गृहिणी आदि रूपों से स्पष्ट और मार्मिक बन गया है।

#### **रत्ना**

रत्ना ब्राह्मण कन्या है। वह दिखने में बड़ी सुंदर है। उसकी इसी सुंदरता पर मुग्ध होकर तुलसीदास उसे पत्नी के रूप में मांगने हेतु उसके पिता के पास जाते हैं। तब उसके पिता रत्ना के संबंध में बताते हैं, "मेरी बेटी भोग विलास की दासी नहीं है। वह अपनी माता के समान ही धर्म परायणा है। उसका मन बड़ा सरल है। और बड़ा ही स्वाभिमानी है। मुझे वह बहुत प्रिय है। तुम कवि हो वह भी कविता करती है। जैसे वह बुद्धिमति है जो उसी मर्यादा का निर्वाह करेगी।"<sup>12</sup> रत्ना और तुलसी के प्रथम परिचय का वर्णन उपन्यास में इस तरह हुआ है, "कैसा मिलन था वह? मर्यादा ने दोनों को जकड़ रखा था। वह तो गरिमा से आवृत्त थी। सब कह गई, पर कहा कुछ भी नहीं। इस तरह रत्ना गरिमामयी नारी थी। जिसकी हर बात एवं क्रिया में विशेष ओज प्रकट होता था।

विवाहोपरांत वह पति प्रेम में आनंदित रहती है। उसका पति उसके प्रति पूर्ण समर्पित होता है। परंतु रत्ना नहीं चाहती कि उसका पति केवल उसके प्रेम में ही अनुरक्त रहे। वह चाहती है कि उन्हें धार्मिक और सामाजिक कार्यों में भी ध्यान देना चाहिए। इसी बात को लक्ष्य करके वह पति से कहती है, "मैं अर्द्धांगिनी हूँ। धर्मपत्नी हूँ। मैं स्त्री हूँ। तुम पुरुष हो। इतना ही मेरा तुम्हारा संबंध नहीं है। हमारा तुम्हारा धर्म का भी तो संबंध है। हम तुम तो गाड़ी के दो पहिए हैं। एक पर दूसरा अटककर रह जाएगा तो गाड़ी चलेगी कैसे? इस तरह वह पति को सामाजिक तथा धार्मिक मर्यादा से अवगत कराती है।

इस प्रकार डॉ. रांगेय राघव जी ने रत्ना के जीवन को नारी जागरण का प्रतीक माना है। नारी केवल भोग-विलास का साधन नहीं, वह जीवन की संगिनी भी है। नारी का गौरव बढ़ाते हुए रत्ना के व्यक्तित्व को प्रेरक बनाया है।

निष्कर्ष रूप में कहा जा सकता है कि रांगेय राघव जी ने अपने जीवनीपरक उपन्यासों में प्रमुख नारी-पात्रों का खुलकर चित्रण किया है।

#### **संदर्भ ग्रन्थ सूची**

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## **A Review on Object Detection and Tracking Techniques**

**Vivek Shukla, Dharendra Pandey & Raj Shree\***

### **Abstract**

Object detection and tracking is very popular and challenging issue in vision based computer applications. The extension of the application of object detection can be seen as a analytical part in different applications such as image processing, security surveillance, artificial intelligence, and some more areas. It is applied to detect whether targeted object is present in the frame or not. It can be one object or many objects to detect in any video. These objects can come in the categories of vehicles, pedestrian, animals etc. There are three main stages required whenever data processing takes place for object detection and tracking that are: Identification of object, classification of object and object tracking. In this review paper we have studied the different methods for object detection and tracking.

**Keywords** - Object detection, Object tracking, Object detection methods, Object extraction, Object classification.

The Modern history of object detection and tracking is quite interesting with successive inventions and up-gradation or the greater precision and controlling. There are so many important object detection concepts which were not quite easy for the past but as an outcome of various research and successive advancements in technologies such concepts can be easily identified and understand. Detecting the moving objects and tracking them is very important to navigation around objects and predicting its locations and trajectories. Object detection and tracking is still an open research area even after many years research has done in field of object detection and tracking. A qualitative, great accurate and best performance technique is still a great challenges now a days in the field of object detection and tracking. The hierarchy of difficulties of this issue is totally based on that how to define the targeted object to be detected and tracked with better precision.

There are a few defined characteristics of an object which is not very difficult to detect all pixels with similar color as the object presented in frame. However, there are always chances to appeared another object or background with the similar color information. This will make an issue to differentiate the background with an object. This issue is much difficult when the object is changing from one frame to another frame. This perceptibility defines from three principle origin such as difference in target positions, change in illumination and less or more occlusion of the targeted object. The way to detecting and tracking the objects are following as:

**Object Detection:** It is detecting the objects in the frame sequence and combines the pixels of all these objects. There are some more popular techniques also that help to detect the object named as Frame Differencing, Optical flow and Background subtraction method.

**Object Classification:** In frame the moving background detected, it may matches to different objects in real time e.g. humans, vehicles and other etc. There are many other ways to classifying the objects such as Shape based method, Motion based method and Color based classification method.

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**Object Tracking:** The objective of a moving object tracking is to create the way for an object in given time by detecting its position and location in every single frame of the video.

Object tracking challenges that should be taken care by following as:

Frame illumination changes.

Noise in detected object.

Difficult to define the objects shapes and size.

Intricate objects motion.

Less and more object occlusions.

### **Related Work**

This method stated that (Horprasert, Thanarat, Harwood, Davis, 1999) the ranges from very simple technique to state of the art published methods are divided on the basis of speed, memory requirements, quality, precision and better performance. They applied the methods named as frame differencing method, Real time background subtraction method and shadow detection method for object detection and tracking, for real time tracking of object that they applied adaptive background mixture model and techniques ranges from changing the degree of precision, quality and measure the complexity. A few of them handle with real time object detection obstruction like snow, rain, changing the position of objects in frame, objects overlapping, effect of lights or slow moving objects.

The most difficult thing to getting high rate of detection with low error rate for human detection and tracking in frame sequence is to increasing the performance, quality and increase the response time. It discussed the main causes that to affect the complexity of object, differences in range and object background human interactions. Simple two-steps refine solution which is human detection and tracking with two novels categorization arrangement discussed in (Zhou, Hoang, 2005).

There are basically three simple modes in video analysis that are detection of targeting objects in video frame, tracking of objects in frame differences and determining to detect and track the object with their movements. Detecting humans from video is a very challenging issue due to the changing in the position of objects.

In (Mikolajczyk, Schmid, Zisserman, 2004) they developed a detector for moving human in frames with possibly dynamic cameras and backgrounds, testing different coding functions for moving object and resulting that conformed by the histograms and differential optical flow gives the expected accuracy. Moving inscriptions are integrated with histogram of conformed Gradient appearance inscriptions. The designed detector is tested on different databases and some other critical test set taken from video and holding wide point ranges, location, change in position and background inequality by containing moving cameras and backgrounds ( Paragios, Deriche, 2000).

In ( Zhang, Sun, Fu, Wang, Wang, 2014) they have proposed the object detection techniques such as moving object detection methods, frame differencing and approximate median method (AMM). The frame differencing method has been taking reference frame selection and step length. They have considered the moving object detection and tracking by applying the customized frame differencing method. In the controlling and monitoring system for object captured by a camera is to be considered for the space under the adequate measurement. This method tested on multiple videos and the results are quite acceptable.

In ( Belongie, Puzicha, 2002) they have proposed the cascade-of-rejecters techniques with the histograms of conformed Gradients characteristics to get a qualitative most efficient and accurate human detection system. This method used histograms conformed Gradients of

variable size blocks that taking the main characteristics of humans automatically. This technique applied for characteristic selection, it detects the accurate set of blocks from a large set of possible blocks. It uses the important image representation and a non- acceptance waterfall which significantly increases the calculation. For an image, the system can process certain number of frames per second based on the density in which it process the image, while maintaining the precision level and this method is similar to existing methods.

In (del-Blanco, Jaureguizar, García, 2012) they have proposed a novel method for detecting the moving objects from a static background by using background subtraction technique.

**Method Comparison**

In below all the methods described for object detection and tracking have some advantage and disadvantage:

Table 1 – Method Comparison

Methods	Advantage	Disadvantage	Object Identified
Background subtraction methods	Simple to implement Objects are allowed to become a part of the background without removing the existing background It learns itself and Doesn't require reprogramming. Easy to implemented with any applications. Fast recovery process. Less memory requirement.	Very less accuracy Hard to manage speedy changes. Initializing the Gaussians is important. Not a decent subtraction when shadow or some other hindrances are there. Gives false positives. It doesn't make with multi-model background.	Any targeted object
Real Time Background Subtraction and Shadow Detection Technique Theory	Accuracy is greater than frame difference It detects shadow as Well.	Intricate method.	Target foreground objects
Template Matching	Best method for explicit condition.	One-to-one matching. Moderate process for perceive new variation of a pattern. No scanning procedure is done on the percentage so Cannot anticipate the better precision.	Takes sub-image of a target image frame
Image Differencing	Very Simple and straight forward. Easy to interpret the output.	Multiple values are absolute so value may have different meaning. Require environmental adjustment.	Determine changes between images

		Requires choice of limits.	
Shape Based	Simple pattern-matching methodology Having not able to moderate precision.	More striking technique. Frequently utilized as a substitution to local features. Does not function admirably in unique circumstances. Not able to determine internal movements well. Processing time is low.	Outline of the objects.
Optical Flow	It can produce the complete Information of moving object containing good precision.	Require large amount of calculation.	Flow vectors of moving objects over time to detect moving regions in an image
Frame Differencing	Good for static background. High precision. Very simple method	It needs a background without moving objects. Method with low to moderate computational time.	comparisons between two successive frames to detect moving targets
Motion based	It does not require detection of predefined motion patterns.	Struggles to distinguish a non-moving human object.	Number of moving objects in each frame
Texture based	Provides enhanced quality with the cost of extra time.	High computational time.	Texture available over the surface of the object

Table 1: Method Comparison of Object Detection and Tracking (Tan, Wang, Maybanks, 2004).

**Tracking Learning Detection Method**

Tracking Learning Detection (TLD) method became a very popular tracking algorithm as it gives the robust and long term tracking outputs. TLD has been developed for long-term tracking of unpredictable objects in abandoned conditions. The ocular object was tracked and concurrently proficient in order to design a detection mechanism that helps the tracker which failed once. The purpose to design the detector that to provides the information by tracker as well as information from the first frame.

**Conclusions**

It is very difficult task to focus on one method for detecting all type of images, nor can all methods gives the better accuracy result for specific types of image. The background subtraction method detects noisy object and its directly affect to the accuracy. Object behind

object is not detected and problem occurs during detection of object when any un-specified objects comes before the object. If the position of camera is not set appropriately then object cannot be captured properly and leads to decrease the quality and accuracy of object detection method. To solve the identified problems with high quality and accuracy needs to develop the novel object detection and tracking methods by combining the multiple object detection and tracking methods to make use of it together according to the application.

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## **Impact of Social Infrastructure on Economic Growth in Haryana**

**Anju Devi\***

### **Abstract**

*This paper attempts to explore the impact of social infrastructure on economic growth in Haryana. Indicators of social infrastructure are primarily education and health. This study has taken Haryana as its study area because of increased expenditure on social sector in Haryana. This study examines the growth trends in education and health infrastructure in Haryana. The result of the analysis is that Haryana is having solid infrastructure for education and health but it is not used in adequate manner as such. On the basis of our study suggestion is that in Haryana there is current need of hour for proper utilisation of education and health infrastructure besides focus on the quality education as well as quantity.*

**Key wards** - Social infrastructure, Education and health.

### **Introduction**

In present conditions of national economy modernization era the importance of various factors which affects the economic parameters of its growth is significantly increasing out of which the social infrastructure plays an important role. The sectors of social infrastructure today influences our gross domestic product and the number of employed population, the rates of profit growth, the volume of capital investments, the level of innovation activity. However, the influence of social infrastructure on the enterprises, industries and regional economy growth parameters as a whole is still understudied. There are no official methods of assessing the impact of the social overhead on the dynamics of economic Growth. All these demands designing and implementing the measures of an institutional nature related to creating the development concept of national, regional and municipal social infrastructure, developing the state institutions of control and monitoring of the social infrastructure, developing the tools of public-private partnerships, drafting special laws regulating the activities of social overhead as a form of economic activity, implementing the measures of state support for small business in the social overhead.

The relationships between the economic growth and development parameters of the social infrastructure have mutual, not unilateral but having cross character. It is clear that the acceleration of economic growth will give rise to activation processes of certain sectors of social infrastructure, stimulate the emergence of new types of services that measure up today's phase and nature of economic growth. For example, activation of the innovation processes in various sectors of the economy, the construction of industrial parks and business incubators, initiated by the Government necessitated the development of special education programs on innovation management and their implementation into the training courses of major national research universities.

### **Social Infrastructure**

Infrastructure can broadly be defined as long-term physical assets that operate in markets with high barriers to entry and enable the provision of goods and services. Social Infrastructure is a subset of the infrastructure sector and typically includes assets that accommodate social services. We can take examples of Social Infrastructure Assets which

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include schools, universities, hospitals, prisons and community housing. Social Infrastructure does not typically extend to the provision of social services, such as the provision of teachers at a school or custodial services at a prison. In contrast, economic infrastructure supports economic activity and is often characterised by 'user-pays' or demand-based revenue streams (such as tolls on toll roads or landing fees for an airport).

**Education** is a very important source of economic growth as the Denison study reflects. Even though education is a social investment but it is also an economic investment since it enhances the stock of human capital. Denison's conclusions on the economic contribution of education may be summarized in his own words.

**Health**, like education, is a very important argument in the socio-economic production function. A popular adage says that a sound mind usually resides in a healthy body. Health is one of the major determinants of labour productivity and efficiency. Again, since health as a social good provides externalities, large-scale health facilities can only be provided with public resources.

Public health deals with the environment in which economic activities take place. If that environment were conducive, it would be permissive of accelerated growth and development. "Public health measures include the improvement of environmental sanitation both in rural and urban areas, removal of stagnant and polluted water, slum clearance, better housing, clean water supply, better sewage facilities, control of communicable diseases, provision of medical and health services especially in maternal and child welfare, health education, family planning and above all, for the training of health and medical personnel". Economic Growth is the increase in the inflation adjusted market value of the goods and services produce by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product (GDP).

### **Review of Literature**

**Pravakas Sahoo and Ranjan Kumar Dash (2009)** conducted a study on 'Infrastructure development and economic growth in India'. They investigated the role of infrastructure in economic growth in India for the period 1970-2006 on the basis of a theoretical frame worked developed by Solow (1956) and Romer (1987) and empirics inspired by Aschauer (1989). In the study analysis developed a composite index for infrastructure stocks to examine the impact of physical infrastructure on growth. Overall, the results reveal that infrastructure stocks labour force and total investment play on important role in the economic growth of India.

**Dash and Sahoo (2010)** conducted a study on "Economic growth in India: The role of physical and social infrastructure". In the study they revealed the role of physical and social infrastructure in economic growth in India after controlling for other important variables such as investment, labour force and trade using the two stage least squares (TSLS) and Dynamic ordinary least square (DOLS) techniques for the period 1970-2006. In this contest we develop a composite index of physical infrastructure stocks and examine its impact on output. They found that physical and social infrastructure have a significant positive impact on output a part from gross domestic capital formation and international trade. Future, the causality analysis supports the results, revealing unidirectional causality from infrastructure development and human capital to output growth in India.

**Milyausha K. Bikemirova (2015)** conducted a study on 'The Social Infrastructure Services in the Context of Economic Growth Factors'. The objectives of the study was a theoretical underpinning of the relationship between the social infrastructure and economic growth

parameters determination of the extent and indicators that reflect the influences of social overhead on the growth parameters of the national economy, the analysis of the main components of the social infrastructure, their role and importance in the process of the national modernization, the development of the criteria for the social infrastructure establishment and development, its territorial arrangement, structure frame work, the level of intra industry priority at every particular stage of economic development.

**Henk Gnade and Phillip Frederick Blaauw (2017)** conducted a study on “The Impact of Basic and Social Infrastructure Investment on South African Economic Growth and Development” this study revealed that the basic and social infrastructure investment can assist in addressing widespread inequality and divided societies by promoting economic growth and social development. The aim of this study was to determine whether basic and social infrastructure investment differently affect economic growth and social development indicators of urban and rural municipalities. In this study used a balanced panel dataset containing infrastructure, economic, demographic and social indicators for rural and urban municipalities for the period from 1996 to 2012. Principal component analysis was used to construct synthetic indices of basic and social infrastructure. Restricted within least squares dummy variable estimation techniques are used to evaluate the differences between urban and rural municipalities. The elasticity of basic and social infrastructure investment generally are more pronounced for economic growth and social development indicators in rural municipalities.

#### **Need for Research**

Social infrastructure had played a vital role in economic development. The developed countries have strong base of social infrastructure such as education, health facilities, social security's, roadways, railways, communication technologies etc. The growth of urban and social infrastructure contributes considerably to inclusive development. With urbanization on the rise, educational Institutes, healthcare centre, IT infrastructure and commercial centers (malls and IT offices) are crucial requirements of a State's social infrastructure, and real-estate plays a pivotal role in fulfilling these requirements. The present research work had tried to present the critical understanding of the role that the social and urban infrastructure sector plays and the challenges that slow down the growth process. The study had also tried to relate growth of Haryana and the contribution of social infrastructure in total GDP.

#### **Objectives of the study**

The prime objectives of the study are to find out the impact of social infrastructure on economic growth in Haryana.

#### **Research Methodology**

The study basically depends on secondary sources of data to achieve the mentioned objectives. The concerned data would be collected from Census of India, Statistical abstract of Haryana and other related government reports, bulletins, publications. Variables of the study are -Education, Health, Area of study Haryana.

#### **Data Analysis**

**Education** is the element which enhances the quality of human life and ensures social and economic progress (UN WSS Report 1997). Education is the key to economic growth as it creates the highly productive and technically experienced labour force; provide the employment and skills development.

**Table No. 1: No. of Recognised Universities, Colleges and Schools in Haryana**

Type of Institution	1966-67	2017-18
Universities	1	46
Technical Universities/Engineering Colleges	1	127
Art & Science Colleges	40	297
Teacher Training Colleges	5	491
High/Senior Secondary Schools	597	8024
Middles Schools	735	5228
Primary/Pre Primary Schools	4447	9974

Source: Statistical abstract of Haryana 2017-18

Table No. 1 suggest that in Haryana there are 9974 primary schools; 5228 middle schools; 8024 high and senior secondary schools; 297 art & science colleges; 491 teacher training colleges and 46 universities as compared with in year 1966-67 when Haryana had emerged as a new State on Nov. 1, 1966. This table clearly reveals that Haryana has become an educational hub and educational facilities are available in every nook and corner of the state.

**Table No. 2: Gross Enrolment Ratio by Education level in Haryana and India during 2015-16**

Education Level	India			Haryana		
	Boys	Girls	Total	Boys	Girls	Total
Primary	97.87	100.69	99.21	89.96	93.21	91.41
Upper Primary	88.72	97.57	92.81	87.39	99.22	92.39
Elementary	94.53	99.59	96.91	88.98	95.37	91.77
Secondary	79.16	80.97	80.01	84.20	84.23	84.22
Higher Secondary	55.95	56.41	56.16	59.68	59.48	59.59

Source: Statistical abstract of Haryana 2017-18

Table No. 2 highlight that in Haryana the gross enrolment ratio is lesser than the country's overall ratio at primary, upper primary & elementary educational level, whereas at secondary & higher secondary level it is greater than national average. This table shows the GER at primary level of Haryana is 91.41 and India is 99.21. And at higher secondary level of Haryana is 59.59 and India is 56.16 respectively.

**Health** is one of the most important possessions a human being has as it permits us to develop its capacities not only as a social agent but also as an economic agent. Many existing studies links labour quality with growth via health status. It is being argued that with a given labour and capital an improvement in health status pushes the economy towards the higher welfare level and hence improved health has a significant effect on the rate of growth of GDP per capita. So, good health has a positive, sizable and statistically significant effect on aggregate output.

**Health Infrastructure** The State Govt. is committed to provide quality healthcare services to all citizens of the State. At present, the health services are being provided through a network of 63 Hospitals, 125 Community Health Centres, 509 Primary Health Centres and 2,636 Sub-Health Centres. In addition to this, there are 7 Trauma Centres, 3 Burn Units and 57 urban Dispensaries/Polyclinics. There is a constant endeavour to keep communicable and non-communicable diseases at check and to have strong and robust systems of maintaining

data, reporting and planning. For the financial year 2018-19, the budget estimates of the Health Department was Rs.2, 588.54 crore.

A flagship programme of GOI, National Health Mission, in which Haryana has brought down its Infant Mortality Rate by 8 points from 41 to 33 per thousand live births, as well as Neonatal Mortality with 4 points from 26 to 22 per thousand live births (SRS, 2016 report released in September, 2017) which points out as under:

- Haryana has brought down its Under 5 Mortality to 37 per thousand live births with a remarkable 6 points dip.
- Haryana has been crowned with the best score in the country for Special 122 National Care Unit (SNCU) and Special Quality of Care Index (SQCI) as per fact sheet shared during National Child Health Review cum workshop in October, 2017 organized by Ministry of Health and Family Welfare.
- Haryana is among first few states to have developed Haryana New Born Action Plan (HNAP) in response to India New Born Action Plan (INAP) to address state specific challenges and to provide consistent guidance to districts for planning, implementation and review.

### **Gross State Domestic Product**

The Department of Economic & Statistical Analysis, Haryana prepares the estimates of Gross State Domestic Product (GSDP). As per the Advance Estimates for the year 2018-19, the GSDP of the State at current prices was estimated as Rs. 7,07,126.33 crore, while recording growth of 12.9 percent in 2018-19 as against the growth rate of 12.5 percent achieved in previous year 2017-18 was achieved. The GSDP at constant (2011-12) prices is expected to reach the level of Rs. 5,26,055.24 crore with a growth of 8.2 percent in 2018-19 as compared to the growth of 7.9 percent recorded in preceding financial year 2017-18. The real growth of 8.2 percent recorded in GSDP of the State in 2018-19 which is even higher than the All India GDP growth of 7.2 percent. The GSDP of the State at current and constant (2011-12) prices is given in table below.

**Table No. 3: Gross State Domestic Product of Haryana**

(Rs. in Crore)

<b>Year</b>	<b>At Current Prices</b>	<b>At Constant (2011-12) Prices</b>
2011-12	297538.52	297538.52
2012-13	347032.01	320911.91
2013-14	399268.12	347506.60
2014-15	437144.71	370534.51
2015-16	495249.01	413175.07
2016-17 (P)	556324.58	450667.68
2017-18 (Q)	626053.52	486238.67
2018-19 (A)	707126.33	526055.24

P: Provisional Estimates Q: Quick Estimates, A: Advance Estimates

*Source: Department of Economic & Statistical Analysis, Haryana.*

The growth of Gross State Value Added (GSVA) decreased from 9.6 percent in 2015-16 to 8.6 percent in 2016-17 and further declined to 7.6 percent in 2017-18. The low growth of 5.5 percent in Industry Sector led to the decline in growth in 2017-18. During the year 2018-19, the growth in GSVA improved to 7.8 percent.

**Table No. 4: Growth in Gross State Value Added at Constant (2011-12) Prices  
(Percent) All**

Sector	Haryana						India
	2013-14	2014-15	2015-16	2016-17 (P)	2017-18 (Q)	2018-19 (A)	2018-19 (A)
Agriculture & Allied	2.8	-2.2	3.8	10.4	5.5	5.5	3.8
Industry	7.4	4.7	11.4	10.4	5.5	8.6	7.8
Services	10.1	10.4	10.7	6.8	9.8	8.2	7.3
GSVA	7.6	6.0	9.6	8.6	7.6	7.8	7.0

Source: Department of Economic and Statistical Analysis, Haryana and CSO, New Delhi.

In the above backdrop we can say that social infrastructure always pours impact on economic growth of the state. As we visualize from data that availability of infrastructure results in to educated community and having health seeking behaviour as well and when people will be healthy both in physical & mental level it will directly give impact on GDP or GSDP. The same is in case of Haryana state as well which is highlighted in respective tables having sound position of state and indicators also show the positive impact. Needless to mention here that there is need to address the problem of availing health & educational facilities from govt. set up however in modern age people are believing and become more dependent on private sector thinking it more reliable and dignified.

### Conclusion

Social infrastructure play indirect role in economic growth. Human beings are educated and healthy then they done work with full dedication and satisfactory. Impact of this is that the productions are increasing in efficient way. On the other hand human beings are not educated or healthy then they do not work properly. For this reason the responsibility of the govt. and society to provides the healthy social infrastructure to the human beings for doing our best contribution in economic growth. Because education is the pillar on which efficiency of human resources depends and it enhances the globalization. Without strengthening the education, the national income and per capita income cannot be increased sustainably. Health also affected economic growth by affecting labour productivity.

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## **A Study of Profitability Analysis Financial Performance of Reliance Groups in India with Special Reference**

**Dr. Dineshkumar R. Chavda\***

### **Abstract**

The paper focuses on the financial strength of the Reliance Industry in India. The Reliance industry of India plays a substantive role in the economy. This is one of the largest industries in India in terms of employment generation, and earning foreign exchange. The study has analysed the profitability of selected Reliance unit in India. It is empirical in nature it selected seven major Reliance units in India such as Reliance Industries, Reliance Capital, Reliance Nippon Life Asset Management, Reliance Power, Reliance Infrastructure, Reliance Home Finance and Reliance Communications as sample of the study. It collected data from annual reports of the selected companies for the period of seven years from 2011-12 to 2017-18. The study mainly used ratio analysis as statistical tool. The present study of profitability analysis of selected Reliance unit in India

**Keywords:** *Reliance Industry Development, financial performance, Net Profit Margin, Return on Capital Employed, Return on Net worth, Assets Turnover Ratio*

### **Introduction**

Reliance Industries is India's largest private sector company on all major financial parameters. In 2004, Reliance Industries (RIL) became the first Indian private sector organisation to be listed in the Fortune Global 500 list. The company operates world-class manufacturing facilities across the country at Allahabad, Barabanki, Dahej, Hazira, Hoshiarpur, Jamnagar, Nagothane, Nagpur, Naroda, Patalganga, Silvassa and Vadodara. Reliance Industries' activities span hydrocarbon exploration and production, petroleum refining and marketing, petrochemicals, retail and telecommunications. The petrochemicals segment includes production and marketing operations of petrochemical products. The refining segment includes production and marketing operations of the petroleum products. The oil and gas segment includes exploration, development and production of crude oil and natural gas. The other segment of the company includes textile, retail business and special economic zone (SEZ) development.

### **Review of literature**

**Marimuthu, K. N., (2012)**, the main objective is to evaluate the financial performance of Indian textile Industry and any influence on the financial performance and business growth through the changes on working capital, liquidity position etc. An empirical study is based on secondary data (2001-02 to 2010-12) select Bombay Dyeing and Manufacturing Company (BDMC) from the topmost listed NSE Indian textile industry. Findings and suggestions; normally funds are highly required for day-to-day business activities of the firm and what way utilize it and in what way should exit from loses of investment are discussed. Results may not generalize whole company of India or to other financial firms.

**Dr. S. Ayyappan, Dr. M. Sadika Sultana, M. Sakthivadivel, (2014)**, the financial performance of the industry can be studied with regard to various factors namely market

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place, competitiveness, technology, environment protection and strategic positioning. All the above some factors play a major role in the changes in financial performance of the textile industry.

**Dr. Meenakshi Anand, (2014)**, this purpose profitability, liquidity and solvency position of Reliance companies has examined. In this paper comparative ratio analysis technique has used to know the financial soundness of Reliance companies. The result shows the profitability margins has slightly different due to volatile Reliance market and volatility in raw material prices. The liquidity and solvency position is almost same in all the Reliance companies.

**Varsha Gupta,(2017)** To measure the financial performance of selected Reliance companies, in terms of Managerial efficiency, Liquidity, Profitability and Solvency position of the companies, ratio analysis has been used. Further one way ANOVA has been used to identify if there exist a significant difference in the mean and performance of different Reliance companies. The results showed that there is significance difference in the Return on Capital Employed, Net Profit Margin, Current Ratio, Debt to Equity Ratio, and Fixed Asset turnover ratio of sample Reliance companies at 5% level of significance.

### **Objectives of the study**

In the present research paper has the following objectives:

- ⇒ To study the financial position of selected Reliance Industry of India.
- ⇒ To study the effective financial structure of selected Reliance Industry of India.
- ⇒ To improve the effectiveness and efficiency of Indian Reliance Industry.

### **Period of the Study**

The period of the study is of 7 years. The study period cover the period from year 2011-12 to year 2017-18. The Financial solvency and liquidity ratios calculated for the last 7 years from 2011-12 to 2017-18.

### **Data collection**

This study is based on secondary data. The data is collect from published annual report of selected Reliance units of India. Other information related to selected Reliance industry of India will be collected from official website and net sources, annual report, various books, different publication, journals and relating Reliance industry etc.

### **Data Analysis and Interpretation**

#### **Profitability Ratios**

This section of the tutorial discusses the different measures of corporate profitability and financial performance. These ratios, much like the operational performance ratios, give users a good understanding of how well the company utilized its resources in generating profit and shareholder value. The long-term profitability of a company is vital for both the survivability of the company as well as the benefit received by shareholders. It is these ratios that can give insight into the all important "profit". In this section, we will look at four important profit margins, which display the amount of profit a company generates on its sales at the different stages of an income statement. We'll also show you how to calculate the effective tax rate of a company. The last three ratios covered in this section - Return on Assets, Return on Equity and Return on Capital Employed - detail how effective a company is at generating income from its resources.

#### **1. Net Profit Margin (%)**

Often referred to simply as a company's profit margin, the so-called bottom line is the most often mentioned when discussing a company's profitability? While undeniably an important

number, investors can easily see from a complete profit margin analysis that there are several income and expense operating elements in an income statement that determine a net profit margin. It behooves investors to take a comprehensive look at a company's profit margins on a systematic basis.

**Formula:** 
$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Net Sales (Revenue)}}$$

**Table no. 1 Net Profit Margin (%)**

Sample Units	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	SD	CV
Reliance Industries	6.07	5.82	5.63	6.9	11.75	12.98	11.58	8.68	3.26	10.63
Reliance Capital	15.88	17.29	12.9	19.17	23.96	21.44	25.28	19.42	4.45	19.78
Reli. Nippon Life Asset Mgt	51	33.72	45.67	42.53	33.51	31.88	32.96	38.75	7.59	57.62
Reliance Power	470.14	4,279.18	61.59	18.42	2,314.56	133.7	5.08	<b>1040.38</b>	<b>1649.99</b>	<b>272248.010</b>
Reliance Infrastructure	11.17	13.96	13.98	14.55	19.93	14.75	18.55	15.27	<b>2.98</b>	<b>8.91</b>
Reliance Home Finance	7.8	7.72	10.26	13.78	10.89	16.08	11.26	11.11	3.03	9.18
Reliance Communications	1.4	5.53	6.53	-1.42	-3.79	-50.77	-442.4	<b>-69.27</b>	165.73	27465.74
Mean	80.49	623.32	<b>22.37</b>	16.28	<b>344.40</b>	25.72	-48.24	<b>152.05</b>		
SD	159.80	1492.53	20.42	<b>12.61</b>	804.39	50.63	161.15			
CV	29792.32	2598911	486.49	<b>185.42</b>	754877.80	2990.37	30297.22			

It is found the above Table no. 1 highest Net profit Margin is reported by Reliance Power (1040.38) selected companies of the selected Reliance units of India during study Period where as Reliance Communications (-69.27) Ltd showed lowest Net Profit Margin during these Periods. The data was for the seven years. Fluctuating trend in mean Net profit margin ratios of selected Reliance units of India sample units has been observed during the entire study period. The mean unit of Net profit margin of Reliance units in highest year wise mean 344.40 in year 2015-16, and lowest 22.37 in year 2013-14 in study period. It is show the overall mean 152.05 during the research study.

It is describe Company wise of SD of highest Net Profit Margin Reliance Power (1649.99), and lowest Reliance Infrastructure (2.98), across different samples during study period. It is clearly show Year wise of SD lowest Net Profit Margin 2014-15 (12.61), is compared to other samples during the study period.

The study period may be considered as uniform as compared to selected Reliance units of India, as it is evident by lowest maximum ratio year wise 185.42 in year 2014-15 and highest maximum ratio 2598911 in year 2012-13, and Company wise lowest maximum ratio 8.91

Reliance Infrastructure and highest 2722480.10 Reliance Power all sample unit. It shows the overall fluctuation in the ratio within the study period.

**Hypothesis Testing:**

For the Testing of Hypothesis Researcher has applied F (ANOVA) Test.

- **H<sub>0</sub>:** There is no Significant of difference in Net Profit Margin in selected Reliance units of India.
- **H<sub>1</sub>:** There is Significant of difference in Net Profit Margin in selected Reliance units of India.

**Table no. 2 Analysis of Variance (Anova)**

Source of variation	S.S.	d.f.	M.S.	F-Cal. Value	F-Table value
Between Groups	6493711.81	6	1082285.30	2.75	2.32
Within Group	16500311.72	42	392864.56		
Total	22994023.53	48			

It is clear from table No. 2 that the calculated value of 'F' was 2.75, which is higher than table value of 'F' 2.32. So, alternative hypothesis is accepted and null hypothesis is rejected. So, it can be concluded that there is Significant of difference in Net Profit Margin in selected Reliance units of India.

**2. Return on Capital Employed (%)**

The return on capital employed (ROCE) ratio, expressed as a percentage, complements the return on equity (ROE) ratio by adding a company's debt liabilities, or funded debt, to equity to reflect a company's total "capital employed". This measure narrows the focus to gain a better understanding of a company's ability to generate returns from its available capital base. By comparing net income to the sum of a company's debt and equity capital, investors can get a clear picture of how the use of leverage impacts a company's profitability. Financial analysts consider the ROCE measurement to be a more comprehensive profitability indicator because it gauges management's ability to generate earnings from a company's total pool of capital.

**Formula:**

$$\text{Return on Capital Employed (ROCE)} = \frac{\text{Net Income}}{\text{Capital Employed}}$$

$$\text{Capital Employed} = \text{Average Debt Liabilites} + \text{Average Shareholders' Equity}$$

**Table no. 3 Return on Capital Employed (%)**

Sample Units	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	SD	CV
Reliance Industries	8.85	8.92	8.08	7.41	8.24	11.04	11.8	9.19	1.62	2.62
Reliance Capital	2.36	2.76	1.71	2.81	3.6	6.79	8.82	4.12	2.64	6.99
Reli. Nippon Life Asset Mgt	22.92	14	19.62	22.96	22.01	31.27	22.34	<b>22.16</b>	<b>5.12</b>	<b>26.22</b>
Reliance Power	1.91	3.05	0.33	0.14	7.27	1.95	2.07	2.39	2.38	5.68
Reliance Infrastructure	6.92	7.12	5.03	4.64	5.65	8.5	10.86	6.96	2.18	4.74

Reliance Home Finance	1.17	1.16	1.63	2.03	1.64	10.4	10.42	4.06	4.35	18.88
Reliance Communications	0.34	1.88	2.32	-0.24	-0.67	0.29	0.34	0.61	1.09	1.19
Mean	6.35	5.56	5.53	5.68	6.82	10.03	9.52	7.07		
SD	7.96	4.69	6.74	8.06	7.39	10.21	7.22			
CV	63.29	22.00	45.40	65.00	54.60	104.21	52.07			

Above Table no. 3 it is found that the highest Return on Capital Employed is reported by Reliance Nippon Life Asset Management (22.16) selected companies of the selected Reliance units of India during study Period where as Reliance Communications (0.61) Ltd showed lowest Return on Capital Employed during these Periods. The data was for the seven years. Fluctuating trend in mean Return on Capital Employed ratios of selected Reliance units of India sample units has been observed during the entire study period. The mean unit of Return on Capital Employed of Reliance industry in highest year wise mean 6.24 in year 2012-13, and lowest 10.03 in year 2016-17 in study period. It is show the overall mean 7.07 during the research study.

Company wise of SD of highest Return on Capital Employed Reliance Nippon Life Asset Management (5.12), and lowest Reliance Communications (1.09), across different samples during study period. It is clearly show Year wise of SD lowest Return on Capital Employed 2012-13 (4.69) is compared to other samples during the study period.

The study period may be considered as uniform as compared to selected Reliance units of India, as it is evident by lowest CV year wise 22.00 in year 2012-13 and highest Minimum ratio 104.21 in year 2016-17, and Company wise lowest CV 1.19 Reliance Communications and highest 26.22 Reliance Nippon Life Asset Management all sample unit. It shows the overall fluctuation in the ratio within the study period. It shows the overall fluctuation in the ratio within the study period.

**Hypothesis Testing:**

For the Testing of Hypothesis Researcher has applied F (ANOVA) Test.

- **H<sub>0</sub>:** There is no Significant of difference in Return on Capital Employed in selected Reliance units of India.
- **H<sub>1</sub>:** There is Significant of difference in Return on Capital Employed in selected Reliance units of India.

**Table no. 4 Analysis of Variance (Anova)**

Source of variation	S.S.	d.f.	M.S.	F-Cal. Value	F-Table value
Between Groups	2195.30	6	365.88	38.62	2.32
Within Group	397.94	42	9.47		
Total	2593.24	48			

It is clear from table No. 4 that the calculated value of 'F' was 38.62, which is higher than table value of 'F' 2.32. So, alternative hypothesis is accepted and null hypothesis is rejected. So, it can be concluded that there is Significant of difference in Return on Capital Employed in selected Reliance units of India.

**3. Return on Net worth (%)**

This Ratio measures the ability of company's management to realize an adequate return on capital invested by the owners in the company. This is the ratio of PAT to Net worth:=

**PAT**  
**Net worth**

The term “Net-worth” means money belonging to equity share holders and includes reserves net of fictitious assets awaiting write off. It measures how much income a firm generates for each rupee stockholders have invested. Higher the percentage the better it is for the company.

**Table no. 5 Return on Net worth (%)**

Sample Units	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	SD	CV
<b>Reliance Industries</b>	12.29	11.73	11.15	10.51	11.41	10.89	10.68	11.24	<b>0.63</b>	<b>0.39</b>
<b>Reliance Capital</b>	4.69	5.75	3.51	6.01	7.35	3.05	5.84	5.17	1.51	2.29
<b>Reli. Nippon Life Asset Mgt</b>	22.99	14.03	19.65	23.48	22.48	22.23	22.49	<b>21.05</b>	3.33	11.07
<b>Reliance Power</b>	1.93	3.05	0.33	0.14	7.69	0.38	0.01	1.93	2.78	7.71
<b>Reliance Infrastructure</b>	11.09	10.36	7.78	7.41	9.32	6.13	7.57	8.52	1.78	3.17
<b>Reliance Home Finance</b>	6.76	6.52	9.34	12.94	13.98	15.71	9.51	10.68	3.59	12.86
<b>Reliance Communications</b>	0.34	1.88	2.32	-0.42	-1.38	-7.45	-105.94	<b>15.81</b>	<b>39.88</b>	<b>1590.14</b>
<b>Mean</b>	8.58	7.62	7.73	8.58	<b>10.12</b>	7.28	<b>-7.12</b>	<b>6.11</b>		
<b>SD</b>	7.73	4.55	6.56	8.22	7.25	9.93	<b>44.10</b>			
<b>CV</b>	59.71	<b>20.67</b>	43.04	67.49	52.63	98.57	<b>1945.02</b>			

On analyzing the Table no. 5 it is found that the highest Return on Net Worth is reported by Reliance Nippon Life Asset Management (21.05) selected companies of the selected Reliance units of India during study Period where as Reliance Communications (-15.81) showed lowest Return on Net Worth during these Periods. The data was for the seven years. Fluctuating trend in mean Return on Net Worth ratios of selected Reliance units of India sample units has been observed during the entire study period. The mean unit of Return on Net Worth of Reliance Units in highest year wise mean 10.12 in year 2015-16, and lowest -7.12 in year 2017-18 in study period. It is show the overall mean 6.11 during the research study.

It is describe Company wise of SD of highest Return on Net worth Reliance Communications (39.28), and lowest Reliance Industries (0.64), across different samples during study period. It is clearly show Year wise of SD highest Return on Net Worth 2017-18 (44.10) is compared to other samples during the study period.

The study period may be considered as uniform as compared to selected Reliance units of India, as it is evident by lowest CV year wise 20.67 in year 2012-13 and highest CV 1945.02 in year 2017-18, and Company wise lowest CV 0.39 Reliance Industries and highest 1590.14 Reliance Communications all sample unit. It shows the overall fluctuation in the ratio within the study period.

**Hypothesis Testing:**

For the Testing of Hypothesis Researcher has applied F (ANOVA) Test.

- **H<sub>0</sub>:** There is no Significant of difference in Return on Net Worth in selected Reliance units of India.
- **H<sub>1</sub>:** There is Significant of difference in Return on Net Worth in selected Reliance units of India.

**Table no. 6 Analysis of Variance (Anova)**

Source of variation	S.S.	d.f.	M.S.	F-Cal. Value	F-Table value
Between Groups	5424.22	6	904.04	3.89	2.32
Within Group	9765.78	42	232.52		
Total	15190.00	48			

It is clear from table No.6 that the calculated value of 'F' was 3.89, which is higher than table value of 'F' 2.32. So, alternative hypothesis is accepted and null hypothesis is rejected. So, it can be concluded that there is Significant of difference in Return on Net Worth in selected Reliance units of India.

**4. Assets Turnover Ratio**

**Assets Turnover Ratio:**

**Turnover**

**Total assets or Capital Employed**

This shows how much sales are generated for every L1 of capital employed. A low asset Turnover indicates that the business is not using its assets affectively and should either try to increase its sales or dispose of some of the assets. A Company with old non-current assets that completely depreciated will show a high asset turnover, whereas a company with recently acquired ratios, for example using the cost model to or revaluation model.

The age of the non Current assets is important in understanding the ratio. Recently acquired non-current assets will not be generating revenues to their full extent. Interaction between ROCE, Operating profit margin and asset turnover.

$$ROCE = \frac{PBIT}{Turnover} \times \frac{Turnover}{CE} = \frac{PBIT}{CE}$$

(ROCE = Operating Profit Margin x assets t/o

**Table no. 7 Assets Turnover Ratio**

Sample Units	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	Max	Min
Reliance Industries	111.77	113.11	106.13	82.72	50.93	44.26	46.96	<b>79.41</b>	29.30	<b>1001.23</b>
Reliance Capital	10.82	11.4	8.67	11.05	11.21	5.84	9	9.71	<b>16.43</b>	4.12
Reli. Nippon Life Asset Mgt	36	39.1	39.36	49.41	61.73	62.85	61.35	49.97	16.52	143.32
Reliance Power	0.44	0.06	0.4	0.63	0.25	0.19	0.17	<b>0.31</b>	365.94	<b>0.04</b>
Reliance Infrastructure	41.27	32.39	23.11	21.25	19.46	15.2	15.25	23.99	390.15	91.94
Reliance Home Finance	13.18	12.03	11.29	9.01	10.34	9.45	10.22	10.79	421.64	2.17
Reliance Communications	12.96	14.83	14.53	14.33	13.49	4.78	3.98	11.27	<b>459.75</b>	22.62
Mean	<b>32.35</b>	31.85	29.07	26.91	23.92	20.37	20.99	<b>26.49</b>		
SD	37.92	<b>38.23</b>	36.16	29.08	<b>23.07</b>	23.74	23.52			
CV	1437.61	<b>1461.23</b>	1307.55	845.65	<b>532.34</b>	563.78	553.15			

On examine the Table no.7 it is found that the highest Assets Turnover Ratio is reported by Reliance Industries (79.41) selected companies of the selected Reliance units of India during study Period where as Reliance Power (0.31) showed lowest Assets Turnover Ratio during these Periods. The data was for the seven years. Fluctuating trend in mean Assets Turnover Ratio of selected Reliance units of India sample units has been observed during the entire study period. The mean unit of Assets Turnover Ratio of Reliance industry in highest year wise mean 32.35 in year 2011-12, and lowest 20.99 in year 2017-18 in study period. It is show the overall mean 26.49 during the research study.

It is describe Company wise of SD of highest Assets Turnover Ratio Reliance Communication (459.75), and lowest Reliance Capital (16.43), across different samples during study period. It is clearly show Year wise of SD highest Assets Turnover Ratio 2012-13 (38.23), and lowest 2015-16 (23.07) is compared to other samples during the study period. The study period may be considered as uniform as compared to selected Reliance units of India, as it is evident by lowest CV year wise 532.34 in year 2011-12 and highest CV 1461.23 in year 2012-13, and Company wise lowest CV 0.04 Reliance Power and highest 1001.23 Reliance Industries all sample unit. It shows the overall fluctuation in the ratio within the study period.

### Hypothesis Testing

For the Testing of Hypothesis Researcher has applied F (ANOVA) Test.

- **H<sub>0</sub>**: There is no Significant of difference in Assets Turnover Ratio in selected Reliance units of India.
- **H<sub>1</sub>**: There is Significant of difference in Assets Turnover Ratio in selected Reliance units of India.

**Table no. 8 Analysis of Variance (Anova)**

Source of variation	S.S.	d.f.	M.S.	F-Cal. Value	F-Table value
Between Groups	33624.74	6	5604.12	31.00	2.32
Within Group	7592.55	42	180.78		
Total	41217.29	48			

It is clear from table No.8 that the calculated value of 'F' was 31.00, which is higher than table value of 'F' 2.32. So, alternative hypothesis is accepted and null hypothesis is rejected. So, it can be concluded that there is Significant of difference in Assets Turnover Ratio in selected Reliance units of India.

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## **A Study on Customer Perception towards E-Currency in Bangalore**

**Dr. Jahnvi M\***

**Dr. B. Percy Bose\*\***

### **Abstract**

*A Crypto currency is a digital asset designed to work as medium of exchange; they are classified as a subset of digital currencies/alternative currencies/virtual currencies. Bit coin became the first decentralized crypto currency in 2009. Since then numerous crypto currencies have been created. These are frequently called Altcoins. The legal status of crypto currencies varies substantially from country to country and is still undefined or changing frequently. In this paper an attempt is made to give a short introduction to crypto currencies and block chain technology, it also covers the idea, motivation, the mode of operation and possible applications of crypto currencies and at last it is concluded with the results obtained from the survey that covers the privacy, security, functionality, acceptance level of customers as financial asset for trading and feasibility aspects of Crypto currencies.*

**Keywords:** Crypto Currency, Block Chain, Feasibility, Security, Functionality, Altcoins, Virtual

### **1. Introduction**

A crypto currency is a digital asset designed to work as a medium of exchange that uses strong cryptography to secure financial transactions, control the creation of additional units, and verify the transfer of assets.

Crypto currencies are a kind of alternative currency and digital currency (of which virtual currency is a subset). Crypto currencies use decentralized control as opposed to centralized digital currency and central banking systems. The decentralized control of each crypto currency works through distributed ledger technology, typically a block chain that serves as a public financial transaction database.

#### **1.1 Meaning**

A crypto currency is a digital or virtual currency designed to work as a medium of exchange. It uses cryptography to secure and verify transactions as well as to control the creation of new units of a particular crypto currency. Essentially, crypto currencies are limited entries in a database that no one can change unless specific conditions are fulfilled.

#### **1.2 Virtual Currency**

In 2014, the European Banking Authority defined virtual currency as "a digital representation of value that is neither issued by a central bank or a public authority, nor necessarily attached to a fiat currency, but is accepted by natural or legal persons as a means of payment and can be transferred, stored or traded electronically". By contrast, a digital currency that is issued by a central bank is defined as "central bank digital currency".

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### **1.3 Types of Crypto Currency**

Among the different types of crypto currency, BIT COIN is considered the main and important type of crypto currency.

#### **1.5.1 Bit Coin**

Bit coin is a crypto currency, a form of electronic cash. It is a decentralized digital currency without a central bank or single administrator that can be sent from user to user on the peer-to-peer bit coin network without the need for intermediaries.

Bit coin uses peer-to-peer technology to operate with no central authority or banks; managing transactions and the issuing of bit coins is carried out collectively by the network. Bit coin is open-source; its design is public, nobody owns or controls Bit coin and everyone can take part. Through many of its unique properties, Bit coin allows exciting uses that could not be covered by any previous payment system.

Bit coin is a crypto currency, meaning it's supported by a source code that uses highly complex algorithms to prevent unauthorized duplication or creation of Bit coin units. The code's underlying principles, known as cryptography, are based on advanced mathematical and computer engineering principles. It's virtually impossible to break Bit coin's source code and manipulate the currency's supply.

#### **1.5.2 Other Forms of Crypto currency Other Than Bit coin**

- LITECOIN (LTC), ETHEREUM (ETH), Z CASH (ZEC), Dash (DASH), RIPPLE (XRP), MONERO (XMR), BIT COIN CASH (BCH), NEO (NEO), CARDANO (ADA), EOS (EOS)

## **2. Literature Review**

**Annol Mehrotra, Mr Vanishree** – “A study to understand the awareness about bit coins among the youth population in Bangalore”

The recent boom in crypto currencies has gathered a lot of attention from everyone a lot of attention from everyone around the globe. The year 2017 saw a 2000% rise in the value of bit coins making it a household name. However, this wasn't enough for India to accept it as a legal tender and the future of crypto currency in India is still uncertain. This study was conducted to understand the awareness about bit coins among the youth population in Bangalore. The data was collected using a structured questionnaire distributed via Google form survey and the data was recorded. The tool used for analysis was correlation to find out if two variables were related and how they affect each other. The researcher found that the variables showed a positive a correlation.

**Usman W Chohan** – “Crypto currencies: A brief thematic review”

Crypto currencies are an area of heightened pecuniary, numismatic, technological, and investment interest, and yet a comprehensive understanding of their theories and foundations is still left wanting among many practitioners and stakeholders. This discussion paper synthesizes and summaries the salient literature on crypto currencies with a view to advancing a more general understanding of their order and purpose.

Crypto currencies are getting better known every day with more people investing in the different currencies and using them for transactions because of the various advantages that they represent such as have no bank regulations, but few people actually understand the characteristics of how they are formed. The way they are mined is through complicated algorithms and when these have been solved then a crypto currency is created. The good aspect of using this system is that each crypto currency is determined through a certain result and cannot be duplicated or forged. These crypto currencies are stored on our computers and

they cannot be sent twice, forged and the transactions cannot be changed or cancelled. In the "Crypto currency Volatility Lessons" by Richard Bauer, CFA, the author helps to point out some kinds of crypto currencies by market capitalization as reported by the website coinmarket.com on September 1, 2017. Bit coin is still the dominant currency with its market cap exceeding the total value of the other nine. Two of the ten have a severely limited history. Bit coin cash came into existence on August 1, 2017, and Iota came into existence on June 13, 2017.

### **3. Methodology**

#### **Research Methodology**

This report is theoretical as well as experienced based. Methodology includes the overall research procedures used during the course of study. This involves gaining the knowledge from the earlier research. Findings are based on the respondent's responses and shared by various experts of the financial industry.

#### **Research Problem**

The present research is exploratory in nature. Since cryptocurrency is not a new phenomenon in India, even though there are hardly any studies have done in this area. Especially there is a huge gap of empirical and behaviour studies on crypto currency in India. The study tries to find the significance of popular perception regarding cryptocurrency.

#### **Need for the Study**

The Need of study is to understand the concept of cryptocurrency and its technical impact on economy as well as on society. Under the present study we will come to know how much level of understanding and perception towards cryptocurrency, as well as government, financial regulators concerned by the technical issues in cryptocurrency.

#### **Scope of the Study**

This study is conducted to find out the views of people regarding the use of cryptocurrency as medium of exchange and to know about their knowledge towards the new innovative technology. The respondents selected are of mixed group which will give wider difference in understanding. The scope of the study is limited only to the concerned area of study which cannot be justified for any other place.

#### **Objectives of Study**

- Understanding the concept of bitcoin.
- Study the legal position of bitcoin and view around the world.
- Analyzing the position of bitcoin in India.
- Studying the regulatory concerns regarding the bitcoin.
- Understanding the intellectual properties issues.
- Analyzing the Security, Privacy and Data protection issues.
- Understanding and analyzing the other risks and vulnerabilities in Bitcoin transaction.
- Studying the regulatory consideration setting up of Bitcoin related business in India.

#### **Research Design**

A research design is purely and simply the framework for a study that guide the collection and analysis of data. In this project the research design used is called Exploratory Research.

#### **Development of research plan has the following steps**

- **Sample Design:** The complete study of all items in the populations is known as a census inquiry. Sample is a group of few items, which represents the population, from where it is taken.

- **Sample Size:** The sample size of the study is 50. The responses were captured from respondents on a 5-point Likert scale. The area of study is India.
- **Sample Method:** The sampling method was Judgment Sampling (only those respondents were chosen who had some knowledge about cryptocurrency).

#### **Data collection**

Data collection is the process to gather information about the relevant topic research. Data collection usually takes place early in an improvement project, and is often formalized through data collection plan which often contains the following activity:

- Pre-collection activity on goals, target data, definitions and methods.
- Collection of Data.
- Presenting findings involving some form of sorting analysis.

For accomplishing the objective of study, both Primary and Secondary data have been used.

- **Primary Data:** The study is largely based on the primary data which has been collected through the structured Mail-Questionnaire Method.

#### **Primary Data Collection Tools**

**Questionnaire:** - The data has been collected by administering a structured schedule of questions. The questions are generally framed by using 5-point Likert Scale and Dichotomous scale. The Questionnaire has been prepared to study the people perception towards the new innovated technique in the world. For the present study questionnaire method is used to collect the Primary data. This questionnaire is self-administrated questionnaire and it is divided into two section - Section A and Section B. Section A consist the questions regarding Personal Information i.e., demographic information for E.g., Gender, Occupation. Section B contains the questions which fulfil the research objectives and it contains 20 Questions.

#### ➤ **Secondary Data**

This type of data has already been collected by someone else and has already passed through statistical process. This type of data has been collected from the following resources:  
Sources of Collection of Secondary Data - Internet, Books & Journals, Thesis, News Paper, Govt. Gazettes, Magazines etc.

**Tools of Analysis:** Percentage Method

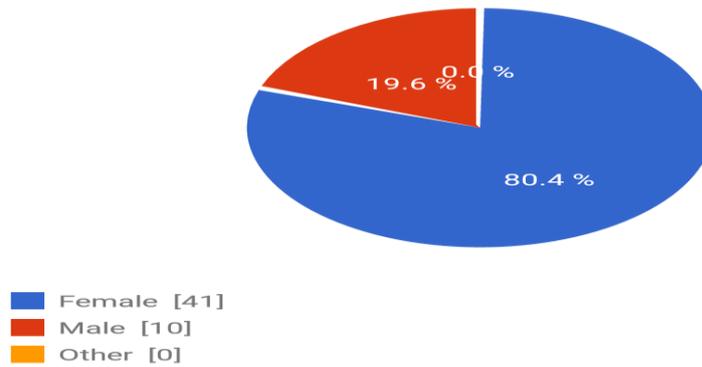
#### **Limitation of Study:**

This study too has its limitations that limits the applicability and validity of study. The limitation for the study are as follows:

1. The Sample size is small and cannot be applied to the entire population.
2. The study is restricted within India.

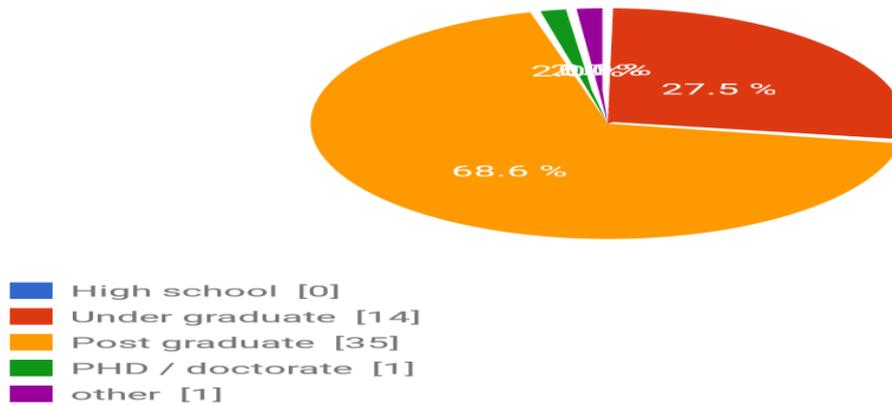
#### 4. Data Analysis And Interpretation

Chart 4.1 Gender



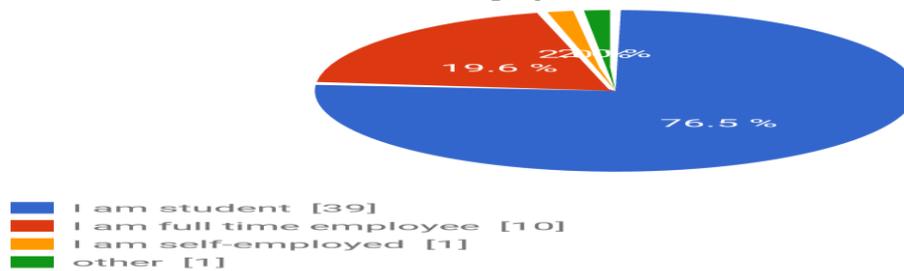
The majority of responses in the survey are female accounted around 80.4%.

Chart 4.2 Qualification



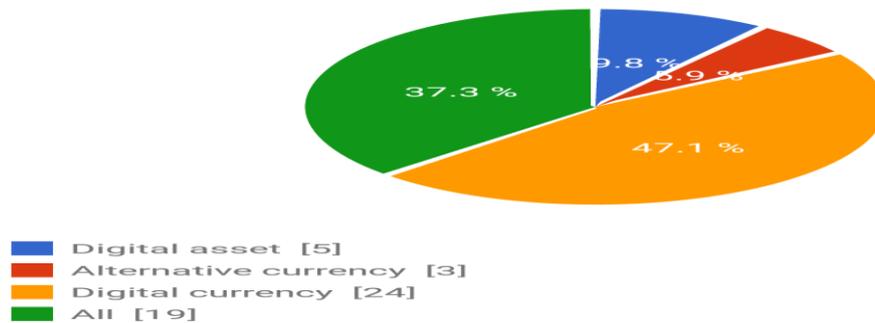
The responses received from majority of the post graduates (68.6%)

Chart 4.3 Employment Status



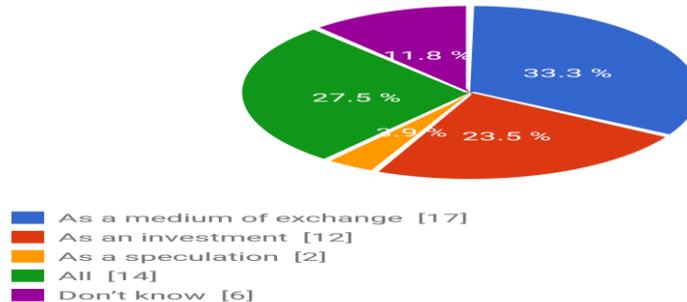
Majority of the respondents are Post graduate students and followed by employees (22%).

Chart 4.4 about Crypto Currency



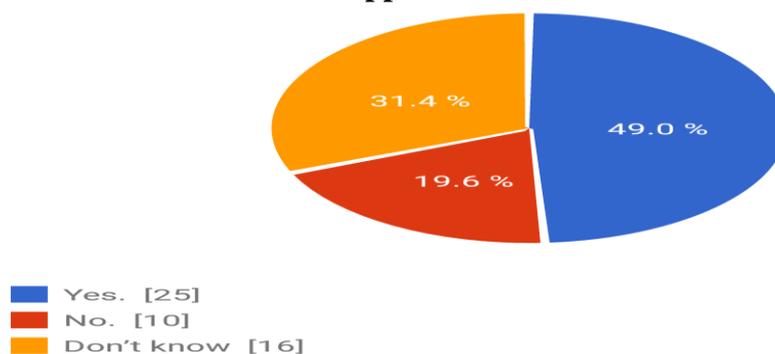
According to the respondents, 47% of respondents say it is a digital currency; and 37.3% said it is a digital asset, alternative currency as well as Digital currency. Most of the people are aware of this, it is considered as all the above-mentioned options.

Chart 4.5 Usage of Crypto Currency



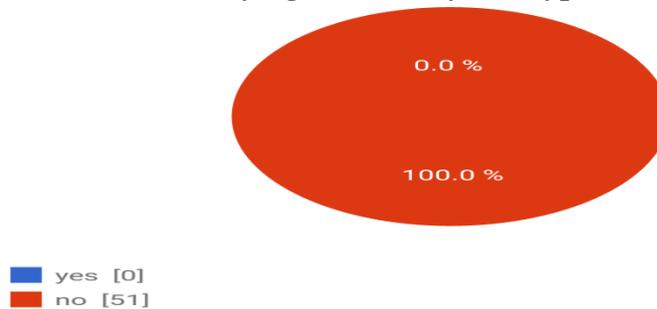
There are a moderate and various ideas towards the term, it is used as - 17 out of 51 says that it is a medium of exchange (maximum responses); they say it can also be used as investment and speculative. By this, we get to know that cryptocurrency is used as medium of exchange, as investment as well as a speculative.

Chart 4.6 Applications across World



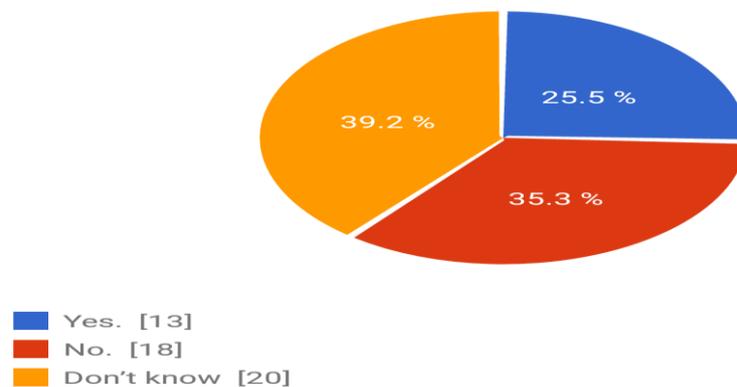
According to the respondents, 49% of them say that, the cryptocurrency is used across the world, and 19.6%, people may not be used; whereas 31.4% people doesn't know about it. We conclude that, it is used all over the world.

**Chart 4.7 Buying Probability of Crypto Currency**



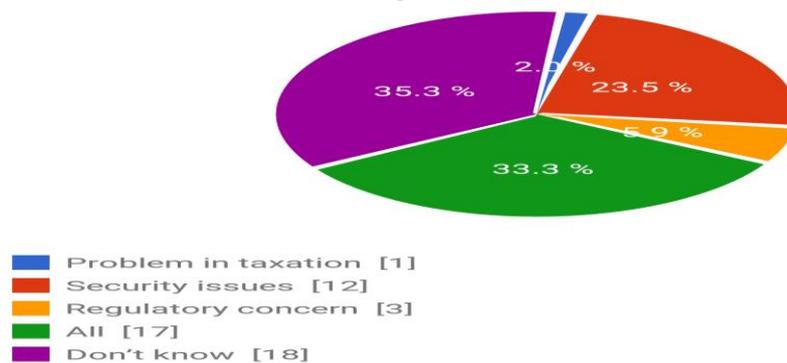
In India, according to our research, 100% (respondents) have never bought or used cryptocurrency, just because of lack of knowledge towards the use of bitcoin and its technical terms.

**Chart 4.8 Legal Acceptance of Crypto Currency**



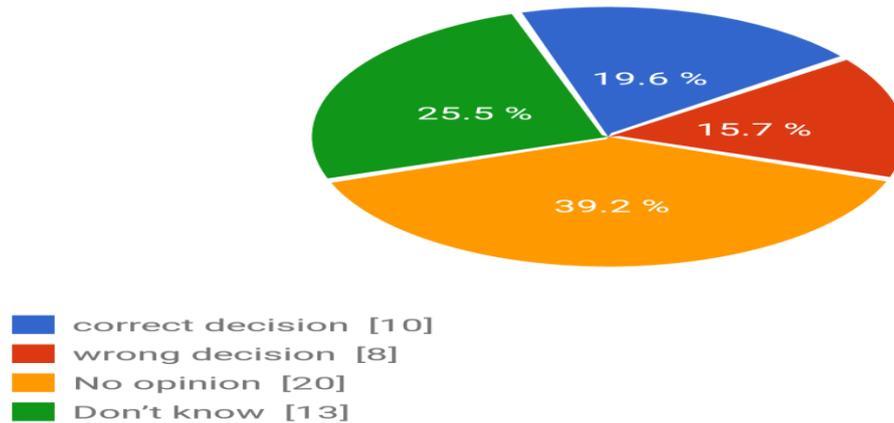
Here, we arrived at mixed responses from the public, where few say yes, and few say No, and other have No knowledge about it. According to Indian law, it is illegal in India.

**Chart 4.9 Legal Issues in Bit coin**



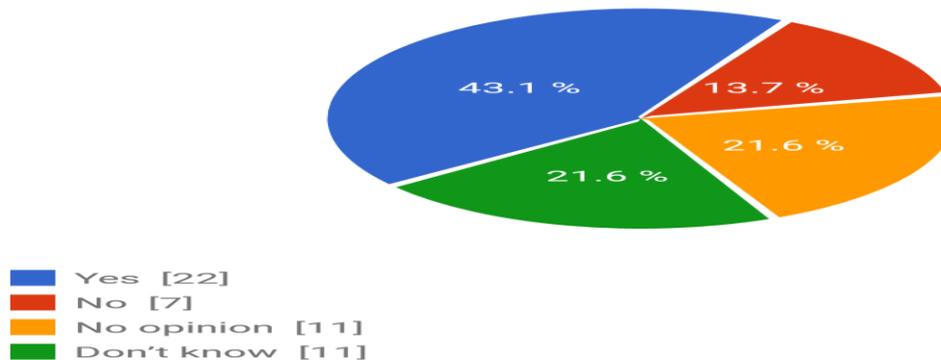
As it is an unknown and illegal concept in India, majority of people have no ideas on the legal issues about cryptocurrency. According to our research, we got to know all the above are the legal issues in the usage of Bit coin.

**Chart 4.10 Banning Crypto currency is Good or Bad Decision**



Crypto currency is not the well-known concept in India, as well as, lack of knowledge on the concept, they have no opinion or No idea on the banning of cryptocurrency. Because in Bitcoin, there is lack of innovative technology, taxation problems and security issues and may lead to illegal activities like hacking etc.

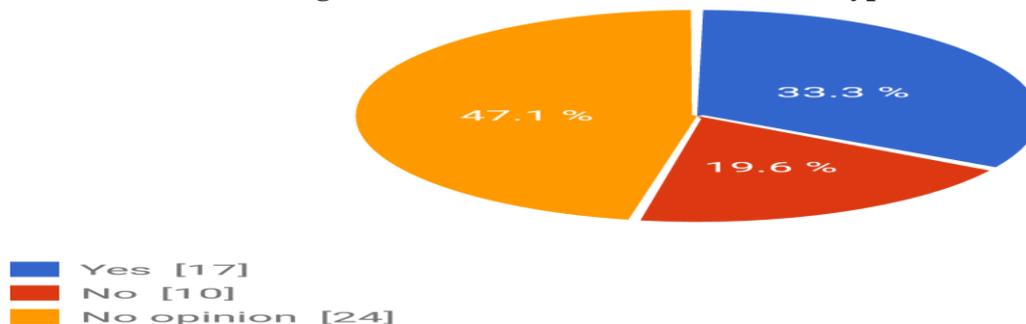
**Chart 4.11 Indian Government should allow crypto currency in India**



As many people says it is digital currency, they think that, the government should allow cryptocurrency in India. They should allow Cryptocurrency in India, to remove the mediators, brokers and others. It allows peer to peer transaction, therefore, there will be not extra charges.

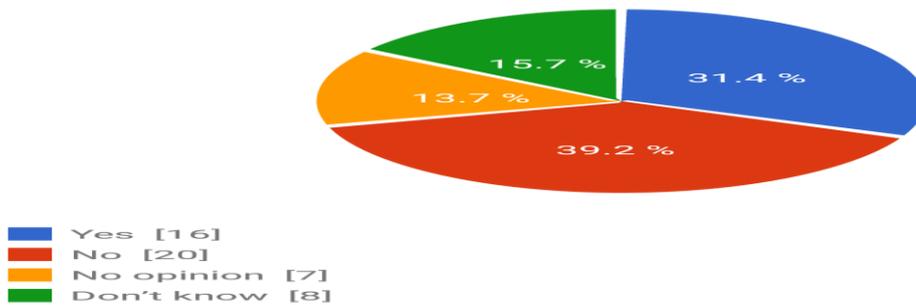
But, if it is innovated with a strong technology and security, it can be allowed in India. For example: Indian government not allows Bitcoin but, they are thinking to allow Block chain technology which is used in making cryptocurrency.

**Chart 4.12 Sovereign or central banks create their own crypto currency**



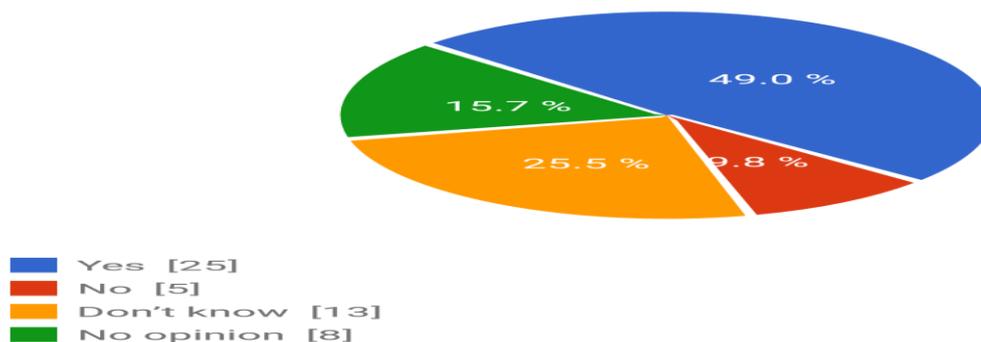
The respondents don't have an idea of creating its own currency by the central government of India and 33.3% of them say, to create an own crypto currency. It is because of its innovative idea and technology to make the financial transactions easier.

**Chart 4.13 Risk of investments in Bit coin**



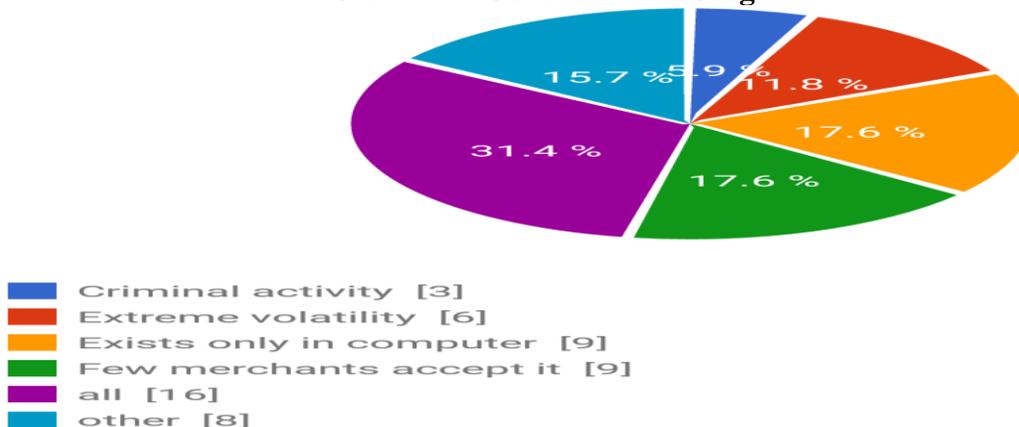
According to the respondents, they say it is a digital currency and not popular in India, they are not aware of risk involved in cryptocurrency.

**Chart 4.14 Security Concern**



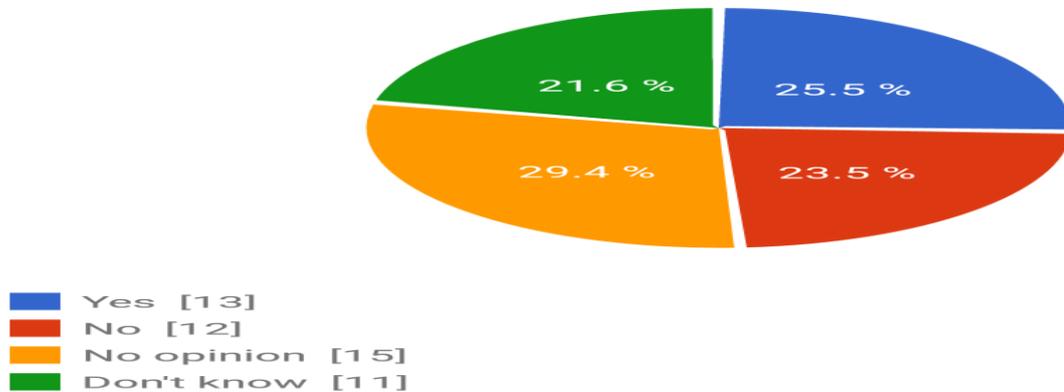
Crypto currency is a digital currency, it involves online transaction. The response says (25 out of 51) it would increase the security concern. As we mentioned above, the concerns are hacking and trafficking.

**Chart 4.15 Constraints in Usage**



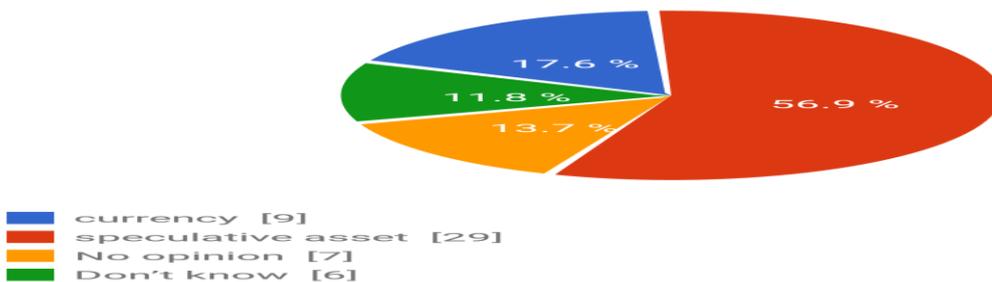
People think there are many constraints in the usage of cryptocurrency. It includes criminal activities, extreme volatility, exists only in computer, and only few merchants would accept it.

**Chart 4.16 Technological Application**



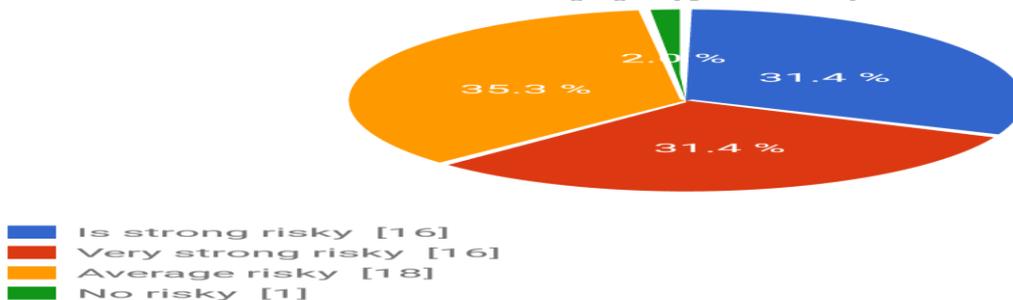
Respondents have different opinions, as there are no maximum responses for a particular option, consolidated particular response say No, hence its technology is not useful for long term.

**Chart 4.17 Bit coins are like a general Currencies or Speculative Asset**



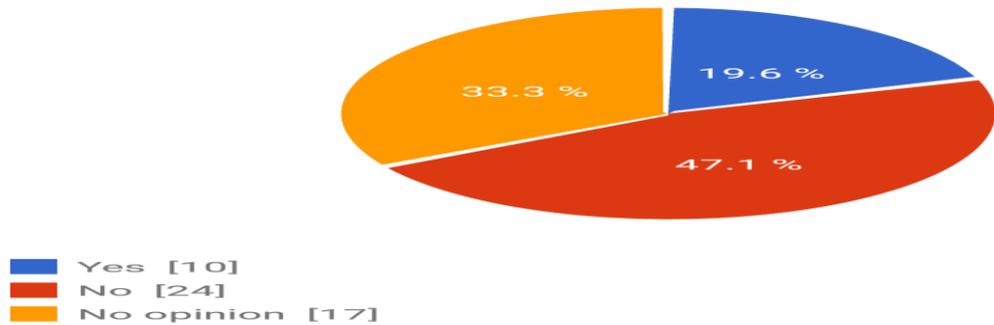
56% responses say that it is a speculative asset and can also be used as a currency for trading in market. People want to use cryptocurrency as a speculative asset more than as a currency for transaction.

**Chart 4.18 Risk in managing Crypto currency**



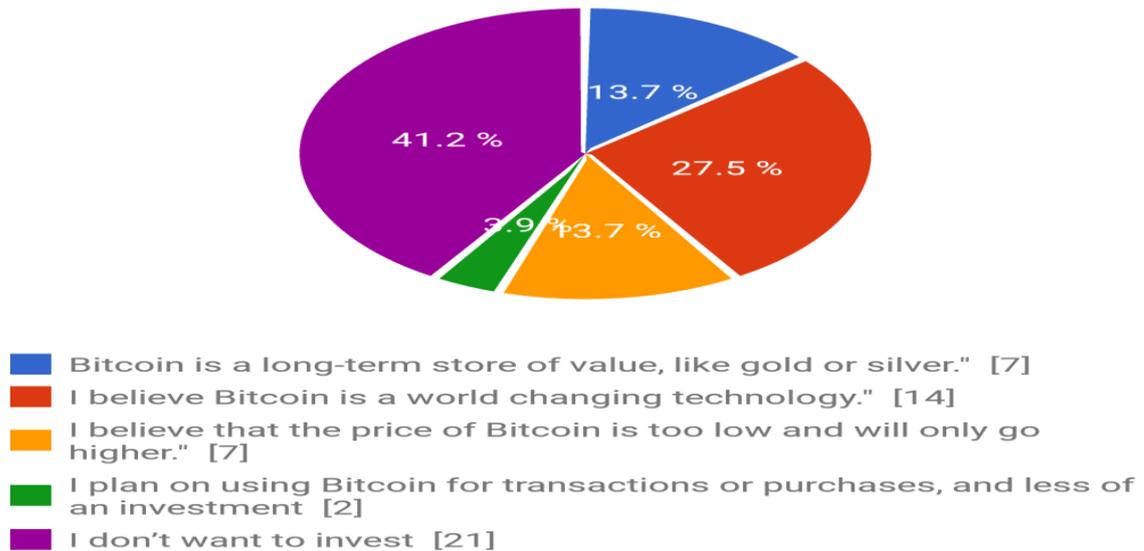
Only 2% of the population (respondents) say it involves no risk, But majority says it involves risk (may be average or strong).

**Chart 4.19 Willingness to take legal risk in investments**



More than 45% of the respondents are not interested in taking up the risk involved in cryptocurrency by investing in it. If it is towards me, I'll be investing in cryptocurrency with my excess money.

**Chart 4.20 Reason behind investments into crypto currency**



As majority of the people are not interested in taking up the risk in it, they don't want to invest in the cryptocurrency.

**Conclusion**

Bitcoin is unique not because it is Virtual currency, but because it is proof of concept of a decentralized non-issued electronic currency. Bitcoin has a number of weakness and may have long-term viability issues for the economic reasons referred to earlier. But it shows that Virtual currencies can and probably will succeed in time, as innovators build on the lessons from the Bitcoin experience. The evidence suggests that virtual currencies \_Bitcoin and others- might play an increasing role in payments system, worldwide According to CoinDesk, they are Being in north\ and south America Europe Africa And Asia. The number of companies accepting Bitcoin September 2014 soared to over 80000. "Use bitcoin info" reported more than 2000 business using Bitcoin worldwide.

It must be kept in mind that the issues with Cryptocurrency, hacking is one that any Software must face. But all the attempts that have to date made to hack the coding of Bitcoin themselves have met with failure, though attempts at hacking Bitcoin exchanges and Wallets have been more successful. According to Nakamoto, as long as the total computing power

of the 'honest' nodes dedicated to keeping the Bitcoin network up and running is more than the computing power of a group of attackers, the network will remain unharmed. Crucially, this does not mean that the Bitcoin Software will remain un-hacked forever. Just as Nakamoto's genius created the Bitcoin, it is quite possible that someone will someday successfully crack the Bitcoin software.

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## **The Empowered Woman – A Study of work life balance in Bollywood film “Dil Dhadakne Do”**

**Pooja Choudhary\***

**Dr. Preeti Yadav\*\***

### **Introduction**

Films are a reflection of the society and Bollywood has been a medium of showcasing the changes dawning upon our society. It is also instrumental in creating awareness, influencing and channelizing growth and development in the society. From time to time it has been used to inculcate revolutionary ideas in the society. Bollywood as a medium of mass communication and a tool of propagation has brought radical changes in the society. Bollywood is the world's largest producer of films covering myriad of themes from family love story, to “devotional films, social films and topical films” (Takhar et al, 2012). To quote the words of D. Bhoopaty as found in Therwath (2010), ‘cinema is widely considered a microcosm of the social, political, economic, and cultural life of a nation. It is the contested site where meanings are negotiated, traditions made and remade, identities affirmed or rejected’. Bollywood has come a long way from presenting a weak, marginalised, dependent image of Indian women to empowered, strong willed, independent, confident, self made new age women. As opposed to their socially submissive counterparts, the new age women are ready to take challenges head long. These women are manifestations of super women, multitasking divas respecting their culture and tradition, grounded to values but in subservient to shackles of society and confines of the gendered roles. They command respect, equality, right to education and are not ready to be treated as an object of recreation or sex object. According to Bharathi et al., (2015), to quote “this opened new vistas, increased awareness and raised aspirations of personal growth.” Indian women have carved a place for them in every spheres of life today. Expanding her role, she has stepped out of the shackles of the house hold chores and is sharing equal responsibility of the household along with their spouses and has become an economic symbol.

However, women are not completely protected against the patriarchal elements of the society. Thus from time to time have to struggle against these unwanted and socially restricting criticisms that go against the traditional role and image of the women in the Indian society. According to a report by SIOP White Paper Series (2015) by Rife and Hall stated that “a survey by the Society of Human Resource Management (SHRM) in 2002 showed 70% of employees report an unhealthy balance between their work and personal lives.” The garb of modernity is not immune to the criticism and does not offer respite from household chores and responsibilities of a women. According to Chaudhary (2019) “Maintaining equilibrium between work and life is much more demanding than fulfilling either familial responsibilities or professional task. Women are supposed to perform their so called “real” tasks besides their fancy desire to earn. Despite contributing to the family finances they cannot be expected to return home after a long tiring day at office to peacefully sip a cup of coffee.” “India is one of the countries where unrest among working women is increasing in

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leaps and bounds, and hence starts the practice for working on work life balance”, as mentioned by Tapliyal.

Work life balance captured the attention of social scientists and researchers who explored and delved into microscopic study of a woman's life including her struggles and pleasures of life. Pahuja (2016) cited work life balance as an act of striking a positive balance between one's personal and professional life. The concept came into existence, for the first time, in UK and US in the late 1970s and 1980s, respectively. Organizations and companies also feel morally obliged to help women in striking a balance between their personal and professional life and have thus taken up several WLB (Work – life balance) activities and programmes to help employees develop a balance between work activities and non- work activities. This paper endeavours to analyse work life conflict that are faced by working women in Indian society through the depiction of Ayesha Mehra presented in Bollywood film *Dil Dhadakne Do*. In an article published by Rediff titled *The hidden lessons of Dil Dhadakne Do* (2015) says, “Dil Dhadakne Do self-consciously joins the debate over the role of women in an India which is confident of its place in the world and can give China a run for its money.”

#### **Significance of the study**

As discussed earlier that films are reflection of the society, the silver screen showcases the reality or the true face of the society. The film *Dil Dhadkne Do* is a reflection of the marginalization of working women or so called “modern” woman by their near and dear ones. Study of the film acquaints the readers with the difficulties faced by working woman in India. Society that comprises of one's family and relatives is the one that criticises, ridicules, and tries to pull down the woman who wants to raise her standard in terms of individuality and assert her independence. It is also evident in the film that it is mostly female figures in the families that hinder growth of another woman but wants them to be grounded to the rules and ways of the society. It is the same force whose dominance was accepted by those women and they silently dealt with it. The transition from an active to a passive woman is beautifully captured in the film – an idea worth studying.

#### **Rationale for choosing the film**

*Dil Dhadkne Do* offers a reality check to the society. The film set against the background of an elite, educated Mehra family deal with the struggle of a modern woman who wants to break out of the shackles of the pre defined gendered roles and endeavours to create her own identity by coming out of the shadow of her father and husband. The film shows the resistance, verbal and emotional abuse from her parents, in – laws and husband that the “new” woman has to go through in order to assert her independence. Elements of patriarchy are deep rooted in the mindset of her own parents and that of her in – laws, besides the members of the society in which she lives. Mother, father, mother - in – law and husband are shown as people who do not credit her independence, business acumen, perseverance and had work rather criticise her for not participating in house hold chores, not extending her family and thus s considered non homely. Her desire to walk out of an unhappy marriage is met vehemently by her parents on the grounds of protecting their family honour and prestige. The film is a fight of a 21<sup>st</sup> century woman against the dominant norms of society laid out for woman. Oppression of the “modern” woman is aptly captured through the characters.

#### **Research: An overview**

The purpose of the research paper is to explore the work life balance of a modern woman as found among the number of working women in India. The study is conducted based on

review of the content of a commercially successful Indian film – *Dil Dhadkne Do*. The research is quantitative in nature. Methodology used is content analysis. The research paper makes use of primary and a wide variety of secondary sources. Secondary sources included research articles, book chapters, newspaper review, and blogs. The film was released in 2015. The movie is reviewed based on the following opinion of the characters -

- 21<sup>st</sup> Century modern woman's life and struggles
- Primitive view of society against working or modern woman
- Dominating husband's attitude towards his working wife

Choice of the movie is based on the following factors –

- The movie is set in an elite Indian nuclear family
- Female protagonist is a modern working woman and married
- The family adopts a modern outgoing lifestyle resonating with western lifestyle
- Supporting female character of mother is westernised yet conservative
- Supporting female character of mother – in – law is westernised yet dominating and criticising
- Husband wants a submissive and homely wife
- Sub plots of struggling relationships and conflict faced by working woman is the main element of the theme of the film

#### **Brief about the Film**

Released on June 5, 2015 *Dil Dhadkne Do* revolves around Mehra family and the dynamics their interpersonal relationships. Each character of the film has some uniqueness and contributes beautifully to the central idea of the film. A review of the film appeared in Women's Web captures the peculiarity of each character and defines their struggles and perspectives of their lives:

“A rich Delhi-based business family, the Mehra's consist of four members who together make a unique, noteworthy unit for a simple reason: This family is a living, moving, breathing piece of hell. A hell they have created themselves with their supercilious attitude and confused selves.

The senior Mehra in the movie is played by Anil Kapoor with great panache. He is a man who talks, eats and breathes success. For Kamal Mehra, it seems as though people or things are not divided into good and bad. They are, in fact, classified into successful and unsuccessful. A man with salt and pepper hair, a suave, charming demeanour and a way with women, he is in reality a businessman desperately trying to save his business from falling apart and has no qualms in being ruthless in crushing people's emotions and sometimes, people who come in the way of his path to success. A handsome man who thinks it is his right to be high and mighty, he has drifted far away from his roots and it seems life in general. Kamal Mehra's wife Neelam Mehra, played by Shefali Shah, is a feisty woman. Prim and proper, with elegance and élan, she is fully, completely, wholly and painfully aware of her husband's philandering ways but decides to turn a blind eye to his deeds because for her, concentrating on making things work in a relationship is more important than running away from it. A woman who is bitter from the inside but hides her insecure self behind the veil of a posh life, she works hard to give an impression of being happy and content in the marriage. Ayesha Mehra (Priyanka Chopra) is the eldest child of the Mehra's. A successful, self-made woman caught in a loveless marriage, she has inherited her father's sharpness and business

acumen. A calm and mostly composed woman, she is sensitive to the fact that her parents conveniently forget her success and advise her to have a child so that her world is 'complete'. The youngest Mehra, Kabir, played by Ranvir Singh, is a man who at heart is still a boy trying desperately to come out of the shadow and protection his moneyed family provides him but is too scared of the outside world and fears the discomforts that he might have to come across."

The ending of the film shows transition of the entire Mehra family from supposedly smart, business oriented, outgoing but orthodox to genuinely modernised family that accept the "changes" and does not attach their false prestige and social status to the wishes of their children.

### **Analysis – Ayesha Mehra's work life balance**

An article published in Feminism India talks about the character of Ayesha, "The character of Ayesha Mehra, in particular, strikes a chord as she faces the fate of most strong, successful married women in India – a mother-in-law's jibes about her outrageous independence, a husband who sees her career as little more than a hobby to be benignly entertained and "allowed" until she serves her actual purpose of bearing him children, and parents who think of her as the exported commodity, now the belonging of another family." In her article, *9 Times 'Dil Dhadakne Do' Understood Our Society Perfectly & Gave Us A Reality Check*, Devika Sahni (2016) talks about the character of Ayesha saying, "Priyanka's character is a bang-on depiction of a young, independent woman with a successful business, striving to earn the respect of her father and husband. But her self-centred husband tries to take the credit for letting her work and her success." Carrying herself with elegance and professionalism she single handedly manages and owns a travel agency funding it from her marriage jewellery. Owner of a successful business enterprise, she is also covered by Forbes as "Successful Businesswoman". Ayesha owns a successful business but is unhappy with her marriage to Manav Sangha, a controlling, narcissistic husband who, together with his mother Smita, hates Ayesha's family. Caught in unhappy marriage she is hurled with comments and taunts by her mother-in-law and husband from time to time for "neglecting" her duties and responsibilities as a wife and daughter-in-law. She is also shown fulfilling her husband's carnal desire without her wish. Ayesha presents the contested image of a modern working woman who strives to balance between work and home. Juggling from one end to the other, she is trapped between her desire and passion for independence and her family's and extended family's demand for having a baby. As pointed out in the article in Rediff:

"In a significant scene where Manav's (Rahul Bose) and Aisha's (Priyanka Chopra) families sit together to find a solution to their marital problems, the easiest solution that is offered is motherhood. Once a child is born to a woman, so goes the argument, she would be busy with its upbringing and the marital issues, thus displaced, will appear 'solved'. It is the immanent female self that is emphasised in this solution."

According to them the end goal of a woman's life is to have a child, increase the progeny and take care of family members. If a woman is allowed to work that means she is granted liberty by her family and she should not misuse it. Her mother-in-law also asserts that if there is no physical abuse that means the marriage is normal, family has invested in the girl and there is no question of ending it. Mother-in-law also compares her life with the kind of life her daughter-in-law leads. She is also critical of Ayesha's way of living and appreciates her own docile, submissive and obedient life style. She also points at her clothes

and too much independence that Ayesha is enjoying. Excerpt from the film as pointed out in Feminism India says:

“When Ayesha contemplates a divorce, family meetings are held in which she is questioned and counselled by her parents and in-laws. Something that comes through rather strongly during these counselling sessions is how everyone in the room sees the divorce as something she is doing to them. “How can you do this to us?” is literally the overwhelming emotion in the room. Without laying it on too thick, these reactions portray the plight of the average Indian woman seeking freedom from an unhappy marriage. Even when the woman in question, like Ayesha, is strong and financially independent, the threat of not supporting her financially comes easily to her family – when the only support she needs from them is actually emotional.”

Character of Ayesha is a radical shift in the picture of orthodox Indian woman, who passively accepts the gendered roles, gleefully follows the societal institutions of marriage and remains faithful to the idea of marriage while men enjoys all liberty and freedom from any such restrictions. As opposed to the figure of a traditional woman, Ayesha takes up the challenge of living a dual life, that is, of being professional and homely at the same time. However, this extrovert ambitious nature is not supported by either her parents or her in – laws. A woman has to undergo several challenges in order to meet her desired self, fight several battles, put up a brave face, even though she may be hurt or in pain. This is true in case of most of the working woman in Indian society. Character of Ayesha Mehra embodies the hardships that Indian woman face on day to day basis on account of turning her dreams in to reality.

A modern woman independent, educated, financially stable, she expresses her desire to get out of the marriage to her mother only to be rebuked. Although her mother who has been living through an abusive marriage herself, aware of her husband's extra – marital affair, could not take the bold step of walking out of the marriage. For a woman, it is of utmost importance as “she has to fight the historical baggage of a narrowly-defined role in a patriarchal set-up. The film unambiguously makes the statement that it is her transcendent self, the self which refuses to be trapped in marriage and motherhood, which should be the ultimate goal. If, in the process divorce is used as an easy option, so be it. Aisha takes pills to avoid pregnancy even though her husband and his family are keen that she delivers a baby (the contraceptive pill has played a very important role in women's emancipation, giving them greater control of their bodies). Aisha pursues her passion to become a successful businesswoman instead” (Rediff review).

The character of the mother, presents the kind of woman who have donned on the garb of modernity in terms of attire but deep within remains every bit of the traditional woman who accepts subversion as part and parcel of her life and whines but lives with it for the sake of family honour and prestige. Finally advises her to be rational and stay in the marriage as it is good for her family's social standing. Similar response is received from her father too on divorce. Parents blame Ayesha's independence for such irrationality. In a review that appeared in Hindustan Times says, “The mother sagely advises her to abandon her career and focus on her family.” Though strong willed and outgoing Ayesha succumbs to her parents advice and falls silent. “This is a woman who has spent her life thwarting her desires. She has the confidence to build a successful business but can't summon the strength to stand up to her parents” stated in Hindustan Times review.

## **Conclusion**

Indian society has undergone a tectonic shift in the last couple of decades where woman have started coming out of the confines of their houses, taking up challenging roles and has been deftly maintaining the two equally demanding and challenging profiles of being a home maker cum professional. The duality of their self chosen lifestyle is sharp, stressful, and keeps them on the edge of their sanity. The turmoil of balancing work and life is a perpetual challenge that they undertake. Ayesha's portrayal is an image of several thousands of women in India who strive to strike a balance between homely tasks and being a professional. However, only a few have a happy ending as seen in the film and a note of success, acceptance, and recognition as given to Ayesha Mehra in the end of the film.

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## **Review Of Existing Research On Managerial Agency In Capital Budgeting Decision Making**

**Dr. Pooja Mishra\***

**Nidhi Mahajan\*\***

The “capital budgeting practices” across Indian corporates have been viewed from perspective of firm perspective as well as with perspective of industry practices. Yet there is substantial role of “managerial cognitions” and “mindsets” in shaping the decision making and sense making. Such a mindset has often been observed to possess consequences for the decision making, choice making across various courses of action as well as execution of financial strategy and policies. In fact the review of literature on the non-financial determinants of capital budgeting, investment appraisal and choice making underlines the growing significance of “manager” and “human factor”(Sumadilaga, 2017) as an agency shaping the stimulus for financial decision making, choice of depreciation methods, sense making with regard to risk mitigation as well as rampant differences in utilizing asset based depreciation as a source of funding for organizational competence. The paper hence concentrates on the review of literature on the subject matter in order to explore the different ways and means in which aforesaid factor and the construct has been operationalized across existing studies. The rationale is to examine and interpret the role of factor operationalization vis a vis managerial perspective and mindset.

Ever since the emergence of studies on human perspective as shaping financial and strategic domains across organizational decision making, there is dearth of appropriate research attention on the exploration of “human agency” as leading to dismal or optimum financial performance across quarters and especially across strategic aspects of capital mobilization, capital allocation and asset management as well as asset impairment. Essentially there is substantial global research that categorically underlines the role of human aspect in capital budgeting propositions. “Human capital” as managing and deciding on course of action with regard to financial capital management is a novel phenomenon that is recently being viewed as determining the choice and prediction of accounting methods by the managers across accounting departments. A review of recent literature on the subject matter reveals that a substantial impact is exerted from managerial perceptions of self-gains in shorter time frame. The traditional positive accounting theory(Beattie, 2013) elaborates on the three common biases that easily creeps in; in form of determination of standards and protocols. The tendency for choosing a method could be influenced by firm based presence of bonus plans, firm based consistent indulgence in violations of accounting based debt covenants or by incidence of political costs. The managerial agency for decision execution has been observed to rest across middle managerial class and the next to senior management who under board and top management influence articulate and act upon the determined and identified corporate interest(Garicano, 2016). Managerial agency and respective identification of corporate interest(Garicano, 2016) has a lot in common with firm based choice of decisions

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that ultimately benefit or fail to benefit the firm based survival, sustenance as well as asset usage and market value of the assets under consideration.

The tendency for narrative establishment (Beattie, 2013) in accounting practice choice making and biased articulation of corporate interest as well as choice of accounting practices is essentially driven by top management's sense making with regard to current business situations engulfing the business. The corporate narrative setting has a potential role in establishment of the ideology, business philosophy as well as trends. The construct of "positive accounting" has reflected well across existing literature and emphasizes the focus on determination of accounting standards. The proposition (Daoud, 2013) believes that firm based management is vital in shaping and influencing the origins and operationalization of the construct as per their unique understanding of the factors that seem to influence the production, usage of assets and the market based utility of the assets currently under operation. The essence of forecasting earnings, contracting processes, internal bonus allocation, debt contracts, information asymmetries as well as resource allocations; all seem to invariably influenced by human effort, human tendency to undergo bias as well as face uncertainty.

"Managerial choice making" (Garicano, 2016) with regard to accounting seems to be driven by the "mindsets", "opinions", "ideologies", "sense making" as well as "managerial perceptions" as harnessed over period of time and across interactions with stakeholders, markets, creditors and supply chain partners. The literature (Chattopadhyaya, 1997) distinguishes the rational and irrational aspects of managerial sense making across complex matters of financial decisions and accounting principles. The often identified "rational" aspect identifies with the managerial inclination for application of intellect, independent review and sense making while undertaking decision. The "irrational notions" on the other hand stem from the managerial haste, indecisiveness as well as influences, biases, cognitive biases and cognitive loads, inertia to change and learn as well as pressures from the upper hierarchy to follow a course of action vis a vis the acquisition and usage of productive assets. The irrational managerial (Beattie, 2013) origins have been observed to possess their roots in the conduct, in the principal-agency relations, in the training, in the initial organizational conditioning and in the education of the employees or financial decision makers. The financial decision makers (Elvira, 2016) essentially are not aloof from the biases that interfere and laterally influence the effective decision making. The debate between rationality and irrationality while undertaking and executing a decision with regard to asset usage and value retrieval.

Accountants, financial managers and financial board (Tiwana, 2013); often undertakes decision making in a manner that purely promotes their own self-interest and perceptions of short term monetary gains. The incidence of adoption of practices increases which leads to rewards and positive support from across the markets. The managers often inculcate the tendency to restrain (Garicano, 2016) from courses of action that seem to lead to isolation or punishment from the market. "Managerial choice making" with regard to accounting seems to be driven by the mindsets, opinions, ideologies, sense making as well as managerial perceptions as harnessed over period of time and across interactions with stakeholders, markets, creditors and supply chain partners.

A research study (Daoud, 2013) across Tunisian enterprises on accounting system integration and managerial perceptions revealed the substantial impact of top management involvement and support in shaping the prospects for the expertise, accounting knowledge

structures, accounting information quality as well as implications for practice adoption as well as staff based competency. The study across 102 Tunisian firms established the rationale for the managerial agency as interfering with organizational working, efficiency management and choosing across alternatives as identified.

In a study across 169 MNCs operating in Finland, Russia and America (Minbaeva, 2014); the research explored the quantum of relationship amongst the MNC subsidiary based practices, emphasis on knowledge transfer, HRM practices, absorptive capacity (Sumadilaga, 2017) and the extent of inertia and stickiness. The research outcomes pointed towards the incidence of moderating role of employee's ability and levels of motivation in shaping the impetus to successfully transfer the practice based tacit knowledge across departments, divisions and organizational entities.

Managerial discretion (Theodore, 2017) has been observed to be stringent in choice making. Accounting methods and their choice is not aloof from managerial discretionary attitude (Carpenter, 1997) and perceptions (Sumadilaga, 2017) regarding organizational state of affairs. A research study (Chattopadhyaya, 1997) explored the incidence of the manager's perceptions in Walsh's framework and observed the prevalence of negative relationships across manager's respective areas of experience and perceptions; thus pointing to prevalence of functional experience of manager as leading to selection imperceptions as well as selective perception.

A research study (Theodore, 2017) across Indonesian middle level managers revealed the incidence of substantial influence of "task environment", "organizational agility", "cognitive complexity" on the formation of distinct manager based "discretion" which was observed to lead to substantial changes in "strategy implementation" as well as "unit based performance". The study based inputs further underlined the relevance of human agency in shaping the corporate prospects. The existing literature (Larsen, 1999) speaks and reflects on the resetting of clock with more emphasis on the feedback approach to dynamics of organizational inertia, survival and change management propositions. A study (Bontis, 1998) examined the role of managerial capital, human relationships, customer capital and structural capital as shaping the prospects for the firm based decision making, and managerial myopia as well as relative firm based performance across balance-sheet prospects.

The research studies (Elvira, 2016) on development of professional expertise ponder a lot on the aspects that focus on consistent transformation and upholding of unique ways and means of accomplishing the task, tacit knowledge, skills and attitudes essential to sort out domain specific problems and occupational challenges. Expertise integration and absorption (Tiwana, 2013) cross modern organizational information systems and decision making eco systems is also a challenge in developed and developing economies alike.

<b>Author</b>	<b>Research Focus Area</b>
(Garicano, 2016)	Managerial agency for decision execution as influencing the articulation of corporate interest
(Beattie, 2013)	Tendency for narrative establishment in accounting practice choice making
(Daoud, 2013)	A study across Tunisian enterprises on accounting system integration and managerial perceptions revealed substantial impact of top management involvement and support in shaping the prospects for the expertise, accounting knowledge structures, accounting information quality
(Theodore, 2017)	A research across Indonesian middle level managers revealed the influence of “task environment”, “organizational agility”, “cognitive complexity” on the formation of distinct manager based “discretion”
(Sumadilaga, 2017), (Carpenter, 1997)	Accounting methods and their choice is not aloof from managerial discretionary attitude and perceptions regarding organizational state of affairs.
(Minbaeva, 2014)	A study across 169 MNCs operating in Finland, Russia and America explored relationship amongst the MNC subsidiary based practices, emphasis on knowledge transfer, HRM practices, absorptive capacity and the extent of inertia and stickiness.
(Tiwana, 2013)	Accountants, financial managers and financial board often undertakes decision making in a manner that purely promotes their own self-interest and perceptions of short term monetary gains
(Chattopadhyaya, 1997)	The rational and irrational aspects of managerial sense making across complex matters of financial decisions and accounting principles.
(Bontis, 1998)	A study examined role of managerial capital, human relationships, customer capital and structural capital as shaping the prospects for the firm based decision making, managerial myopia
(Elvira, 2016)	Studies on development of professional expertise ponder a lot on the human agency driven aspects
(Beattie, 2013)	The irrational managerial origins have been observed to possess their roots in the conduct, in the principal-agency relations, in the training, in the initial organizational conditioning and in the education

From the above literature review it is clear that as far as the capital budgeting techniques are used across corporates operating in India, the “managerial agency” seems to matter and should be responsible for differences in choice making and selection of a particular depreciation method. As evident depreciation plays an important role in the discounted techniques of capital budgeting, managerial differences in perceptions and opinions do lead to execution of different methods of depreciation. This paper is an attempt to understand what “factors” ultimately lead to “differences” in “choosing and using” different methods of depreciation while undertaking capital budgeting decisions. Most of the existing studies reveal the managerial oriented difference between techniques used in corporates but only a few studies reveals the effect of difference in choice making mechanisms and subsequent factors that seem to impact managerial agency vis a vis choice of depreciation techniques keeping in view the long term investment decisions.

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## **Game Playing: Introduction, Application areas and Working**

**Simarjeet Kaur\***

**Abstract:** *There are many real life problems which are difficult to solve directly without any particular logic and intelligence. Some of these problems belong to the area of artificial intelligence also .To solve such kind of problems ,intelligence and proper logics are required. The concept of Game playing is useful to solve such kind complex problems in efficient and effective manner . Four queen problem, Chess playing, eight queen problem are the examples of such complex problems which can be solved with the help concept of Game playing .All of such type of problems can be solved easily with the help of the concept of game playing. playing. To use the concept of Game playing ,there should be the proper logic and strategy to solve the problem and to reach the goal by using the game playing. Without proper logic and strategy, one cannot reach the goal or solve the problem for which the game playing initiated. Any particular game has logic to play game , participants to play game and destination stage to achieve the goal . There are many search problems of artificial intelligence and Game playing is also one of them. The field of game playing is very broad . With the new inventions and developments of new technologies the Scope of game playing increased. This research paper will cover the game playing core concepts which include working game playing, need and application areas of game playing along with introduction to it.*

**Key Words:** *Intelligence ,logic, Strategy ,Core, queen*

**Introduction:** A game includes players/participants to play the game and a goal state. For reaching the goal, players have to follow some rules and use the strategy .By using this procedure many complex problems of real life and search problems of artificial intelligence can be solved. [1] In artificial intelligence, game playing is an important branch of it which can solve the complex problems like eight queen, four queen, chess playing etc. Game playing is a search problem that is solve many complex problems. [2] Complex problems can be consider as games which needs the proper logic and intelligence to solve and proper method to interpret the given input .[3] Games are well defined search problems that are solved using multiple strategies. [4]The concept of game playing can also be used for making action scenes of movies easily which can be difficult to make them in reality.

**Objective:** There are many objectives and aims of game playing. The major and main objectives for which the game playing can be use are:-

- To solve the complex search problems like queen problem and chess playing, game playing can be used.
- To provide the mechanism of defining any problem using various states like initial state, goal state. In this way using various modules for solving the problem can be used to achieve the goal state.
- To provide the system like inference engine to interpret the given input and getting some useful results from it.

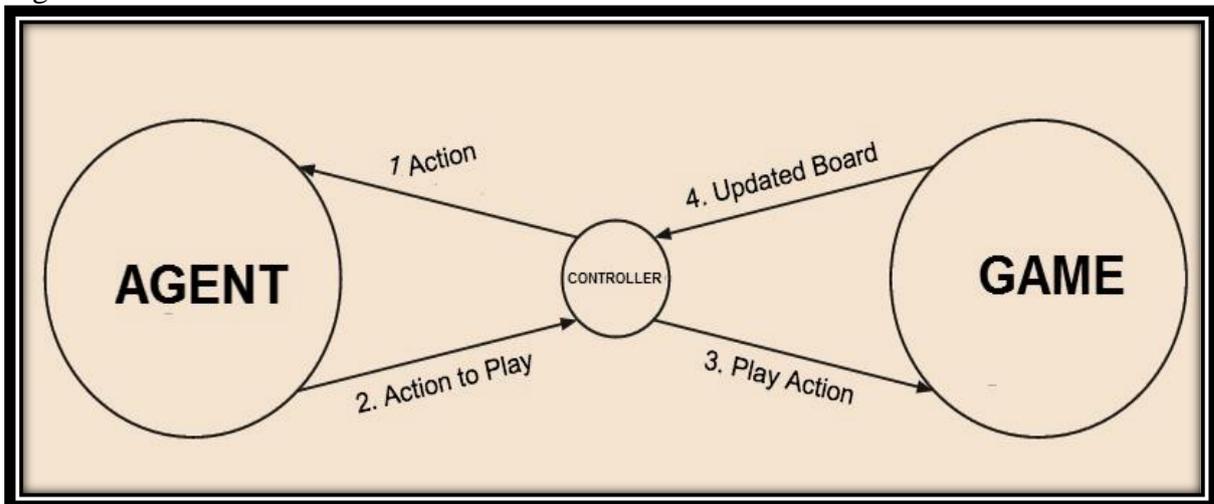
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- Using various methods and strategies to solve the problems related to artificial intelligence and real life also.
- The main two popular methods of game playing for solving problems that can be used are alpha beta and min max cutoff. Min and Max is the name given for variables one for maximum value and other can be used for minimum value.

**NEED:** Various problems like eight queen problem, four queen problem, chess problems can be solved with the help of game playing which is an important application of game playing. In these problems, it is not possible to know the moves of opponent in advance. So, game playing helps to solve such kind of the problems by predicting the possible moves in such kind of complex problems. In this way, one can say that game playing is helpful and useful for solving the complex problems related to AI by using Alpha beta and min max strategy to solve the problems effectively.

**WORKING:** Generally game is represented by the initial state. Working of game playing is given below :



**Fig.1-An Example of Game's Working**

- **Agent:** Agent is a user of the game who will play the game. Game should be understandable so that user of the game can easily play the game. All the actions performed by the agent or user of the game who play the game.
- **Game:** Game is a problem which defined with particular goal to achieve and on the same time demands some intelligence to achieve such a goal and represented by initial state.
- **Action:** For every move made by the agent or user or the person who is playing game, there possible result and reaction for it. Such possible reaction comes after any move made by the game player. This is known as game action.
- **Controller:** To play any game a controller is needed. Without any controller, it is impossible to perform any move in the game. Agent uses the controller for performing the various actions like left, right, up, down, jump etc. For playing any game, move is made by the user or agent of the game. Without the help of any controller it is not possible to perform any move while playing the game. Controller may be some joystick, gaming remote or virtual controller
- **Gaming Strategy:** Games are made for entertainment purpose and require some intelligence of player or user who is playing the game. For making any game project

successful, there should be some strategy to play the game. Without proper logic and strategy game will be boring and not interesting.

**Desirable Features:** Any game may have many features, but There should certain features that a game should have. Some of them are given below-:

1. There should some rules to follow in game. Without the presence of any rule in the game, the game become very boring and not interesting.
2. The gaming characters should aware about how to act in the gaming environment means to say that game should be user friendly .
3. There should be some algorithm to find the path from initial state of the game to reach the goal state. In this way game works properly.
4. In game playing, there should exist some mechanism to decide the best feasible and optimal path from the available path that exist.
5. Game playing need a proper planning and strategy to play the game. Without any proper strategy or planning game is meaningless.

**APPLICATIONS AREAS:** Games are used in both the real world and virtual world. There are many applications of the game playing. Some of them are given below-:

- Game playing is used in the real life for human to test their intelligence by various types of available options and type of games including puzzle and strategic games.
- Various software and machines use artificial intelligence. Such type of intelligence that is artificial not of human, can be tested easily with the help of game playing.
- Game playing is also used in various problems for solving them. Most of these problems are related with artificial intelligence and real life based problems.
- In complex problems like chess playing where it is difficult to predict the possible move of the player, game playing is used to generate all the possible combinations.
- Various simulators and emulator tools are used for getting the realistic experience for learning many things like games related with driving car or motorcycle and so on.
- Lots of options available in market for playing games like single play, multi player, strategic, adventure , puzzle, racing games for the entertainment purpose.
- Concept of game playing is also used in various action based movies for making the action scenes of the movies realistic and powerful.

**Acknowledment:** While making this research paper, I have put all of my best and possible efforts for making this research paper. I hope this research paper will be useful and helpful for the authors who want to do further research Related to game and working of game playing.

**Conclusion:** There is no doubt that without proper strategy and logic, it is not possible to reach on any conclusion or achieve any goal or destination or result. Game playing is helpful to the solve any particular problem from initial state by declaring all the possible moves and players. By following the particular strategy and rules a player can the destination and achieve the goal state. In this way many problems of artificial intelligence can be solved. Moreover, game playing is also helpful in real life situations like the field of medical line where a patient with stroke history can gain the movement and sensory control for example arm up and leg down etc. In this way ,game playing is helpful not only in AI related problems but in real life situations also.

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## **Child Labour**



**Anju\***

**Dr. Ashok Kumar(Guide)**

Almost one third of the world population comprises children. Therefore, they deserve to be cared and protected to keep up and improve posterity. They are important component of the social structure and the potential future careers of culture. Social Justice demands to children.

### **Abstract**

If you want to see Godliness, watch a child smiling. The innocence of a child reveals the purity of his heart but sadly, this world of cruel human beings and the universal disease called poverty have not left this beautiful and innocent form of life untouched. The existence of child labour is a ground reality, a social crime and a crime against humanity, which steals away the innocence of a child and leaves him as a machine in this cruel world of human beings, the most savage animal of this world.

A good proportion of children throughout the world, especially in India, form a part of the toiling masses-destitute, deprived and disadvantaged. It is a matter of shame that maximum number of child labourers is in India. As per the Government data, the number of child labourers in India is approximately two crores. They work in fields and factories, at street corners and a garbage dumps. With low level of education and no sense of social responsibility, these children can do much harm to the society, if they are not given protection and equal opportunities to develop.

The existence of child labour in India is a complex problem. Poverty is the main and parent cause of the existence of child labour in India. Ineffective laws and more often, lack of political will to implement them and social unawareness contribute to the continuation of this problem. Child labourers are preferred by many employers as they are available at cheap rates, and come without much liability. They are easy to be moulded to different circumstances but lack of education, games and fun make them mechanical and hamper their all round development.

### **Child Labour**

Child labour keeps a child away from all the benefits of the childhood, a happiest and memorable period of the life of everyone. It interferes with the ability of attending regular school which makes them socially dangerous and harmful citizen of the country. This illegal activity of the child labour is increasing day by day even after lots of the rules and regulations against this by the government to completely prohibit the act of child labour.

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In many developing countries child labour is very common because of the existence of high level of poverty and poor schooling opportunities for the children. The highest incidence rate of the child labour is still more than 50 percent in which children of age group 5 to 14 are working in the developing country. The rate of child labour is high in the agriculture field which is mostly found in the rural and informal urban economy where most of the children are predominantly employed into the agriculture work by their own parents.

The issue of the child labour has now been an international concern as it highly involved in inhabiting the growth and development of the country. Healthy children are the bright future and power of any country thus child labour is damaging, spoiling and destroying the future of the children and finally the country.

Children are the new flower with powerful fragrance of any nation however some people are declining the power and destroying the future of the country just for earning small money by illegally involving the growing kids. They are playing with the moral of the innocent people and their kids. After the independence of the country, various laws and regulations has been implemented regarding the child labour however it did not found its end in the country. Child labour is the global issue which is more common in the underdeveloped countries.

#### **Important Law/Provision against Child Labour**

The Constitution has prohibited the employment of children below the age of 14 in any hazardous industry under Article 24. The Child Labour (Prohibition and Regulation) Act of 1986 was also a welcome step. Their employment at homes as domestic help and at dhabas has also been banned by an amendment made effective from 10<sup>th</sup> October, 2006. The amendment included houses, hotels, Dhabas restaurants etc. in Part A of the Child Labour (Prohibition and Regulation) Act 1986, by recognizing the above mentioned places as place of hazardous occupation. But the reality is far away from what was expected. In spite of various safeguards provided in the different Acts, the existence of child labour is a shocking reality. Hunger and starvation push the poor children to do odd jobs. More often the parents in greed of some extra income push their children to do various odd jobs but there is also another stark reality. Abrupt end to child labour without any solution to the problem of hunger, starvation and poverty may lead to more grim exploitation. The plight of the poor children would be more severe if they are suddenly deprived of their livelihood. Crime, prostitution and destitution can hardly be a better fate than child labour but at the same time, with this huge population of child labourers, the dream of a developed India seems distant.

#### **International Organisation**

The need for providing protection and safeguards to children have first been stated in the Geneva Declaration of the Rights of the child, 1925 and was recognized in the Universal Declaration of Human Rights, 1948 and in Statutes of specialized agencies of U.N.O. Art. 25 of the Universal Declaration of Human Rights, 1948 provides that "Motherhood and Childhood and entitled to special care and assistance. All Children, whether born in or out of wedlock, shall enjoy the same social protection". Rights to free and compulsory elementary education to children is assured by Article 26.

According to the International Labour Organization (ILO), there is an age limit applied to the children that children up to age fifteen will not involve in any type of work forcefully. It is an employment of the children in any type of work which makes children deprived of childhood, proper education, physical, mental and social well being. It is completely forbidden in some countries however has been an international concern in most of the

countries as it is destroying the future of children to a great extent. It is not surprising boys and girls (38.7 million vs. 8.8 millions) are forced into doing hazardous work (According to International Labour Organisation's (ILO) World Report on Child Labour 2015.

It is a serious matter (a big social problem) in most of the developing countries. Small age group children are being involved in the child labour hugely by the people of high status. They are avoiding the fact that children are the big hope and future of the nation. Millions of children have been deprived of the childhood and proper education in our country which is a dangerous sign. Such children do not get the chance of living a healthy life as they are not satisfied physically, mentally and socially from their childhood.

#### **In Indian Laws**

According to the Indian law, children below the age of 14 years cannot be employed to any type of work forcefully whether by the parents or owner in a factories, offices or restaurants. It is a common practice in India as well as other developing countries in a small scale industry, domestic aid, restaurant service, stone breaking, shopkeeper's assistant, every house-hold industry, book binding, etc. According to Census data, there are over 82 lacs children labourers (aged 5 to 14 years) in India.

#### **Child labour as a Crime**

Child labour is still practiced in many countries even after being a big crime. Business owners of the industries, mines, factories, etc are using child labour at great level in order to get more work at low labour cost. Poor children are more prone to be involved in the child labour as they are forced by parents to earn some money to give economic help to their family in the very young age (too young to realize their responsibilities towards family) instead of getting proper education and play with friends in childhood.

#### **In India**

India one of the leading countries in Asia has a whopping 33 million children employed in various forms of child labour. The World's largest democracy is yet to ratify the Minimum Age Convention, 1973 (No. 138) of International Labour Organisation (ILO) that lays down ground rules for employment of minor across the global World Day against child labour, on June 12 is an ILO sanctioned holiday first launched in 2002 with the objective to raise awareness and activism to prevent child labour under the above convention an estimated 150 million children are involved in child labour worldwide as per UNICEF data.

#### **What are the reason of Child labour**

There are various reasons of child labor in our country. Some of-the causes of global child labour are similar however differ country to country. Most common reasons are like poverty, repression of child rights, improper education, limited rules and laws on child labor, etc. Following are some important points regarding causes of child labour:

- Poverty and high level of unemployment in the developing countries are the main reason of child labor.
- According to the U.N. statistics more than 1/4th of people worldwide are living in extreme poverty.
- Lack of access to the regular education in many countries. It was found that around 75 million children were away from the school life.
- Violating laws regarding child labour give the way to increased child labor in any developing country.
- Inadequate social control gives rise to the child labour in the agriculture or domestic work.

- Limited child or Workers' rights which affect labour standards and living standards to a great extent In order to eliminate child labour.
- They are hired by the industries to get more Work at reduced labour cost.

### **What are the Solutions to Child labour**

In order to eliminate the Social issue of child labour, there is need to follow some effective solutions on urgent basis to save the future of any developing country. Following are some solutions to prevent child labour:

- Creating more unions may help in preventing the child labor as it will encourage more people to help against child labour.
- All the children should be given first priority by their parents to take proper and regular education from their early childhood. This step needs much Cooperation by the parents as well as schools to free children for education and take admission of children from all walks of life respectively.
- Child labour needs high level social awareness with the proper statistics of huge loss in the future for any developing country.
- Every family must earn their minimum income in order to survive and prevent child labour. It will reduce the level of poverty and thus child labour.
- Family control will also help in controlling the child labour by reducing the families burden of child care and education.
- There is need of more effective and strict government laws against child labour in order to prevent children from working in their little age.
- Child trafficking should be completely abolished by the governments of all Countries.
- Child workers should be replaced by the adult Workers as almost 800 million adults are unemployed in this world. In this way adult will get job and children will be free from child labour.
- Employment opportunities should be increased For adults in order to overcome problem of poverty and child labor.
- Employment opportunities should be increased For adults in order to overcome problem of poverty and child labor.
- Business owners of factories, industries, mines, etc should take the pledge of not involving children in any type of labour.

### **Conclusion**

Nothing effective is happening to prevent the child labour from society as quickly as possible. Children are too young, cute and innocent to realize the things happening to them in the early age. They are unable to recognize that what is wrong and illegal for them instead they become happy getting small money for their work. Unknowingly they become interested in the getting money on daily basis and ruining their whole life and future.

Child labour has become a biggest social issue in India which needs to be solved on regular basis. It is not the responsibility of the government only, it should be solved and taken care by all the parents, owners and other social organizations. It is the issue of everyone which should be solved personally as it can be happened with the child of any person.

Child labour is a big Social problem which needs to be solved on urgent basis by the support of both, people (especially parents and teachers) and government. Children are very little however they carry a prosperous future of any developing country. So, they are the big

responsibility of all the adult citizens and should not be used in negative ways. They should get proper chance to develop and grow within the happy environment of family.

Parents want to make them very responsible towards their family in the early childhood of their kids. They do not understand that their kids need love and care, they need proper schooling and play with friends to grow properly. Such parents understand that their kids are the only property of them, they can use them as they want. But really, every parents need to understand that they have some responsibility towards their country too. They need to make their kids healthy in every aspect to make the future of the country bright. Parents should take all the responsibility of the family by own and let their kids to live their childhood with lots of love and care. The main causes of the child labour all over the world are poverty, parents, society, low salary, joblessness, poor living standard and understanding, social injustice, lack of schools, backwardness, ineffective laws which are directly affecting the development of the country.

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## **Attributes of Brand Preference towards Purchase of Mobile Phone: With Reference to Jaipur City**

**Mayank Tiwari\***

### **Abstract**

*This is a general belief that in most of the case, customer is having a pre-set of mind before deciding on purchase of any product or availing any service. Now there is a dilemma between the researchers and marketers that this mindset of the customers remains the same of all kind of products and services or there is any difference for variety of products. In this present study the researcher has taken the mobile phones to study the modality of brand preference. Mobile phone is a kind of product which is gradually becoming a necessity for all and the gradual purchase of the same is dependent on number of factors, in the present study the researcher has taken the gender discretion for the purchase decision of mobile phones. This present study is mostly based on the primary data and exploratory research method is used to carry the research. The sample of the study are the faculty members from different colleges in Jaipur, the total sample size is around 100. A structured questionnaire is used to collect the data and SPSS ver. 20.0 is used to analyze the data.*

**Key words:** attributes, brand, consumer preference, entertainment, technical feature.

### **Introduction**

The mobile phones are having a prominent place in the life of a average human being and it is gradually becoming the essential part of the daily routine life of the people. Not only in India but across the globe it has become the basic source of communication between the people. In less than the period of 12-15 years it has taken over all the means of communication used by the people at large. As a matter of fact the researches have proved that in some parts of the globe it has been considered as the best companion of a person and people use to give it a preference over all other things in a given scenario. The development of mobile communication technology e. g. wireless internet, mobile phone, MP3 player, GPS navigation system has been a long journey of innovation, which is constantly evolving and updating as a result of consumers changing needs and preferences **Yaakop et al. 2014**.

This is a well known fact the there is a fierce competition between the mobile phone brands in any of the given markets. The technology used in the mobile phones is enhancing with every passing day and as a result of the same we can see a new phone in the market with every passing day. Nevertheless of the fact that this competition has provided the consumer a wide variety of mobile phones to choose from at the same time there is also confusion prevailing in the minds of consumer about which of particular mobile phone suits their requirements the most. This problem of choice is known as brand preference. Brand preference has negatively impacted the marketers as well as consumers. For marketers increase in competition leads to decrease in sales for mobile phones as market share is now divided among more sellers. For consumers, it involves opportunity cost, i.e. cost of foregoing best alternate. So the study of brand preference is of great importance for the marketers as well as consumers. So the marketers have to study the various mobile phone

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attributes that influence the consumer brand preference towards mobile phones to face this competition. Perhaps a study which investigates the Consumer Brand Preference towards Mobile Phones by Factor Analysis method could remedy the situation.

### **Meaning of Consumer/Brand Preference**

Consumer preferences or brand preference is very closely related to the taste and preference of the individual customer, and the same is being measured by every customer on the basis of subjective issues like individual taste, usage and variety seeking nature of every person. Now these subjective preferences use to categories all kind of products and services into sections of variety and importance. Having a closer look we will find that this categorization is independent of income and prices as because the taste and preferences are not related to the ability of a person to purchase the item i.e. the ownership is different from the liking. In totality we can say that the preference of a customer towards a given brand explains the subjective categorization made by the customer and it also depicts the present or future purchase of the same. This definition assumes that consumers rank goods or services by the amount of satisfaction, or utility, afforded. Consumer preference theory does not take the consumer's income, good or service's price, or the consumer's ability to purchase the product or service.

### **Growth of Mobile Phones in India**

As per the most recent patterns in the Indian Smartphone showcase is warming up as global and homegrown organizations contend to change over clients from old-age highlight telephones. The cell entrance at simply 73%, handset producers still have space to draw in new clients in India and purchasers' are likewise updating, with a flourishing substitution advertise supported by dropping costs and shabby financing plans. According to the August report from to innovation scientist IDC India (International Data Corporation), just 10% of India's portable populace utilizes cell phones however this is the quickest developing section, representing 29% of handset shipments in the quarter finished June 2017, up from 16% in Q2 2016. According to this examination, amid the quarter the general India versatile handset advertise remained at 63.21m units with a 5% quarterly development, while Smartphone shipments became 11% quarterly and 84% year-on-year. Notwithstanding, the UK-based consultancy Analysis says that India is currently the world's quickest developing Smartphone showcase all around and the third-biggest market after China and the United States. Additionally as indicated by a July report by We Are Social, India has just 243m Internet clients, a 19% infiltration rate, yet seventy five percent of these utilization their cell phones to go on the web. Google says it anticipates that India should be the world's second-biggest Internet advertise by 2017, driven by versatile use.

Intestinally, this has added to the transient ascent of nearby organizations. Not even on the guide five years prior, they currently represent 33% of handset deals and command the piece of the overall industry rankings. As per IDC, in Q2 2017, Samsung Electronics Co. driven the general handset showcase with a 17% piece of the pie pursued by Micromax (14%), Karbonn (9%) and Lava (8%). The examination firm IDC says it is imperative that Micromax is becoming quicker than Samsung and that among the main five merchants, just Micromax and Lava are becoming quicker than the market, at 18% and 54% separately, in spite of the fact that Samsung still serenely drives the Smartphone section with a 29% offer against 18% for Micromax. eight-year-old Micromax may before long surpass Samsung: to be sure, a report from Hong Kong-based Counterpoint Technology Market Research evaluated a 16.6% by and large piece of the overall industry for Micromax in a similar June

quarter, against 14.4% for Samsung's 14.4%. There are some new dangers from China in this field. Well known Smartphone brands are looking to India. For instance, China's Gionee, prior a provider to Micromax, has sold 3million units since its Indian presentation in March 2016 and Taiwanese PC producer Asus entered the Smartphone advertise in July 2017 with four advanced cells estimated somewhere in the range of Rs. 5,999 and Rs16,999, selling more than 100,000 units since. This organization is presently intends to be among India's main five Smartphone players by end of 2018. Additionally, China's Xiaomi has likewise sold 100,000 units of its lead Mi3 gadget, valued at Rs13, 999, since it was propelled in July 2017 as per this site (<http://www.eiu.com>). Be that as it may, the nearby organizations are likewise joining forces with worldwide ones. (<http://www.eiu.com>).

### **Review of Literature**

**Chowdhury et al 2014.** Stated that the demographic factors are having a very close relationship with the preference of a customer towards a particular brand of mobile phone. This study was based in the Chennai city, and the respondents stated that the factors of durability, price and reference groups are the preferred basis for deciding on the purchase of mobile phones and these are the factors that are responsible for switching the same decision towards a different brand. The study revealed that Samsung is the most preferred brand and it is competing with existing market giants like Nokia, Symphony, Sony Ericsson and other brands grab a share of the market, as far as young people i.e. 25-35, are concerned.

**Gopal et al 2015.** Conducted a study on the preference of the customers for a mobile phone with respect to the size of the screen. the researchers found that in the present market the mobile phones with medium screen are more popular among the customers as compared to the large screen mobile phones. The study also revealed that the mobile phones with small screens are least preferred by the customers. The researchers also found that the weight of the mobile phone is again a deciding factor for the purchase of the same. This study was the based on the primary data using a likert scale questionnaire conducted in the metro city of Delhi.

**Thakur et al, 2016** conducted a study to identify brand image positively influence the consumer brand preference and is also having a positive effect in enhancing the satisfaction of the customer, this phenomenon can be taken as landmark by the marketers and may yield a positive selection criteria for the given set of brands in a market.

### **Objectives**

- To study the attributes responsible for framing the brand preference of the customers towards mobile phones.

### **Hypothesis**

#### ***Hypothesis 1***

H<sub>0</sub>: Related perceptions towards branded mobile phones are not significantly different between male and female.

H<sub>1</sub>: Related perceptions towards branded mobile phones are significantly different between male and female.

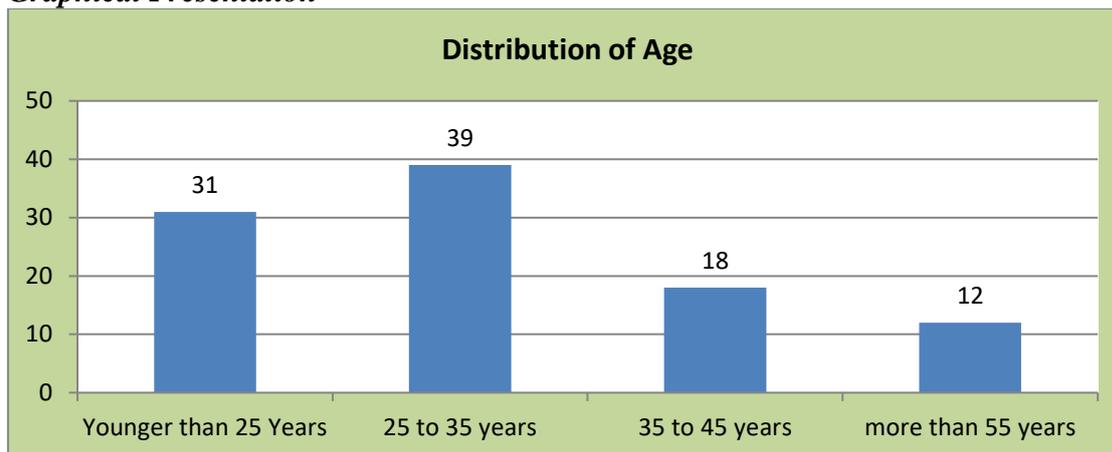
### **Research Methodology**

The research design used in this study is exploratory, descriptive, pure and empirical in nature. The present research paper attempts to identify the effect of mobile phone attributes on consumer brand preference. To achieve the said objective, only 17 question item of the questionnaire was used. The study used primary Data collected with the help of a well-structured questionnaire. The sampling technique employed in research was a non

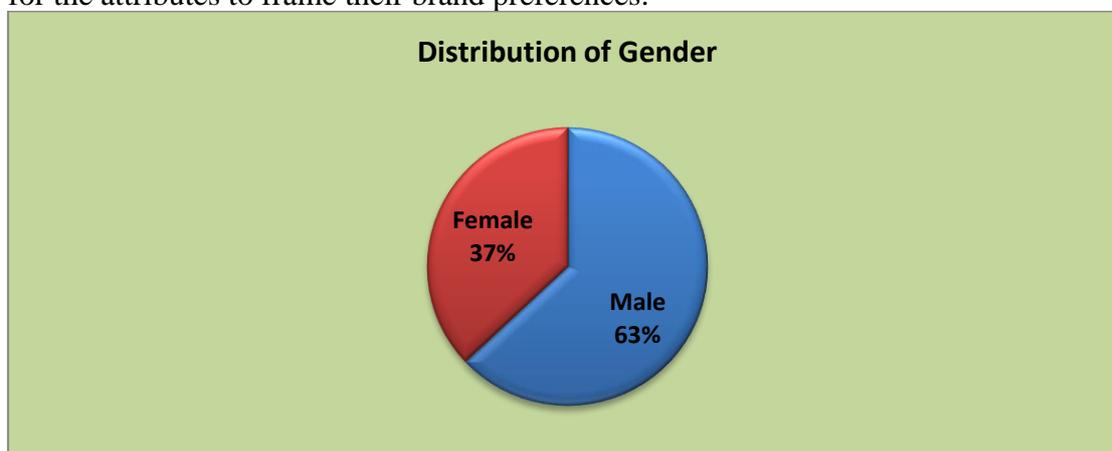
probability sample method and judgment sampling technique was selected for the study of population. A total 100 questionnaire had been sent out and to which 93 respondents are received are included and time of data collected is December 2018 to January, 2019. Further, to analyze and interpret the data frequency factor analysis were used for confirmatory data analysis.

### **Data Analysis and Interpretation**

#### **Graphical Presentation**



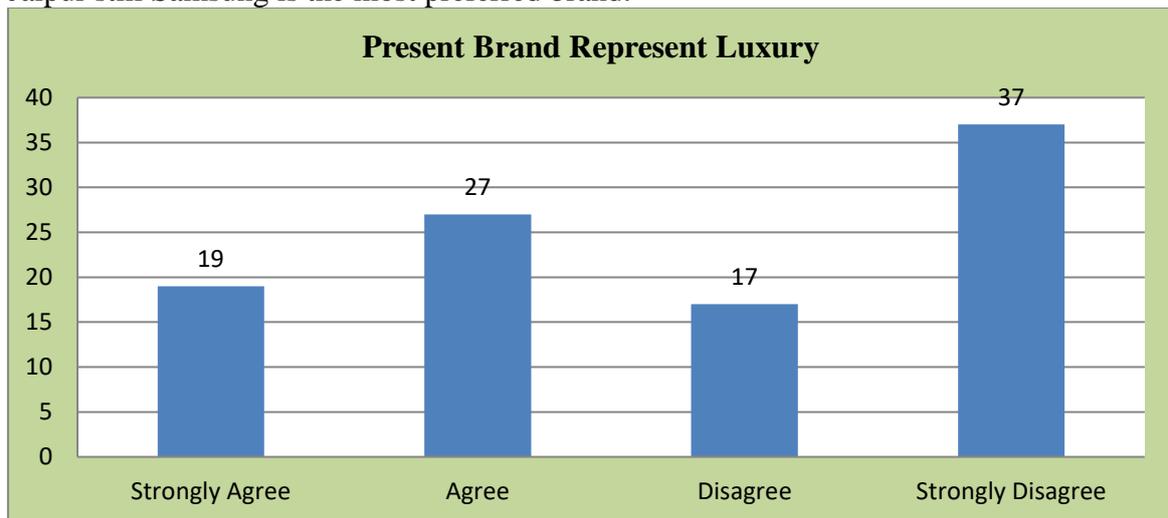
As far as age of the respondents is concerned, most of the respondents belong to the age group of 25-35 years, other than this 31% of the customers are from the age group of less than 25 years, these are the respondents who have just started their job and still searching for the attributes to frame their brand preferences.



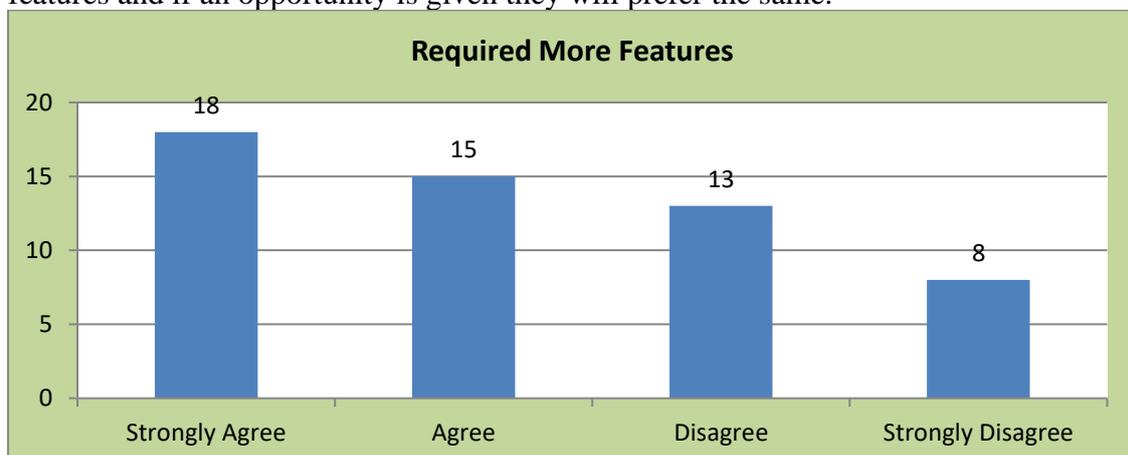
As can be seen from the above diagram, there are 63% of the male respondents and 37% of the female respondents, here the researcher would like to mention that in case of the female respondents, they are dependent on their male counterpart for the analysis of the technological aspects, as far as mobile phones are concerned.



As can be seen from the above diagram that the most preferred brand of mobile phone is Samsung, followed by the other brands like Vivo, Oppo, Xiaomi, etc. in the given market of Jaipur still Samsung is the most preferred brand.



The above given diagram states that, in most of the cases the customers do not find their existing brand as a luxury, irrespective of their ability to purchase they stated that there are other brands in the market which are technologically more sound and having high rated features and if an opportunity is given they will prefer the same.



Most of the respondents agreed to the fact that the price that they have paid for their existing brand of mobile phone, they deserve more features. This belief is related to the fact the technological features and variation are the copyright of the concerned brand and the customer is having no claim on the availability of the same at any level.

**Hypothesis Testing**

***Hypothesis 1***

H<sub>0</sub>: Related perceptions towards branded mobile phones are not significantly different between male and female.

<b>On the Basis of Age</b>	F	Sign
My present device is fully loaded (existing brand)	.155	<b>.926</b>
Wish to change the device in next one or two months (existing brand)	.688	<b>.559</b>
Always looking for desired deal (any brand)	.660	<b>.577</b>
Found comparable deficiencies in my previous device (Existing Brand)	.365	.778
I go by the market trends (any brand)	.889	.446
<b>On the Basis of Education</b>		
My present device is fully loaded (existing brand)	3.098	.016
Wish to change the device in next one or two months (existing brand)	.534	<b>.711</b>
Always looking for desired deal (any brand)	.983	.417
Found comparable deficiencies in my previous device (Existing Brand)	1.885	.112
I go by the market trends (any brand)	1.117	.348
<b>On the Basis of Income</b>		
My present device is fully loaded (existing brand)	.209	.890
Wish to change the device in next one or two months (existing brand)	.579	<b>.629</b>
Always looking for desired deal (any brand)	.993	.396
Found comparable deficiencies in my previous device (Existing Brand)	.593	<b>.620</b>
I go by the market trends (any brand)	.301	.825
<b>On the Basis of age</b>		
My present device is fully loaded (existing brand)	1.056	.367
Wish to change the device in next one or two months (existing brand)	1.398	.242
Always looking for desired deal (any brand)	2.036	.108
Found comparable deficiencies in my previous device (Existing Brand)	.371	.774
I go by the market trends (any brand)	1.750	.156

**Interpretation**

As far as the age of the respondents is concerned it can be seen from the above analysis that the level of variation is less between the 'F' and 'Sign.' value, in almost all the cases. Though in some of the cases like, the features of existing brand of mobile phone and following the market trends, some amount of variation is experienced.

Then on the basis of education of the respondents it was found that most of the respondents were not agreed to the fact that the perception of the males and females is different in case of preference towards a particular brand of mobile phones. Though in some of the cases the respondents agreed that if the desired features are available in any other brand then they can change their existing brand with the new one. The amount of variation is high in almost all the cases. This refers to the fact that the respondents are informed enough to buy the mobile phones of different brands.

Then on the basis of income of the respondents, the amount of variation is high in case of satisfaction with the existing brand, looking for desired deal and following the market trends. This variation may be due to the income variation of the respondents i.e. the respondents of the high income group are not buying the high value mobile phones, but they also prefer the low end mobile phones with the desired features. This situation may be viewed in a vice-versa condition.

Here the researcher would like to mention that as far as the perception of the respondents for the mobile phones is concerned, gender is not the deciding factor or we can say that gender is not the only factor, rather respondents from different gender are having inclination for the mobile phones with desired features in relation to their income, age and education. Rather it is clear that demographic factors are having collective impact on the purchase decision of the respondents and not a single factor can levy the desired impact.

### **Result**

In light of the above interpretation, it can be said that gender related perceptions towards mobile phones are not significantly different between male and female i.e. there are some other demographic variables like age, income, education, etc. are also responsible for the same, hence the null hypothesis can be rejected.

### **Conclusion**

As can be seen from the analysis of above data that most of the customers are having a preference towards the compatibility and social influence, as far as the purchase of the mobile phone is concerned. The companies that the manufacturing the mobile phones are giving social and electronic media to advertise their products, as it is one of the most preferred source of information by the young generation of the customers. Then on the other hand most of the customer uses to prefer a mobile phone that is high on features and low on prices, hence the companies are required to present structured deals related to the same.

While observing the relationship between preferred usability features and age, the highest level of significance emerged for differentiated features and price. While looking for relationship between preferred usability features and occupational status, the highest level of significance emerged for internet browser, game applications and entertainment. While observing relationship between preferred usability features and income status, the highest level of significance emerged for game applications. Thus, more emphasis should be laid on enhancing features for game applications for positioning their Smartphone for various targeted consumers.

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## **Mudra Scheme: Funding The Unfunded**

**Preeti Singh\***

### **Abstract**

In India, many things revolve around mere perceptions, while getting into detail is often point a different picture. It is a common misperception people have that large industries create more employment, though the truth is that “in India only 1.25 crore people find employment in large industries whereas small industries employ 12 crore people.” In India, small business plays an important role by providing employment to a large number of people. But millions of low income earning group person aspire to set up small businesses are not getting adequate credit since banks do not find them eligible for credit loan. Therefore, Government of India launched MUDRA Yojana to address the financial and other constraints.

**Keywords:**-Financial Inclusion, MUDRA, Micro credit.

### **Introduction**

Pradhan mantri MUDRA Yojana has come as a boon for MSME (Micro, Small and Medium Enterprises) sector and is widely hailed as robust measure to achieve inclusive growth. Recently PM interacted with MUDRA Yojana beneficiaries from across the country through a video bridge and claimed that MUDRA Yojana has opened up new opportunities for youth, women and those who wanted to expand their businesses. Of the total loans disbursed, 74% of the beneficiaries were women and 55% belonged to SC/ST and OBC communities. The scheme has transformed the lives of the poor.

### **The Mudra Scheme**

Pradhan Mantri Mudra Yojana (PMMY) is a scheme launched by the Hon'ble Prime Minister on April 8, 2015 for providing loans upto Rs 10 lakh to the non-corporate, non – farm small/micro enterprises. These loans are classified as MUDRA loans under PMMY. These loans are given by Commercial Banks, RRBs, Small Finance Banks, Cooperative Banks, MFIs and NBFCs. Under the aegis of PMMY, MUDRA has created these products namely, 'Shishu', 'Kishore' and 'Tarun' to signify the stage of growth or development and funding needs of the beneficiary micro unit or entrepreneur. The applicable limits and rates are as follows:-

1. **SHISHU**- this is for starter or small entrepreneur. Under this scheme, the lending amount will be Rs. 50000 with 10% to 12% interest rate.
2. **KISHORE**- this scheme is meant for the mid-level business organizations with the lending amount of Rs 50,000 to Rs 5,00,000. The rate of interest is around 10% to 12%.
3. **TARUN**- this scheme is for manufacturing organizations providing loan of Rs 5 lakh to Rs. 10 lakh. The rate of interest starts at 16%.

### **Performance Of Mudra Scheme**

As per the research done by SKOCH Group on MUDRA Scheme, MUDRA Yojana has led to the creation of a total number of 54,479,763 jobs. This includes 37,753,217 direct jobs

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and 16,726,545 indirect jobs. Out of the total jobs created under the scheduled castes, scheduled tribes and other backward class categories.

The average loan size under PMMY during FY 2016-17 increased to Rs. 45,471.98 as against Rs 39,405.28 crore in the previous year. Similarly, the average loan size under the Shishu category at Rs. 23,317 has been higher than that of Rs. 19,411 in the previous year. The participation of women was very high under PMMY during FY 2016-17 also with 73% of the loan accounts and 44% of loan amount sanctioned being the share of women borrowers. The participation of the weaker sections of the society in the PMMY programme was at 57% in terms of loan accounts.

**Table: CATEGORY-WISE ANALYSIS OF PMMY SCHEME**

Category	No. of loan accounts for FY 2016-17	Loan sanctioned 2016-17	Loan sanctioned 2015-17	%change	Share 2015-16	Share 2016-17
SHISHU	3,64,97,813 (92)	85,100.74	62,894.96	35.31%	45.76%	47.14%
KISHOR	26,63,502 (7)	53,545.14	43,052.55	24.37%	31.32%	29.66%
TARUN	5,39,732 (1)	41,882.66	31,501.76	32.95%	22.92%	23.20%
<b>TOTAL</b>	<b>3,97,01,047 (100)</b>	<b>1,80,528.54</b>	<b>1,37,449.27</b>	<b>31.34%</b>	<b>100.00%</b>	<b>100.00 %</b>

### Challenges To Mudra

MUDRA Yojana has to address the following challenges:-

- One of the most persistent problems that Indian economy is facing is the inequitable distribution of funds.
- At present the non- profit micro financing institutes (MFIs) are not able to provide enough support to small businesses
- Even within the organized sector in India, it is the larger units that are deploying the most capital, providing the most jobs, wages and emoluments and generating the most output.
- Another problem is that the firm's age in India, they fail to employ more people.

### Way Ahead

The government should measure the success or failure of its interventions including MUDRA Yojana by the extent of reduction in informal employment and the rise in formal employment. Objective criteria will help in making these decisions in a political fashion, for that, one of the conditions of the loans must be that entrepreneurs start to maintain books of account on employment, outputs, revenues, and taxes. Government should also bring in policy measures to create incentives for firms in India to increase their size. The aim of policy must be to make them grow out of their sizes at birth.

### Conclusion

Under this scheme, Rs 1.25 trillion disbursements have been done in the space of less than a year. If such rates of growth were maintained, they would constitute a sizeable chunk of total non- farm credit in the economy. Therefore, given its importance to the future evolution of the economy, it is useful to have as precise an idea as possible, ex-ante, of the economic and social outcomes that the government is seeking with such generous credit support

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## **Stock Market Operations And Investment Opportunities**

**Bindu Aggarwal\***

### **Abstract**

Stock market is an important part of the economy of a country. The stock market plays a pivotal role in the growth of the industry and commerce of a country that eventually affects the economy of the country to a great extent. That is the reason that the government, industry and even the central banks of the country keep a close watch on the happenings of the stock market. The stock market is important from both the industry's point of view as well as the investor's point of view. This paper explains in detail about investment opportunities available in the stock market. It explores the concept of stock market operations, important points to be considered before investment in the stock market and highlights the process to be followed for making an investment. This paper may prove to be very beneficial for all new comers who want to invest in the stock market.

### **Stock Market Operations – An Introduction**

The stock market lets investors participate in the financial achievements of the companies whose shares they hold. When companies are profitable, stock market investors make money through the dividends the companies pay out and by selling appreciated stocks at a profit called a capital gain. The downside is that investors can lose money if the companies whose stocks they hold lose money, the stocks' prices go down and the investor sells the stocks at a loss.

### **Review Of Literature**

**Randall, Shleifer and Robert** mentioned how the stock market effects the investment habits of an individual with the help of four theories that explained the relation between stock market returns and subsequent investments.

The first theory suggested that stock market cannot directly determine the returns on investment as it cannot predict the future of a particular stock. Hence, most of the managers do not rely on the same. The second theory examined stock market as a source of information for making the investment decisions by the managers keeping in mind the future fundamentals of any stock. The third theory determined the cost of funds and external financing for investing in stock market as the finance available with an investor and the value of the total funds to be invested by him will determine his level of entry in the stock market. The fourth theory mentioned the pressure as exerted by the stock market on investment habits. They led stress on the habits of investors in the growing and falling markets. According to them, if an investors feels that the market is bullish, he shall buy some stock or funds to be sold at a later stage to realize some profits out of them and if he thinks that the market is bearish, he shall liquidate the stocks ad stay away from the market and wait for an appropriate time to re-enter into the market. Thus, the trend of the market also decides the investment habits.

**Aparna and Burghate** conducted a study to know regarding the preference of investment instruments and the pattern of investment of middle class household. It was concluded by

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them that it is not only the income of the household that has an immediate effect on the investment preferences but also the age group to which the head of the household belongs that influences the choice of the investment avenues. They mentioned that savings and investments are classified by analyzing the amount of money left after consumption and paying taxes and when these savings are used for all sorts of earning like return on investment, generating wealth, formation of assets like gold, property, etc. then these are considered as investment. Another important analysis was regarding the objective of investment by an investor. The conclusions drawn were that investors invest their money to conserve the value of money and inflation rate in near future. Another important objective was to keep their investment more liquid. Tax advantage was the third desired objective of the investors.

**Christopher and Paola** identified the fact that how stock market mispricing may influence individual firms' decisions. They found a positive relation between abnormal investment and discretionary accruals. They analysed that if a company's stock is mispriced, a manager can issue overvalued stock. When the stock prices are above the base or fundamental price, the managers find it more lucrative to issue equity based stocks. But in the opposite scenario, if the stocks are underpriced, the managers do not invest. They also found that company's with high abnormal investment have low stock returns on average.

The stock market can be split into two main sections: the primary market and the secondary market.

### **Primary Market**

**The primary market** is the market where new issues are first sold through initial public offerings. Institutional investors typically purchase most of these shares from investment banks.

### **Secondary Market**

In secondary market, an investor can buy a share directly from a seller and the stock exchange/broker act as an intermediary in this case. Secondary markets are important for price discovery. Secondary market operations are carried out on stock exchanges. All subsequent trading goes on in the secondary market where participants include both institutional and individual investors.

### **Stock Exchanges in India**

In India mainly there are two exchanges which deals in stock market.

#### **NSE (National Stock Exchange)**

NSE started its operations in 1994. The Index of NSE is called Nifty. Nifty consists of 50 top companies, the movement of which influences the Nifty Index. It is the largest stock exchange in India in terms of daily turnover and number of trades for both equities and derivative trading.

#### **BSE (Bombay Stock Exchange)**

The BSE is the oldest exchange in India which was started in 1875. The Index of BSE is called Sensex. Sensex consists of 30 top companies, the movement of which influences the BSE Index. The Bombay Stock Exchange is the oldest stock exchange in Asia and has the greatest number of listed companies in the world. It is located at Dalal Street in Mumbai.

### **Different Investment opportunities available in the Stock Market**

There are many ways for an investor to invest the money, which are different from each other depending on the risk factor and returns they provide. To know which investment options are suitable, the investor has to find the characteristics and other details of all these

investments methods. Mainly an investor can invest in Bonds, stocks, Mutual funds, Futures, Exchange traded funds, Forex etc. A brief summary of the investment opportunities available in stock market are mentioned as under :

- **Bonds -**

A company needs fund to expand into new markets, new products etc, while government need money for everything from infrastructure to social programs. In such scenarios they issue BONDS. A bond is nothing more than a loan for which you are the lender (provider) and the organization that sells a bond is known as the issuer.

- **Stocks -**

Stocks are exactly opposite of bonds. Stocks provide high returns with high risk. If an investor buys some stocks then he/she will become share holder responsible for profit as well as loss for that company.

If company makes profit then it may pay back in terms of dividends, but it is not guaranteed. Some companies reinvest the profit for further growth and expansion plans which will increase the stock price of that company. If the company makes loss then the stock price may come down.

- **Mutual Funds –**

Mutual fund consists of fund manager and investors. The fund manager collects the money from all investors and invest in stocks, bonds etc. It is the decision and responsibilities of the fund manager to invest the pooled money collected from investors and generate the profit from investments. As some part of the investment is done in stock market so risk factor is present but as the investment is done through highly qualified and experience person the risk is moderate.

- **Options and Futures –**

These are high risk and high returns related investments. This investment method is advanced, which requires good knowledge of stock market.

- **Exchange Traded Funds-**

An **exchange-traded fund (ETF)** is an investment fund traded on stock exchanges, much like stocks. An ETF holds assets such as stocks, commodities, or bonds, and trades close to its net asset value over the course of the trading day. Most ETFs track an index, such as a stock index or bond index. ETFs may be attractive as investments because of their low costs, tax efficiency, and stock-like features. ETFs are the most popular type of exchange-traded product.

- **Forex ( Currency trading ):**

An investor can trade in Currencies in the Indian market. Presently, an investor can trade in four major currencies in the Indian Market. These are US Dollar, Great British Pound, Euro and Japanese Yen. The trading is done under NSE under the NSE currency segment.

### **Important Do's For An Investor Before Investment In The Stock Market**

**Save** Before investing, an investor needs money. So he/she needs to learn how to budget the money and to spend the earnings wisely. Most investors have to be careful not to spend any of their profits, and to keep some aside for future use, and for retirement, as well as emergencies.

#### **Read**

Before investing, an investor needs a basic understanding of what a stock is, what it means to invest, and how to evaluate stocks. This knowledge can be gathered by reading some basic books in stock investing.

### **Think**

After gaining some basic knowledge, the investor needs to think about the stocks on which the trading can be initiated. There should be valid reasons for an investor to invest in a particular stock.

### **Practice**

An investor can trade stocks on paper before actually trading stocks with real money. This can be done by trading in stock trades on paper, keeping track of dates of the trades, number of shares, stock prices, profit or loss, including commissions, taxes on dividend, and short or long term capital gains taxes which he/she would have to pay for each trade. It is also helpful to record the reasons for each buy or sell decision

### **Open an account with a broker**

Open a stock brokerage account with a discount broker. No specific recommendation can be offered here, as the stock brokerage business is a rapidly changing field. Trial and error is probably the only way to find a good broker, but an investor should take due diligence by checking out their site and looking at reviews online. The most important factor to consider here is cost, namely, how much commission is charged, and what other fees are involved.

### **How To Invest In The Indian Stock Market**

The Indian Stock market is growing at a rapid pace and this has in turn resulted in the growth of the economy as a whole. The number of investors has also grown manifold as a result of this and stock market has become a very interesting and knowledgeable topic for all the common people as compared to the earlier times where stock market was confined to a limited number of rich and sophisticated investors. The process for stock trading has also been simplified and has become a very quick process.

### **Open a Demat / trading account**

For investing in the stocks or to trade in the stock the investors have to go through the brokers of the stock market. Brokers actually execute the buy and sell orders of the investors and settle the deals to keep the stock trading alive. The brokers basically act as a middle man between the buyers and sellers. Once the buyer places a buy order in the stock market the brokers finds a seller of the stock and thus the deal is closed. All these take place at the stock market and it is the demand and supply of the stock of a company that determines the price of the stock of that particular company. To invest in the stock market, an investor will need to open a DEMAT account. This account can be either offline or online.

### **Offline account**

This is a traditional broking account, where an investor can place an order either through the telephone or by visiting the brokerage house personally. While there are some advantages of this method like professional advise, personal service, etc. there are some drawbacks like longer execution time, high maintenance and service costs, etc. as well.

### **Online account**

An investor can also open an online account, which is linked to a depository participant and his bank account. The investor can place buy/sell orders directly, and the money will be accordingly debited from/credited into your bank account. Maintaining an online account is less expensive, and the execution is quick.

### **Conclusion**

With the rapid growth of the Indian economy and the change in the habits of the investors with regard to investing their hard earned money, stock market has emerged as an option which can cater to both small and large investors. The growth in this investment pattern has

been manifold. It helps both the business houses and the normal investors to meet their financial needs. So the stock market is not only providing the much required funds for boosting the business, but also providing a common place for stock trading. It is the stock market that makes the stocks a liquid asset unlike the real estate investment. It is the stock market that makes it possible to sell the stocks at any point of time and get back the investment along with the profit. This makes the stocks much more liquid in nature and thereby attracting investors to invest in the stock market.

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## **Start-Up India and Stand-Up India : opportunities & challenges**

**Rozy\***

### **Abstract**

*The economic development of any country is depending upon their people. In India, more than 65 percent of its population is youth (under 28 years of age). With the growing percentage of the youth, the need for jobs is also increased. To cope with the rising challenges of the economy's, the innovative programs become driving forces for any country. Honourable Prime Minister 'Narendra Modi' had announced the Start up India and Stand Up India on 15<sup>th</sup> August, 2015. The aim of these action plans is to promote and enhance the bank financing for Start UP ventures, offer incentives to boost such ventures, and job creation. The main objectives of this paper is to discuss the government plans, policies, schemes, and strategies related to Start up and Stand up India. This paper also explores the various challenges and opportunities of Start up India and Stand Up India.*

**Keywords:** *Entrepreneurship, Start Up, Action Plan, Stand Up.*

### **Introduction**

The economy of any country depends upon its citizens. If the countrymen grow, the country will automatically grow. India has more than 65% of its population of young people. So, the new generation is very motivated, creative, and innovative. But the younger generation seems more discouraged about job market. Besides detecting a job, matching salary expectations remains another challenge for the younger generation. According to the You Gov- Mint Millennial Survey (2018) the most of the young people, aged between 22 to 28 years, mostly earn less than Rs.30,000 per month. India's "Jobless Growth" has been the most controversial issue in the present globally competitive scenario. Thus all of these conditions in the economy should require making our youth from 'Job Seekers to Job Creators'. In order to meet this objective Prime Minister Narendra Modi announced the 'Start Up India' and 'Stand Up India' on 15<sup>th</sup> August, 2015

### **The Action Plan taken by the Government on 'Start Up India'**

The role of government is very important in setting up the new enterprises. The plans, policies, initiatives, strategies of the government affect the entrepreneurs. Following are the 19 plans as an initiative for start-ups:

- 1) Simplification and Handholding
- 2) Funding Support and Incentives
- 3) Industry- Academia Partnership and Incubation

The explanation of these schemes are described as-

**1.1 Compliance Regime based on Self certification:** The main objective of the government is to make compliance for the start ups friendly and flexible. The burden on the start ups hence permitting them to focus fully on their business and keeping the low cost of adherence. It will include nine labour laws and environment related laws.

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**1.2 Start-up India hub:** The main objective is to make a single point of contact for the entire start-ups in India, which will enable them to exchange knowledge and access to funds.

**1.3 Register through Mobile App and the Portal:** An online portal is providing single platform for start ups which will help entrepreneurs to interact with the government and other regulatory officials.

**1.4 Legal support and Fast Tracking Patent Examination at Lower Cost:** The main objective of the action plan is to enhance adoption and commercialisation of Intellectual Property Rights by start ups by providing access to high quality intellectual property services and resources. Various measures i.e. patent application of start ups shall be fast tracked for examination, a panel of facilitator shall be empanelled by the CGPDTM (Controller General of Patents, Designs and Trademark) to promoting and protecting IPRs in other countries.

**1.5 Relaxed Norms of Public Procurement for Start ups:** The main aim is to provide an equal platform to start-ups vis-à-vis the experienced start ups/ companies in public procurement. Start-ups in the manufacturing sector shall be exempted from the criteria of 'prior experience/ turnover' without any relaxation in quality standards or technical parameters.

**1.6 Faster Exit for Start Ups :** to become easier for Start-ups to wind up operations. Start ups with simple debt structures may be wound up within a period of 90 days from making of an application for winding up on a fast track basis.

## **2) Funding Support and Incentives**

**2.1) Financial Support through a Fund of Funds:** The government provide funding support for development and growth of innovation to driven enterprises with a starting aggregation of Rs 2,500 crore and a total aggregation of Rs 10,000 crore over four years, to help new entrepreneurs.

**2.2) Credit Guaranteed Fund:** A National Credit Guarantee Trust Company will be created with a budget of Rs 500 crore per year for the next four years to help the entrepreneurs across all the sections of society.

**2.3) Exemptions from Capital Gains Tax:** The objective is to encourage the investments into start ups by giving tax exemption on the Capital Gains through the fund of funds recognised by the government.

**2.4) No Income Tax for three years:** Start-ups would not pay Income Tax for the first three years which will facilitate the growth of business and meet the working capital requirements during the initial years of operations.

**2.5) Tax exemption on investments above Fair Market Value:** In case of ventures of higher amount than the market price, they will be exempted from paying tax. The main objective is to encourage seed capital investments in start-ups.

## **3) Industry- Academia Partnership and Incubation**

**3.1) Organising Start up Fests:** Creative plans are proposing by the government to introduce start-up ecosystem in India at national and international stages. It includes the various activities such as sessions to connect with investors, mentors, incubators, and start-ups, exhibitions, launches etc.

**3.2) Atal Innovation Mission:** This Mission will provide a platform for promotion of ideas and motivate creative youngsters. The two basic functions are entrepreneurship promotion through self employment & talent utilisation and providing platform for innovative ideas.

**3.3) Setting up Incubators:** A private-public partnership model is being considered for 35 new incubators and 31 innovation centres at national institutes. NITI Aayog shall provide funding for establishing of the incubators Ayog.

**3.4) Building Innovation Centres at National Institutes:** To promote the successful innovation of new centres through step-up of incubation and R&D efforts.

**3.5) Research Parks:** The government plans to lay seven innovative research parks, including six in the Indian Institute of Technology campuses and one in the Indian Institute of Science campus.

**3.6) Promoting Start UP in biotechnology Sector:** The government plans to construct 5 advanced biotech nests, 50 advanced bio incubators, 150 technology transplant offices and 20 bio-connect offices in the country. The main objective of the action plan is to promote start ups in biotechnology sector and leveraging global partnerships in biotech set up.

**3.7) Focussed Programmes for Students:** The aim of the plan is to foster a culture of innovation in the field of Science and Technology amongst students. Various measures like innovative core, NIDHI, Uchhattar Avishkar Yojna have been implemented to promote research and innovation among young students. The government plans to inculcate transformational programs for scholars in over 5,00,000 schools.

**3.8) Legal reinforce:** A committee of moderators will give legal help and reinforcement in complying patent applications and other papers.

**3.9) Rebate:** An exemption value of 80 percent of the total value will be given to the start ups on filing the patent applications.

### **Challenges For Start -Up & Stand -Up India**

In India the opportunities for the start- up & stand -up India are immense but so are challenges .It will take combined efforts from the government and the start -ups to overcome these challenges.

**1. Government policies :** The govt. is the single largest facilitator . The policies of govt. than are slowly and steadily increasing although; it must be noted that India still maintain a dismal ease of doing business raking as per the world bank report . Due to maze of laws and regulations it takes more of an effort for an entrepreneur to start a business in India most of the other places in the world and after they succeeds in setting up a business it takes even a greater effort to comply with sector, department, state and center law.

**2. Talent and skill requirement :** A successful start-up can not start a business just with passion and an idea .A high level of leadership skills with clear understanding of market , excellent communication skills, maturity to see things in high perspective along with the ability to take calculated risks are required on the part of the entrepreneur .In start-ups employment is uncertain due to companies reaching scale and then downsizing for better efficiencies. However this is a small problem as compared to finding the right skilled talent and retaining the talent . Skilled talent is hesitant to join start-ups because early stage they have lesser pay than their corporate peers. Asper Nitin Sharma principal and founder member, lightbox India advisors private ltd. "Hiring and retaining high quality talent especially in the area of product and technology remains a key challenge.

**3. Revenue generation :** several start-ups and stand-ups fail due to poor revenue generation as the business grows as the operation increase , expenses grow with reduced revenue forcing start-ups to concentrate on the funding aspect , hence revenue generation is critical. In initial stage challenges is not to generate enough capital but also to expand and sustain the growth.

**4. Team members:** to find and hire the right kind of talent for the business with skills to match growing customer expectations are one of the biggest challenge .Assembly a good team is the first major requirement , failure to have one sometimes could break the star-up. According to a survey ,23% start-ups fail because members did not work as a team. Chirag Garg, CEO, HYPER DEL feels that bringing in affordable talent at the right time is a challenge.

**5. Infrastructure:** there are numbers of support mechanism that play a significant role in life cycle of start-ups which include incubators , science and technology parks, business development centers etc. Lack of access to such support mechanism increases the risk of failure.

**6. Creating awareness in the market:** There are lack of attention in the markets because the environment for a start-up is usually more difficult than for an established firm due to uniqueness of the product. The situation is more difficult for a new product as the start -up has to build everything from scratch.

**7. Funding:** Raising the capital has been a big challenge for start-ups. Angel investment and seed investment is easier to find as the amount are smaller; it has gotten much tougher to go for later stage round as companies burn too fast and do not look units economics very limited funding is available in forms of larger cheques in India.

**8. Lack of mentorship :** Millan Hoogan vice president -sales and marketing at Erflog life sciences feels that lack of proper guidance mentorship is one of the biggest problem that exist in the Indian start-ups ecosystems. Most of the start-ups have brilliant ideas but have little business . There are lack of adequate mentoring ,guidance is the biggest challenge which could bring to potentially good idea to an end.

**9. Lack of strategy :** Absence of effective branding strategy is another issue that prevents start -ups and stand -ups from flourishing at a faster pace. Branding demand paramount attention as it gives an identity and occupies a space in the consumers minds.

**10. Exceed customer expectation:** The most important challenge is gauging the market need for the product, existing trends etc. Innovations play an important role since that the start-ups has to fine tune the product offering suit the market demands. Also, the entrepreneur should have through domain knowledge to counter competition with appropriate strategies. Namrata Garg ,director, Sendkado feels that the biggest challenge is the need to constantly reinvest yourself and come up with a service to be able to match up customer expectation and exceed them.

### **Opportunities of start-up & stand -up India**

Inspite of challenges and problems that start-ups are facing below is a list of few of the opportunities that are discussed for consideration by start-up and stand-ups.

**1. Population:** India has the largest youth population which is the largest driver for innovation , workforce , talent and future leaders. India has its owns challenges of education, health, infrastructure. This represents big opportunities for start-ups to solve a variety of problems. India has the population of 1.3 billion peoples the country's middle class growing along with the consumers. Unique demographic advantage will offer a great opportunity to any start-up. So the population of India is a huge asset of the country.

**2. Change of mind set:** Traditional career paths will be giving way to Indian start-up space. Challenging assignment, good compensation packages would attract talented

peoples. Also it is seen that several high profile executives are quitting their jobs to start or work for start-ups. A survey conducted by Economic Times also confirmed that the number of students joining start-ups and e-commerce companies has grown in recent years.

**3.Connectivity:** Indian telecom industry has nearly 100 crore subscribers, mobile connectivity has made in roads in the rural and urban population. The race to cheapest data has started and distribution is certain. The cheap data has helps everyone to get their hand on it. Start-ups will have an easier time to top into markets, territories and even traditional business.

**4. De-globalization:** some people thought that this will be a challenge but it is opportunities for the others .”Make in India” is also a part of this de globalized world where we promoting to make in India rather than anywhere else in the world. This is an opportunities for the Indian start-ups and also help to reduce brain drain .

**5. Government initiatives :** There are many govt. and semi govt. initiatives to assist start-up and stand-up India.

A. Mudra: in this scheme start-ups get loans from the banks to set up, grow and stabilize their businesses.

B. SETU(self-employment and talent utilization): govt. has allotted Rs.1000 crore in order to create opportunities for self employment and new jobs mainly in technology-driven domains.

C. E-BIZ Portal :it integrates 14 regulatory permissions and licenses at one source to enable faster clearances and improves the ease of doing business in India.

D. Royalty tax: Indian govt. has reduced the royalty tax paid by businesses and start-ups firms from 25 % to 10% .

### **Conclusion**

Start up India and Stand up India has played an important role in the growth of economy. It has emerged in various sectors i.e. retail, medicine, industry, hotel, education, transportation. According to the NASSCOM, India ranks third in global start up ecosystem. More than 65% growth has been seen in 2015. Start up and stand up India become rapid approvals for starting business, easier exit, tax rebates, faster registration for the patents etc.

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## **Evaluation of Foreign Direct Investment in Indian Telecom Sector**

**Neeraj Naruka\***

### **Abstract**

*The present study is an attempt for understanding the trend of FDI inflow in the telecommunication sector of Indian economy. It focuses on the role played by Foreign Direct Investment (FDI) in the development of the Telecommunications sector. FDI in services responds well to openness especially when it comes to the telecommunications sector. This is quite evident looking at the recent boom in the Indian Telecommunication sector. Further liberalization of services involves potential advantages for Indian economy. Benefits can arise from increased competition, lower prices, and better quality of services. FDI in services like Telecommunications provide key inputs to other productive activities that lead to further investment and competitiveness of an economy. Efforts should be made towards attracting efficiency seeking FDI through a right policy that expands operation, improve local skills, establish linkages and upgrade technology.*

**Keywords:** FDI, Telecommunications Sector, Liberalization, Indian Economy.

### **Introduction**

**FDI in India:** FDI means holding assets in a foreign country, by any firm or individuals/group of individuals. This holding of assets or the investment in some economy can be made directly or indirectly, where the direct investment refers to a long-term equity investment in a foreign company and the investing company has the control (Managerial) and in case of indirect investment includes portfolio investment, acquisition of stock of an enterprise, medium-term and long-term loans by financial institutions and intermediaries, and investment in new issues of national loans, bonds and debentures. This can be done in many ways, one of the ways by which the nature of investment in a foreign country can be decided, defines FDI. This explains which of the investments are direct and which of the investments are done by the MNC's. As defined by IMF, "It is the category of international investment that reflects the objective of a resident entity in one economy obtaining a lasting interest in company, resident in another economy (RBI, 2003). The lasting interest implies the existence of a long term relationship between the direct investor and the company and a significant degree of influence by the investor on the management of the company." (Where the resident entity is the direct investor and the company is the direct investment company)(IMF, 1993).

### **Different Types of FDI**

- a) **Outward FDI:** In this case a long term capital outflows in the home country by the host country. It is a kind of investment which is other than any kind of aid, portfolio investment or a repayable debt.
- b) **Inward FDI:** The inward FDI also includes a long term capital in the form of inflow, which is other than any kind of aid, portfolio investment or a repayable debt. It is done by an entity outside the host country in the home country.

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- c) Greenfield Foreign Direct Investment: Greenfield FDI refers to the kind of investment which any Multinational Corporation use to do in the host country, in order to develop and construct new facilities. These facilities are favourable for both the recipient country and the investing country (**Balasubramanyam et al., 2003**).
- d) Brownfield FDI: Brownfield FDI refers to the formation of new MNC affiliate by the way of Merger and Acquisition, where any MNC or its affiliate merges with or acquire any of the existing companies of the recipient country.
- e) Horizontal FDI: This refers to a multi-plant firm producing the same line of goods from plants located in different countries
- f) Vertical FDI: This type of FDI is aimed at the economies of scale for the recipient country, i.e. production, where the assemblies are involved, can be met by the exports only, where the components are collected from the home country by the way of exports.

### **Scenario of Telecom Sector in India**

Telecommunication has been recognized the world-over as a powerful tool of development and poverty reduction through empowerment of masses. It is one of the key enabler for 'inclusive and sustainable' growth and in areas of poverty reduction, employment generation, gender equity, balanced regional development and special protection for vulnerable sections of the society. Indian telecommunication sector has emerged as a strong growth engine for the Indian economy in the last decade with the country witnessing tremendous growth in wireless sector. The penetration of internet and broadband has also improved. In order to increase penetration of telecom network in rural areas, Government of India has been implementing a project for creation of National Optical Fiber Network for connecting about 2.5 lakh Gram Panchayats with support from Universal Service Obligation Fund (USOF). The proposed National Telecom Policy, under finalization in consultation with various stakeholders is a step forward for bringing rapid and equitable growth of this sector.

Indian Telecommunication sector maintained the impressive growth rate during last decade. Indian telecom network has crossed one billion connection mark at the end of 2015-16 with total telephone connection 1.05 billion from 36 million connection in 2000-01 and it is now the second largest network in the world after China. The penetration of internet and broadband has also improved with about 17 million broadband subscribers across the country in 2015-16. The future progress of telecommunication in our country is very encouraging as operators have started rolling out advance networks with high speed internet connectivity in the country. The present status of telecom sector is as:

- Indian Telecom market is one of the fastest growing markets in the world.
- With its 1059 million telephone connections making it the second largest network.
- Mobile Telephones are 97.62% of the total telephone connections.
- The share of private sector in total telephones is 90%.
- Tele-density has been reached to 83.37% and increasing steadily.

Telecom subscriber base expands substantially: India is currently the second-largest telecommunication market and has the third highest number of internet users in the world, Between FY 07-16, India's telephone subscriber base expanded at a Compound Annual Growth Rate (CAGR) of 22 per cent to 1059 million and tele-density to 83.37%.

Wireless segment dominates the market: India's telephone subscriber base reached 1034 million in March, 2016. The wireless segment which is about 97.62 per cent of the total telephone connections dominates the market, while the wire line segment accounts for the rest, urban regions account for 58.58 per cent of telecom subscriptions, while rural areas

constitute the remaining.

**Objective of the study**

- 1) To find out the status of telecom sector in India.
- 2) To know the FDI policies in Telecommunication Industry of India.
- 3) To analyze the sector wise, year wise and countries wise FDI in Indian Telecommunication Industry.

**Literature Review**

**Yadav et al.** In his paper on rapid changes in technology in Indian telecom sector stated that there is a significant impact of technology on the operational aspect of telecom business with increased competition and emergence of rural market.

**Fathima et al.** in her article on FDI in Telecom Sector presented an overview of FDI in Indian Telecom sector. The article examined the current status of FDI in the Indian telecommunication sector and the issues being faced by foreign companies. The paper concludes with a brief economic examination through relevant factors influencing the level of FDI.

**Chennappa,** in his research discussed on “FDI in Telecom sector in India”, he opined that many countries allowed FDI based on the growth of tele-density and the per capita income that had gone up to considerable levels.

**Research Methodology**

The present paper is an analytical and conclusive research, it used secondary sources of data to ascertain the objectives and examine the hypotheses. To analyses trend and growth of subscribers of telecommunications sector under FDI, data was taken for 15 years period, which spans over 2001-2015.

This includes the various reports published by the different liable agencies, statistical data published in various government and non-government publications.

**FDI Policy for Telecom Sector**

Telecom sector has been witnessing tremendous growth in last decade and government is keen to keep the pace of this growth. This requires massive investment in the sector as it requires new technologies and heavy investment in the rolling out upgraded services in every nuke and corner of this vast country. This not only create affordable and accessible network to the people but also creates many job opportunities to the unemployed youth. Therefore, besides other policy decisions, Government of India issued revised FDI Policy for telecom sector to attract heavy foreign direct investments. Following is the present FDI Policy for the telecom sector:

Sector/Activity	FDI Cap/Equity	Entry Route
<b>Telecom Services (including Telecom Infrastructure Providers Category-I):</b> All telecom services including Telecom Infrastructure Providers Category-I, viz. Basic, Cellular, Unified Access Services, Unified license (Access services), Unified License, National/ International Long Distance, Commercial V-Sat, Public Mobile Radio Trunked Services (PMRTS), Global Mobile Personal Communications Services (GMPCS), All types of ISP licenses, Voice Mail/Audio text/Ums, Resale of IPLC, Mobile Number Portability services, Infrastructure Provider Category – I (providing dark fiber, right of way, duct space, tower) except Other Service Providers.	100 %	Automatic up to 49%. FIPB beyond 49%.
<b>Other conditions:</b> FDI up to 100% with 49% under automatic route and beyond 49% through FIPB route subject to observance of licensing and security conditions by licensee as well as investors as notified by the Department of Telecommunications (DOT) from time to time.		

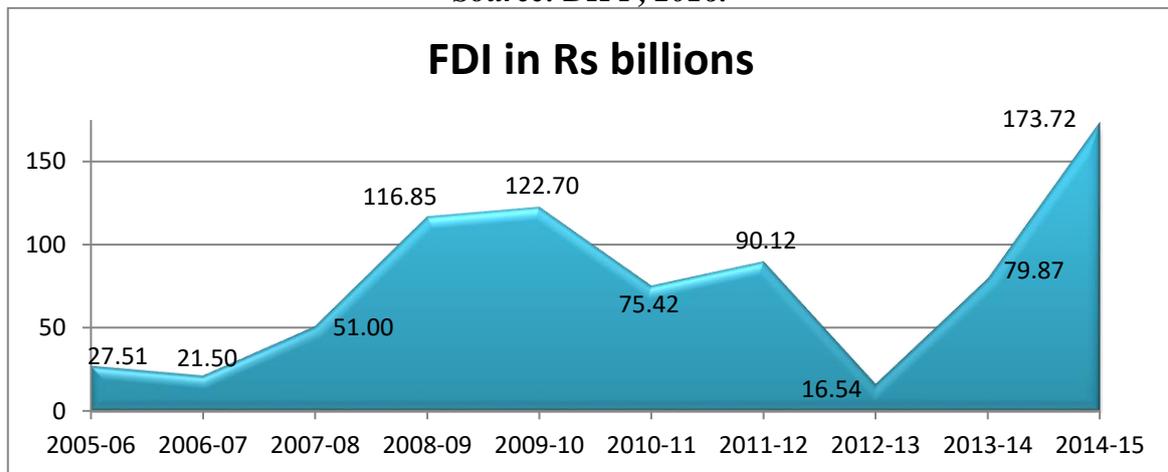
**Source:** <http://www.dot.gov.in/fdi-policy-telecom>

As per the policy, 100% FDI is allowed in the telecom sector with 49% through automatic entry route and after that it is through the Foreign Investment Promotion Board (FIPB) which is a national agency of Government of India. Earlier, it used to be 74%. The 100% FDI is allowed in Service, Manufacturing and Infrastructure area of the sector. Following is the FDI inflow in telecom sector:

**Table 1: FDI Equity inflows**

S. No.	Year	FDI in Rs billions
1.	2005-06	27.51
2.	2006-07	21.50
3.	2007-08	51.00
4.	2008-09	116.85
5.	2009-10	122.70
6.	2010-11	75.42
7.	2011-12	90.12
8.	2012-13	16.54
9.	2013-14	79.87
10.	2014-15	173.72

*Source: DIPP, 2016.*



*Source: Authors Compilation, Based on data given in table 1*

**Figure 1:** FDI inflows (From 2000-01 to 2014-15)

From above, it is seen that FDI was around Rs. 7.84 billion in 2000-01 and remained low till 2004-05. After that, it increased from Rs. 5.41 billion in 2004-05 to Rs. 122.70 billion. It remained around Rs. 75 – 80 billion and reached to all time maximum Rs.173.72 billion in 2014-15 which is primarily impact of revision in FDI policies and the boom in telecom sector in India. It is seen that FDI in telecom sector has been around 5% of the total FDI in India. After service sector, telecom sector is receiving highest share of total FDI in India. Following is the list of top investing countries from where the FDI has come in the telecom sector during 2001 to 2015:

**Table 2: Top 10 countries for FDI Equity in India (2001-2015)**

SN	Country	Amount of FDI Inflows (in US million \$)	
		Telecom Sector	Total Economy
1.	Mauritius	8810.99	89644
2.	Singapore	1537.90	35861
3.	Russia	394.48	22329
4.	Japan	318.17	18811
5.	USA	278.20	14378
6.	Cyprus	251.11	8140
7.	United Kingdom	242.04	22329
8.	Germany	100.16	8198
9.	Netherlands	84.24	15323
10.	UAE	48.81	4651

Mauritius is the top most country from where maximum FDI has come in telecom sector. It contributes about 73% of the total FDI in the country. Top four countries, Mauritius, Singapore, Russia, and Japan contributes more than 90% of the total FDI in telecom sector. Following is the above table, it can be seen that FDI in telecom sector is about 5% of the total FDI in the economy. Mauritius, with 9.8% share, is giving highest share of its total FDI in telecom sector out of total FDI in the economy followed by Singapore with 4.3% and then Cyprus at 3.1%.

**Interpretation**

- The major impact of FDI in Telecom sector can be seen in the form of following components: greater participation of foreign investment has helped fostered competition in the industry. Currently, there are more than a dozen telecom service providers who operate in the wire line and wireless segment, primarily 11 GSM and 5 CDMA operators providing mobile services in 22 telecommunication circles, covering more than 2000 towns and cities across the country.
- The subscriber base of the industry grew from under 20 million in 1998 to almost 1059 million in March, 2016. The tele-density of mobile and fixed-line telephone subscribers was below 2% in the late 1990s but suddenly boom to over 69% in India in 2011 thanks to the significant indirect impact of massive FDI inflows.
- The impact of foreign direct investment on employment in telecommunication sector has been remarkable, especially around 2005 when government adopted more liberalised policies on FDI approval. Total employment for telecommunication, transport and storage industries as a whole has increased from 14.61 million in 1999-00 to 18.47 million in 2004-2005, a net increase of 3.86 million into the labour force. And in 2009-2010, employment reached 19.36 million, which accounts for 4.2% of total employment in the Indian labour market. Consequently, telecommunication becomes the fourth largest contributor to employment following service, construction and agriculture and the top contributor among all non-manufacturing sectors. It is also estimated that telecommunication sector would continue to be the engine of Indian economy in the next 5 years.
- Attracting foreign direct investment is the best way to resolve the problem. Technology transferred from foreign investment projects will improve the efficiency of local firms as well. Knowledge transferred through FDI in telecom sector apparently helps the technology development for the whole country, in terms of appearance of new services

and technologies along with telecom booming, fast technology diffusion from urban to rural areas and huge impact on other sectors needing technologies.

- The huge amount of FDI made the diffusion of wireless technology very fast. The wire line telephone increased to 41.42 million in March 2005 but then started declining largely after the policy was launched. An analysis of tele-density in India has shown that the overall tele-density grew from 3.58% in 2001 to 77.58 % at end of the December 2014.

### **Conclusion**

FDI in India has a significant role in the economic growth and development of India. FDI in India to various sectors can attain sustained economic growth and development through creation of jobs, expansion of existing manufacturing industries. The inflow of FDI in service sectors and construction and development sector, from April, 2000 to June, 2015 attained substantial sustained economic growth and development through creation of jobs in India. Computer, Software & Hardware and Drugs & Pharmaceuticals sector were the other sectors to which attention was shown by Foreign Direct Investors (FDI). The other sectors in Indian economy the Foreign Direct Investors interest was, in fact has been quite poor. The study by analysis found that in the trend of FDI flows in India and telecommunication sector is significant different because the total flow into telecommunication sector was just 5% over the total FDI flows in India over the 10 years period of time that spans over 10 years. Not only that growth in subscribers among Telecom, Internet and Broadcasting and Cable services is also differing a lot as proved by Kendall trend analysis caused by the change in requirement of people. Even in the case of growth in subscriber in numbers among major telecom is also highly volatility and insistence give to intimacy commutation. Hence, the impact of growth in FDI on the growth of subscriber of in number in telecommunication sector is in significant. It does mean to say that FDI is playing a submissive role in telecommunication sector as it is working as only a focal source of capital and not able to create any difference. It is also caused by less utilization of FDI give cost of FDI.

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## **A Study on Consumer Perception towards Buying Knitted Shirts**

**Dr. Shivkumar Belli\***

### ***Abstract***

The study aims to understand how consumers perceive knitted shirts and identify the consumer profile for men's knit shirts. By using structured questionnaire and the study bring out major finding that the knit shirt properties of built in stretch, unravelling quality and the fact that it is not as wrinkly as a woven fabric is what makes it a preferred choice. The preferred price points fall between 1,000-2,000 and colors liked are greys and blacks.

**Keywords: knit shirts, perception, consumer, profile**

### **1. Introduction**

The consumer wardrobe in international as well as in the Indian market is witnessing a constant shift from formal to casual attire. Consequently, casual wear categories like T-shirts, denims, casual shirts and trousers are witnessing a comparatively higher growth rate. The Indian consumer is no longer restricted to same combo of woven shirt and trouser for all occasions. Wardrobe of an Indian consumer has evolved with time and now it is a combination of various different kinds of clothing for different occasions like office, gym, shopping, morning or evening walk, marriage and social gatherings etc. This trend of occasion specific clothing has also provided an additional impetus for the growth of the adaptable casual wear categories like T-shirts. T-shirt market of India that includes knit shirts, polos, knit tops etc. is estimated to be Rs. 13,830 40 crore in 2014. This market is expected to grow at an impressive compound annual growth rate of 13 percent to reach Rs. 24,940 crore in 2019. This market remains dominated by the men's/ boys' segment that contributes 83 percent to the total market.

**Shirt Market in India:** The shirt market has evolved along with the rest of the global apparel market. With increasing disposable incomes, growing middle class, increasing penetration of e-tail and increasing acceptance for branded apparel, the shirt market has expanded its consumer base in past decade. Also, consumers are embracing the idea of fashion for its own sake, as a means of self expression, and not merely as a functional purchase. Similar trend can be seen for shirts; they are no more category of functional buy but have become a part of self-statement.

In 2015, the domestic shirt market in India was estimated to be worth Rs 34,717 crore. This market is expected to grow at compound annual growth rate of 8 per cent to reach Rs 51,913 crore by 2020. Shirts accounts for 13 per cent of the total apparel market. The market is dominated by men's segment accounting for 94 per cent of the total market. The men's shirt market is expected to grow at a CAGR of 8 per cent while the women's segment is expected to grow at a CAGR of 14 per cent, owing to its current smaller base.

**Select trends and growth drivers:** The shirt market in India has witnessed several fashion trends and fashion fads in fabric, style and design. With personalization emerging as a key concept in fashion retail, major shirt retailers are focusing on developing customized

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products to suit customer needs. The retailers have brought in various size segments like slim fits, skinny fits, etc., to cater various demographics.

In line with the global trend of casualization, the Indian shirt market is anticipated to witness higher growth for semi-formal shirts compared to formal shirts. Consequently, semi-formal look – polo shirts – have gained popularity, accounted to its combination of classic and causal look. Shirt market has witnessed diversification in terms of colour and fabrics. Retailers today provide customer with wide range of choices in colours, styles and patterns. There is also a growing market for linen shirts as the demand for linen shirts has grown in past few years.

With growing disposable income and rising middle class, the shirt market has experienced a major thrust. Further, growing urbanization and corporate culture are additional growth drivers for shirts retail market (for both in men's and women's category). Women's category being comparatively new and smaller in base is expected to show higher growth rate.

The conventional trend of buying fabric and getting shirt stitched from tailor has lost its popularity. The Indian populace has shown high acceptability ready to wear shirts rather than going for fabric. Value brands and private labels catering to this segment have grown rapidly as the consumers' awareness of brands has increased substantially.

Increasing penetration of e-tailing in apparel has further led to expansion in consumer base for shirts. With increasing brick and mortar brand association with established e-tailers, the domestic market of the shirts has been on growth trajectory.

## **2. Review of Literature**

Despite being strong in wovens, the knitwear industry in India is on a double digit growth trajectory. The industry is gearing up for bigger play in the Indian apparel industry. The Indian knitwear industry has witnessed strong growth in past one year. Globally, trade in knitwear fared better compared to wovens and there is an increased demand for knitted apparels. A study by consultancy firm Wisedge, knitwear constitutes 50 percent of the domestic apparel market in India and 45 percent of the apparel exports from India. Globally, knitwear grew at a CAGR of seven percent (from 2005-11) and is expected to grow at a much faster pace in coming years. In India too, the growth of knitwear has been upward of 9-10 percent. Its growing acceptance has helped boost the knitwear industry in India. As Rupesh Puri, Director, Hues explains, "At one time you'd hardly find T-shirts on 40-year-olds. But now the picture has changed considerably." Traditionally India has been wovens-based. Adds Rajiv Ramchandani, Director of Tantra, "Many consumers wonder why they should pay Rs 800 for a T-shirt when they can get a good shirt for Rs 1,200. The fact is T-shirts suit the Indian climate."

Despite the growth story, the segment is facing its own set of troubles and rising cotton and yarn prices is the most immediate one. Strong competition from global brands is another challenge. Davinder Singh Mankoo, Partner Granzstein & Gavio, adds, "International brands have arrived in the market. However, higher priced brands are not a challenge, but some of them come at lower price points. Naturally customers prefer them."

Another problem is that the industry is fragmented. As Ashish Dhir Founder and MD, Wisedge points out, "Processing is one area where the country lags and players can enhance the value of products by applying innovative finishing systems." And as Usha Periasamy, VP Operations and Brand Head, Classic Polo, says, "There are very few players in T-shirts because a heavy investment is required. The infrastructure is very specific. It's a risky

business.” Bangladesh today is one of the biggest reasons for decline in India’s knitwear industry. What helps Bangladesh and gives them an edge over India is the cost, their wages costs are lower. It is able to give cheap products at lower costs. But Vikram Chopra, Rishi Chopra, Managing

Directors of Raves, feel these impacts are short term. “Some big brands tried outsourcing from Bangladesh but discovered that the logistics costs were huge. So the cost effectiveness which they looked at did not actually happen.”

What’s more in knits, Bangladesh has yet to reach a level to be a threat to Ludhiana or Tirupur. And the removal of excise duty on branded garments has come as a boon. Rajat Misra, Vice President-Marketing and Designing UV&W avers, “Prices are more manageable. It will have a good impact on sales.”

Today, the knitwear industry is spread across the nation. It used to be Tirupur and Ludhiana. “There is a good knitwear industry in Bangalore, Gujarat, Rajasthan. Vapi has some good units. Indian knitwear industry is more than a century old. Calcutta, the cultural capital of India, and the commercial capital of East India owns the credit of giving verve to this industry. The initiative started with a small hosiery unit, which later grew multi-fold during the years. Currently, Indian knitwear makes a significant contribution to the country’s economy, and employment. Several other units support this sector by making relative products.

Ludhiana in Punjab, Tirupur in Tamil Nadu, Delhi, Bangalore, and Mumbai are the important knitwear centres. Almost 100 different types of wool are manufactured in Rajasthan, popular varieties being joria, magna, chokla, jaisalmer etc. These varieties are blended with other relevant fibres. With the advent of ideas from international designers, domestic industry is flooded with fashionable knitted apparels.

Export market for India’s knitwear is showing positive signs of growth. It is steadily emerging as one of the fastest growing export segments. Textile accounts for 30% of the total exports of the country, and knitwear comprises 45% of it; volume wise. The role of knitwear within textile sector shows an increasing pace, as being preferred comparatively over woven garments due to their virtues of comfort, stretchability, easy care, and the pattern of being built within the knitted fabric structure. While the domestic market is mainly based on festive and summer seasons, export markets are mainly based on summer seasons in the West. Mostly apparels with cotton knit is preferred in the export market.

Knitwear today has become an accepted form of wear because of the new emphasis on leisure and casualness. Indian exports for knitwear are already quite phenomenal since India is able to provide reasonably priced fashion knits for the world markets. With the body conscious look very much in vogue all over the world, knitwear becomes the ideal form of clothing that can achieve the body conscious look that is so much aspired for by designers and the fashion elite.

Knitwear forms a very important facet of the Indian readymade garment industry. The unit price of a knitted garment is less than that for a woven garment. This industry now caters to a wide variety of markets and mainly the summer and winter seasons. The process Fashion in clothing has always been a reflector of changes in lifestyle of people, their state of mind, and social and economic status. Rising disposable income levels, shift towards urbanisation and the retail boom have given way to the "look good, feel good" attitude. Within apparels, knitwear has become extremely popular owing to higher degree of comfort it tends to provide to the skin.

With India's rich history of textile traditions and the skills of her craftsmen, it is not surprising that the country should make a foray into the exciting world of woollen knitwear. The art of hand knitting has been practiced since thousands of years. Knitted socks discovered in Egyptian tombs have been dated between the 3rd and 6th centuries AD. In the medieval Europe hand knitting was an important industry and had developed into an advanced craft by 16th century.

### **3. Method**

For the purpose of this study, the research will be both exploratory and descriptive in nature. Primary data collection involved obtaining first hand information from the customers of knit shirts through a detailed customer survey by the way of questionnaires. In addition to this, data was also obtained from interviewing the retailing experts such as store managers as well as fashion consultants at various multi-brand outlets as well as exclusive brand outlets visited during market visits. The use of secondary data from both published and unpublished data sources is necessary for carrying out the research. The information was gathered from website of Arrow, Indian Terrain, Allen Solly, Louis Phillipe, United Colors of Benetton and other authentic online data, research papers, magazines, text books and journals.

MS Excel will be used for quantitative data analysis and presentation of findings.

Non-Probability method of judgmental sampling will be used for the purpose of this research. The sample will be representative of the population containing men who purchase knit shirts. The respondents will be selected on basis of their availability and easy access. The advantages of this type of sampling will be the availability and the quickness with which data can be gathered. The sampling will be carried out without replacement, i.e., each respondent will be interviewed only once. Sample size was 100 and the main characteristic of the sample was that the individual should be a man and is a purchaser of knit shirt.

### **4. Findings**

- The major segment is 18-25 years age group.
- Students are the major respondents i.e, 58.8%, followed by work professionals being 25% of the respondents.
- The majority has family income above 1lac per month
- 49% of the respondents mostly buy casual wear.
- 62.7% have purchased a knit shirt
- About 50% have purchased a knit shirt 3 months back while 40.5 bought one about a month back and only 9.5% of the respondents purchased it a week ago.
- 60% of the respondents would prefer a knit shirt for casual wear.
- The quality of some degree of built in stretch has attracted 50% of the respondents to buy while 30% prefer the product due its property of unravelling and 20% like it because it does not get as wrinkly as a woven shirt.
- Solids are preferred pattern as 45.1% people like this and 35.3% people prefer checks.
- 51% respondents like Louis Phillipe and only 25.5% like Arrow.
- Slim Fit is preferred fit by 51% respondents while regular fit appeals to 27.5% of respondents.
- Greys and blacks are liked by 37.3% and blues by 31.4%
- The bracket of 1,000-2,000 is a preferred price point by 58.8% and 33.3% is willing to pay 2,000-3,000 for a knit shirt.

- Fit is most important buying factor followed by comfort, quality and look and feel of the fabric.

#### **5. Suggestions**

- 58.8% people prefer buying in the 1000-2000 brackets and thus the pricing can be revised offering some options at lower prices.
- More patterns such as prints, textures can be introduced offering a better mix for the customers.
- More colour options should be available according to the survey.
- 50% of respondents prefer a knit shirt due to its stretch ability, 30% prefer due to its quality of unravelling while 20% respondents prefer a knit shirt as it does not get wrinkly as woven fabrics and thus is low maintenance.
- 60% respondents would like to wear a knit shirt for casual wear thus number of options produced can be increased particularly in solids.
- Also increasing number of people are shifting to casual wear and thus there is a good scope for knit shirts.

#### **6. Conclusion**

- Knitwear today has become an accepted form of wear because of the new emphasis on leisure and casualness and thus a budding industry.
- Knitwear also suits the Indian climate and is a comfort wear for the people and thus can be increasingly produced.
- Despite being strong in woven's, the knitwear industry in India is on a double digit growth trajectory and

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## **Impact Of Exchange Rate On Indian Stock Market**

**SAHIL KAPOOR\***

**SHUBHAM KAPOOR\*\***

### ***Abstract***

Exchange rate serves as a measure to assess the state of economic condition of any developing or developed nation majorly after increasing the pace of globalization around the whole world and the stock market of a country depicts the economic condition of that particular country. So the main purpose of this paper is to establish a relationship between exchange rate and stock market and also to know the impact of exchange rate on stock market with reference to India. Secondary data of monthly closing prices have been used for the study for 5 years i.e. 2014-2018. Econometric tools like Unit root test, Johansen cointegration test, Granger causality test and Regression have been used. The study has concluded that both the variables are non stationery at level, there exists long run relationship between exchange rate and stock returns. Further there was no causality found between exchange rate and stock returns. At last a significant impact of exchange rate has been found on stock market of India.

**Keywords:** Globalization, Econometric, Stationery, Cointegration, Causality.

### **Introduction**

Today is the world of globalization, where any individual, group of individuals, body corporate etc. can trade, make investment, open subsidiary in any country and as far as India is concerned, after the economic reforms of Liberalization, Privatisation, Globalization, 1991, foreign trade and investments are in increasing trend which has a direct relationship with the exchange rate. Any payment made by India or to India is dependent upon the exchange rate of India with that country's currency and it is totally dependent upon demand and supply forces. Majority of the trade around the world is done in US \$ because it is the international accepted currency. The business of India with the rest of the world have a great impact on Indian economy and as the Stock market is considered as the barometer of the economy, So the present study focuses in establishing the relationship between the exchange rate and stock market with special reference to India only.

### **Literature Review**

- **S. POORNIMA AND M. GANESHWARI (2016)** had examined the relationship of exchange rate with Indian stock market index. Secondary daily closing data have been used for the study from the period of 1-7-2014 to 29-7-2016 of INR-US DOLLAR Exchange rate and Nifty Index. Econometric tools like Unit root test, Johansen cointegration test, Granger causality test have been used. They concluded that data was stationery at 1<sup>st</sup> difference and negative correlation found between variables under the study. Further, Exchange rate grangerly causes stock returns.
- **V. INGALHALLI et al (2016)** had examined the causal relationship between selected macro economic variables and stock prices . They collected secondary data in their study

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for the period ranging from 2005 to 2015 of INR-US DOLLAR Exchange rate and BSE Sensex. Econometric tools like Unit root test, Augmented Dickey Fuller Test, Correlation matrix, granger causality test. they concluded that all the variables were non stationery at level and stationery at first difference, Moderate degree of positive correlation found between exchange rate and Sensex. Further Sensex grangerly cause exchange rate.

**Statement Of The Problem**

Exchange rate determines the payments and revenue of a country which also includes the business of the companies traded in stock market so to know whether there exist any causality between both variables or not and to assess the impact of exchange rate on stock market is the cental theme of this research paper.

**Objectives Of The Study**

1. To study the characteristics of Exchange rate and stock index.
2. To analyze the relationship between Exchange rate and stock returns.
3. To analyze the causality between Exchange rate and stock returns.
4. To analyze the impact of Exchange rate on stock index.

**Research Methodology**

The present study includes 2 variables i.e. exchange rate and stock market. For exchange rate (INDIAN RUPEE- US DOLLAR) and for stock market performance (BSE SENSEX) have been used. Secondary data have been collected of monthly closing prices for 5 years i.e. 2014-2018 from the official websites of RBI and BSE. The method of data analysis includes Augmented dicky fuller test, Johansen cointegration test, Granger causality test and Regression.

**Analysis And Interpretation**

1. To study the characteristics of Exchange rate and stock prices.

**Null Hypothesis: Data of Exchange rate and BSE Sensex has a unit root.**

**Alternate Hypothesis: Data of Exchange rate and BSE Sensex has no unit root.**

At Level:

Variables	Test includes	Equation	t statistics	Probability value
BSE Sensex	Intercept		-1.404657	0.5741
	Intercept and trend		-2.237691	0.4604
	None		1.540959	0.9684
Exchange rate	Intercept		-1.195864	0.6707
	Intercept and trend		-2.163293	0.5005
	None		0.759182	0.8753

At First Difference:

Variables	Test includes	Equation	t statistics	Probability value
BSE Sensex	Intercept		-6.815438	0.0000*
	Intercept and trend		-6.753487	0.0000*
	None		-7.494250	0.0000*
Exchange rate	Intercept		-7.812366	0.0000*
	Intercept and trend		-7.751009	0.0000*
	None		-7.777248	0.0000*

**Interpretations**

From the above 2 tables of ADF test, it can be concluded that at level, the data of both the variables were showing p value ( $> 0.05$ ) which means that the null hypothesis was accepted. So, the data was non stationery or the data was having unit root at level.

At 1<sup>st</sup> difference, the data of both the variables were showing p value ( $< 0.05$ ) which means that the null hypothesis was rejected. So, the data was stationery or the data was not having unit root at 1<sup>st</sup> difference.

2. To analyze the relationship between Exchange rate and stock prices.

**Null Hypothesis: No long run relationship exists between Exchange rate and BSE Sensex.**

**Alternate Hypothesis: Long run relationship exists between Exchange rate and BSE Sensex.**

**TRACE TEST**

NULL HYPOTHESIS	TRACE STATISTIC	CRITICAL VALUE	PROBABILITY VALUE	DECISION
NONE	48.48209	15.49471	0.0000*	<b>REJECT H0</b>
ATMOST 1	16.01452	3.841466	0.0001*	<b>REJECT H0</b>

**MAXIMUM EIGENVALUE TEST**

NULL HYPOTHESIS	MAX-EIGEN STATISTIC	CRITICAL VALUE	PROBABILITY VALUE	DECISION
NONE	32.46757	14.6460	0.0000*	<b>REJECT H0</b>
ATMOST 1	16.01452	3.841466	0.0001*	<b>REJECT H0</b>

**Interpretation**

From the above 2 tables of johansen cointegration test, it can be concluded that according to trace test, the p value was ( $< 0.05$ ) which means that the null hypothesis was rejected. So, the data of both the variables were having relationship.

According to maximum eigen value test, the p value was ( $< 0.05$ ) which means that the null hypothesis was rejected. So, the data of both the variables were having relationship.

Both the test were showing same results which concludes that as this test is used to measure long run relationship, so there exists the long run relationship.

3. To analyze the causality between Exchange rate and stock prices.

NULL Hypothesis	F-Statistics	Probability Value	Decision
<b>Exchange rate does not Granger Cause BSE Sensex</b>	0.88577	0.3507	<b>Accept H0</b>
<b>BSE Sensex does not Granger Cause Exchange rate</b>	3.71720	0.0590	<b>Accept H0</b>

**Interpretation**

From the above table of granger causality test, it can be concluded that the first null hypothesis was **Exchange rate does not Granger Cause BSE Sensex** and it was showing p value ( $> 0.05$ ) which means that the null hypothesis was accepted.

Second null hypothesis was **BSE Sensex does not Granger Cause Exchange rate** and it was also showing p value ( $> 0.05$ ) which means that the null hypothesis was accepted.

So, no causality found between exchange rate and stock prices.

**4.** To analyze the impact of Exchange rate on stock prices.

Dependent Variable: BSE

Method: Least Squares

Date: 06/07/19 Time: 01:14

Sample (adjusted): 2014M02 2018M12

Included observations: 59 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.012043	0.004166	2.890563	0.0054
EX	-1.320599	0.239910	-5.504557	0.0000
R-squared	0.347080	Mean dependent var		0.009565
Adjusted R-squared	0.335625	S.D. dependent var		0.039032
S.E. of regression	0.031815	Akaike info criterion		-4.024453
Sum squared resid	0.057695	Schwarz criterion		-3.954028
Log likelihood	120.7214	Hannan-Quinn criter.		-3.996962
F-statistic	30.30015	Durbin-Watson stat		1.863191
Prob(F-statistic)	0.000001			

Source: Eviews10.0

**Interpretation**

From the above table of regression analysis, it can be concluded that independent variable (Exchange rate) was having the p value ( $< 0.05$ ) which means that the null hypothesis was rejected and here the null hypothesis was independent variable was not significantly impact the dependent variable (BSE Sensex). Also there was negative coefficient value of independent variable which depicts the negative correlation between both the variables..

P value of F statistic was also ( $< 0.05$ ) which means that the null hypothesis was rejected and here the null hypothesis was that this whole model is not fit for prediction of the BSE sensex on the basis of exchange rate.

Further R square was (0.34) which indicates that 34% variation in BSE Sensex was explained by Exchange rate only and rest 66% explained by other factors.

At last for diagnostic checking of this model, all three conditions were satisfied which were that there exists no serial correlation, homoskedasticity was there in the model and the data was normally distributed.

So, this model is statistically fit for prediction or forecasting of stock prices on the basis of exchange rate.

### **Conclusion**

At last it can be concluded that the data of both Exchange rate and BSE Sensex were non stationery at level and stationery at first difference. There exists long run relationship between Exchange rate and BSE Sensex. There was no causality found between both the variables under study. Further there exists significant impact of Exchange rate on BSE Sensex.

### **Limitations Of The Study**

The study is limited to the sample of 1 macroeconomic variable only and also the period of study is only 5 years. Hence more information will be needed in order to generalize the results.

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## A Note On General Distribution Of Pure Birth And Death Process

**Dr. Jyoti Jaiswal\***

### **Abstract**

Distribution of arrivals, inter-arrival times, service times and departures have been investigated in pure birth and death processes.

### **Key words**

Medical system/pure birth process / pure death process / Rouche's theorem / inter-arrival times.

### **Introduction**

Queueing models have been used effectively as performance evaluation of medical system / facilities, analysis of queueing models in health / medical services have received considerable attention in the recent studies. For broader insight one can see, Goffin<sup>1</sup>, W.C., Cox<sup>2</sup>, D.R., Gross<sup>3</sup> and Harris C.M., Kleinrock<sup>4</sup>, L. and Pandey<sup>5</sup>, O.N. etc.

In the present study we have investigated the general probability distribution of pure birth and death process. We have also worked out Laplace Steiltjes Transform of the distribution of arrivals, inter-arrival times and departure. At last we have obtained Laplace steiltjes Transform of distribution of service times.

We consider a single server queueing system for which the inter-arrival times are independent, identically distributed as random variables. A customer who arrives and finds the server idle enters services immediately, and service times of the customers successive are identically distributed random variables that are independent of the inter-arrival times. A customer who arrives and finds server busy joins the end of the single queue.

We consider a model in which only arrivals are counted and no departures take place and this type of model is called to be a pure birth model. Stated in terms of queueing birth process which usually arise when there is a customer that is increased by birth as arrival in the system and decreased by death of departure of serviced customer from system. Sometimes a situation may arise when no additional customer joins the system while service is continued for those who are in line.

### **DISTRIBUTION OF ARRIVEALS : (Pure Birth Process)**

Let  $P_n(t + \Delta t)$  be the probability of N customers in the system at time  $(t + \Delta t)$  Here two cases arise :

Case I : When  $N \geq 1$  and  $t \geq 0$ , then

- (i) The system contains N Customers at time t and there is no arrival during time interval  $\Delta t$ .
- (ii) The system contains (N-1) customers at time t and there is no departure during time interval  $\Delta t$ .

Thus

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$$\begin{aligned}
 P_N(t + \Delta t) &= \{(\text{Prob. Of } N \text{ customers in the system at time } t) \times (\text{Prob. Of no arrival during time } \Delta t)\} \\
 &\quad + \{(\text{Prob. Of } (N-1) \text{ customers in the system at time } t) \times (\text{Prob. Of 'a' arrivals during time } \Delta t)\} \\
 &= P_N(t)(1 - a\lambda\Delta t) + P_{N-1}(t)(a\lambda\Delta t), \quad a \geq 1
 \end{aligned} \tag{1}$$

**Case II :** When  $N = 0$  and  $t \geq 0$ , then

(i) There is no customer in the system at time  $t + \Delta t$  and there is no customer arrived during  $\Delta t$ .

$$\begin{aligned}
 P_0(t + \Delta t) &= \{(\text{Prob. of no customer at time } t) \times (\text{Prob. of no arrival during time } \Delta t)\} \\
 &= P_0(t)(1 - a\lambda\Delta t)
 \end{aligned} \tag{2}$$

Equations (1) and (2) may be written respectively as

$$\begin{aligned}
 \frac{P_N(t + \Delta t) - P_N(t)}{\Delta t} &= -a\lambda P_N(t) + P_{N-1}(t)a\lambda \\
 \frac{P_0(t + \Delta t) - P_0(t)}{\Delta t} &= -a\lambda P_0(t)
 \end{aligned}$$

Taking limits  $\Delta t \rightarrow 0$  on both sides the above equations take the form :

$$P'_N(t) = -a\lambda P_N(t) + a\lambda P_{N-1}(t) \tag{3}$$

and

$$P'_0(t) = -a\lambda P_0(t) \tag{4}$$

Applying Z-transform to the equation (3), we arrive at, in the light of (4),

$$\sum_{N=0}^{\infty} P'_N(t) Z^N + P'_0(t) = -a\lambda \sum_{N=0}^{\infty} P_N(t) Z^N + a\lambda \sum_{N=0}^{\infty} P_{N-1}(t) Z^N - a\lambda P_0(t) \tag{5}$$

After a little simplification, (5) reduces to

$$\sum_{N=0}^{\infty} P'_N(t) Z^N + P'_0(t) = -a\lambda \sum_{N=0}^{\infty} P_N(t) Z^N + a\lambda \sum_{N=0}^{\infty} P_{N-1}(t) Z^N - a\lambda P_{a-1}(t) - a\lambda P_0(t) \tag{6}$$

Finally it is fairly easy to observe that

$$\sum_{N=0}^{\infty} P'_N(t) Z^N = -a\lambda \sum_{N=0}^{\infty} P_N(t) Z^N + a\lambda \sum_{K=0}^{\infty} P_{N-a}(t) Z^K - a\lambda P_{a-1}(t) - a\lambda P_0(t) + P'_{a-1}(t)$$

Now putting

$$\sum_{N=0}^{\infty} P'_N(t) Z^N = -P'(Z, t)$$

and

$$\sum_{N=0}^{\infty} P_N(t) Z^N = P(Z, t), \text{ we have}$$

$$P'(Z, t) = -a\lambda P(Z, t) + a\lambda z^{-a} P(Z, t) + P'_{a-1}(t) + a\lambda P_0(t) \tag{7}$$

Further we define the Laplace Transform with respect to time of  $P(Z, t)$  as

$$P^0(Z, \theta) = \int_0^{\infty} e^{-\theta} P(Z, t) dt \tag{8}$$

Where  $|Z| \leq 1$  and  $\text{Re}(\theta) > 0$

Integration by parts yields the relation

$$\int_0^{\infty} e^{-\theta} P'(Z, t) dt = -Z' + \theta P^*(Z, \theta)$$

Putting this value in the equation (7) we get,

$$P^*(Z, \theta) = \frac{Z' + a\lambda P^*(a-1, \theta) - a\lambda P^*(0, \theta) + \theta P^*(a-1, \theta) - \theta P^*(0, \theta)}{\{(\theta + a\lambda) - a\lambda Z^a\}} \tag{9}$$

Where  $|Z| \leq 1$  and  $\text{Re}(\theta) > 0$ ,

In this region, where  $|Z| \leq 1$   $\text{Re}(\theta) > 0$  we have

$$|a\lambda Z^a| = |a\lambda| < \theta + a\lambda \tag{10}$$

By an appeal to Rouché's Theorem, the denominator on the right hand side of (9)  $(\theta + a\lambda) - a\lambda Z^a$ , has only zero in unit circle

Thus

$$P^*(Z, \theta) = \frac{Z' + a\lambda P^*(a-1, \theta) - a\lambda P^*(0, \theta) + \theta P^*(a-1, \theta) - \theta P^*(0, \theta)}{\{(\theta + a\lambda) - a\lambda Z^a\}} \tag{11}$$

Taking  $Z \rightarrow 1$  one can get

$$P^*(Z, \theta) = \frac{a\lambda P^*(a-1, \theta) - a\lambda P^*(0, \theta) + \theta P^*(a-1, \theta) - \theta P^*(0, \theta) + 1}{\theta} \tag{12}$$

By an appeal to equation (12) equation (9) yields

$$\sum_{N=0}^{\infty} P_N(t) = 1$$

Equation (11) is the transform of the transition probability for the process.

**DISTRIBUTION OF INTER-ARRIVAL TIMES :**

Let the arrival distribution be Poisson. Let  $t_0$  be a fixed time and  $t$  be a variable time interval and  $\Delta t$  infinitesimal unit time interval.

Let  $Q(t)$  be the probability that inter-arrival time is at least  $t$ .

Now  $Q(t) = \text{Prob. (that no customer arrives after } t_0 \text{ and before } (t_0 + t))$

and

$Q(t + \Delta t) = \text{Prob. that neither customer arrives in } (t_0, t_0 + t) \text{ nor in time interval } \{(t_0 + t), (t_0 + t + \Delta t)\}$

Thus probability  $Q(t)$  and  $Q(t + \Delta t)$  connected by product law of probability provide us

$$Q(t + \Delta t) = Q(t) \cdot \left[ (1 - a\lambda \Delta t)^2 \right], a \geq 1 \tag{13}$$

Simplifying a little more, we have

$Q(t) = a\lambda Q(t)$ , which gives the solution

$$Q(t) = gae^{-a\lambda} \tag{14}$$

Where g is integrating constant and form initial condition

$$Q(0) = a \tag{15}$$

In view of equation (13) and (15) we get

$$g = 1$$

Finally we have

$$Q(t) = ae - a\lambda \tag{16}$$

Again taking Laplace Transform of the above equation

$$LQ'(t) = -Z' + \theta Q^*(t) \tag{17}$$

Now equation (13) takes the form

$$Q^*(t) = \frac{Z'}{\theta - a\lambda} \tag{18}$$

The probability density function (Pdt) of interval between an arrival and the next subsequent arrival  $f(t)$  is therefore.

$$\lim_{x \rightarrow \Delta} f(x) = \frac{\text{Pr ob.) interval lies between}(t + M)}{\Delta t}$$

$$F(t) = -Q'(t) \tag{19}$$

If  $f^*(\theta)$  is the Laplace Transform, the equation (19) takes the form

$$f'(\theta) = [+Z' - \theta Q^*(t)] \tag{20}$$

Equation (20) presents Laplace Transform of the probability density function (Pdf) of inter-arrival time distribution.

**DISTRIBUTION OF DEPARTURE : (Pure Death Process)**

Now, we analyse the distribution of departure in view of the following assumptions.

- (i) Departure occurs at the  $\mu d$  per unit time.
- (ii) Departure of customers during time interval of time is independent and identically distributed.
- (iii) Probability of departure in any given time interval is proportional to the width of the interval but is independent of the location of the interval.
- (iv) There is no arrival in the system and there are N patients in the system at  $t = 0$
- (v) The probability of more than  $a^m$  departures in the infinitesimal interval of length  $\Delta t \rightarrow 0$ .

Under the above assumptions the departure distribution can be developed as follows :

Let  $P_N(t)$  be the probability that there are n customers in the system at time t.

- (i) The probability that these N customers in the system at time  $t + \Delta t$  will be equal to saying that there were N customers in the system at time t and no departure of any customer occurred in  $\Delta t$ .

Thus

$$P_N(t + \Delta t) = P_N(t) = [1 - \mu d \Delta t], d \geq 1 \tag{21}$$

(ii) The probability that there were only  $n$  patients at time  $(t + \Delta t)$ ,  $(0 < n < N)$  is same as saying that there were  $(n+d)$  patients in the system at time  $t + \Delta t$  with 'd' departures in  $\Delta t$  or no departure in time  $t$  when there were only  $n$  patients in the system at time  $t$ .

$$P_n(t + \Delta t) = P_n(t)(1 - d\mu\Delta t) + P_{n+d}(t)\mu d\Delta t, \quad 0 < n < N \quad d \geq 1 \quad (22)$$

(iii) The probability that there were no customers in the system at time  $t + \Delta t$  is equivalent to saying that there were no customers in the system at time  $t + \Delta t$  whose departure to take place in  $\Delta t$ .

Hence

$$P_0(t + \Delta t) = P_0(t) + P_d(t)\mu d\Delta t \quad (23)$$

After a little simplification it is fairly easy to observe that

$$P'_N(t) = -\mu d P_N(t) \quad (24)$$

$$P'_n(t) = -\mu d P_n(t) + \mu d P_{n+d}(t), \quad 0 < n < N, \quad d \geq 1 \quad (25)$$

$$P'_n(t) = -\mu d P_d(t), \quad n = 0 \quad (26)$$

To solve the first equation of the above three equations, we proceed with

$$P'_N(t) = -\mu d P_d(t) \text{ with initial condition } P_N(0) = d,$$

Which gives the solution

$$P_N(t) = d e^{-d\mu t} \quad (27)$$

Now to solve remaining two equations (25) and (26) apply Z-transform in equation (25).

After a little simplification, we have

$$\sum_{n=\theta}^{\infty} P'_n(t) Z^n - P'_{d-1}(t) + P'_0(t) = \mu d \sum_{n=\theta}^{\infty} P_n(t) Z^n + \frac{\mu d}{Z^d} \sum_{j=d}^{\infty} P_j(t) Z^j + \frac{\mu d}{Z^d} P_{d-1}(t) - \frac{\mu d}{Z^d} P_{d-1}(t) \quad (28)$$

In view of the assumption

$$\sum_{n=\theta}^{\infty} (t) Z^n = P(Z, t), \text{ equation (28) takes the form}$$

$$Z^d P'(Z, t) = P(Z, t)(-\mu d Z^d + \mu d) + (\mu d - \mu d Z^d) P_{d-1}(t) + P_{d-1}(t) - P'_0(t) \quad (29)$$

To solve this we make use of Laplace Transform

$$|Z| \leq 1 \text{ and } \text{Re}(\theta) > 0$$

$$P^*(Z, \theta) = \int_{\theta}^{\infty} e^{-\theta t} P(Z, t) dt,$$

Thus

$$LP'(Z, t) = \int_{\theta}^{\infty} e^{-\theta t} P(Z, t) dt = -Z' + 0P^*(Z, 0) \quad (30)$$

Again from equation (29) we have

$$Z^d P'(Z, t) = (-\mu d Z^d + \mu d) P(Z, t) + (\mu d Z^d - \mu d) P_{d-1}(t) - P'_{d-1}(t) + P'_0(t)$$

In view of equation (30) the above equation, yields

$$P'(Z, \theta) = \frac{Z_{d+1} + (\mu d Z^d - \mu d) P^*(d-1, \theta) - \theta P^*(d-1, \theta) + \theta P^*(0, \theta)}{(\theta d Z^d + \mu d Z^d - \mu d)} \quad (31)$$

In the region  $|Z|=1$  ( $\text{Re}(\theta) > 0$ ) we have,

$$|(\theta + \mu d) Z^d| = |\theta + \mu d| > \mu d \quad (32)$$

By an appeal to Rouché's Theorem, the denominator of the right hand side of equation (32)  $\{(\theta + \mu d) Z^d - \mu d\}$ , has only zero in the unit circle if  $Z = \xi$ . Now since the Laplace Transform  $P^*(Z, \theta)$ , converges in the region  $|Z|=1, \text{Re}(\theta) > 0$  the zeros of the numerator and denominator on the right hand side of equation (31) must coincide and therefore.

$$P^*(d-1, \theta) = \frac{\xi^{d+d} - \theta P^*(d-1) + \theta P^*(0, \theta)}{\mu d - \mu d \xi^d} \quad (33)$$

Substituting equation (33) in equation (31) we obtain

$$P^*(Z, \theta) = \frac{Z^{i+d} - [(-\mu d Z^d + \mu d) \cdot \{\xi^{i+d} + \theta P^*(d-1, \theta) - \theta P^*(0, \theta)\}] - \theta P^*(d-1, \theta) + \theta P^*(0, \theta)}{\theta d Z^d + \mu d Z^d - \mu d} \quad (34)$$

Equation (34) is the transform of the transition probabilities for the process.

### DISTRIBUTION OF SERVICE TIMES

To obtain the probability density of service times for the Poisson departure system if we consider the probability density function (Pdf) of service times  $S(t)$  as a continuous to the probability of occurring no departure during the same period.

i.e.

Prob. (Service time,  $t > t_0$ ) = Prob. (no departure during  $t_0$ )

Or

$$P_N(t_0) = 1 - d \int_0^\infty s(t) dt, \quad d \geq 1$$

using equation (27) in the above equation, we get after little simplification

$$s(t) = \mu d e^{dt}$$

Taking Laplace Transform of the above equation we get,

$$S^*(t) = \frac{\mu d}{d - \theta}, \quad d \geq 1$$

Which gives required distribution of service times.

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## **Benefits of Digital India**

**Sushma\***

### **Abstract**

India not only emerging as one of the fastest growing economy, but also posses efficient financial market in terms of technology, regulation and systems and also continues to remain one of the highest savers among the emerging market economies recognizing the fact that that high domestic savings and investment are crucial for sustenance of high stable rates of growth of the economy. Moving one step forward, various efforts has been made by governments to induce the growth of cash less economy. Thus, this paper analyzes the effective policies adopted to promote the cash less economy and its benefits.

**Key Words:** Financial inclusion, banks, cashless economy.

### **Introduction**

Indian economy is one of the fastest growing economies in the worlds, but it suffers from various issues like black money, corruption, increasing numbers of NPAs, twin balance sheet problems and so on. One way to cope these problems were the idea of the population is estimated to have ever used any kind of non-cash payment instrument. This indicates the major scope for strengthening the base of the untapped non- case user market. Digital payments can promote women's economic empowerment by facilitating greater account ownership and asset accumulation and increasing women's participation. Digital payments, particularly by governments and employers, enable the confidentiality and convenience women require in financial services. Payments provided via an account can provide the on-ramp to financial inclusion and in many cases the first account that a woman has in her own name and under her control. Opening an account can be an important first step for introduction to the formal economy for an entrepreneur and can lead to formalization of her small business.

### **Research Methodology**

The study was based on the secondary information which has been collected through websites, newspapers, magazines, government reports, books, research paper etc. Main objectives of this study: To Analysis the Benefits of Digital Payments.

### **Benefits of Digital Payments**

Advantages arrives from use/implication of digital payment doesn't retain to the person specific, alike it will affect the economy as well as society as the whole. If implemented efficiently and effectively. Thus, benefits were discuss in the context of government, consumers and providers of these services.

### **Benefits for Govt**

#### **1. Increase in Transparency and Monitoring**

Digital Transaction can be easily monitored by government, Comparatively to the cash payments which are subject to `leakages`. Along with increase in transparency due to digital transaction tax evasion would be difficult and promote revenue collection.

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\* (Ph.D Scholar, Dept. of Economics, M.D.U Rohtak)

## **2. Decline in cost**

Shifting from cash economy to will result into low cost in various aspects. For instance, due to use of digital transaction methods the cost of printing money will reduce, cost of leakages bearing by government, in social transfers will also reduce.

### **Benefits for Consumers**

#### **Convenient mode of payment**

Digital transaction is convenient enough to conduct. In this form, payments can be made without delay when the need is greatest.

#### **Lower cost**

Due to digital transaction `shoe leather` cost which includes visits to banks, share of financial intermediaries or agents and so on will decline.

#### **Lower risk**

There always remains safety issues while carrying cash with proper cyber security, online payments is relatively risk free.

#### **Inducement to savings**

Digital payments can help to overcome the psychological barriers to savings by providing automatic deposits, scheduled text reminders and positive default options.

#### **More financial inclusion**

Financial inclusion now days become a major component of economics development. Normally, digital payments were considered as first entry point into the financial system for individuals.

#### **Increase in Women's economic participation and Empowerment**

Various studies revealed that women are most efficient savers. Access to these services will promote their saving capacity and allow them to actively participate in economy.

#### **Benefits for service providers**

#### **Reduce incidence of NPAs**

Due to availability of all transaction related information and data reduce the possibility of providing fund to defaulters.

#### **Digital Payment Methods**

The Digital India programme is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. "Faceless, Paperless, Cashless" is one of professed role of Digital India.

As part of promoting cashless transactions and converting India into less-cash society, various modes of digital payments are available.

These Mode are:



### **Conclusion**

Achieving 100% cashless society, in present scenario of India, quit hard nut to crack as most of the population especially in rural area are financially excluded as well as digitally illiterate. However, steps towards less cash economy depends on many factors like awareness campaigning, financially inclusion into the formal banking system and so on.

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## **Socio Economic Status of Agriculture Labour: with Special Reference to Female Agricultural Labour**

**Prof. Shivaji Mane\***

**Dr. D. S. Bagade\*\***

### **Abstract**

Agriculture labour is one of most vulnerable factor in the society. Because they are unorganized in nature and their inbuilt features like uneducated, non skilled and non negotiating abilities make them helpless. Their level of income is low as compare to nonfarm wages that's the reason of their social and economic backwardness. Agriculture labour faces many social problems like health, Poor Education, Non availability of credit, Poor accommodation, Lack of Security and standard of living and low level of Income. Even they face problem like malnourishment due to poor purchasing power. Calories intake fall short as per the requirement. Another important problem they face is that the non availability of work throughout the year. This section is economically weaker section of the society. Now governments should implement the minimum wages act effectively as well as the land owner should also make sure to pay the wages as per the Act.

**Key Words:** Socio Economic Status, Agriculture Labour, Social Problems Etc.

### **Introduction**

Labour is one of important factor of production in each and every sector of the economy. Especially in agricultural sector, it occupies a pivotal position for the each and every activity. The total demand of 65% of agricultural sector is fulfilled by the labour market.

The size of labour force is determined by the number of people's in the age group of 15-59 years. Agricultural labor mostly belongs to the poorest, economically backwards and backward communities. They are basically unskilled and un-organized. In India about 6.38 lakh villages and agricultural labour are scattered in this villages. They are dispersed, unorganized and they have poor bargaining power. Due to seasonal work, they usually migrate. The demand of agricultural labour is highly in the season periods and uneven in the off season. Due to the seasonal nature of agricultural operations, there is a peak demand for labour in the harvesting seasons and next to that in time of transplanting and weeding. The duration of employment in a year various from five to seven month in dry area and nine to ten month in irrigated areas.

Numbers of labour demand depend upon the size of holding and the nature of cultivation. So agriculture sector does not provide full time job for agricultural laborers.

In numerical terms, they constitute about one fourth of the total work force. Their number has been rising faster than the rate of growth of rural population. Their contribution to rural economy is highly significant.

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The famous agricultural scientist, Dr. M. S. Swaminathan, explained the importance of women in agriculture sector by saying that some historians believe that it was woman who first domesticated crop plants and thereby initiated the art and science of farming.

While men went out hunting in search of food, women started gathering seeds from the native flora and began cultivating those of interest from the point of view of food, feed, fodder, fibre and fuel. Women have played and continue to play a key role in the conservation of basic life support systems such as land, water, flora and fauna. They have protected the health of the soil through organic recycling and promoted crop security through the maintenance of varietal diversity and genetic resistance. Therefore, without the total intellectual and physical participation of women, it will not be possible to popularize alternative systems of land management to shifting cultivation, arrest gene and soil erosion, and promote the care of the soil and the health of economic plants and farm animals. (Prasad & Singh 1992)

Women constitute half of the global population and one third of the labour force, but receive only one tenth of the world income and own less than one percent of the world's property. The process of economic development induces several key changes in the structure of the developing economies that includes changes in the allocation of labour in different economic activities. The most important change concerns with the participation of women in the economic activities. Women are more vulnerable than men, disproportionately concentrated in low-wage sectors or occupations and often segregated into informal sector. Women constitute nearly half of the adult population in India and 77 % of them belong to rural area. The major occupation of rural women is agriculture and related activities and thereby they contribute about three-fourth of the labour required for agricultural operations. Women workers play a significant role in agricultural development and allied fields including in the main crop production, livestock production, horticulture, post harvest operations, agro/social forestry, fisheries etc. Women also play vital role in allied agricultural activities such as entire management of dairy animals, starting from collection and cutting of fodder to feeding, cleaning of cattle and cattle shed collection of dung, milking, preparation of milk products etc. Their role in sectors like poultry, piggery, duckery, goatery, sheep rearing, rabbit rearing, fisheries, sericulture and mushroom cultivation, is also overwhelming.

Women contribute in innumerable ways to the development process. Broadly their contribution to socio economic development has two fold, say within the home, as well as outside the home. Outside home women try to be an equal and able partner in the economic activities. In agriculture, she is engaged in seeding, planting, weeding, irrigation, processing and harvesting operations.

The agriculture sector occupies pivotal role in Indian economy. It contributes around 19 to 21% to the Gross Domestic Product. The mechanization in agriculture sector has been consistently affecting the agriculture sector. The men laborers have been shifting to semi industries whereas the women laborers have been consistently increasing. The cropping pattern has also been change. It has resulted into changing composition of agriculture sector.

### **Meaning of Agriculture labor**

A person who tills the soil for a living 39-51-205 Agricultural labor defined. (1) The term "agricultural labor" includes all services performed prior to January 1, 1972, which was agricultural labor as defined in this section prior to such date and remunerated services performed after December 31, 1971:

(a) on a farm, in the employ of any person in connection with cultivating the soil, or in connection with raising or harvesting any agricultural or horticultural commodity, including the raising, shearing, feeding, caring for, training, and management of livestock, bees, poultry, and fur-bearing animals and wildlife;

(b) in the employ of the owner or tenant or other operator of a farm in connection with the operation, management, conservation, improvement, or maintenance of such farm and its tools and equipment or in salvaging timber or clearing land of brush and other debris left by a hurricane if the major part of such service is performed on a farm;

(c) in connection with the production or harvesting of any commodity commonly known as agricultural commodities or in connection with the hatching of poultry or in connection with the operation or maintenance of ditches, canals, reservoirs, or waterways used exclusively for supplying and storing water for farming purposes, except where such ditches, canals, reservoirs, or waterways are owned and operated by government entities;

(d) in the employ of the operator of a farm or a group of operators of farms or a cooperative organization of which such operators are members in handling, planting, drying, packing, packaging, processing, freezing, grading, storing, or delivering to storage or to market or to a carrier for transportation to market in its unmanufactured state any agricultural or horticultural commodity, but only if such operator or operators produced more than one-half of the commodity with respect to which such service is performed.

#### **Definition of Labor Force**

The current definition of the total labor force is that it refers to all non-institutionalized individuals 16 years of age and over who are at work, seeking work, or unemployed.

#### **Classification of Agricultural Labourers**

Agricultural labourers can be divided into four categories —

1. Landless Labourers, who are attached to the land lords;
2. Landless labourers, who are personally independent, but who work exclusively for others;
3. Petty farmers with tiny bits of land who devote most of their time working for others and
4. Farmers who have economic holdings but who have one or more of their sons and dependants working for other prosperous farmers.

The first group of labourers has been more or less in the position of serfs or slaves; they are also known as bonded labourers.

#### **Agricultural labourers can also be divided in the following manner:**

1. Landless agricultural labourers

2. Very small cultivators whose main source of earnings due to their small and submarginal holdings is wage employment. Landless labourers in turn can be classified into two broad categories:

1. Permanent Labourers attached to cultivating households.

2. Casual Labourers. The second group can again be divided into three subgroups: (i) Cultivators (ii) Share croppers (iii) Lease holders.

**Permanent or attached labourers** generally work on annual or seasonal basis and they work on some sort of contract. Their wages are determined by custom or tradition.

**Temporary or casual labourers** are engaged only during peak period for work. Their employment is temporary and they are paid at the market rate. They are not attached to any landlords.

**Under second group comes small farmers**, who possess very little land and therefore, has to devote most of their time working on the lands of others as labourers.

**Share croppers** are those who, while sharing the produce of the land for their work, also work as labourers.

**Tenants** are those who not only work on the leased land but also work as labourers.

### **Issues of Agricultural Laborers**

The main features, characterizing Indian agricultural labor are as follows:

**1. Agricultural Labourers are Scattered:** Agricultural labour in India is being widely scattered over large number of villages in the country and so cannot be effectively organized.

**2. Unskilled and Lack Training:** Agricultural labourers, especially in smaller villages are generally unskilled workers carrying on agricultural operation at a very low wages. Majority of them are generally conservative and tradition bound. There is hardly any motivation for change or improvement. Since there is no alternative employment, the agricultural laborer has to do all types of work- both farm and domestic for landlord.

**3. Unorganized:** Agricultural laborers are not organized like industrial laborers. These laborers are illiterate and ignorant. They live in villages scattered all over the country. Hence they could not be organized in unions. Accordingly, it is difficult for them to bargain with the land owners and secure good wages.

**4. Low Social Status:** Most agricultural workers belong to the depressed classes, which have been neglected for ages. In some parts of India, agricultural laborers are migratory, moving in search of jobs at the time of harvesting with a lot of dislocation of family life, dislocation of education of children and numerous other handicaps.

**5. Abundance of Labour:** The agricultural labourers are abundant in supply in relation to their demand. It is only during the sowing and harvesting seasons that there appears to be nearful employment. But, once these seasons are over, majority of agricultural workers are jobless especially in areas, where there is single cropping pattern. The problem is further aggravated due to the fact that these labors are generally unskilled and so couldn't find alternative employment.

**6. Low Bargaining Power:** Due to all the above mentioned factors, the bargaining power and position of agricultural laborers in India is very weak. In fact, quite a large number of them are in the grip of village money lenders, landlords and commission agents, often the same person functioning in all the three capacities. The agricultural labor is the most exploited class of people of India. Thus partly because of factors beyond their control and partly because of their inherent bargaining weakness, the farm laborers have been getting very low wages and have therefore to live in a miserable sub-human life.

### **Objectives of the Study**

1. To study the social issues with agricultural labour
2. To study the economic status of agricultural labourer
3. To study the corrective measures for social and economic issues

### **Review of Literature**

In a research titled "A Study on Socio Economic Conditions of Agricultural Labourers in Virudhnagar District" researcher Parvathi, P mentioned that rural labour households and agricultural labour households percentage has been declining in employment both for male and female labour. There is also a decline in the average number of wage earners per household. Clearly, the rural labour households and agricultural labour households in the

state are characterized by low earning, decline in income, low consumption and high debt. The government should find certain solutions to generate more employment and income.

Though some improvements have been seen in economy but still agriculture sector is lagging behind on various grounds like low agricultural growth, low quality employment growth, low human development, rural-urban divides, gender and social inequalities, and regional disparities etc.

In another research paper written by M. Radhakrishnaiah and Sankaraiah showed that the agricultural labourers constitute a considerable proportion of rural work force in India. They manage their livelihood by working on various farms for wages. The productivity in agriculture depends upon the efficiency of agricultural labourers, which in turn depends upon their socio-economic conditions. Most of the agricultural labourers in the village are landless and so they depend on wage paid employment.

In research paper entitled "Agriculture Labor's Socio-Economic Conditions: A Study in Krishna District of Andhra Pradesh state by Dr. B.V.RAJU revealed that majority of the agricultural labourer belongs to Scheduled Caste and Scheduled Tribes. Their income is little and irregular as compare to urban area. Since they possess no skills or training and they do not have alternative work opportunities also. Hence they face exploitation from landowner or whosoever hires them.

The shortfall of labourer in agriculture sector is mainly because of cropping pattern and more of mechanization of farming. The farmers' community is dealing with this problem in a way where they use family labour, heavy use of machinery and hiring labour from outside the village. Small and medium farmers are unable to pay wage rates equal to the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) wage rates due to low income from agriculture. As MGNREGA is a labour bank in the rural areas, these labourers can be involved in agricultural work in the field of farmers so that labour shortage problem can be overcome.

The data provided by the census of India reveals that in 1981, about 69 per cent of the total workers were engaged in agriculture and allied activities; during 1991, the share of agriculture in total employment slightly declined to 68 percent. In absolute terms, agriculture provided employment to 256 million persons in 1997, thus bringing percentage of economically active population in agriculture to 61 per cent. It was increased in 2011 census to 263.02 million (72.57% of total main workers i.e. 362.45 millions). It is really disturbing that the proportion of agricultural labourers has increased and the cultivators have indicated a decline.

One of the most distinguished features of the rural economy of India has been the growth in the number of agricultural workers, cultivators and agricultural labourers engaged in crop production. The phenomena of underemployment, under-development and surplus population are simultaneously manifested in the daily lives and living of the agricultural labourers. Usually they get low wages, conditions of work put an excessive burden on them, and the employment which they get is extremely irregular. Agricultural workers constitute the most neglected class in Indian rural structure. Their income level is low and employment is also irregular. Since, they possess no skill or training, they have no alternative employment opportunities either. Socially, a large number of agricultural workers belong to scheduled castes and scheduled tribes. Therefore, they are a suppressed class. They are scattered and they cannot fight for their rights. Because of all these reasons this entire group is far away from economic development.

### **Problems of Landless Agricultural Labour**

The problem of agricultural landless labourers is increasing year after year and in order to evaluate the economic conditions of this class. The First Agricultural Labour Enquiry was conducted in the year 1950-1951 by the Ministry of Labour. The enquiries revealed the following problems of agricultural landless labourers.

**Low wage rate:** The main problem in this sector is low wages. Though agricultural wages have been revised upward several times since independence, the legislations are poorly implemented. For instance wages in U.P, Bihar, Orissa and M.P ranges from Rs.20. to 30 per day per man compared to the wage range between Rs. 7.50 and Rs. 9.50 in Punjab and Haryana there is exploitation by landowners low wages generate the vicious cycle of poverty.

**Large sized families** The number of members increased in the families is other problems of landless agricultural labours. Their income earning available sources only in the field of agriculture land.

**Low social status:** The incomes of agricultural labourers are very low. Hence their standard of living is not improved way social status of the labourers are very low level compare with other income group of people.

**Zero social security:** Agriculture workers in the country do not have any social security. The existing legislations are also not enforced permanently by concerned authorities.

### **Research Methodology:**

The research is being made on the basis of secondary data.

### **Findings**

1. Women face many problems like wage discrimination, exploitation, and irregularity in availability of work in agriculture.
2. Child marriage is very common in the laborer's family. Because of low income the head of the family of labourer cannot give better education to the children so he opts for girl child marriage at early stage.
3. The male labourer is most probably addicted with addiction of wine, beedi, and tobacco which in turn makes suffering to women. Men harass the women by scolding, beating etc so the women go in the search of job by which she can manage the responsibilities and care her children.
4. The increasing vulnerability among the agricultural labourers is inevitable due to incompetent schemes of the governments.
5. There is acute poverty persist in the agricultural sector. Agricultural labourers face several problems like discriminated wages, mechanized practices, cultivation of single crop, failure of irrigation facilities and other social problems make them highly vulnerable.

**Suggestions for the Improvement of Agricultural Labours:** The following suggestions are be made for the improvement of the socio-economic conditions of the female agricultural labourers

1. Improvement in the working conditions for female workers is a need of hour
2. Public works programmes should be available for longer period in year.
3. Credit at cheaper rates of interest should be available on easy terms of payment for undertaking subsidiary occupation
4. Better implementation of legislative measures should be available to female labourers.
5. strengthening of Mahathama Gandhi National Rural Employment Guarantee Scheme

(MGNREGS) is require because it is good alternative source of employment.

6. Protection of women and child labourers is essential.

7. Cooperative farming needs to be adopted to boost production and employment.

8. Proper training needs to be provided to female workers so as to improve the skills of farm labourers

### **Conclusion**

Labour shortage in agriculture is being major problem in agriculture sector in India. The main causes of labour shortages are rural out-migration of agricultural labour; MGNREGA works and its wage rate; high wage rate in nonfarm sector; institutional factors. Former two factors are more prominent in rural areas. Labour shortage started since 1990s when economic reform was introduced but acute labour shortage started since 2005-06 when the MGNREGA was begin. Mechanization in agriculture is the best alternative for labour shortage but it has some limitation such as costly, small landholding, high maintenance charges, etc. Wage employment programs and employment guarantee scheme of MGNREGS regulates the right direction to ensure livelihood security to the agricultural labourers. This Scheme Safeguard the agricultural landless labours sources of income earnings and improve standard of living. A technology which best suit and fulfill the requirement of agricultural labours should be promoted in the direction of sustainable agricultural without affecting livelihood security of agricultural labour in India. A balanced approach towards capital intensive technology without affecting the interest of manual labour is the need of the hour.

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6. THE SOCIO-ECONOMIC CONDITIONS OF AGRICULTURAL LABOUR: A CASE STUDY OF TEHSIL ELLENABAD by Harjwant Singh\* Department of Economics Sri Guru Hari Singh College, Sri Jiwan Nagar.

## **Agriculture And Sustainable Economic Growth**

**CMA (Dr.) Rajni Bala\***

**Abstract:** The decreasing growth in real agricultural GDP and land productivity, increasing food security among the poor and an increased level and persistence of food inflation all are having an adverse impact on the growth of the economy.

**Keywords - Agriculture, economic growth, inflation.**

**Introduction:** - Agriculture plays an important role in India's economy. 54.6% of the population is engaged in agriculture and contributes 12.8 % to the country's GDP gross value added for the year 2016-17. Govt. has taken several steps for its sustainable development. Steps have been taken to improve soil fertility through the social health card scheme, to enhance the water efficiency through Pradhan Mantri Krishi Sinchai Yogna (PMKSY), to support the organic farming through Paramparagat Krishi Vikas Yogana (PKVY). Agriculture is viewed as a source of food and raw material for the economy and its people so that they can overcome poverty.

India's current problems are rooted in agricultural and allied sectors. These problems mainly result in decreasing growth in real agricultural gross domestic product and land productivity and this also increasing the food insecurity among the poor and an increased level and persistence of food inflation. India's agricultural growth rate has averaged less than one third of the govt. modest target of 4%. Agriculture growths always demands massive public goods provision and that in turn requires a radical reorientation of central, state and district government activities.

### **Review of literature**

1. K Palanisami, K.R Karunakaran, Upali Amarasinghe and C.R Ranganathan, 'Doing Different Things' or doing it differently?' Economic and political weekly, Feb, 23 2013 concluded that the average yield increase of system of Rice intensification (SRI) Parcels over non SRI is about 22%, though it varies across regions. The southern region, which dominates rice production in the country, reports in 18% increase in average yield, but absolute increments in Andhra Pradesh and Karnataka are as high as any other region.
2. Harbir Singh and Ramesh Chand, "The Seed Bill, 2011, some reflection. 'The economic and political weekly, December 17, 2011 concluded that the Private Sector has an edge over the public sector in capturing market signals and signals and delivering the desired seed products in time. There is a strong need to promote competition in the seed sector to fill the gap between demand and supply or quality seed and to ensure supply at reasonable prices.
3. Madhavi Sally and Jayashree Bhosale,"Reforms " From fields to market"; Economic Times, July , 10 2014 concluded that to establish common national market, it was suggested to review of the Land Tenancu Act, pursuing direct marketing and contract farming examining the inclusion of agri-related taxes under the General Goods and Service Tax(GST) and providing incentive to the private sector to scale up incentives.

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\* Assistant Professor, Punjab Institute of Management and Technology, Alour, Khanna

4. Misra S.K and Puri V.K; Indian Economy' 'Himalaya publishing house, Mumbai,2012 concluded that Agricultural Research is conducted by the India n Council of Agricultural Research and Agricultural Universities have evolved in high-yielding varieties of seeds for different crops, particularly wheat. However, intensive efforts are required for achieving similar success in other crops. Research should be conducted on a substantial scale at different regional center's for testing the quality soil.

**Objectives of the study**

1. To study the growth and development of agriculture in India.
2. To study the productivity in agriculture.
3. To suggest the measures to achieve sustainable economic growth.

**Research Methodology**

The study is descriptive and analytical in nature and it is based purely on the secondary date which has been collected from papers, journals, various reports of ministry of commerce and from ministry of agriculture. The data is analyzed with the help of various statistical methods such as averages. A few suggestions have been given in the end in order to achieve the sustainable economic growth of the country.

**Table-I Share of GDP%**

Year	Agriculture	Industry	Services
2009	14.6	28.3	57.1
2010	14.6	27.9	57.5
2011	14.4	28.2	57.4
2012	13.9	27.3	58.8
2013	13.9	28.0	59.9
2014	13.9	26.13	59.93
2015	12.9	27.1	60
2016	12.8	26.2	61
2017	11.7	26.3	62
2018	11	26	63

**Gross Domestic Product-** The share of agriculture, industries and services in Gross Domestic Product over the years is given in table-1.

Above table shows that the share of agriculture in GDP of the country has fallen over the past ten years while on the other hand service sector's contribution towards GDP is on the rising trend.

**Table 2 Trends in Production of Food Grains**

Year	Production(Million Tonnes)
2008-2009	234.47
2009-2010	218.11
2010-2011	244.49
2011-2012	259.32
2012-2013	250.14
2013-2014	265.04
2014-2015	252.02
2015-2016	251.57
2016-2017	275.68
2017-2018	276.78
Average	252.76

**Source – Ministry of Agriculture, Agriculture Statistics Division, DES**

This Table 2 shows the trends of food production of food crops this data shows that there is an increasing trend in production of food grains during the last ten years. The average production of food grains is 252.76 Million tonnes.

**Table 3 India's Agri Exports and Imports (Rs Cr.)**

Year	Exports	Imports
2008-2009	85552	37183
2009-2010	89342	59528
2010-2011	117484	57342
2011-2012	187609	109212
2012-2013	232041	82819
2013-2014	1905011	2715434
2014-2015	1896348	2737087
2015-2016	1716378	2490298
2016-2017	1849429	2577666
2017-2018	1862321	2682104

**Source – Ministry of commerce, DGCI &S**

Agriculture exports and imports are shown in table 3 over the last 10 years. In this table agriculture imports are increasing but the imports have reduced having the period 12-13 due to the govt. controls. The imports must be reduced by increasing the domestic production so that surplus must be there to bridge the current account deficit.

**Conclusion**

The share of agriculture in GDP of the country has fallen over the past ten years while on the other hand service sector's contribution towards GDP is on the rising trend. the trends of food production of food crops this data shows that there is an increasing trend in production of food grains during the last ten years. The average production of food grains is 252.76 Million tonnes. agriculture imports are increasing but the imports have reduced having the period 12-13 due to the govt. controls. The imports must be reduced by increasing the domestic production so that surplus must be there to bridge the current account deficit.

**Suggestions**

1. India's imports should be reduced by increasing the domestic production
2. Pulses are the main source of proteins for Indians for this the per capita availability of pulses should be increased.
3. Research must be conducted for testing the quality of soil and various measures must be suggested for soil conversation and examination of various diseases affecting crops and improving the quality of agricultural implements etc.
4. Policies of the government, relating to different crops, exports, taxes, subsidies, supplies of inputs and availability of credit should be favorable to increase agricultural production.

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## **Sustainable Development of Agriculture by Natural Farming: An empirical study on farmers of Odisha**

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### **Abstract**

Natural resources and environmental concerns have been prevalent not only in India, but in other countries of the world as well, but in most cases, India has been the major country that has experienced the depletion of natural resources and environmental degradation. In this research manuscript, main focus has been laid upon India. India is the most populous country in the world and with the impact of population explosion, there is exhaustion of natural resources and environmental degradation. The main areas that have been highlighted are rural poverty and environmental degradation, effects of disasters and natural hazards, assessing risks, impacts and opportunities from natural resources and the environment, precise insinuations for environment, sustainability and green development, greening rural development and economic growth and environmental sustainability. In this article, an effort has been made to identify the constraints faced by the agricultural sector, discuss the available farm management options, and to outline the vibrant strategy backed by an efficient and effective Extension to realize sustainable yields and rural development in the country. In this paper we are trying to do a study on sustainable development in Agriculture in Odisha through Natural farming.

**Keywords:** Natural farming, Sustainable, Growth, Development, Concern, Vital.

### **Introduction**

Nowadays, environmental issues including air and water pollution, climate change, overexploitation of marine ecosystems, exhaustion of fossil resources, conservation of biodiversity are receiving major attention from the public, stakeholders and scholars from the local to the planetary scales. It is now clearly recognized that human activities yield major ecological and environmental stresses with irreversible loss of species, destruction of habitat are the most dramatic examples of their effects. In fact these anthropogenic activities impact not only the states and dynamics of natural resources and ecosystems but also alter human health, well-being, welfare and economic wealth since these resources are support features for human life. The numerous outputs furnished by nature include direct goods such as food, drugs, energy along with indirect services such as the carbon cycle, the water cycle and pollination, to cite but a few. Hence, the various ecological changes our world is undergoing draw into question our ability to sustain economic production, wealth and the evolution of technology by taking natural systems into account. The concept of “sustainable development” covers such concerns, although no universal consensus exists about this notion. Sustainable development emphasizes the need to organize and control the dynamics

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and the complex interactions between man, production activities, and natural resources in order to promote their coexistence and their common evolution.

The concept of “sustainable development” covers such concerns, although no universal consensus exists about this notion. Sustainable development emphasizes the need to organize and control the dynamics and the complex interactions between man, production activities, and natural resources in order to promote their coexistence and their common evolution. It points out the importance of studying the interfaces between society and nature, and especially the coupling between economics and ecology. It induces interdisciplinary scientific research for the assessment, the conservation and the management of natural resources.

Odisha is primarily an agrarian economy having nearly 30% contribution to the Net State Domestic product (NSDP) with 73 percent of the work force engaged in this sector. The cropped area is about 87.46 lakh hectares out of which 18.79 lakh hectares are irrigated. Climate and soil play a vital role in Odisha's agriculture economy. The total cultivable land exploited for cropping is about 40% of the total geographical area and the exploitation is comparatively more in the coastal districts of Odisha i.e. Balasore, Bhadrak, Cuttack, Ganjam, Jajpur, Jagatasinghpur, Kendrapara, Khurda, Nayagarh, Puri etc.

With the accelerating population growth, diminishing arable land surface - especially in developing countries, declining non-renewable energy supplies and an increasing awareness of potential environmental degradation, there is now much greater demand for sustainable management in the agricultural sectors of the world's economies. The agricultural sector continues to play a crucial role for development, especially in low-income countries where the sector is large both in terms of aggregate income and total labor force. Having been a key preoccupation of developing country governments, donors and the international. Although food production in the developing world is expected to increase at a faster rate than in developed countries, cereal production will not be able to keep pace with demand. Cereal imports by developing countries are therefore expected to double in order to bridge the gap between food production and demand.

Irrigated areas are also projected to grow at a slower rate during the next few decades than in the previous ones, and soil degradation is an escalating problem, especially in the developing world. The concept of sustainable agriculture therefore now encompasses ecological, economic and social issues for which weather and climate are key factors. In particular, agricultural production is highly dependent upon weather, climate, and water availability, and sustainable agricultural development needs to incorporate weather and climate information in order to be most effective. Some examples of this fact include the use of climate information to select the most appropriate crops for a given region, thus contributing to sustainability; use of long-term climate information to ensure water availability for agricultural and other users of water management projects; use of climate information to assess the risk of land degradation as a possible consequence of certain land management practices; use of climate forecasts to determine the optimal distribution of crops to be grown and rangeland management practices to be implemented over the next growing season; and use of weather and climate forecasts to estimate fire risks in woodland management. Weather and climate information can also be used to advantage in assessing the risk of agricultural and land practices that might somehow impact upon the environment. Recent studies have shown that runoff of agricultural fertilizers can be transported by rivers over thousands of kilometers and produce considerable impacts on marine ecosystems. In

addition, weather and climate information is critical for real-time monitoring and long-term risk assessment of natural disasters, such as droughts, floods, grassland and forest fires, severe weather and tropical cyclones, which can induce very strong impacts on natural and environmental resources.

We can grow healthful food without depending too much on toxic chemicals and chemical fertilizers with Natural Organic and Biological Farming systems. The knowledge and simple but practical technology in this manuscript can save your crops and help you earn more from your garden and farm. Let's return to the "Natural" ways. The growing market demand is for safe organically grown fruits and vegetables. It is not the intention of this paper to entirely eliminate the use of beneficial agricultural chemicals and fertilizers that help to suppress and control destructive pest and diseases and provide food nutrients to the plants. We also encourage the adoption of the latest improved technology and farming systems that are environmentally and ecologically friendly. We encourage farmers to adopt practical Integrated Pest Management (IPM) There is a worldwide shift for safe, chemical free food and a demand for organically grown food crops. The alarming increase in the use of toxic chemicals to control pests and diseases on both farm animals and plants has endangered the environment and reduce bio diversity as well as the health of consumers. We become too dependent like addicted people as the soil becomes poorer and insect pest become resistant to chemicals used. The world that we have created is dominated by a disregard for Nature and agreed that destroys for profit the environment, the ecosystem and the capacity of the land to produce without artificial human interventions.

### **Sustainable Development in Agriculture**

Sustainable development in agriculture has gained prominence since the publication of the Brundtland Report in 1987. Yet, the concept of sustainable agriculture is very vague and ambiguous in its meaning, which renders its use and implementation extremely difficult. In this research, we aim to understandings of innovations in natural farming through sustainable agriculture development from a social science and governance perspective by identifying areas of complementarity and concern between emerging definitions of sustainable agriculture. The need to integrate paradigms and conceptualizations of sustainable agriculture demands that knowledge is integrated between scientific disciplines. Indeed, such integral solutions address a range of different challenges all at once instead of seeking different isolated solutions for single aspects.

### **Objectives of the Study**

This thesis has the following objectives:

- a) To assess the current issues and challenges faced by the farmers.
- b) To study the feasibility of Natural Farming for our farmers,
- c) To suggest the various Innovative steps for natural farming

### **Research Methodology**

#### **Research Type**

It is an exploratory study, as it has focused on particular aspects or dimensions of the problem studied. Data has been collected by distributing questionnaires.

#### **Research Design**

A research design specifies the methods and procedures for conducting a research work. Both qualitative and quantitative approaches will be used for this purpose of the study.

#### **Sampling**

For present study convenience sampling method has been used for collecting data from

Odisha.

### Sample size

The sample size for conducting research is 481 farmers.

### Sources of Data

For the present study primary data has been collected. For primary data 481 questionnaires consisting of questions concerning issues and challenges associated with Sustainable farming , feasibility of Natural farming for farmers of Odisha.

### Data Analysis

The data pertaining to the demographic profile of the farmers is relevant to an analysis of the understanding of respondents about the perceptions of innovations in natural farming - sustainable agriculture and management of natural resources. The demographic characteristics of the respondents are given in table 1. In gender, all the respondents are belongs to male i.e. 481 (100 percent). In Age, majority of age group are between 36 to 45 years i.e. 210 no.s (43.66) percent than coming 26 to 35 yrs i.e. 147 (30.56 percent) and less no. of respondents are coming below 25 yrs (2.49 percent) and above 55 yrs of age (1.87 percent). Further, in household size, majority of the respondents are having less than 3 256 (53.22 percent) than coming 3 to 5 i.e. 105 no.s(21.83 percent), then coming 5 to 9 i.e. 93 no.s(19.33 percent). Further, in education majority of the respondents are intermediate i.e. 379 no.s (78.79 percent), then coming post-graduation 57 no.s (11.85 percent). Less number of respondents are belongs to 5 to 10 years i.e. 74 no.s (15.38 percent).

**Table 1: Demographic Profile of Tourists (N = 481)**

Particulars	Frequency	Percent	Cumulative Percent
<b>Gender</b>			
Male	481	100.0	100.0
<b>Total</b>	<b>481</b>		
<b>Age</b>			
below 25 yrs	12	2.49	2.49
26 - 35 yrs	147	30.56	33.05
36 - 45 yrs	210	43.66	76.71
46 - 55 yrs	103	21.41	98.12
Above 55 yrs	9	1.87	100
<b>Total</b>	<b>481</b>	<b>100</b>	
<b>Household size</b>			
less than 3	256	53.22	53.22
3-5	105	21.83	75.05
5-9	93	19.33	94.38
9 and more	27	5.61	100
<b>Total</b>	<b>481</b>	<b>100</b>	
<b>Qualification</b>			
Intermediate	379	78.79	78.79
Graduation	39	8.11	86.9
Post-Graduation	57	11.85	98.75
Others	6	1.25	100
<b>Total</b>	<b>481</b>	<b>100</b>	

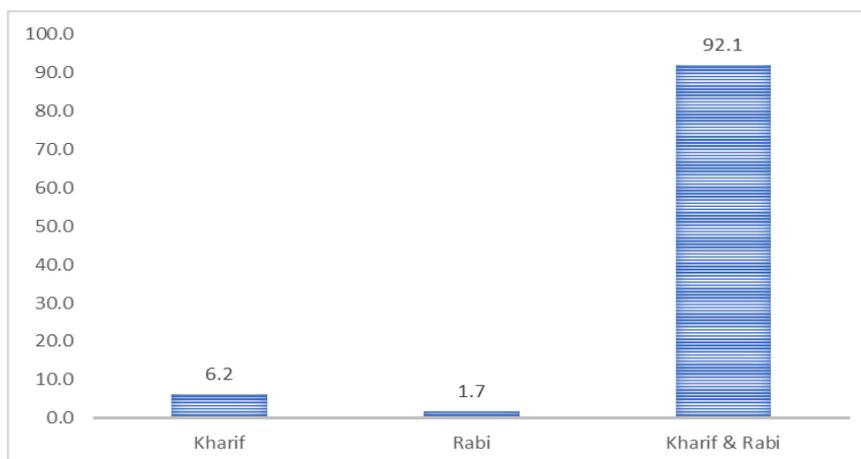
<b>Work Experience</b>			
less than 5 yrs	19	3.95	3.95
5 to 10 yrs	74	15.38	19.33
11 to 15 yrs	93	19.33	38.66
16 to 20 yrs	62	12.89	51.55
above 20 yrs	233	48.44	100
<b>Total</b>	<b>481</b>	<b>100</b>	

**Type Of Cropping Seasons**

The following table shows the number of respondents doing cultivation for kharif and rabi season. The results shows maximum of the respondents are doing cultivation to both kharif and rabi (92.10 percent), then coming kharif (6.20 percent ) and rabi (1.70 percent).

**Table 2: Type of cropping seasons in Odisha**

<b>Particulars</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>
Kharif	30	6.20	6.20
Rabi	8	1.70	7.90
Kharif & Rabi	443	92.10	100.00
<b>Total</b>	<b>481</b>	<b>100.0</b>	



**Fig.1: Type of cropping seasons in Odisha**

**Validity of Questionnaire**

The questionnaires were tested for face validity interactively among three experts including researchers, consultants and practicing managers. The respondents were asked to indicate items for understandability, relevancy and also to check whether the items were exhaustive for the dimension under consideration in the context of marketing of events.

**Reliability**

Reliability of the variables was ensured through item analysis. Item sum correlations were calculated and only items with more than 0.5 correlations with the sum was included for summation (Hair et al 1998). The item sum correlations and the Cronbach Alpha were calculated for each variable to check for internal consistency of the scale. The Cronbach Alpha in all cases are higher than 0.7 except in one where it is in the 0.6 range. An Alpha value of 0.6 and above is considered usable in exploratory studies (Hair et al 1998). The range of the item sum correlations and reliability coefficients are given in the below table.

**Table 4: Reliability Analysis (Sustainable farming )**

Sl	Statements	Mean	Std. Deviation	Cronbach's Alpha	N
B11	Whether respondents have heard of sustainable agriculture	4.012	0.992	0.831	481
B12	Whether respondents have had any training on sustainable agriculture	4.094	0.923	0.834	481
B13	Environmental balance is one basis for sustainable agricultural practices	4.188	0.848	0.820	481
B14	Sustainable agriculture discourage and stop usage of chemical fertilizers and pesticides.	4.012	0.892	0.820	481
B15	The adaptibility percentage of sustainable farming practice is less because of its short term losses & long term risk associated.	3.815	0.892	0.829	481
B16	Sustainable agricultural practices may require additional management beyond conventional practices	3.870	0.925	0.827	481
B17	There is no any readily available attractive market for high risk bearers of sustainable agriculture adaptors./ retainers.	4.027	0.823	0.830	481
B18	Homemade Innovations inspired from traditional and Vedic sciences are important tools to encourage sustainable agriculture.	4.085	0.986	0.828	481
B19	Adoption of sustainable agriculture will be easier for farmers who have both cropped and livestock enterprises	4.036	0.885	0.841	481
B110	The balance of Integrated efforts of innovative traditional practices in different geographies along with innovative green technological products should be encouraged to support agriculture.	3.997	0.797	0.845	481
<b>Cronbach's Alpha</b>					
<b>0.845</b>					

**Factor Analysis (Analysis of internal homogeneity of the items by factor Analysis)**

The factor analysis was applied to ten variables of sustainable development of agriculture. The KMO value of factor analysis is 0.854 which indicates that Factor Analysis is reliable to be done for the 10 variables which is also cross validated by significant value of Bartlett's test of sphericity i.e. 0.000.

**Table 5: Factor Analysis (KMO and Bartlett's Test)**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.854
Bartlett's Test of Sphericity	Approx. Chi-Square	1085.416
	df	45
	Sig.	0.000

Source: developed from research

Kaiser (1974) recommends accepting values greater than 0.5 as acceptable (values below this should lead to either collect more data or rethink which variable to include). Furthermore, values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb. For these data the value is 0.854, which falls into range being good. So, we should be confident that factor analysis is appropriate for these data.

**Factor Analysis (Total Variance Explained)**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.241	42.406	42.406	4.241	42.406	42.406	3.156	31.555	31.555
2	1.141	11.407	53.813	1.141	11.407	53.813	2.226	22.258	53.813
3	.943	9.428	63.241						
4	.865	8.646	71.887						
5	.638	6.377	78.263						
6	.591	5.907	84.171						
7	.442	4.422	88.593						
8	.418	4.176	92.769						
9	.403	4.029	96.798						
10	.320	3.202	100.000						

Extraction Method: Principal Component Analysis.

The factor analysis was done for all the 10 variables. All these variables are reduced to two different factors which explained around 53.813% of the total variance. The first factor with their loading pattern indicates that a general factor is running throughout all the items explaining about 31.555% per cent of the variance. The second factor explains about 22.258%. The entire two factors explain about 53.813% of the total Variance.

**Table 6: Factor Analysis (Rotated Component Matrix)**

Particulars	Component	
	1	2
B11	0.181	<b>0.849</b>
B12	0.127	<b>0.847</b>
B13	<b>0.578</b>	0.499
B14	0.527	<b>0.555</b>
B15	<b>0.744</b>	0.121
B16	<b>0.634</b>	0.296
B17	<b>0.792</b>	0.033
B18	<b>0.697</b>	0.197
B19	<b>0.492</b>	0.229
B20	<b>0.430</b>	0.195

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

All the 10 variables are reduced to 2 factors. We have extracted the factors through varimax method and through principal component analysis where the eigen value should be greater than 1. Variable 3, 5, 6, 7, 8, 9 and 10 defined as factor 1 with new name as Sustainable agriculture. Similarly, variable 1, 2, and 4 defined as factor 2 with new name as Awareness.

**Table 7 : New Factors named**

Factors	Variables	New Factor
Factor 1	B13, B15, B16, B17, B18, B19 & B20	Sustainable
Factor 2	B11, B12 & B14	Awareness

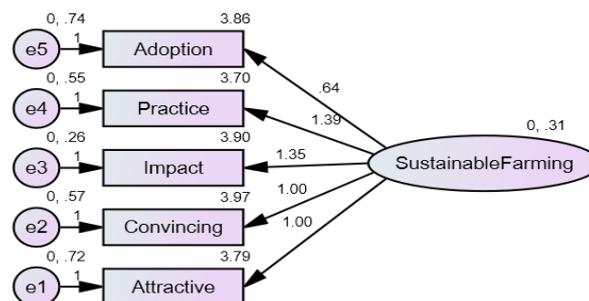
**Issues And Challenges Associated With Sustainable Farming**

The following table shows the reliability analysis of sustainable farming. Five variables are taken in the questionnaire to measure sustainable farming. The Cronbach's value of each of the variable are coming more than 0.8, this shows that the variables are reliable to measure the sustainable farming.

**Table 8: Reliability Analysis of Sustainable farming (N=481)**

Sl.	Particulars	Mean	Std. Deviation	Cronbach's Alpha	N
1	The <b>adoption</b> of sustainable agricultural practices is slow because farmers lack the knowledge to implement them	3.861	0.932	0.874	481
2	Sustainable agricultural <b>practices</b> may require additional management beyond conventional practices	3.697	1.074	0.875	481
3	<b>Impact</b> or efficacy level of sustainable farming does not meets farmer 's productivity expectation	3.903	0.911	0.851	481
4	The fact of long term benefit over short term losses in adaption of sustainable agriculture is not <b>convincing</b> .	3.970	0.938	0.892	481
5	The unavailability of <b>attractive</b> market base for risk takers of sustainable farming, discouraging adaptors.	3.788	1.015	0.815	481
<b>Cronbach's Alpha</b>					
<b>0.749</b>					

**SEM of Sustainable Farming**



**Table 9: SEM results of Sustainable farming**

Particulars	CFI	RMSEA	GFI	NFI
Chi-square = 72.410	0.945	0.101	0.981	0.923
Degrees of freedom = 5	RMR	RFI		
Probability level = 0.000	0.078	0.873		

Source: Developed from Field Study

For construct adequacy and discriminate validity of the test of Fiscal Compliance towards Corporate Governance in State Bank of India a confirmatory factor analysis through AMOS was used to test whether the observed measures were associated with their respective constructs. The fit of the model was examined and verified, that each indicator loaded significantly with its intended construct. In the model, Chi-square =72.410, df = 5, p<.001, CFI=0.945, GFI=0.981, NFI=0.923, RFI = 0.873, RMSEA=0.101, provided a good fit to the data (Browne and Cudek, 1993; Hu and Bentler, 1999). Each item loaded significantly with its intended construct, as the significant value p<.01). All the p value of regression weights was acceptable at a significant level of 0.05.

**Regression Analysis of Variable- Sustainable farming**

**Table 10: Regression Weights (Sustainable farming)**

Particulars	Estimate	S.E.	C.R.	P	Label
Attractive <--- Sustainable Farming	1.000				
Convincing <--- Sustainable Farming	0.997	0.127	7.878	***	
Impact <--- Sustainable Farming	1.346	0.148	9.083	***	
Practice <--- Sustainable Farming	1.392	0.158	8.811	***	
Adoption <--- Sustainable Farming	0.636	0.112	5.679	***	

Source: Field Study

All the p value in the above table was acceptable at a significant level of 0.01. Within the analytical framework of the study, structural equation model (SEM) was performed to determine the sustainable farming. Linear SEM estimates models: a measurement model and a structural model. A measurement model is one that specifies some number of latent, unmeasured variables or factors, each with a specified number of measured indicators or variables. A structural model includes a set of paths (regression coefficients) or correlations between the various measured and unmeasured variables in the overall model. The assessment of the model fit is also revealed by the goodness of fit index (GFI) and other statistics such as the NLI and TLI. It is generally recognized that the GFI, NLI and TLI close or to above 0.90 indicate a good model fit. The root mean square error of approximation (RMSEA) residual is a measure of the average explained variances and covariance in the model. The index should be close to zero if the model fits the data well.

**Observations:** The above table represents the regression weights of SEM of sustainable farming through maximum likelihood estimates. The path analysis reveals that - Regression weights of sustainable farming in agriculture of India is structurally fitted. All the contributing variables are statistically significant and contributing to sustainable farming. Out of all the variables, variables - Sustainable agricultural **practices** may require additional management beyond conventional practices, **Impact** or efficacy level of sustainable farming does not meets farmer 's productivity expectation, contributing maximum towards sustainable farming.

**feasibility Of Natural Farming**

Following table shows the descriptive statistics (mean & standard deviation) along with Cronbach's Alpha value of each of the independent variables towards measurement of feasibility of natural farming.

**Table 12: Reliability analysis of feasibility of natural farming**

Sl.	Particulars	Mean	Std. Deviation	Cronbach's Alpha	N
B31	Land stewardship, ecological sustainability	3.71	0.990	0.823	481
B32	Chemical avoidance for family/farm worker health	3.97	0.848	0.825	481
B33	Chemical avoidance for environmental health/ concern for environment	4.36	0.598	0.828	481
B34	Organic represents good farming practices--like the results	4.38	0.715	0.819	481
B35	Ecological principles--view farm as ecological system	4.02	0.910	0.803	481
B36	Community values, tradition, quality of life	3.91	0.920	0.811	481
B37	Provides economic support on fewer acres than conventional	4.03	1.021	0.812	481
B38	To reduce input costs	4.00	0.991	0.822	481
B39	To change practices in response to farm chemical regulation	3.61	1.113	0.828	481
B40	Customer or buyer required it	4.02	0.910	0.803	481
B41	Ease of farming	3.45	1.198	0.817	481
B42	Yield is consistent	3.78	0.976	0.827	481
<b>Cronbach's Alpha</b>					
<b>0.831</b>					

Since, Cronbach alpha value of each of the independent variable are coming more than 0.8. The variables are reliable for the measurement of feasibility of natural farming.

**Analysis of internal homogeneity of the items by factor Analysis (feasibility of natural farming):**

The factor analysis was applied to twelve variables used for the measurement of feasibility of natural farming. The KMO value of factor analysis is 0.731 which indicates that Factor Analysis is reliable to be done for the 12 variables. And also the significance value is coming to 0.000 which also relates the same.

**Table 13: Factor Analysis of Feasibility of Natural farming (KMO and Bartlett's Test)**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.731
Bartlett's Test of Sphericity	Approx. Chi-Square	1989.195
	df	66
	Sig.	0.000

Source: developed from research

Kaiser (1974) recommends accepting values greater than 0.5 as acceptable (values below this should lead to either collect more data or rethink which variable to include). Furthermore, values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb. For these data the value is 0.731, which falls into range being good. So, we should be confident that factor analysis is appropriate for these data.

**Table 14: Factor Analysis of Feasibility of Natural farming (Total Variance Explained)**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.843	32.028	32.028	3.843	32.028	32.028	2.503	20.855	20.855
2	1.771	14.756	46.785	1.771	14.756	46.785	2.108	17.566	38.421
3	1.342	11.183	57.968	1.342	11.183	57.968	1.930	16.080	54.501
4	1.148	9.565	67.533	1.148	9.565	67.533	1.564	13.032	67.533
5	.757	6.312	73.845						
6	.713	5.939	79.784						
7	.564	4.697	84.482						
8	.542	4.517	88.998						
9	.504	4.198	93.196						
10	.397	3.306	96.502						
11	.217	1.806	98.309						
12	.203	1.691	100.000						

Extraction Method: Principal Component Analysis.

The factor analysis was done for all the 12 variables. All these variables have reduced to four different factors which explained around 67.533 % of the total variance. The first factor with their loading pattern indicates that a general factor is running throughout all the items explaining about 20.855 % per cent of the variance. The second factor explains about 17.566 %, third factor explains 16.080% and the fourth factor explains 13.032% of the total variance. The entire four factors explain about 67.533% of the total Variance.

**Table 15: Factor Analysis of Feasibility of Natural farming (Rotated Component Matrix)**

Particulars	Component			
	1	2	3	4
B31	0.132	0.098	0.028	<b>0.855</b>
B32	0.061	0.062	0.153	<b>0.843</b>
B33	0.024	0.029	<b>0.823</b>	0.035
B34	0.240	-0.035	<b>0.753</b>	0.053
B35	<b>0.874</b>	0.093	0.249	0.057
B36	<b>0.764</b>	0.100	0.275	-0.014
B37	<b>0.514</b>	0.088	0.502	0.057
B38	0.239	0.238	<b>0.502</b>	0.173
B39	0.007	<b>0.851</b>	0.125	0.021
B40	<b>0.829</b>	0.149	-0.019	0.243
B41	0.248	<b>0.885</b>	-0.022	0.008
B42	0.078	<b>0.693</b>	0.051	0.147

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

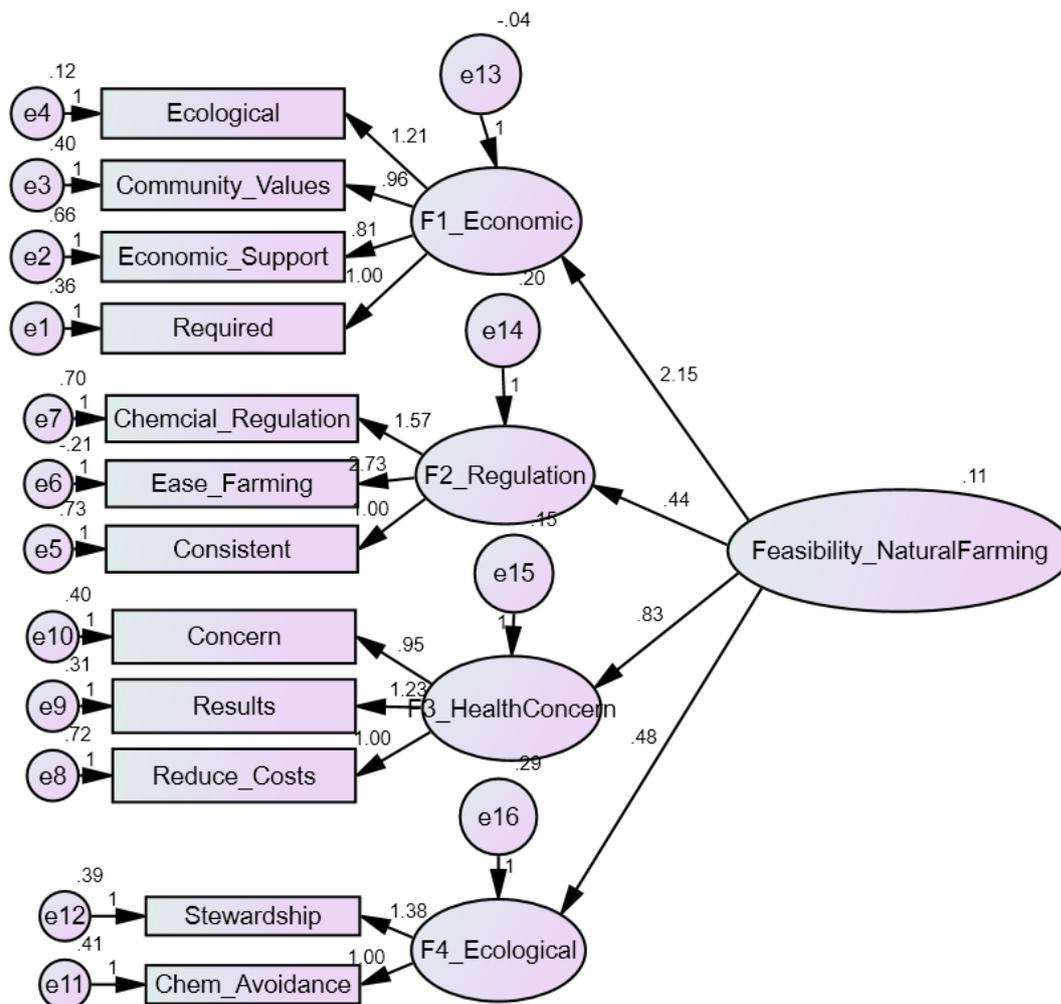
a. Rotation converged in 5 iterations.

**Table 16: New factors of Feasibility of Natural farming**

Factors	Variables	Factors named
<b>Factor 1</b>	B35, B36, B37 & B40	Economic
<b>Factor 2</b>	B39, B41, & B42	Regulation
<b>Factor 3</b>	B33, B34 & B38	Health Concern
<b>Factor 4</b>	B31 & B32	Ecological

Source: Developed from Field Study

All the 12 variables are reduced to 4 factors. We have extracted the factors through varimax method and through principal component analysis where the eigen value should be greater than 1. Variable – B35, B36, B37 AND B40 constitute factor 1 named as **Economic**, variable – B39, B41 and B42 constitute factor 2 named as **Regulation**, variable B33, B34 and B38 constitute factor 3 named as **Health Concern** and variable – B31 and B32 constitute factor 4 named as **Ecological**.



**Fig.6: SEM of Feasibility of natural farming**

**Table 17: SEM results of Feasibility of natural farming**

Particulars	CFI	RMSEA	GFI	NFI
Chi-square = 259.393	0.892	0.093	0.917	0.897
Degrees of freedom = 50	RMR			
Probability level = 0.000	0.250			

Source: Developed from Field Study

For construct adequacy and discriminate validity of the test of Feasibility of natural farming a confirmatory factor analysis through AMOS was used to test whether the observed measures were associated with their respective constructs. The fit of the model was examined and verified, that each indicator loaded significantly with its intended construct. In the model, Chi-square = 259.393, df = 50,  $p < .001$ , CFI=0.892, GFI=0.917, NFI=0.897, RMSEA=0.093, provided a good fit to the data (Browne and Cudek, 1993; Hu and Bentler, 1999). Each item loaded significantly with its intended construct, as the significant value  $p < .01$ . All the p value of regression weights was acceptable at a significant level of 0.05.

**Regression Analysis of Variable- Feasibility of natural farming**

**Table 18: Regression Weights (Feasibility of natural farming)**

Particulars	Estimate	S.E.	C.R.	P label
F1_Economic <--- Feasibility Natural Farming	2.151	.663	3.242	.001
F2_Regulation <--- Feasibility Natural Farming	.443	.133	3.326	***
F3_HealthConcern <--- Feasibility Natural Farming	.827	.229	3.614	***
F4_Ecological <--- Feasibility Natural Farming	.480			
Required <--- F1_Economic	1.000			
Economic Support <--- F1_Economic	.811	.068	11.979	***
Community Values <--- F1_Economic	.960	.062	15.541	***
Ecological <--- F1_Economic	1.213	.065	18.753	***
Consistent <--- F2_Regulation	1.000			
Ease Farming <--- F2_Regulation	2.727	.299	9.133	***
Chemcial Regulation <--- F2_Regulation	1.568	.143	10.961	***
Reduce Costs <--- F3_HealthConcern	1.000			
Results <--- F3_HealthConcern	1.226	.158	7.764	***
Concern <--- F3_HealthConcern	.952	.127	7.478	***
Chem Avoidance <--- F4_Ecological	1.000			
Stewardship <--- F4_Ecological	1.381	.315	4.381	***

Source: Field Study

All the p value in the above table was acceptable at a significant level of 0.01. Within the analytical framework of the study, structural equation model (SEM) was performed to determine the feasibility of natural farming.. The assessment of the model fit is also revealed

by the goodness of fit index (GFI) and other statistics such as the NLI and TLI. It is generally recognized that the GFI, NLI and TLI close or to above 0.90 indicate a good model fit. The root mean square error of approximation (RMSEA) residual is a measure of the average explained variances and covariance in the model. The index should be close to zero if the model fits the data well.

**Observations:** The above table represents the regression weights of SEM of Feasibility of natural farming through maximum likelihood estimates. The path analysis reveals that - Regression weights of feasibility of natural farming is structurally fitted. 12 variables are reduced to 4 factors as Economic, Regulation, Health Concern and Ecological.

Out of four factors – the factor economic (2.151) contributes maximum towards feasibility of natural farming, then coming Health concern (0.827) since path coefficient is coming maximum.

Further, in economic factor, ecological (1.213) contributes maximum then coming required (1.00), three variables measure regulation factor. Out of three variables, the variable -ease of farming (2.727) and Chemical regulation (1.568) contributes maximum towards regulation. Similarly, three variables measure health concern factor. Out of three variables, the variable results (1.226) contributes maximum. And in ecological, the variable stewardship (1.381) contributes maximum since path coefficient is coming maximum.

### **Conclusion**

There are many benefits of sustainable agriculture, and overall, they can be divided into human health benefits and environmental benefits. In terms of human health, crops grown through sustainable agriculture are better for people. Due to the lack of chemical pesticides and fertilizers, people are not being exposed to or consuming synthetic materials. This limits the risk of people becoming ill from exposure to these chemicals. In addition, the crops produced through sustainable agriculture can also be more nutritious because the overall crops are healthier and more natural.

Sustainable agriculture has also had positive impacts of the environment. One major benefit to the environment is that sustainable agriculture uses 30% less energy per unit of crop yield in comparison to industrialized agriculture. This reduced reliance on fossil fuels results in the release of less chemicals and pollution into the environment. Sustainable agriculture also benefits the environment by maintaining soil quality, reducing soil degradation and erosion, and saving water. In addition to these benefits, sustainable agriculture also increases biodiversity of the area by providing a variety of organisms with healthy and natural environments to live in.

Together, the agriculture sector and Extension Service have a significant and positive role in achieving sustainable rural development. Projects and programs on sustainable agriculture based on scientific concepts and principles will improve rural livelihood. Hence, we conclude that effective agriculture management would lead to sustainable rural development.

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## **Study Of Correlation Between Irrigation And Cropping Intensity Of Bassi Tehsil, Jaipur, Rajasthan, India**

**Dr. Arjun Lal Meena\***

**Priyanka Bisht\*\***

### **Abstract**

Utilization of irrigation facilities becomes crucial in a region having scanty rainfall to get water for farming. This paper is an attempt to examine the relationship between cropping and irrigation intensity. There is employed spearman's rank correlation coefficient to establish the relation between cropping and irrigation intensity. Along with this, study throws the light on the role of other factors in agriculture production. The study is carried out at micro level so there could be focused on the results of different combination of these factors on the agriculture production. In this way, the focus of study is to analysis at what extent irrigation play important role in farming and its allied activities in study area.

**Key words:** Cropping Intensity, Irrigation Intensity, Techniques, agriculture production etc.

### **Introduction**

Agriculture growth is measured by its output (production) in a region. Production depends on the various factors e.g. water availability, soil fertility, techniques & tools, fertilizers & pesticides etc. The availability of water is one of the crucial factors of farming which directly influence the agriculture production. The demand of water could be meet by two methods: One way is Natural method (rainfall) and another method is employing artificial method (Irrigation method). India receives 80% of total rainfall through S-W monsoon originated from Bay of Bengal in months of June- September and rest 20% through western disturbance. Indian monsoon is well known for its inconsistency and irregularities, so there is need to utilize the irrigation source for the fulfilment the demand of water for irrigation. Practice of irrigation becomes more crucial in state like Rajasthan where rainfall is scanty and unpredictable. As a result state experiences drought frequently (Garhwal et.al, 2017). Rajasthan is divided into two agro climatic zone; One is Eastern halves having characteristics of humid and sub-humid region & another one is western halve characterised by arid and semi-arid climatic conditions. The western halve is famous for the Great Thar and having the scanty rainfall. Eastern halve receive rainfall comparably high rainfall than the western. In this way, Farmers of Rajasthan totally reliable on the irrigation sources for irrigation. But

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the declining rainfall delimiting the utilization of irrigation sources as the water level is declining sharply.

### Study Area

Rajasthan is the state of India which is extended between the Latitude 23°3'N to 30°12'N and longitude 69°30'E to 78°17'E. Jaipur is the district and capital of the state which is stretched between the latitude 26°23'N to 27°51'N and longitude 74°55' E to 76°50'E. There are 13 Sub-Districts and 16 Tehsils in the district. Name of Tehsils are Jaipur, Sanganer, Bassi, Chaksu, Kotkhawada, Amer, Jamwa-Ramgarh, Chomu, Kotputli, Shahpura,

Viratnagar, Phulera, Kishangarh Renwal, Mauzamabad, Dudu and Phagi.

Bassi tehsil is located in south eastern part of Jaipur district. The latitudinal expansion of tehsil is 26°41'N to 26°59'N and longitudinal expansion is 75°54'E to 76°20'E. It is located 1km south off the NH11 leading towards Agra. The climate of study area is Semi-Arid. The study area is influenced by local steppe and desert climate. The area receives rainfall mainly from south west monsoon in summer season and other seasons remain dry. In past 25 years, the highest rainfall is recorded in month of July. Tehsil is divided into 11 L.R. Circles named as: Bassi, Bashkhoh, Kanota, Toonga, Deogaon, Sambhariya, Phalaywas, Doodhli, Tahtra , Jatwara and Lalgarh.

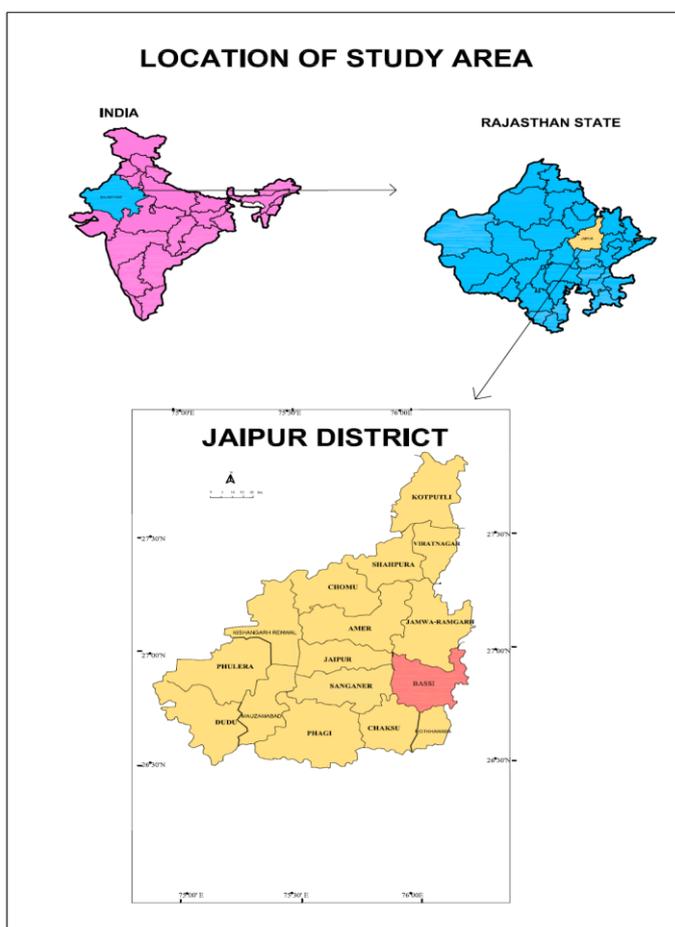


Figure 1: Location of Study Area

### Objectives

The research paper investigates on the following aspects of farming:

- Spatial distribution of irrigation and cropping intensity.
- To establish the relationship between cropping intensity and irrigation intensity.

### Material And Methods

The study is carried out with secondary data collected from the L.R. Department, Sub-Registrar office, Bassi Tehsil.

1. Data of Gross sown area and Net sown area are employed to calculate the cropping intensity by using the following formula.

$$\text{CROPPING INTENSITY} = \frac{\text{Gross Sown Area}}{\text{Net Sown Area}} \times 100$$

**Net Sown Area**

Where, Gross Sown Area= Area sown more than once in a particular year

Net Sown Area= Area sown one time in a particular year

2. To calculate the irrigation intensity, data of Gross and net irrigated area are used.

$$\text{IRRIGATION INTENSITY} = \frac{\text{Gross Irrigated Area}}{\text{Net Irrigated Area}} \times 100$$

Gross Irrigated Area= Area irrigated more than once in a particular year

Net Irrigated Area= Area irrigated once in a particular year

All the calculation are made in MS-Excel. All the data are depicted with the maps to show the spatial distribution of irrigation and cropping intensity at the L.R. circle level.

3. To calculate the coefficient of correlation following formula is used-

$$\text{Spearman's rank Correlation } (\rho) = \frac{6 \sum d^2}{n(n^2-1)}$$

Where, d= difference between ranks

d<sup>2</sup>= difference squared, n= number of variables

**Table 1: Irrigation and Cropping Intensity of Bassi Tehsil for year (2017-2018)**

LR Circles	Net Sown Area(ha)	Gross Sown Area(ha)	Cropping Intensity (%)	Net Irrigated Area(ha)	Gross Irrigated Area(ha)	Irrigation Intensity (%)
Kanota	2461	3317	134.78	1283	1451	113.09
Phalaywas	3459	5358	154.90	2580	3067	118.88
Sambhariya	3901	6459	165.57	3251	3744	115.16
Doodhli	2768	3966	143.28	1559	1692	108.53
Bassi	2699	3521	130.46	1347	1445	107.28
Jatwara	3241	4793	147.89	2349	2380	101.32
Tahtra	2229	3119	139.93	827	1006	121.64
Baskhoh	3234	4195	129.72	1704	1794	105.28
Lalgarh	3644	5528	151.70	2666	3247	121.79
Toonga	3157	3647	115.52	1659	1742	105.00
Deogaon	5582	8985	160.96	4000	4844	121.10
Total	36375	52888	145.40	23225	26412	113.72

Source: L.R. Office, Sub- Registrar, Bassi Tehsil.

**Spatial Distribution**

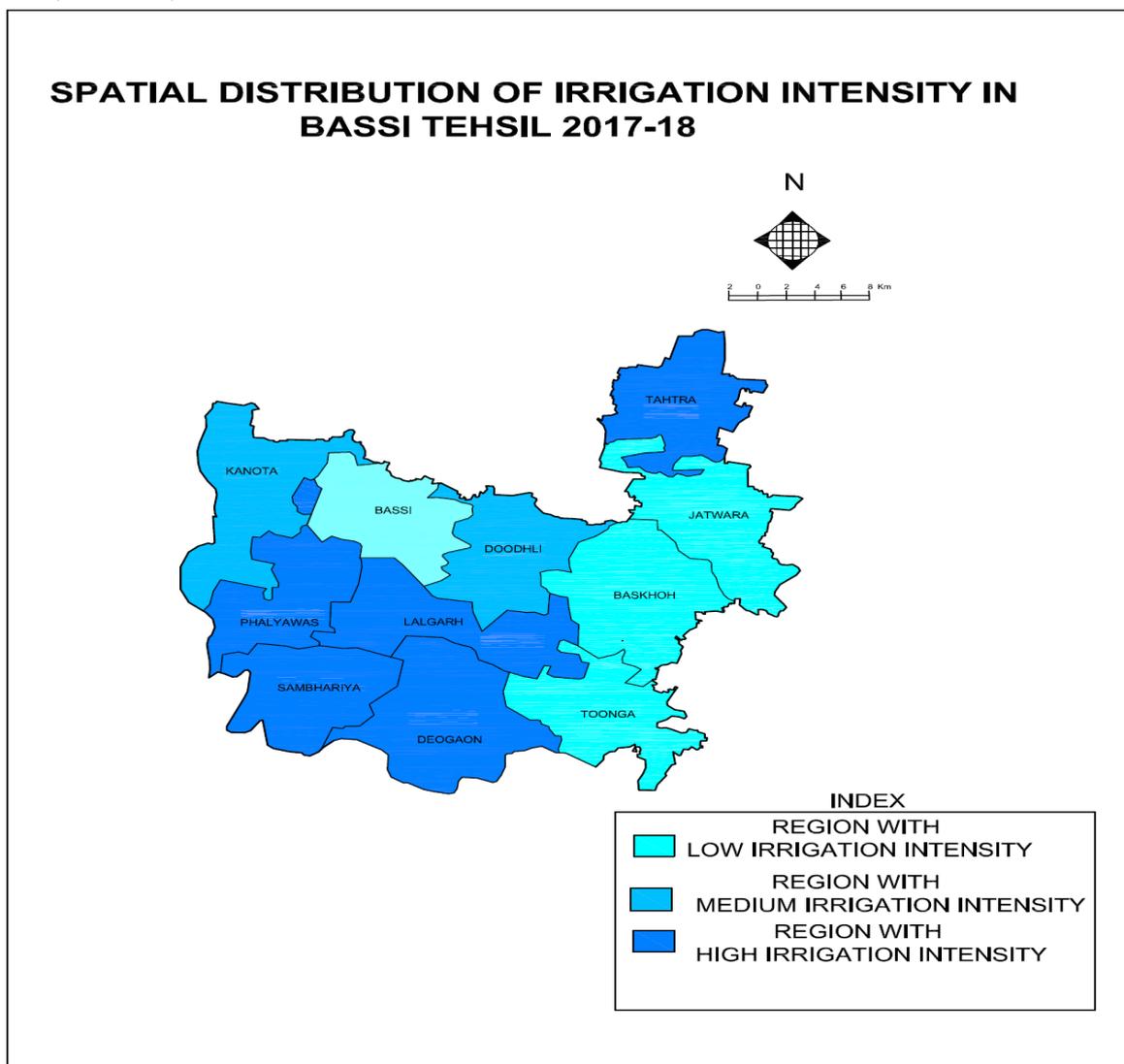
As it is shown in the above table that there is a calculated value of irrigation and cropping intensity of different parts of Bassi tehsil. Here is given the spatial distribution of irrigation and cropping intensity for the Tehsil.

**Irrigation Intensity**

The Bassi tehsil is categorised into the following:

- a. CATEGORY I: REGION WITH LOW IRRIGATION INTENSITY (101.32% to 108.14%) - This category comprises Bassi (107.28%), Baskho (105.28%), Toonga (105.00%) and Jatwara (101.32%). The lowest irrigation intensity is recorded at Jatwara followed by Toonga, Baskhoh and Bassi.
- b. CATEGORY II: REGION WITH MEDIUM IRRIGATION INTENSITY (108.15% to 114.97%) - In this category, Kanota (113.09%) and Doodhli (108.55%).

- c. CATEGORY III: REGION WITH HIGH IRRIGATION INTENSITY (107.59% to 111.38%) - The highest irrigation intensity is recorded at Lalagarh (121.79%) followed by Deogaon (121.10%), Tahtra (121.64%), Sambhariya (115.16%) and Phalyawas (118.88%).



**Figure 2: Irrigation Intensity for Bassi Tehsil (2017-18)**

### **Cropping Intensity**

This quantity technique implies, how much portion of net sown area is devoted to practise farming more than once in a particular year. Higher value of cropping intensity implies that higher portion of net sown area is devoted to practise the farming more than once. It is expressed as percentage of total sown area to the net sown area. This tool is used to show the land efficiency and at what extent the sown area could be re-sown. So in this way, this method is used to calculate the efforts of man to draw amount of output from a particular part of land by sowing more than once (Pagar, 2016).

Bassi tehsil is categorised into the following:

- a. CATEGORY I: REGION WITH LOW CROPPING INTENSITY (115.52% to 132.20%)- Lowest irrigation intensity is recorded in Toonga (115.52%) followed by Baskhoh (129.72%) and Bassi (130.46%).
- b. CATEGORY II: REGION WITH MEDIUM CROPPING INTENSITY (132.21% to 148.89%)-In this category, Kanota (134.78%), Tahtra (139.93%), Doodhli (143.28%) and Jatwara (147.89%) are included.
- c. CATEGORY III: AREA WITH HIGH CROPPING INTENSITY (148.90% to 165.58%)- Highest irrigation intensity is recorded at Sambhariya (165.57%) followed by Deogaon (160.96%), Lalgarh (151.70%) and Phalaywas (154.90%).

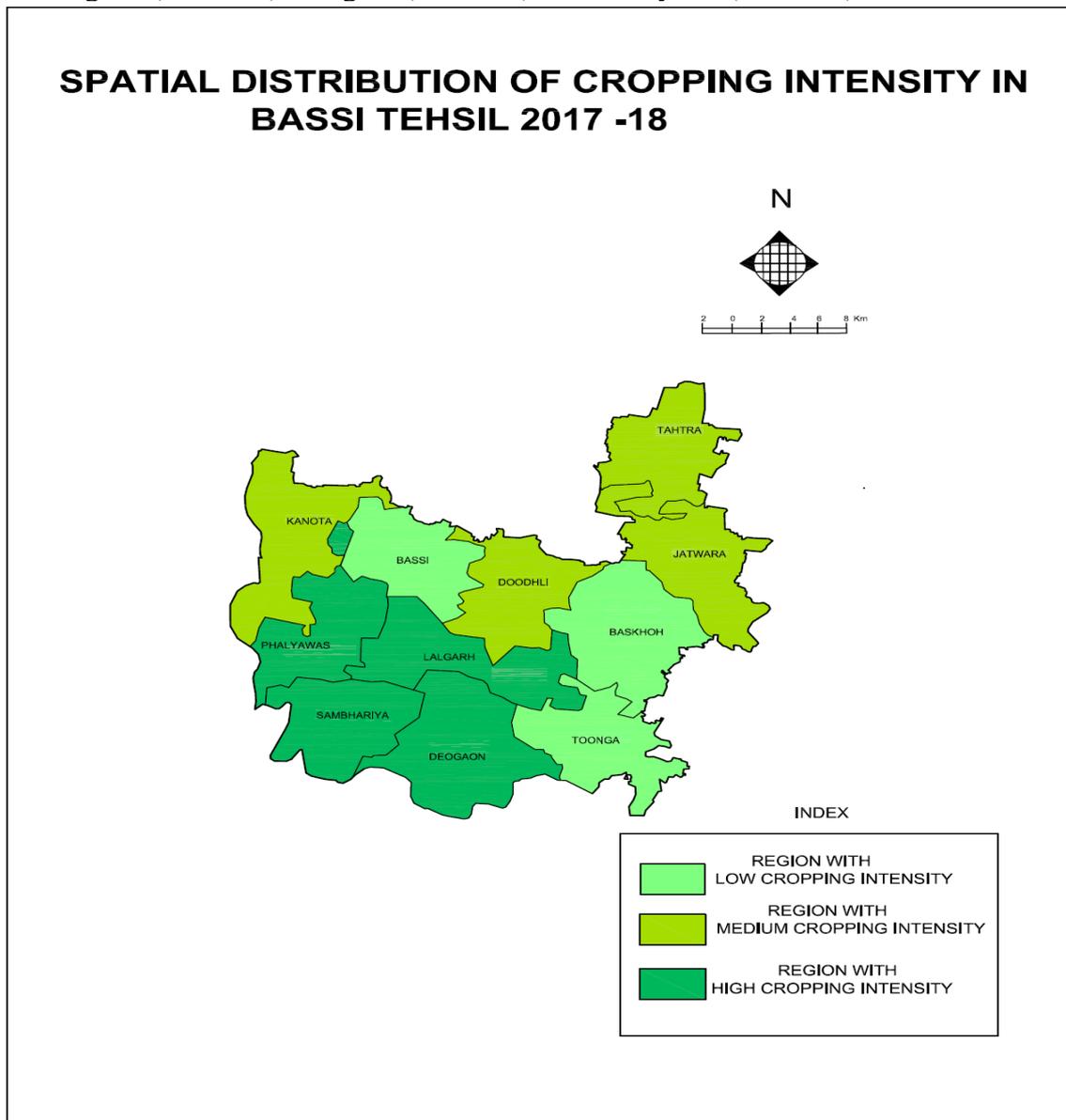


Figure 3: Cropping Intensity for Bassi Tehsil (2017- 2018)

**Findings**

- 1. Fig 2. Demonstrate that the high irrigation intensity occupies in South-West and North-East parts of Tehsil. North-eastern part comprises Tahtra while south-western part is

occupied by Phalaywas, Deogaon, Sambhariya and Lalgargh. Medium irrigation intensity region is found in western part include Kanota and Northern part include (Doodhli). Low Irrigation Intensity region runs from North-east to South-east direction including L.R. Circles Jatwara and Baskhoh and Bassi in Northern part.

2. Fig.3, demonstrate the spatial distribution of cropping intensity of tehsil. High cropping intensity region occupies in south-west part of tehsil including Phalaywas, Deogaon, Sambhariya and Lalgargh. Region of medium irrigation intensity comprises in North-west (Tahtra and Jatwara), western (Kanota) and North (Doodhli) part of tehsil. Low irrigation intensity region is located in south-east part (Toonga & Baskhoh) and in North Western part (Bassi).
3. From analysis it is clear that regions of high cropping intensity follow the region of irrigation intensity respectively.

### **Conclusion**

The spearman's rank correlation coefficient is +0.56. That shows there is a positive relationship between irrigation intensity and cropping intensity for the study area. That indicates towards the low rainfall during the year 2017 and 2018. The annual rainfall was 465mm and 413.5mm for the years 2017 and 2018 respectively which was the lower than average rainfall (625mm). So in this way, Irrigation facilities are the alternative and crucial tool for farming in condition of scanty rainfall.

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## **Securitization A Capital And Risk Management Solution For Life Insurers In India**

**Dr. Manisha Gupta\***

### ***Abstract***

Insurance industry worldwide is undergoing a transformation as new risk-management strategies are being formulated and new financial instruments are being created to supplement and/or to replace traditional (re) insurance products. Once a cause of the financial world's problems, securitization is now part of the solution for insurance industry worldwide. This paper provides an overview of securitization as a financial tool for life insurance and its relevance to the Indian life insurance market. This study is conducted with the use of questionnaire and interview to gather relevant data that is statistically analyzed using percentages and averages. The significance of results obtained has been tested using t test. The study concludes that Life Insurance Securitizations helps the life insurers in financing the capital and meeting solvency requirements and helps the life insurers in managing extreme mortality risk.

**Keywords: securitization, reinsurance, risk management**

### **Introduction**

Securitization has not entered in the life insurance industry as yet in India neither benefits of using it in life Insurance sectors are clear. But worldwide life insurance companies are using securitization to generate additional funds by securitizing the embedded value of the block of insurance policies, meeting capital adequacy and transferring risk to capital markets (Guria, 2004) (Anand et al, 2008). Today, securitization is gradually emerging as a catalyst that has the potential to transform how life insurance companies finance, transfer and transforms risk (Willkomm, 2006). More than \$ 7 billion USD of life insurance linked securities (life ILS) have already completed in 2010 (Milliman, 2011). (Schreiber & Silverman, 2006) categorized most life securitizations to date in three categories: Embedded value or value in force securitizations, Reserve funding securitizations and Pure life risk securitizations (very few to date). Life securitization was pioneered in the US. It has grown rapidly over the past few years. Much of the growth has been driven by US statutory-reserving requirements for life insurance business. Regulation XXX reserves funding remains key asset class in the US

Although, the Indian Insurance sector has seen the total transformation since its privatization still it is lagging behind in comparison with the world wide insurance development. Nevertheless, the present market is offering various opportunities for growth and development. CII and E&Y report on Indian Insurance sector (2010) has provided that India's favorable demographics like rising young working population, rising disposable incomes and rising focus on rural markets, increasing govt. tax incentives, lower level of insurance penetration, increasing sector's contribution towards growth of the economy are the expected growth drivers that will boost the way forward for this sector. Like any other financial institution, an insurance company assumes risks and can only operate soundly if it

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is appropriately capitalized. Adequate capital is essential for the on-going solvency and viability of an insurer. Capital adequacy is an important concept in life insurance because of the need to protect the balance between policyholder and shareholder interests and expectations. Capital adequacy is the maintenance of solvency while conducting the business as a viable going concern. The Act also requires a life insurer to be capital adequate. As per the act capital adequacy is "to ensure, as far as practicable, that there are sufficient assets in each statutory fund of a life company to provide adequate capital for the conduct of the business of the fund in accordance with this Act and the interests of the owners of policies referable to the fund".

Also the Indian Insurance sector has now entered the third phase of growth. The phase is marked by bringing the industry to a stable position, ensuring 'stable profitable' growth. To achieve this growth the regulator is all set to introduce certain regulations to help improve disclosures, profitability and capital as well as ensure consumer protection in the future. The regulator is amid finalizing the norms for the initial public offering (IPO) of insurance companies. In a sector where none of the players are listed, the IPO of insurance companies could be a milestone in the future growth of the sector. Also the increase of FDI limit to 49% is also underway. As risk management plays a very critical role in the insurance business so in the next three to four years, India also plans to shift from the current solvency I norms to risk-based solvency norms, called the solvency II model. This change will result in the better apportionment of risk in the backdrop of the actual risk associated with the asset. With the rising competition, the industry may also witness consolidation among smaller players and the emergence of some large players. So the regulator is in the process of finalizing guidelines for mergers and acquisitions in the insurance space in India. In all the government, regulator and the insurance companies are all set for maintaining a favorable environment for sustainable growth in the future. Towards the achievement of this expected growth by the Insurance sector, life insurance securitization can be viewed as a step forward to fulfill the financing, liquidity and risk management needs of Insurers in India. In developed countries the major uses (Price water house coopers, 2005) of securitized transactions are to assist in financing new business, to provide capital to fund acquisition activity, to transfer extreme mortality risk etc. Taking into consideration these uses of Life Insurance Securitization abroad this study empirically investigates whether securitization can be used in India as alternative Funding tool for meeting capital adequacy and solvency requirements.

### **Securitisatation Concept**

Securitisatation is a financial technique that pools assets together and turns them into tradable securities. Securitisatation typically applies to assets that are illiquid. It is very common in real estate, banking and mortgage industry. In principle any assets can be securitised so long as they are associated with a stream of cash flow. Life Insurance Securitization is a process through which an insurer or reinsurer accesses the capital markets through the issue of asset-backed securities that are backed by cash flows from a defined block of insurance contracts.

### **Review Of Literature**

International Association of insurance supervisors (2003) focused on the overview of life insurance securitization, benefits, obstacles, forms and future of life securitization in U.S. To date the embedded value and asset securitizations have improved liquidity and have enabled the recognition of future profits for solvency purposes in certain jurisdictions, although with limited transfer of risk. In the future, there may be risk transfer securitizations.

Mathew (2005) analyzed the legal aspects of insurance securitization in India. As yet there has been no instance of a securitization in life insurance having been carried out in India. An analysis is made of the legal and regulatory environment relating to securitization in general followed by a review of the newly enacted securitization law in India.

Soanes & Wu (2007) have explained five main categories of insurance securitizations and insurance linked securities including XXX redundant Reserve Securitization, Embedded Value Securitizations, Mortality Cat bonds, Sidecars and Industry Loss warranties. They concluded that these represent the key recent developments of insurance securitization, allowing issuers to use innovative capital markets solutions to achieve strategic and financial objectives through these various forms of securitization

Anand et al (2008) provided an overview of securitization as a financial tool for life insurance and its relevance to the Indian life insurance market. After discussing the concept they have identified financing the new business strain, realizing embedded economic values and freeing up funds to invest in new products, funding regulatory capital requirements, achieving greater diversification in asset sources, lower cost of capital and transfer of catastrophe risk as six main reasons for securitizing life insurance.

Kampa (2010) in a Three Part series has shown the evolution market for insurance linked securities, the state of the market today, and the importance of insurance-linked securities to the financial system. Part I of the I/C Convergence Series provided a macro-level overview of the insurance-linked securitization industry. Parts II and III of the I/C Convergence Series provided a micro-level analysis of the non-life and life insurance-linked security sectors. The paper has also provided that like most other financial markets, insurance-linked securities have been impacted by the 2008 financial crisis; however, despite weaknesses in the global financial markets, ILS has remained relatively strong and issuances in most sectors are continuing to grow.

Lindset et al (2010) tried to develop, price, and analyze a securitization structure for life insurance policies. They assessed that by transferring term insurance policies to a special purpose vehicle, all risk is transferred from insurers to the capital market. They focused on securitizing term insurance policies. Their views contributed to the literature on mortality rate modeling and on securitization

Barrieu & Loubergé (2010) revealed that large systematic risks, such as those arising from natural catastrophes, climate changes and uncertain trends in longevity increases have become an issue for society and more particularly for the insurance industry. Against this background, the combination of reinsurance and capital market solutions (insurance-linked securities) has received an accrued interest. They developed a general model of optimal risk-sharing among three representative agents — an insurer, a reinsurer and a financial investor, making a distinction between systematic and idiosyncratic risks. Their results showed that different regulatory prescriptions will lead to quite different results in terms of global risk-sharing

CII and E&Y (2010). The Confederation of Indian Industry (CII) and Ernst & Young have co-authored this report to evaluate the current state of the insurance industry, implication of new regulations and the steps that can be taken to strengthen the penetration of insurance products.

FICCI & BCG (2011) on “India Insurance Turning 10, going on 20” highlighted that insurance sector is an important and critical part of the economy. It has come a long way since its opening up of sector in 2001. It is expected that the insurance industry to continue

outpacing the rapid economic growth. The insurance industry will be ~US \$350–400 billion in premium income by 2020, making India a top 3 life insurance market and a top 15 non–life insurance market by 2020.

### **Research Objectives**

- To evaluate the use of Securitization in Life Insurance industry abroad.
- To analyze the use of Securitization as an important capital and risk management solution for life insurers in India.
- To know the impact of socio economic variables on the perception of Insurers.

### **Research Hypotheses**

The two hypotheses formulated for the study are stated below:

Ho: Life Insurance Securitizations does not help the life insurers in financing the capital and meeting solvency requirements.

Ha: Life Insurance Securitizations helps the life insurers in financing the capital and meeting solvency requirements.

Ho: Life Insurance Securitizations does not help the life insurers in managing extreme mortality risk

Ha: Life Insurance Securitizations help the life insurers in managing extreme mortality risk

### **Data And Methodology**

Both secondary and primary data is used to draw conclusions in this paper. The study of secondary literature is done by collecting information from available journals, magazines, and the internet. For collecting the primary data questionnaire is used for surveying the officials like chief financial officers, actuaries and others employed in product development, risk assessment and strategic decision making activities in the private and public insurance companies in India. The questionnaire was designed in open and close ended patterns. In the course of this study 50 questionnaire were distributed. The sample was selected using convenience sampling. Out of the total 45 was found to be valid and useful for our study. The questionnaire was analyzed after which the stated hypotheses were further analyzed for confirmations. The data so obtained were presented in tables and analyzed using non-parametric simple percentages and t - test statistical technique was applied in order to confirm the stated hypotheses. Research Hypotheses Testing Our hypothesized statements were tested using the t - test statistical tool as earlier stated. The tests conducted at 95% confidence interval and 0.05 significant levels. Following the decision rule of accepting or rejecting null hypothesis i.e. if calculated t is less than the critical value (1.96), we accept, if not we reject.

### **Results And Discussion**

The respondents were asked to give their views regarding the different benefits drafted by researcher from the literature reviewed on a five point scale.

**Research Hypotheses Testing**

**Table 1: Hypothesis Testing of LIS a funding tool**

Null Hypothesis	WS	SD	t-Value	Accepted/Rejected
LIS is not Alternative Funding Source.(% of responses)	3.59	1.33	2.09	Rejected
LIS does not Provide Low cost funding. (% of responses)	3.59	1.10	2.52	Rejected
It does not Help in meeting regulatory capital requirements.(% of responses)	3.91	0.75	5.70	Rejected
It does not help in Financing the cash strain associated with writing new business. (% of responses)	3.36	1.26	1.36	Accepted
It does not provide Necessary funding required for tapping rural markets.(% of responses)	2.68	1.49	1.01	Accepted

**Table 2: Hypothesis Testing of LIS helps in managing extreme risks**

It is not an Alternative Risk transfer, management and Hedging Strategy.(% of responses)	3.68	1.17	2.73	Rejected
It does not help in Managing extreme mortality and longevity risk.(% of responses)	3.59	1.33	2.08	Rejected

From the Table 1, It is found that in case of benefits of LIS that is it is not Alternative Funding Source, LIS does not Provide Low cost funding, It does not Help in meeting regulatory capital requirements, calculated t value is more than table value at 5% level of significance i.e. 1.96 so we reject the null hypothesis and accepts the alternative hypothesis which shows Life Insurance Securitizations helps the life insurers in financing the capital and meeting solvency requirements. These are significant benefits of life insurance securitization. The other benefits are that LIS helps in financing the cash strain associated with writing new business, it provides necessary funding required for tapping rural markets are not significant.

From the Table 2, It is found that calculated t value in case of benefits, LIS It is not an Alternative Risk transfer, management and Hedging Strategy and It does not help in Managing extreme mortality and longevity risk, is more than table value at 5% level of significance i.e. 1.96 so we reject the null hypothesis and accepts the alternative hypothesis which shows Life Insurance Securitizations help the life insurers in managing extreme mortality risk and these are significant benefits of life insurance securitization. So it can be said that there is no doubt that in advanced countries, securitization is serving as a useful addition for insurers to finance future growth and fund regulatory capital. It is concluded from the above analysis that considering the growth prospects of life insurance sector in India, Securitization in life insurance are mainly to provide insurers with alternative funding

source required to finance future growth, to assist the insurers in meeting regulatory capital requirements.

Further, through the Analysis of Variance the significance of difference in the views of the respondents due to various socio economic variables included in general profile of respondents like age, sex, location and experience is accessed. The level of significance tested is at 1%, 5%, and 10%.

The impact of age on the benefits is shown in Table 3. It is seen that age has significant impact on the benefits of LIS. It is found that younger and middle aged people more consistently perceive the benefits of securitization than older people. The people in the age group of 30-40 years consistently believes that life insurance securitization will provide alternative funding and risk transfer strategy to the insurers, provide them economic alternative to reinsurance, helps in improving the return on equity and transparency. The middle aged respondents consistently view that LIS will assist in meeting regulatory capital.

**Table 3: Impact of Age of insurers on benefits of securitization.**

Variables	X	Age				
		No response	Less than 30	30-40	40-50	More than 50
	N	6	5	12	13	9
Assist the insurers in meeting regulatory capital requirements.	mean(SD)	4.3(.52)	4.4(.55)	3.3(1.72)	3.7(1.03)	4.7(.5)
	F value	2.39				
	P Value	0.067***				
Helps in Improving Financial indicators like return on assets, return on equity.	mean(SD)	3.7(.516)	4.4(.548)	2.8(1.4)	3.4(1.12)	4.1(.6)
	F value	3.39				
	P Value	.018**				
Economic alternative to higher priced reinsurance.	mean(SD)	3.2(.41)	4.4(.55)	3.3(.49)	3.53(.52)	3.22(.97)
	F value	3.69				
	P Value	.012**				
Alternative Risk transfer, management and Hedging Strategy.	mean(SD)	2.8(.98)	4(0)	4(.6)	3.15(.98)	3.8(.44)
	F value	4.09				
	P Value	.007*				
Helps in managing extreme mortality and longevity risk.	mean(SD)	3.7(.516)	3.2(.44)	2.5(1.4)	2.6(.77)	2.78(.44)
	F value	2.14				
	P Value	.093***				
Provides insurers with necessary funding required for tapping rural markets.	mean(SD)	3.8(.75)	4(0)	2.5(1.3)	3.3(1.03)	3(.70)
	F value	3.1				
	P Value	.026**				
Assist the insurers in meeting regulatory capital requirements.	mean(SD)	3.8(.75)	4(1)	2.5(1.6)	4.2(.98)	3.7(1.5)
	F value	2.99				
	P Value	.03**				
Economic alternative to higher priced reinsurance.	mean(SD)	2.5(1.05)	4(0)	2.5(1.2)	3.3(.855)	3.33(1.32)
	F value	2.66				
	P Value	.046**				

\* significant at 1%

\*\* significant at 5%

\*\*\* significant at 10%

On the similar lines the impact of experience or service is shown in the table 5.9 given below. It is found that experience has significant impact on how an insurer perceives different benefits and problems of LIS. The respondents with less years of service but having good

knowledge of securitization consistently perceives that LIS will improve the liquidity position of the life insurance companies, provide with better financial management, finance the much needed funds for growth, monetize the embedded value, Manage and hedge extreme mortality risks and above all will provide and additional investment avenue to the investors. But there is a significant difference on the views of experienced respondents and less experienced respondents on the factor that LIS is an economic alternative to reinsurance and it provides with better asset liability management.

**Table 4: Impact of Service on benefits of Securitization**

Variables	X	Service				
		No response	Less than 1	1-2	3-5	More than 5
	N	7	3	4	21	10
Replacement of illiquid assets with liquid assets thereby improving the liquidity position.	mean(SD)	3.7(.76)	4(0)	4.75(.5)	3.8(.75)	3.8(.42)
	F value	2.01				
	P Value	.111***				
Financing the cash strain associated with writing new business.	mean(SD)	3.9(.9)	4(0)	4.75(.5)	3.2(1.08)	3.5(.85)
	F value	2.76				
	P Value	.041**				
Provides with better Asset Liability Management.	mean(SD)	3.9(.9)	4.3(1.15)	3.3(.5)	3.5(.75)	2.6(1.9)
	F value	2.05				
	P Value	0.105***				
Monetization of the embedded value of a defined block of business.	mean(SD)	4.14(.38)	4(0)	4.8(.5)	3.43(.87)	3.7(.82)
	F value	3.27				
	P Value	.021**				
Alternative Risk transfer, Management and Hedging Strategy.	mean(SD)	2.86(.9)	3.7(.58)	4(0)	3.81(.81)	3.3(.82)
	F value	2.51				
	P Value	.057**				
Helps in managing extreme mortality and longevity risk.	mean(SD)	3.6(.53)	2.7(.58)	3.25(.5)	2.7(.64)	2.4(1.5)
	F value	2.13				
	P Value	.096***				
Economic alternative to higher priced reinsurance.	mean(SD)	2.14(1.34)	2.7(.58)	4(0)	3.5(.51)	2.5(1.50)
	F value	4.71				
	P Value	.003*				
	P Value	.029**				

\* Significant at 1%

\*\* Significant at 5%

\*\*\* Significant at 10%

Similarly the impact of location is significant on the benefits/factors as shown in the table 5.11. The respondents in the metro cities also believe that it will act as a funding source as it will finance the cash strain associated with writing new business as shown by high mean values. It is found that respondents of big cities consistently perceive that LIS will act as an alternative to reinsurance, is an alternative risk transfer strategy for passing extreme longevity and mortality risk and will provide additional source of capital to fund growth..

**Table 5: Impact of location on benefits of Securitization**

Variables	X	Location		
		No response	Big cities	metros
	N	4	8	33
Has a potential to lower funding cost.	mean(SD)	4(0)	4.25(.46)	3.2(1.2)
	F value	3.54		
	P Value	.038**		
Financing the cash strain associated with writing new business.	mean(SD)	4(0)	2.63(1.06)	3.7(.95)
	F value	5.01		
	P Value	.011*		
Economic alternative to higher priced reinsurance.	mean(SD)	3(0)	3.88(.83)	3.4(.66)
	F value	2.51		
	P Value	.093***		
Alternative Risk transfer, management and Hedging Strategy.	mean(SD)	3(0)	4.25(.46)	3.46(.87)
	F value	4.44		
	P Value	.018*		
Helps in managing extreme mortality and longevity risk.	mean(SD)	3.5(.58)	4.25(.46)	3.46(.87)
	F value	3.73		
	P Value	0.032**		
Provides insurers with necessary funding required for tapping rural markets.	mean(SD)	3.5(.58)	3.88(.84)	2.97(1.1)
	F value	2.68		
	P Value	.08***		

From the above analysis it is concluded that the socio economic background of the respondents has made an impact on what they believe towards securitization and LIS.

Further the open ended questions asked from respondents have helped to analyze Life Insurance Securitization can emerge as an effective tool for risk management for Indian financial market. In addition to improving liquidity and transparency and providing a new source of finance, securitized transactions also offer new sources of risk capital to hedge against adverse underwriting more efficiently than with traditional techniques such as reinsurance and letters of credit. It can be effective in controlling longevity risk than the mortality risk. However, in the absence of proper legal framework of it cannot be started in India. Also that illiquidity in debt market because of under-developed secondary market, high costs and lack of standardization of securitization transactions will be spoilers. Other micro level issue is the homogeneity of the receivables which are the assets to be securitized in LIS. The investors in Life Insurance policies are of different age with differing premium commitments that add complexities to the issue of homogeneity. Unlike other assets (other than perishables) whose longevity could be established with reasonable accuracy, the longevity of the policy holders who would be paying the premium is based on actuarial calculation which again is based on averages. It is a common fact that in countries like India the mortality rate of older people is showing a declining trend and there is every possibility that the initial actuarial calculations which decide the premium payable might be proved false and in turn disturbs the receivable flow which forms the basis of Securitization of Insurance receivables. In all it can be said that these micro issues and other macro issues highlighted above need proper consideration on the part of all market participants

### **Conclusion**

The role of LIS as a developmental tool for the life insurance industry is well appreciated but the problems and hurdles which are distracting the growth path of Securitization in India like lack of regulatory support, lack of awareness etc must be addressed urgently. The development of overall securitization market will provide a strong platform for introduction of life insurance securitization in India as a funding tool.

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## Teacher Professional Development Through ICT

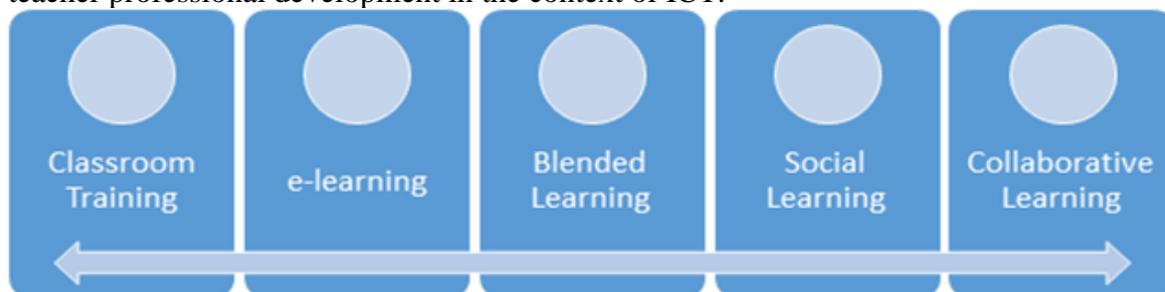
Dr.Muttu Vemula\*

### Teacher Professional Development

As teachers we all know that learning about educational practice in general and teaching in specific is an ongoing activity. The field of educational practice is ever emerging and hence there is always something new to learn. Most of us start learning about our profession through a formal teacher preparation program. Since, any such preparation is incomplete without practicing the profession, the learning continues even after starting the practice of teaching. Additionally, it is not practical to expect to learn everything through formal learning in an ever emerging field like teaching. Starting from the initial teacher preparation program to ongoing teacher learning activities, teacher professional development can be seen as a continuum. It is in this sense the teacher professional development is defined as follows: **Teacher Professional Development (TPD)** is *'a systematized, initial and continuous, coherent and modular process of professional development of educators in accordance with professional competency standards and frameworks'*. Teacher professional development would also include training in the adaptation to the evolution of change of the profession of teachers and managers of education systems.

From the definition we understand that it consists of systematic activities with clear purpose. The purposes are concurrent with the needs of teachers that arise from time to time. With the evolution of professional practice, the professional competency standards and frameworks that are to be developed in tune with the philosophies that govern the educational theory and practice. All these would happen on a continuous but in modular process, but always coherent when seen together. The course you are presently studying is an example of your professional development activity.

The teacher professional development is now a developing area in teacher education. There are different models that are in practice for this purpose. One model proposed by Hart J (2010) that speaks of workplace learning looks useful to understand various avenues for teacher professional development in the context of ICT.



### 5 Stages of Workplace Learning

The classroom training here refers to formal professional education programs available for would be teachers. E-learning in this context refers to the teacher development materials available in digital form and learning happening mostly through online mode. Though the

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content for the e-learning is same as in classroom transactions, the major difference is in the absence of face-to-face learning. E-learning is said to be more flexible. The blended learning brings together the strengths of both face-to-face and e-learning modes. There will be face-to-face learning as well as e-learning components in this model. Social learning will include a social aspect to the blended mode. Instead of individual learning, here people learn through social interaction platforms. Social media takes the role of mediating among the learners. In the last stage of learning in a workplace, one has to collaborate with others as a part of learning. Here learning and working are assumed to take place together. Additional assumption is that in this stage learning in the flow of work needs to be enabled, supported and encouraged; not designed or managed. For this, learner needs to be autonomous, independent and inter-dependent, and self-directed.

One obvious feature of this model is that it looks professional development as a continuum, starting from initial formal programs. Apart from this, two other elements are important in this model.

The first one is that the model is also continuity from top-down control in the extreme left to bottom-up control in the extreme right. In the formal programs, the program itself is a package with limited opportunities to pick from. On the other hand, the bottom up control in the collaborative format allows one to be highly selective, as per the need. The other feature of this model is formal-informal continuum. The classroom learning platforms are highly formal where as the collaborative platforms are highly informal.

In this unit, we are interested in the role of ICT in these. ICT is becoming increasingly prominent in the process of teacher professional development. If we see this continuum of teacher development models, we would see that ICT is more and more important for these models as some of them are partially and others are completely organized through ICT tools.

### **ICT In Teacher Professional Development**

Researchers have identified many uses of ICT in relation to TPD that can be grouped in three categories:

- **A focus of study** that develops teachers' abilities to use specific ICT tools, such as online platforms
- **A delivery system** providing teachers with information to improve pedagogy and content mastery,
- **A catalyst for new forms of teaching and learning**, such as inquiry-based learning, collaborative learning, and other forms of learner-centered pedagogy (infoDev, 2005).

In other words, professional development in the context of ICT can be placed under three broad headings, namely

- Learning How to use ICT
- Learning through ICT
- Integration of ICT in teaching and teacher learning

### **Learning How to Use ICT**

ICT with its versatile nature has found its application in every activity related to educational practice. Some typical questions you may have to address while learning how to use ICT are as follows:

- How do I use ICTs? (Technical)
- What can ICTs help me do? (Functional)
- How can I use ICT tools with so many students? (Logistical)

- Will these ICT tools and technologies replace me as a teacher? Will my students lose respect if they think the ICT platforms have repositories of knowledge that I don't have? (Affective)
- How do I organize my classroom to support the use of ICTs? How can they be used as part of what I already do in the classroom? (Organizational)
- How can I learn from and with ICTs? (Conceptual)
- How can ICTs help my students learn in different ways? How can they support the curriculum? How can they support my teaching? How should I teach using ICTs? (Instructional)
- How do I assess student learning in ICT-based projects? (Evaluation related)

Another way to look at learning about ICT use in educational purposes is to see the various applications of ICT in educational setting. Following is a non-exhaustive list giving an indication on various areas of ICT application.

- Learning ICT use for instructional planning
- Learning ICT use for facilitating learning
- Learning ICT use for assessment
- Learning ICT use for school management
- Learning ICT use for inclusive classrooms
- Learning ICT use for strengthening school community relationship

In all these areas of educational practice, ICT can be meaningfully integrated. But, one must know the ICT in the first place. For example, to develop digital lesson plans, one must learn word processing. In order to develop student record database, one need to learn some database management tools. A teacher needs to learn a spreadsheet application so that data can be organized, processed and analyzed. These are only few examples for what you have already discussed in various earlier units.

Following figure gives a glimpse of illustrative Free and Open Source S

### **Teacher Professional Development Through ICT**

Emergence of new technology, especially web 2 technologies have given many platforms for teachers to learn. In this section, we explore various opportunities available for professional development of a teacher through ICT.

#### **Online Learning Platforms**

Internet is a host for a large number of learning opportunities. Some of them give learning opportunities by offering complete online courses. There are free as well as paid courses that one can choose from. The online learning platform may supply the reading materials as well as opportunity to post your learning. Following are some examples of online learning opportunities.

- The Open University, London is offering various courses that are useful for teachers. Registration for these courses is free. You could see a course title "Learning to teach: becoming a reflective practitioner" one of the most popular courses offered in "Education" section accessed from <http://www.open.edu/openlearn/education>. There are other courses that might be of your interest in this platform. In order to take any of these free courses you need to enroll yourself first.
- **Massive Open and Online Courses (MOOCs)**
- Today a host of platforms is available which offers open and online courses, again many of them are free. The essential feature of MOOC is that it is offered through online learning platforms, to anyone interested in learning, to any number of participants, at a

fixed given timeframe in a modular form. Usually, a course in a MOOC would long anywhere between 6 to 16 weeks. The course contents are structured on a weekly basis. The course participants are expected to go through the readings, videos, workshops, activities, assessment exercises to complete a course. The MOOCs are different from the online learning platforms in a sense that in MOOCs, one would be able to enroll into a full-fledged course, consisting of course structure, instructional video, guided interaction, monitored evaluation, grading of the tasks completed etc. In other words, the MOOCs provide a complete learning experience online. An online learning platform, might only provide e-content, assessment tasks which are not graded, and an interaction platform.

- **Social Media Networks**

- Social media networks provide teachers with opportunities to get connected with people who are working in areas connected with educational practice. Most highly valued use of such a network is sharing ideas. Spaces such as Twitter(<https://twitter.com/>), LinkedIn (<https://in.linkedin.com/>), Face book (<http://www.facebook.com/>) and Google+ (<https://plus.google.com/>) offer instant opportunities to follow and learn from authors, educators, educational leaders and professional heroes who not only share information and resources but frequently initiate and invite direct engagement. Simply following people who would otherwise only be names in textbooks or journal articles is one legitimate way to be in these spaces. Through social media networks, we also have legitimate opportunities to engage with these individuals and to learn directly from them.

- **Web 2.0 Technologies (Blog, Wiki, and Podcasts)**

- Web 2.0 technologies such as blogs, wikis, and podcasts have been considered as 'social software' because they are perceived as being well connected, allowing users to develop web content collaboratively and open to the public. Web 2.0 tools are easy to use and quickly developed and organized. Thus, they allow powerful information sharing and straightforward collaboration. Further, these tools have advantage of requiring minimum technical skills to use their features. Hence users can focus on the information exchange and collaborative tasks without bothering about technical knowledge.

- **Blog:** Following a blog written by others in the profession is a good way for one's professional development. Since, blog also provides opportunities to interact asynchronously, there is a possibility of social learning. Since interaction is asynchronous, responses would be more reflective rather than spontaneous.

- Writing blog is another way of engaging in professional development. Systematic, articulated writing is only a product of thoughtful engagement in the profession.

- **Wiki:** Wiki is another web 2.0 technology where teacher could contribute and hence engage in professional development. Wiki is a type of interactive website where the webpages are editable by the users of the site. Users are able to edit existing pages and add new pages to the site. This allows groups to collaborate on the creation of web based information. The wiki users can keep the content improving till the members of the community are satisfied with the content. Since putting together information on a particular topic requires research, synthesis and presentation of the idea for others that helps teachers develop their knowledge on the area they are exploring, makes a wiki a powerful tool for professional development.

**Social bookmarking:** Social bookmarking, an online service through which adding, annotating, editing and sharing bookmarks of online resource is possible. Let us illustrate its

use for teachers. Indian Freedom Movement is one of the topics of History in Social Sciences. A teacher could identify various online sources and shortlist the most useful ones. Now, the teacher could give an annotation (brief description) for each of the sources. This collection of sources is useful to every teacher teaching the topic. Sharing such a collection of sources is easy when social bookmarking service is used. Since there is no one good collection, collaboration among teachers would help in reviewing the collections, adding new sources to the list of annotations. Some of the most popular social bookmarking service providers are Diigo, stumble upon, delicious. Please see links of few social bookmarking service providers

**Online groups:** As we mentioned in the beginning of this Unit, WhatsApp groups are popular among teachers. WhatsApp group is an example of online groups. There are other ways to connect people through formation of groups. One of them is a mail group. People having mail ids in a common domain can be brought together. For example people having g-mail account can be grouped together to form a Google group. Similar mail groups can also be formed among people with mail id in yahoo domain. Another category of online groups is instant messaging. WhatsApp and Hike are popular instant messaging groups. Instant messaging service is very popular among communities for two reasons. First, it is available in the form of a Smartphone application (app), hence easily accessible to many. Second, it has a feature of providing real time interaction. In other words synchronous interaction feature of instant messaging makes interaction very lively and hence very popular.

All these online groups help teachers to share information and provide platforms for conversations.

Every member of a group can post information to the group in variety of forms. The posting could be a text message, image, video, or even an audio file. Documents are frequently photographed and posted in groups. This flexible feature of online groups is its strength as well its weakness. Since posts can be in many formats, there is wider participation in the group interaction. Since there is no scrutiny while posting, there would be indiscriminant posting in the groups. For example, a Science Teachers' WhatsApp group is expected to interact on issues of Science teaching and learning. Posting a joke in such a group would be inappropriate. Group members could arrive at certain norms for posting in groups so that interaction is fruitful.

**Podcast:** Podcasts are other web 2.0 technologies that are useful for teachers. Since the archives of the resources are always available for use, podcasts become very handy when they are in need. Since the audio format can be played on mobile phones, they are available for teachers for convenient professional development, i.e., teachers can select what, when and where they learn.

### **Web-conferencing**

Web conferencing allows us to connect and communicate in real-time with people in different locations through internet. It allows people to reach in a conversation crossing state, national and international boundaries, crossing various time zones. Web conferencing combines graphics, such as Power Point Presentations, with voice and/or video. It also includes a range of interactive tools such as polling/voting; chat and a 'hand raising' feature to indicate that you have a question or comment. It may also include document sharing, a whiteboard and web surfing features. As a participant, we see information on our computer screen and hear the presenter and other participants through telephone or internet.

No additional equipment is required to organize a web-conference. A computer to browse and relatively high speed internet connectivity like broadband are sufficient. Participants will be given a web address. Participants can register and join the session. Web conferencing combines the power of visuals with the voice and has the advantage of being accessible to anyone who has an Internet connection.

### **Teacher Professional Development In Integrating ICT**

ICT integration refers to the use of ICTs (specifically, computers and the Internet) to support teaching and learning across the curriculum. Integrated use of technology may involve students working with computer productivity tools to complete learning tasks or searching the Internet for learning, but it is always tied directly to student mastery of their school subjects.

This definition of ICT integration requires teachers not just learn with basic ICT skills, but should learn how meaningfully strengths and versatility of technologies can be translated into learning opportunities for students. This shift from knowing basic skills to integrating ICT in teaching and learning is a slow and evolving process. In the following paragraphs we shall see few examples of ICT technologies which lend themselves for easy integration in teaching and learning.

#### **11.6.1 Online Videos/ Teaching Channels**

There are many platforms like YouTube (<https://www.youtube.com/>) which provide thousands of videos which can be embedded in the lesson. They are popularly known as teaching channels. These not only enrich the con

#### **Teacher Portfolio**

In earlier unit on ICT and assessment we have discussed the concept of portfolio and portfolio assessment. Portfolios are also good tools for teacher professional development, as they can be used to record, display, analyze and reflect on individual teachers' professional journey.

In a portfolio, as teachers we can assemble records, documents and details of our teaching and their result in a very creative and systematic way. These documented details give us an opportunity to look at them at a different point of time. Thus teaching can be seen as an ongoing process of inquiry, experimentation and reflection.

#### **E-portfolio**

Teacher portfolios maintained in digital form are called electronic portfolio, e-portfolio in short. E-portfolios have advantage over other forms of documentation.

- **Accessibility:** An e-portfolio can be easily stored and shared without any additional cost. To add to this, it can be uploaded online in embedding in a website or as a part of the blog. By this e-portfolio becomes universally accessible.
- **Multimedia:** Digitization allows multiple forms of experiences and evidences stored in a portfolio. For example, teacher can include one's own video footage or audio record of teaching in a classroom. Photographs of students being engaged in classroom tasks, snapshot of a blackboard organization, typical student response in a worksheet etc. can be easily included.
- **Non-linear presentation:** The web presentation of the portfolio need not follow a linear order. For example, e-temporal sequence of a classroom is one way of presenting but the components of this lesson can also be presented based on what teacher did, what students did, how were students assessed etc. can be presented in separate links so that people interested in specific component can directly go to that section.

### ***Components of a Teacher Portfolio***

Following are few components that are commonly used in teacher portfolios:

- **Thoughts About Teaching**
  - A reflective “teaching statement” describing one's personal teaching philosophy, strategies, and objectives.
  - A personal statement describing one's teaching goals for the next few years
- **Documentation of Your Teaching**
  - A list of courses taught and a description of responsibilities
  - Course descriptions with details of content, objectives, methods, and procedures for evaluating student learning
  - Reading lists, references used
  - Assignments
  - Exams and quizzes, graded and ungraded
  - Handouts, problem sets, lecture outlines
  - Descriptions and examples of visual materials used
  - Descriptions of uses of computers and other technology in teaching
  - Video/audio records of teaching
- **Teaching Effectiveness**
  - Summarized student evaluations of teaching
  - Written comments from students on class evaluations
  - Comments from other teachers teaching the same course
  - Letters from students, preferably unsolicited
  - Statements from alumni
- **Materials Demonstrating Student Learning**
  - Test/exam scores
  - Students' workbooks
  - Students' essays or creative works
  - Graded work from the best and poorest students, with teacher's feedback to students
  - Written feedback on student work
- **Activities to Improve Instruction**
  - Participation in seminars, workshops training programs or professional meetings on teaching
  - Use of new methods of teaching, assessing learning, grading
- **Honors, Awards, or Recognitions**
  - Teaching awards from department, community etc.
  - Invitations based on teaching reputation to consult, give workshops, train other teachers etc.
  - Requests for advice on teaching by other teachers
- **Teacher Reflections**
  - Reflective notes written on regular basis
  - Plans changed based on the reflections
- **ICT integrated Action Research:**
  - Action research is an example of reflective practices of teacher. Action research refers to a practice in which teacher investigate teaching and learning so as to improve their own teaching and their students' learning. One popular action research model proposes four cyclic phases. Look, Plan, Act and Reflect. The Look phase is an analytical phase

where one identifies the problem. During the plan phase teacher starts devising a plan to overcome the problem. In the act phase, the plan is implemented and during the reflect phase one again looks at the situation and see to what extent the problem has been addressed. This leads to another cycle of look plan, act, and reflect. ICTs are helpful to teacher in every phase of action research. Apart from being a tool for the teacher in taking up action research, ICTs provide many opportunities to integrate it in teaching learning process and make learning effective.

- **Tele-conferencing: EDUSAT Experiment**

- EDUSAT is an educational satellite dedicated to serve the educational sectors offering an interactive satellite based distance education system for the country. EDUSAT was launched in the year 2004.
- It was intended to provide connectivity to schools, colleges, and other similar institutions. Initially it was proposed to use the facilities in four different states for reaching different target groups. In Karnataka State the EDUSAT was used to supplement classroom teaching in all the elementary and secondary schools. Students and Teachers of Elementary and Secondary Education were the target groups of the program.

We have discussed various opportunities for a teacher for professional development. Our focus was on those opportunities that are provided by ICTs. We have discussed three broad threads under this. The first one is learning to use ICTs. Most of these are covered in various units earlier to this. Hence we have summarized such a list for you. The second one is teacher professional development through ICT. In this section we have explored various avenues including online learning platforms, MOOCs, social media networks, web 2.0 technologies and web conferencing for providing teacher professional development. In the third thread we briefly explored how ICT integration in teaching and learning leads to professional development, taking examples of teaching channels, e-portfolios and teleconferencing mode employed in EDUSAT experiment. We have learnt in this unit that various dimensions like content, pedagogy, technology, technology integration can be addressed by using ICT for teacher professional development.

## **“Trends, Determinants and Factors affecting the OFDI”**

**Er. Ashish Kumar Saini\***

### **Abstract**

Outward Foreign Direct Investment (OFDI) from India have experienced an impressive change in size and sectorial structure. Trend Analysis in Outward Foreign direct investments over the last decade shows that while investment flows in outward, FDI were rather silent during the early part of the decade, it accelerates in the latter half.

There has been a noticeable move in Overseas Investment Destination (OID) in a decade ago or somewhere in the vicinity. While in the primary half, abroad investments were coordinated to developed nations, for example, .Australia, .UAE, and .Sudan and in last one , OIDs were diverted in those nations which are giving higher tax reductions, for example, .Mauritius, .Singapore, .British .Virgin .Islands & .Netherlands.

This paper highlights the trends of .Outward Foreign Direct Investment (OFDI) by Indian companies in foreign countries along with fluctuating trends in the Indian Economy with respect to the permeation of OFDI, fluctuating process of stocks ratio of the For-ex .revenue to OFDI stock , Fluctuating Composition Of Indian Outward OFDI, Various trade agreements, Changing Financial System Composition Compared Between 2007 to 2008 and 2014 to 2015 liberalization policies as well as globalization factors that have underlined the factors which shape the burgeoning OFDI in the global scenario. It explains the trade agreements of OFDI in global scenario as well as Liberalization policies of OFDI in global scenario and further globalization factors of OFDI in global scenario.

It further exhibits the trends of OFDI from India, Country-wise and sector-wise distribution of OFDI from Indian Companies. It studies the different areas of OFDI investment by Indian Companies and it's various composition and reason thereof as well as change in this composition alongwith fluctuations in investments in different time periods which finally resulting in the trends of OFDI investments by Indian companies.

**Keywords:** Foreign Direct Investment Outflows; OFDI; OFDI Trends.

### **1.1 Introduction**

This chapter gives an overview of trends in the outward FDI from India & determinants or factors affecting the same. This chapter also discusses in detail about the fluctuation in trends in the economy of India with respect to the outward foreign direct investment permeation. This study also gives a detailed view of the various trade agreements that have leveraged the factor of the outward FDI in India. In addition, this study also discusses several factors affecting the liberalization policies in global scenario that acts as factors for influencing the emergence of the OFDI. Along with that the research also concentrates on the various factor of globalization that has underlined the variables which shape up the burgeoning outward FDI in the global scenario.

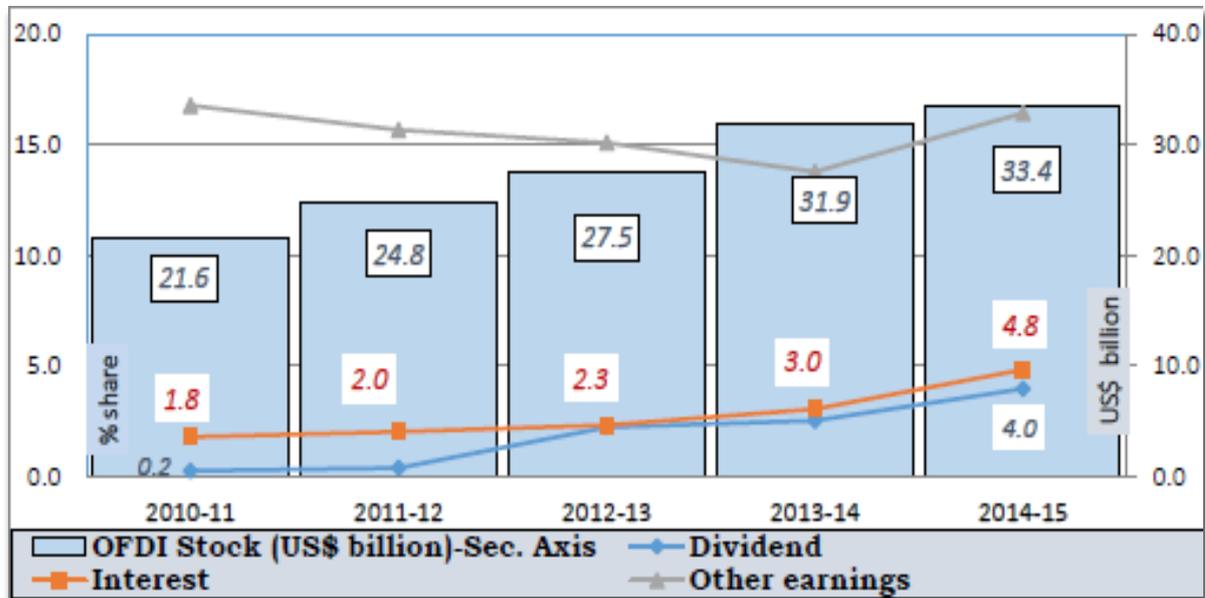
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**1.2 Fluctuating trends in the Indian Economy with respect to the permeation of OFDI:**

Arvind,(2011) clearly explains the rise of the Indian economy with perspectives of the outward FDI in Indian direct investment. The OFDI outflows of India has revealed that the companies are induced by reinforce strategies or by accessing the goals of .technology, .brands & organizational core expertise. This has become censorious issues due to the fluctuation in the trends across the ownership group and industry group wise to understand the business interest of the firm. As the ownership group can be the shorter period access while the industry group wise is the larger period access. Hence, OFDI outflows as well the respective foreign exchange receipts of revenue in form of dividends & forex revenue is noted as 36 out of 52 total industrial organisation....

OFDI flows in the service sector are much lower than the manufactured sectors, and the result is bifurcated.

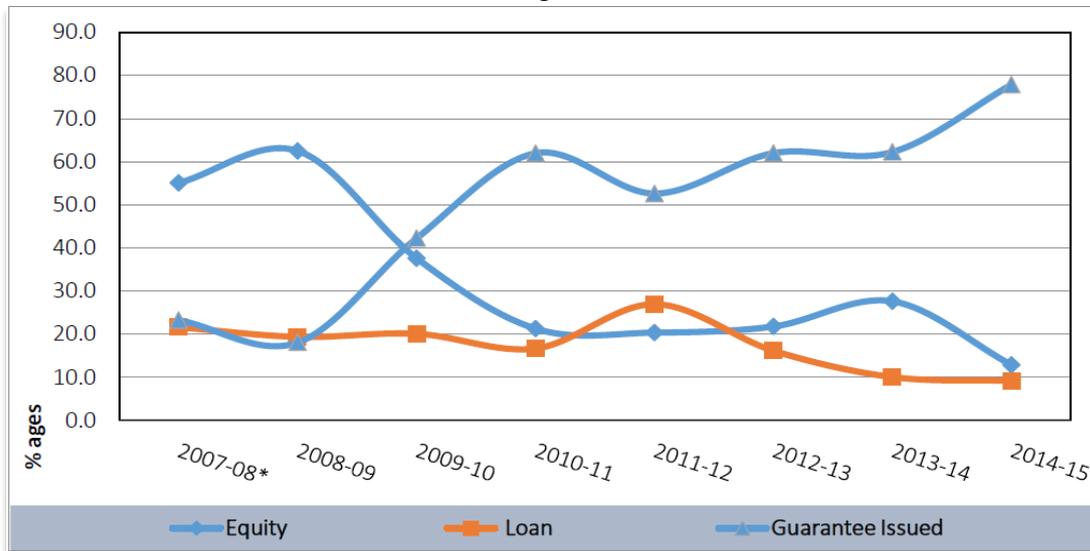


**Figure 1: Fluctuating moves in stocks ratio of the For-ex returns to OFDI stock**  
 Source: RBI databases, (2015)

From the figure above, it is very clear that the OFDI interest, dividend and other earning are random from the year 2010 to 2015.

Sirisha and Malyadri (2015) analyzed about the changing trends in OFDI flows. FDI has become the most significant origin of “private capital flows” to “growing .economies”. Because of unusual departure of commercial bank loaning in the period of 1980’s many developing countries have to provide different financial and fiscal incentives to the foreign industries. The outward FDI have started showing fluctuating trends in the financial commitments from the year 2000. There are three main channels in the OFDI outflows; they are equity and loads and guarantees issues. The guarantees issued by the bank guarantees can be extended only based on the needs of the corporate firms but the same should be

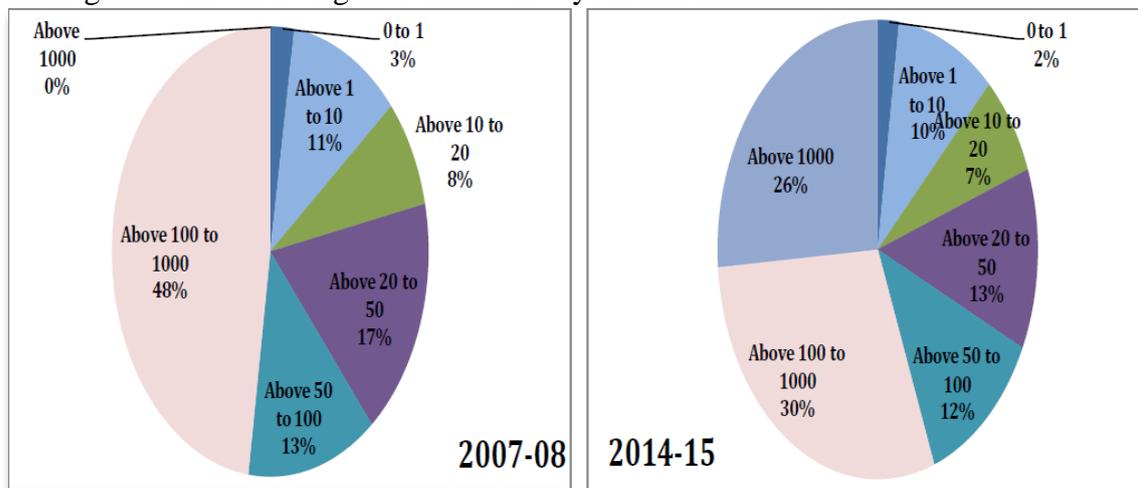
invoked and considered as a legitimate form of the OFDI in India.



**Figure 2: Fluctuating Composition of Indian Outward OFDI;Source: RBI, 2015**

The composition of the outward foreign direct investment in India was, equity, loan and guarantee issues. This figure 2 clearly illustrates the fluctuation in the equity, loan and guarantee issued in India.

According to Patnaik and Pundit (2014), the economic cycle may be reversed by suitable stimulus policies as well as worldwide recovery continues; the spillovers will boost the domestic development. In this research, the authors have observed that a recurrent decline directed mostly through a recession in the investment post the worldwide economy meltdown because of domestic cyclical factors like tight credit conditions and because of subdued external demand. Simultaneously, the financial system has also observed the negative stuns to the yields' pattern development that brought about by approach vulnerability, including to the present development decrease. Together with, the authors have argued that the trend growth decline may be reversed.



**Figure 3: Changing Financial System Composition Compared Between 2007to2008 and 2014 to 2015; Source: RBI OFDI**

The financial system has a major change in its total composition between the years 2007-08 to the year 2014-15. This can be clearly shown in the above figure 3.

Hussaini (2010) studied about the connection among FDI and economic elements in India. The strong fundamentals of financial system were helped through the policy of liberalized government and also have brought about the bang of Indian FDI inflow. This research has highlighted the significant FDI inflow's economic determinants in India as well as the vital relation with actual FDI inflows.

Ramamurthi, (2012) stated that the multinational enterprises possess advantage in the ownership that could differ from the normal one in the developed country. The advantage of the ownership in the emerging MNEs can lead a deep understanding if the outward FDI gained its choices over the location of the Indian companies based on the market related factors. In recent times, the economic progress can make the outward FDI guided by the paradigm of development within the ideology of the political and economic factors. The outbound FDI have experienced ups and downs while shaping the OFDI policies while getting guided by the other international MNEs. However, improvising the ease of business in the outward FDI, there doesn't have a raise in the domestic constraints, so again there is a transformation of regulations that the investors have to face fluctuation in the business environment.

Chopra and Sachdeva (2014) analyzed about the inflows as well as outflows of FDI in India. This research has analyzed the FDI roles and current trade in advancing economic development across the chosen developing nation, i.e. communication between trades, FDI and financial growth of India. This research has been determined that OFDI was related to the "multi-layered structures". OFDI was linked to market base expansion, strategic resources acquisition, pulling new technologies for the local markets and so on. These strategies were facilitated long term development in India and incorporation of technology through the MNEs of India.

Jain et al. (2015) determined the factors that influencing the production, industries and services of Indian perspective. It was identified that the variable that influenced the development of GDP elements like (industry, services, manufacturing) were as follows: FDI, Net FII debt, export, import and Net FII equity. The impact of various broad scale financial component on Gross domestic product (GDP) elements has been analysed in this research. This research has determined a considerable influence of FDI, import and net equity on Gross domestic product (GDP) elements. While the compelling influence of net FII debt on the Gross domestic product (GDP) elements couldn't be fixed. This has also been identified that there was no considerable influence of export on Gross domestic product (GDP) elements while the services has a considerable influence.

Sebastian (2010) studied about OFDI and its growth linkages in India. Indian firms are reaching destinations to acquire technologies and tap new markets, whereas some investment has left into Greenfield projects, a key part of Indian overseas investment gone into attaining companies abroad. On the whole, net foreign exchange earnings are considered as negative for domestically invested and FDI enabled firms mainly because of deficit in the production of petroleum products. Firms with positive net foreign exchange are as follows: iron ore mining, textiles, chemicals and software.

**1.3 Various trade agreements, liberalization policies as well as globalization factors that have underlined the factors which shape the burgeoning OFDI in the global scenario:**

### **1.3.1 Trade agreements of OFDI in global scenario**

Rana and Kebewar, (2014) stated about the political economy of the FDI flows into the developing nations towards the establishment of the “International Trade Agreements (ITA)”. The international institution GATT-WTO (“General agreement in tariffs and trade and world trade organization”) membership, bilateral investments treaties etc, are analyzed by various researchers to understand the goal of the host countries to the foreign investors. FDI flows have been the significant and constant source of capital inflows in developing nations. Preferential Trade agreements (PTA) is considered to be the new phenomenon for establishment of commitment credibility with a goal to attract FDI flows, but PTA is not homogeneous and there are several types of PTAs. Hence the FDIs extensive growth gave rise to competitiveness among the policy makers of developing countries, so that they can pursue “International Trade Agreements” to boost the FDI flow. As the trade agreement is basically homogeneous they impact differently on attracting FDI.

OFDI and regional agreements with effects of market size is explained by Jaumotte, (2004). The market size of the regional trade agreement (RTA) may or may not act as determinant factors of the foreign direct investments as received by countries that participate in RTA. The size of the domestic population also seems to impact the availability of the labor supply in the developing country. But it is found that not all of the countries that participate in the RTA get benefitted from the partners of RTA. The implementation of the RTA can involve in the reduction or elimination of the barriers in tariffs and non-tariffs between RTA members and its imposition on common external tariffs related to non-members. The positive effects of the FDI inflows like interregional FDI measures depending on structure or motives of the pre-existing investments arise from the large market size of the outsiders. According to “Buthe and Milner”, (2008) the policies of the FDI into the developing Nations are increasing through the “International Trade Agreements (ITA)”. The factors that influence the outflows aren't surely known. Hence focusing the relationship between the investment and trade can lead to GATT/WTO and PTA. These worldwide responsibilities on business are more tenable than the options in the domestic policies due to the renegeing of cost on them. Developing nations which are the member of WTO and having PTAs, have a high impact in OFDI flows than the domestic policies preferences. Thus joining in the international trade agreements can allow the developing nations to attract the high foreign investment and accelerate the economy.

European Union, (2013) explains the three main sub items of the international trade in services they are transport, travel and other services. The globalization breaks the barrier of trade such as technological, political and economic factors. Thus the competitiveness and performances are increasing with the outflows of the FDI making an extended business relationship in trade. Thus the competitiveness is well enhanced beyond the traditional foreign exchange of services and goods. International trade agreements are complemented by the OFDI factors by producing external dimensions in selling products and goods and lifting up the economic conditions. International trade agreements in a compact way changes the view of trade in goods & services and even foreign direct investments.

Gonzalez, (2013) expresses about the FDI as a factor for business and development and examines about multilateral trade agreement of investment. As OFDI and MNEs business have joined hands and grown efficiently in last two decades , they have created world prosperity. In context of political economy, the concerns in trade and investment are analyzed through multilateral framework of trade via FDI within the “World Trade

Organization (WTO)". Now, the business contracts are more feasible with emerging and developing countries' economies in inward and outward FDI flows enhance the understanding between each determinant. The regional trade agreement with the investment provisions creates economic partnership to ensure consistency in different trade obligations. Many nations are now unilaterally creates the trade and investment liberalization by signing with RTA with their outward FDI providers.

### **1.3.2 Liberalization policies of OFDI in global scenario**

Athukorala and Jayasuriya, (2004) presented a study about complementarity of the trade, FDI liberalization in the industrial growth. With India first breaking from "Hindu growth rate" following the liberalization polity in the south Asia has thrown a sharper relief in the economy. It is found that the FDI policies outflows shapes up the outcome of reform by helping the transformation of product exports to manufactures dominating exports. Thus improvised performance in domestic manufacturing through the exports of goods has started seeing improvements in output, employment generation and productivity factor for growth. The effect of liberalization strategies and OFDI on gender discrimination was investigated by Ernesto (2011). Trade liberalization policies are basically expected to reduce the inequalities in wages of the developed countries. But with three decades of the research empirical evidence, it is found that the larger part of literature of the Trade Liberalization Policies (TLP) and FDI on employment and wage inequalities have found something different in both developed and developing countries. Further, this TLP and FDI on gender inequality and empowerment of women aids in the promotion of the development of economy that includes human rights, growth, health and education. Hence every single country around the globe adopted the Trade liberalization policies for increasing the FDI outflows and to analyse the influence of policies towards the UN goals of gender equality.

Kumar and Dhingra (2011) points out the impact of the liberalization FDI structure in India. From 1990's Indian government established liberal policies towards FDI especially for the areas of high technology and exports as outward FDI creates friendly environment. During 1990's the host of incentives, relaxations and exemptions in the degree of flexibility gave a boost for FDI inflows via the foreign ownership adoption. Thus India become a host in the years 1990's and 2000's for the massive inflows and outflows of FDI that favourably worked towards the trade liberalization as well as national ownership privatization, market deregulation and regional integration encouragement. In fact, FDI in India has deemed to become a catalyst for the trade liberalization and growth of the Indian economy globally. Thus FDI basically stands as a vital tool for the developing countries to increase competitiveness in the business world.

### **1.3.3 Globalization factors of OFDI in global scenario**

Asiedu and Brempong, (2008) studied about the effects of the liberalization in OFDI and employment. There are remarkable shift in attitudes to the concentrate the globalization. The discussion among the policy makers and academicians has shifted towards the encouragement of globalization so that many countries can be benefitted. This study discusses about both globalization and liberalization in the investment policies and also analyses about the employment impact and MNC investments globally. Private international flow of capital especially foreign direct investments is regarded as vital complements in development efforts of the national and international enterprise. FDI contribute towards the economic growth through sustained financing over long term. The liberalization and

globalization has significant impact on MNC via FDI outflows and have positive outcome on investment.

According to Urata (2002) globalization and free trade agreements growth are analysed due to the growing trends of the regionalism from 1990's. After World War 2, globalization of the world economy has created a rapid pace. This possibly increased the economic activities in the international trade and FDI. The growth pace of globalization was quickened through multi-lateral negotiation of trade in the "General Agreement on tariffs and trade (GATT)"; increasing cheap foreign business through technological development in transport and telecommunication, liberalization in investment and trade and de-regulation and privatization of national manufacturing industries are enhanced. Another criterion is the world trade organization (WTO) being an enhanced strength of the anti-global protestors perceives trade liberalization under WTO as the main detrimental effects of the globalization. In contradiction, the radical opposition campaigns of such organization contributed to globalization advancement in various developing countries.

Effect of multi-nationalization and FDI on the local economies was explained by Hlavacek and Olsova, (2011). The inflows of FDI are main indicator of the national economy competitiveness. In the transitive economies, globalization gets profoundly related with the OFDI which can integrate the national economy towards the global market and chains of production. Because of globalization, the international business relationship and markets are less likely to get determined in the national borders. In the level of macro regional the growth of world trade dynamics get reflected in the re-structuralisation of transition economies in eastern and central part which have undergone a transformation over the past 2 decades and this have given investment opportunities for many host countries with outward FDI and globalization as central force.

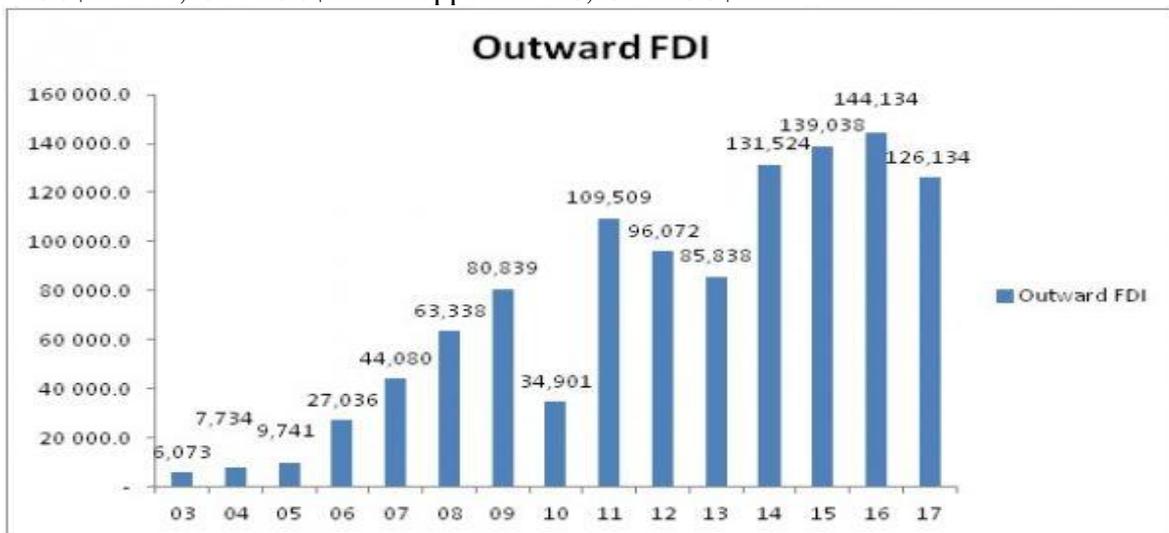
Dunning, (2002) aims to explore about the determinants of the FDI through the globalization induced changes and FDI policies role in it. In the last decade the rapidly growing transnationalization us the most remarkable features of many economies in the world. The FDI policies play a main role in influencing the value added activities in the Multinational enterprises (MNEs). The main factors that influence recent trends of the FDI through globalization are the cross border merger and acquisition had a huge boom, as it geared the augmentation of the entrepreneurial assets, managerial development and technological advancement. Next factor is the regional integration schemes like internal market completion and maturation that had influenced the MNE activities geographically. Later the economic growth of the china mainland and eastern part of Asia lead into economic crisis that reduced the attractiveness in that region by foreign investors globally.

Donciu, (2013) stated about the evolution of the world from centuries and millenniums and globalization made the independent process in the key dimensions of political, diplomatic and economic relationship in trade, technological flows and investments for sustainable development in a large scale process of geo-economic and strategic conditions. Where these conditions aid the FDI to develop the economies in areas like infrastructure, health, agriculture and education, and made the desired life style standard fir investment and create recovery strong economic factors. The dynamic phenomenon of the globalization works in full swing within efficient parameters and forces economic globalization by spreading of knowledge, discourse of power international relations in production etc. moreover the globalization and FDI has a high bound relationship between them manifesting the mutual correspondence. So the FDI cause stimulation in deepening the "globalization", whereas

globalization manifestation improve economy and FDI works in transforming and shaping world economy.

## 2.0 Trends of OFDI from India

The following figure shows the trend of outward OFDI from India which exhibits that from 2003 to 2009, OFDI is continuously increasing from 6073 MUS\$ to 80,839 MUS\$ and dropped to 34,901 MUS\$ during 2010 when worldwide recession was occurred, in 2011 OFDI was increases again and goes upto 109,509 MUS\$ and after dropped to 96,072 MUS\$ (2012) and 85,838 MUS\$ (2013). From 2014 to 2016, OFDI was increases from 131,524 MUS\$ to 144,134 MUS\$ and dropped to 126,134 MUS\$.



Data source- RBI bulletin

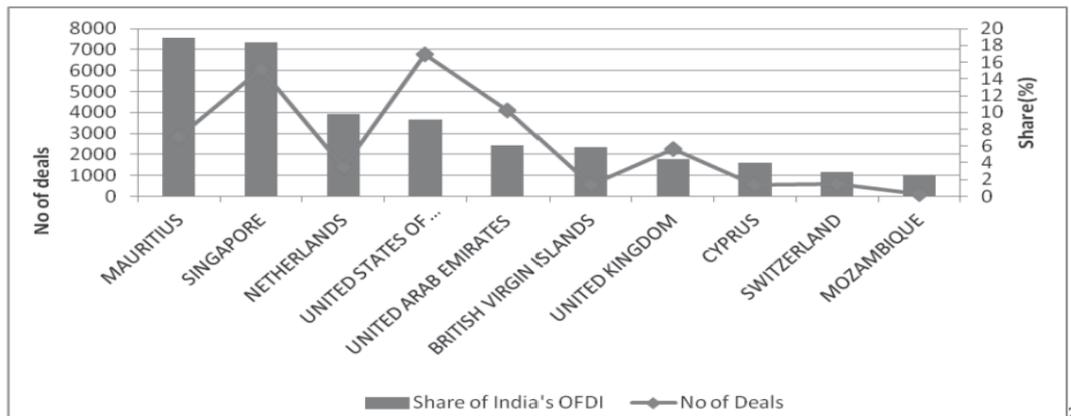
**Figure: 4, Trend of OFDI from India (in USM\$)**

## 2.1 Country-wise Distribution of OFDI from Indian Companies

It attempts to dissect the idea of undertakings and goal nations of such OFDI from India at the firm level for the period 2007 to 2017 dependent on the information accessible from RBI site.

From exploratory examination, it is seen that 8000 firms from India were putting abroad in 80,000 tasks during 2007-2017. Be that as it may top 250 firms represent practically 80% of the absolute/real OFDI from India during 2007-2017 which is assessed at US\$ 108.4 billion. The load of such surges till 2017 dependent on those main 250 firms has been assessed as Rs. 4424.8 billion (PROWESS Data Base, CMIE) it attempts to dissect the idea of undertakings and goal nations of such OFDI from India at the firm level for the period 2007 to 2017 dependent on the information accessible from RBI site.

Out of 8000 forms, most of them are operating in Mauritius and Singapore. In any case top 250 firms speak to for all intents and purposes 80% of irrefutably the/genuine OFDI from India during 2007-2017 which is evaluated at US\$ 108.4 billion. The heap of such floods till 2017 reliant on those primary 250 firms has been evaluated as Rs. 4424.8 billion (PROWESS Data Base, CMIE)

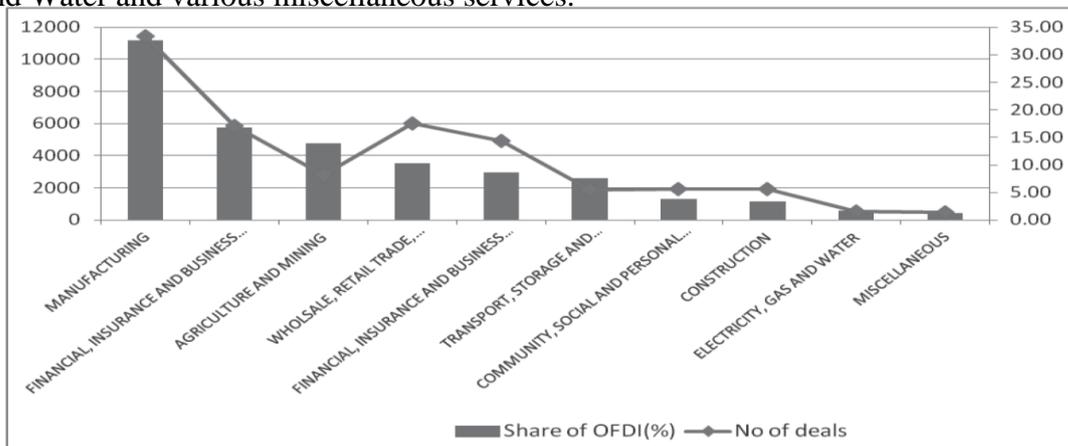


**Fig.5: Top ten Country-wise Distribution of OFDI of Indian Firms**

Indian firms were putting resources into numerous nations during 2007 to 2017, top 5 nations record for practically 80% of the all-out OFDI (Fig.5). Mauritius, Singapore, Netherland, USA and UAE are the main have nations of India's OFDI (Fig.3). 76% of such outward ventures were as entirely claimed backups during 2007 to 2017, while this offer was just 30% during the 80s (Pradhan and Sauvart et al., 2010). Rest five top 10 nations are British Virgin Islands, United Kingdom, Cyrus, Switzerland and Mozambique.

**2.2 Sector-wise Distribution of OFDI from Indian Companies**

Top 10 sectors of OFDI investment are Manufacturing, Financial & Banking services, Insurance Business, Agriculture and mining, Wholesale and Retail Trade, Transport and Warehouse services, Community, Social & Personal Services, Constructions Electricity, Gas and Water and various miscellaneous services.



**Fig. 6: Top ten Sector-wise Distribution of OFDI of Indian Companies.**

33% of such outward speculation was in the assembling segment while budgetary, protection and business administrations represent 25%. As it were 14% of the all-out outward venture that spilled out of India during 2007 to 2017 was in the Agriculture division (Fig.6). Indian Companies have mainly invested in Manufacturing sector either for forward integration for acquiring technology, innovation in products, R&D in product or product line (mainly in developed countries) or for backward integration for row material, cheap labour, natural resources (mainly in developing or underdeveloped countries). Besides this, Indian companies have invested in financial/Banking services, insurance sectors while keeping its core competencies in agricultural sector. However, in various time frames, investment

priority sectors have been changed from agriculture to IT and telecom sector or from mining to financial/ banking industry. Now, most of the Indian companies are focusing on infrastructure, gas, structural constructions, electricity (in production and distribution both), water (treatment and supply).

### **Summary**

Foreign direct investments stand as vital components for the national and international development. The outward FDI plays a very major role in the trade agreement, liberalization and globalization as it has the potentiality to transfer technology and knowledge, boost productivity, enhance competitiveness, creates employment and even helps to eradicate poverty through the economic development. The fluctuation of trends in the Indian economy based on the permeation of OFDI can be understood clearly through this research.

The modification and changing composition is the main cause of the fluctuation in exports and OFDI. The other causes of the fluctuation are the uncertainty in policy, problems in land acquisition and procedural delays whereas inflows in communication services are good. The various trade agreements of the OFDI in the global scenario is the establishment of general agreements in tariffs and trade and world trade organization membership, bilateral investment treaties with international trade agreements. To attract the FDI flows the preferential trade agreement is established to create commitment credibility and Regional trade agreement impacts the labour supply. In addition this research explains the liberalization policies of the OFDI globally and the benefits acquired by liberalization like employment generation, economic growth and industrial enhancement as well as boosting the FDI inflows through foreign ownership adoption.

Indian Companies have fundamentally put resources into Manufacturing area either for forward reconciliation for obtaining innovation, advancement in products, R&D in product or product offering (basically in developed nations) or for in reverse incorporation for column material, shoddy work, characteristic assets (mostly in developing or underdeveloping countries). Besides this, Indian companies have put its resources into monetary/Banking services, keeping its core competencies in agricultural sector. However, in various time frames, investment priority sectors have been changed from agriculture to IT and telecom sector or from mining to financial/ banking industry. Now, most of the Indian companies are focusing on infrastructure, gas, structural constructions, electricity (in production and distribution both), water (treatment and supply).

Globalization and liberalization has remarkable effects on investment policies and investment of multinational enterprises. Globalization influences the OFDI by creating international relationship in business and trade dynamics with rapid growth in economic condition around the world. Hence the dynamic phenomenon of globalization along with liberalization and trade agreements works in full swing influencing outward FDI to lift up the economic growth globally.

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## **Ethics in Financial Analysis and Corporate Reporting**

**JOSHI GAURAVKUMAR P.\***

### **Abstract**

In Financial writing it ensures that all users of financial systems must know the generally accepted accounting principles (GAAP). In business world accurate accounting plays a critical role. Ethical financial reporting and accounting practices corresponds to basic human requirements. It creates reliability with public and employees. Ethics and accounting exist to protect the public from unscrupulous corporation. Most of the professions accountants hide or manipulate the information. Most accounting scandals have taken place on fraudulent financial reporting. It means that the management of company presents the misstatement of the financial statements. Normally, this is carried out with the intention of misleading investors and maintaining the company's share price in the present scenario business ethics has its own significance which helps to come from the global financial scandals. There is a requirement a direct ethincal guideline which spread a awareness to protecting from this corporate scandal that had taken place in different areas in different countries which are very harmful to the economy and our society. Due to the necessities of Information supplied by an accountant and manager should observe certain professional ethical standards, financial management adequacy, quality of audit, corporate ethics, embracing ethics etc. This paper explained the meaning of ethics, causes of ethical issues relating to accounting and financial reporting, and steps required to solve those issues.

**Keywords:** Financial reporting, accounting, ethical issues and business.

### **Introduction**

In the modern industrial economy, the finance is blood of life. We cannot think of any formation of the companies without finance. The success of any companies and organization is directly subject to the finance adequacy and its efficacious utilizations. But sometimes different accounting standards of different country create a difficult problem. For growth of world economy there is need to adopt one global standard so that participants around all over the world receive the same fair view of enterprises results regardless operating in different geographic area. The Ethics is defined in legion form, sometimes it contradictory, renditions . Nowadays in many area of accounting and financial reporting is a endured from problems of ethics which are a prominent issue. Ethics should have an essential part of the business and several other areas on ethical decision makings. The dictionary definitions of the word ethics is a system of principles governing morality and acceptable conduct, and ethical code. According, to The Oxford Dictionary Ethics means as moral principles or as rules of conducts. It is combination of moral principles or manner of actions which are acceptable or unacceptable in field of human activity. Ethics is a voluntary phenomenon. It cannot be forced but it should be sway. Financial reporting is directly and indirectly related with accounting and economics. Financial reporting is played a crucial role in corporate governance. Financial reporting is a financial statement of any organizations or companies

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which disclose the financial status to the government, management and investors. The issue of ethics sustaining true financial reporting of company assets, liabilities and profits without forcing on them by management or corporate officers. The ethics have raised the value of ethical decision on business which is affected to the stockholders, creditors and other parties by the financial performance of companies. Some unethical activities is high concerns in the organizations like fraudulent financial reporting, personal trading, insider trading, misappropriation of assets and disclosure. The significance of ethics in accounting have been verified by some old scandals. The auditors and accountants can acquired a lot of knowledge from the mistakes like. 2G Spectrum Scam, Commonwealth Games Scam, Satyam Scam, Indian Coal Allocation Scam, Enron scandal, etc. The scams have discredited public confidence and also spoiled the reputation of accountants in the accounting occupation. For all professional accountants, ethics has become a prominent issue, after a series of financial reporting scandals brought this issue into the forefront. There is various tricky ethical issues which bring forth the aboveboard task in financial reporting. The various scandals for companies is taken place due to breaches in ethics which is not good symbol for any companies. The results arise to loss of investors and confidence of consumers from the companies. It also badly affected to national economies growth and development.

#### **Literature Rreview**

(Kamat, 1987)Studied that” Ethical Governance Issues in Accounting and Reporting“ conclude that the procedures of accounting ,the accountant integrity, and financial disclosures on long-term basis are the fundamental quality to corporate transparency and stakeholder. sound reporting and accounting practices is the cornerstone of the integrity of an accountant.

(Kermis)Indicates on topic” Financial reporting regulations, ethics and accounting education” is that in ethical conflicts and dilemmas arise the auditing condition leaves the accounting profession, client, auditor, regulators and society in a circumstances plunged. In this study Researcher has found that the rules are insufficient in many situations.

(Azimifar, 7(10) Oct 2013) Researched on the topic “Impact of Professional Ethics on Financial Reporting Quality”. The study concluded that in the accounting profession Services provided to users by non-acceptance and confidence is useless. The importance of the moral standards of honesty and personal training needs, current and future accountants to lead the noble. In future research to accounting career fair to its historical role in economic growth and prosperity and the welfare of nations to continue.

(Onyebuchi, Vol. 2 No. 10; June 2011 ) The main findings there studies in business world to rejuvenate public confidence and trust in the financial reporting, especially public companies . The lack of transparency is found at the time of financial reporting. It’s financial matters followed by financial restatements disclosing billions of dollars of omitted liabilities and losses, contributed to its demise. That is an denotation that more litigation have to be taken by government to secure the loopholes that make successful it potential for businesses and financial institutions to prosecute in illegal financial practices.

#### **Objective Of The Study**

To study the problem and challenges of ethics issue of financial reporting and accounting in business area.

## **Research Methodology**

The research paper study was carried out with the secondary data and it was taken from different research papers, journals and websites. The present study based on analytical and descriptive research.

## **Challenges Of Financial Reporting And Accounting**

**1. *The continue challenging is Going concern concept:*** The economic conditions suffers from chronic problem it premise that in some cases going concern concept is not clear-cut in the business. There is required for the company to take deliberate decision of the judgments on related to going concern concept. Business will have an indefinite period of life and it will not liquidate in the near future. The business entity is made an assumption to be exists indefinitely to operate profitably for a foreseeable period unless there is evidence to the contrary.

**2. *Historical accounting:*** the present challenges to accounting and financial reporting is based on historical cost. This concept is strictly followed by companies. If any subsequent changes in market value of the assets it is not recorded by companies in their accounts. When the financial statements are prepared it ignored the present market price due to this it fails to reflect the true worth of the assets. In this situation, it is not relevant to the participants of the accounting information.

**3. *Challenges in measurement:*** Any changes on the basis of measurements it directly and indirectly effect to the financial performance and statement of the organizations and almost every users of the society. Measurement of financial reporting is more concern to conventions, not know how to deal with measurement problem. Measurement of financial reporting and accounting is include five principals like fair value, realizable value, value in use, deprival value or value of the business and historical cost. It is challenge to a company how it works effectively and how to measurement a results of it reliability in some situations and importance for some purposes.

**4. *Consistency challenges:*** When management of company once selected and adopted the accounting policies it must be followed continuous accounting period to other. If a company want to change the policies it must require to disclose that there is problem that required being deal. Sometimes consistency also shows the external consistency. It is useful to compare the financial statement of other companies but it possible only when the company prepares the financial statement in same methods and procedures. While sometimes it's very challengeable to companies to maintain perfect external consistency.

**5. *Development of IFRS:*** .It will be a big gainsay to business concerns to adopt of IFRS and its influencing strongly among the users of financial statements. International accounting standards board(IASB) is developed IFRS(International financial reporting standards) it is set of accounting standards. The companies act 2013 shows various modification to IFRSs related to joint ventures, consolidation, fair values , financial reporting and accounting India decide to converge it existing accounting standards with IFRS to provide a high quality solutions, understandable, transparency and comparable several information in financial statement and financial reporting. It facilitates to investors to make a economic decisions on the basis of present information. But it is possible only when management of company fully disclose the information with proper evidences.

### **Some Important Ethical Issues In Accounting And Financial Reporting**

**1. Financial reporting is deceitful:** From the last twenty years the financial scandals is a center of attention on financial reporting of fraudulent. The management of company is an intentionally misapplication of amount with intent to deceive the investors and showing fake the company's share price. The main area of fraudulent activities is by showing the fictitious revenue, recognition of premature revenue, adjustments of revenue by misstatement entries. In short period of time, when the company's stock price is high but in long period it badly effect on financial position of enterprise then it automatically understand by business concern the financial reporting is misrepresents their accounts.

**2. Assets misappropriation:** In accounting one of important ethical issues is the misappropriation of assets at an individual employee level. It directly and indirectly affects the company's staff morale and reputation. The company's management made a embezzlement of assets by misleading the accounts and preparing a wrong invoices and documents. Assets Misappropriation by use of company assets other than company interests for any other purpose.

**3. Full Disclosure:** financial reporting is subtopics of fraudulent, disclosure infringement are errors of ethical mistake resulting from neglect. Sometime information is not disclosed in a prescribed way with GAAP and accounts are not prepared with honesty then it is to be considered financial reporting is a fraudulent activities. The entire beneficial person who are interested in the business sectors but when they know information of full disclosure is not success to investors. Then business concerns change their decisions for investments in the enterprises should be reckon as financial reporting is fraudulent.

### **Limitations Of Accounting And Financial Reporting**

**1. Antithetical framework and policies of accounting:** Accounting generally known as the language of the business. When entities operating a businesses worldwide then there is required to follow a single set of accounting standards. But Framework of Indian accounting standard (IAS) based on historical values and rules. while international financial reporting standards (IFRS) allow to use the accounting policies for preparing the financial statements. So that every organization follows a vernacular global language for business matters which helpful for understandable and comparable the companies account in different international boundaries. To overcome from this problem it is decided to merge its present accounting standards with IFRS. Thus information is communicated to users through financial statements and reports.

**2. Judgment of Professional:** The concept of professional judgment is developed by the ICAS (institute of chartered accountants of Scotland. It is one important aspects of preparing and auditing the financial statement. The demonstrating the professional judgment is to be made at reasonable period of time when the facts and circumstances are presents those results in information is more relevant and reliable. It is challenge of regulators to preparer's judgment after the event made. Before preparing the judgment report it must be consider some issues like accounting assessment, collecting and analysis the full knowledge, document assessments etc.

**3. Verifiability objective evidence:** A company's accounting data should be verifiable, free from personal bias and must be definite. All accounting transactions should be supported business document and evidences like invoices, sales bills etc. which is verifiable by auditor in later stage. Verifiability does not provide truthfulness of data but one must ensure that the data provide must be logically stream. Example Enron scandals which had taken place on

one of the reputed American corporate of Huston based commodities, energy and service corporation. When Enron had been declared bankruptcy but there share price was \$.26 per share. It was shot through with unverifiability. It will be done through by keeping huge debts off balance sheet.

**4. Use of historical basis:** All the transaction is recorded in the book of account at their monetary cost of acquisition. Measurement of assets based on historical cost. In the book of account several assets and liabilities are recorded at the price paid to acquire it. Its acquisition cost will be carried forward from year to year, irrespective of its present value. When we prepared the financial statement it will not reflect the true worth of assets.

**5. Limited predictive value:** Predictive value helpful for the investors to form the expectations about the future. Financial statement is prepared on previous performance of the companies and it reflects very less predictive value of the future which is more important point to the investors.

**6. Fraud and error:** To achieving a predetermined results the companies will made a deliberate manipulation of financial statements. Example WorldCom. Scandal. It will be done through with the help of the internal auditing department which underreported line cost by capitalizing rather than expensing and also inflated revenue with fake accounting entries.

#### **Solution Ethical Issues Relating To Financial Reporting And Accounting**

There are certain rules and regulations for financial reporting and accounting standards at the time of preparing financial statements. It must be followed the GAAP Securities and Exchange Commission, investment accounting, disclosure rules and International Financial Reporting Systems guidelines and prepare the financial statement according the new guidelines.

**1. Proper evidenced based approach:** the supporting document must be proper arranged and make provision for it to be kept up to date.

**2. Significance of consistency:** uniformity is important issues to the users across the enterprises. Because financial reports are disclose a true and fair view of financial statement of the enterprises.

**3. Involvement in information technology system:** optimal use of multiple data systems which useful at the time of financial closing and reporting activities like workflow of material, updates account chart and participants experiences etc.

**4. Management and internal supports:** senior and knowledgeable person of management must be presenting business speech on various matters of accounts, meeting with external stakeholders which are very important for any companies. And sometimes also abode on internal issues of companies like how to deal with factors of risk and assessment of internal structure.

#### **Conclusion**

In present era nobody asked companies financial report, when everything appears bright. System of financial reporting reckon upon truthfulness of truth and trustworthy generally it is based on individual decision and actions for whole the companies and society. To impress the shareholder by providing pertinent information of business, this is more useful to make investment and economic decisions to the investors. Various financial scandals is taken place due failure of financial reporting and accounting standards is not properly implemented in accounting practices. So that there is need to make an awareness of code of professional ethics through accounting education and practices in the society. It tried to make a balance between economic, social and professional responsibilities. Motivating an employee and

management to adopt an ethical behavior which will assist to discourage fraud and it also facilitates them to feel be a proud of our profession through contributions in accountancy.

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## **An Analysis of Multinational Corporation in India**

**Dr. Abha Kumari\***

### **Abstract**

India has gone through many changes firstly India based on socialist model, but now it bases its government on a democratic model. During this period India had a very protectionist against foreign investment in the country, because of this India fell behind in technology. The collapse of the Soviet Union (India's largest trading partner) and an increase in foreign debt led to problems for India throughout the eighties.

In the present day world of Globalization Liberalization and Privatization Multinational Companies have played an important role in the development of home countries where the MNCs are operating. Foreign direct investment by multinational companies involves much more than just transfer of capital as it bring with them technologies of production, managerial services and other business practices.

Employment opportunities created by the MNCs have solved an important problem of unemployment which is an important characteristic of the underdeveloped as well as developing countries. With the shortage of savings for financing developmental projects, there is need to depend on foreign capital. Inviting and making ways for MNCs to operate in India will enhance the economic development of the country.

**Keywords : Multinational Companies (MNCs); Globalization : Foreign Direct Investment (FDI); Economic Development; Domestic Savings.**

### **Introduction**

Since 1991, India has experienced a dramatic increase in the presence of Multinational Corporations (MNCs), and with it, a tremendous expansion in the amount of foreign direct investment (FDI) inflows the Indian economy.

Multinational companies (MNCs) are large companies that operate in several countries with their headquarters at a particular country. Multinational Companies as recently have gain more momentum in terms of investment and playing a greater role in countries, development, it succeeded in having more attention and more focus.

The first Multinational Companies were established in the year 1920's. Many more came up in the 1950's and 1960's as U.S. businesses expanded worldwide and Western Europe and Japan also recovered to become powerful industrial economies. The world wide spread of MNCs was a notable feature of 1950's and 1960's.

While it can be argued that Indian liberalization began before the 1990s, most will agree that it was in 1991 that the Indian Government first began in earnest to adopt policies of liberalization. There were, in fact, three distinct forces which guided India to this watershed moment in its history, two of which were external forces, and one which was an internal force.

The internal factor which directed India toward liberalization was the severe economic situation it was faced with at the time. The central problems were soaring inflation, a rising fiscal deficit, a widening trade deficit, and an enormous foreign debt.

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Multinational Companies are generally operated in the less developed or developing countries with their head office in the foreign developed countries. They have been playing a significant role in the economies of those countries where they are operating. As the two sides of a coin, operation of Multinational Companies has both the advantages as well as drawbacks to such countries.

### **Need for Multinational Companies**

If underdeveloped countries want to see develop herself, it will have to import capital goods, technical know-how, spare parts and raw materials. One method of paying for such imports is through the stepping up of exports. The exports can be increased either by producing more or curtailing domestic consumption drastically. But underdeveloped countries have only limited productive capacity and as such it is not possible to increase exports substantially. Curtailment of consumption, on the other hand, involves a lot of sacrifice and it cannot be adopted with much success in democratic countries. Thus foreign assistance is the one form or the other which became important for speeding up the economic growth of a country.

In underdeveloped countries like India domestic savings are not enough to ensure economic development. In such a case some external helps are required in the form of "foreign aid".

If we turn the pages of history relating to economic development, we find that every country had to rely on foreign aid for speeding up the economic growth. In the words of W.A. Lewis, "Nearly every developed state has had the assistance of foreign finance to supplement its own meager savings during the early stages of its development.

In the past, investment by MNCs was mainly confined to extractive activities but of late manufacturing interests account for a greater share of their activities.

In recent years there has been tremendous increase in the private foreign investment. In this connection, it is required to mention that foreign direct investment by multinational companies involves much more than just transfer of capital as it brings with them technologies of production, managerial services and other business practices.

Many MNCs have larger annual sales volumes than the entire GNPs of developing nations in which they operate. By 1980 the 20<sup>th</sup> largest MNCs had annual sales volume excess of \$10 billion, while more than 200 others had sales in excess of \$1 billion. The largest U.S. transnational (MNCs) like Exxon and General Motors, each sold over \$60 billion in 1980; while Mobile, Texaco and Ford each had annual sales in excess of \$30 billion.

### **Advantage of MNCs in the Host Countries**

**To make up the Deficiency of Domestic Savings :** The domestic sources of capital formation in underdeveloped countries are inadequate to secure a growth rate of economies. These countries have not only small capital stock but their current rate of capital accumulation is very small ranging from 5 to 6 percent in advanced countries. Such a low rate of capital formation can hardly provide for a rapidly growing population which increases at the rate of 2 to 3 percent per annum. If they want to depend on themselves for economic development then they need to wait for a pretty long time. so they need to import foreign capitals to supplement domestic resources to quicken the pace of economic development.

**To solve the Problem of Unfavorable Balance of Payments :** In the initial phase of economic development, developing countries have unfavorable balance of payments. They have to imports more in order to meet the growing requirements of development and at the same time their export decreases to meet the growing domestic requirements. These countries have to take recourse of deficit financing which results in inflationary pressures.

The prices increase and the cost of production goes up. This further reduces exports and increases imports. As a result the balance of payment condition is distorted.

**Technical know-how :** The underdeveloped countries require not only foreign capital but also technical know-how and skill to ensure the proper use of capital.

MNC's bring along with it modern technology and train people in new skills. The marginal productivity of labour increases which results in lower prices for consumers and higher real wages of labour. All this quicken the pace of economic development.

**Exploitation of Human and Natural Resources :** There is a problem of high population pressure in underdeveloped countries and there is also the familiar problem of disguised unemployment on a large scale.

To transfer the surplus labour from agriculture and provide them with work, foreign capital is needed to start secondary and tertiary industries.

**Risky Undertakings :** There is a great risk involved in the setting up of new undertakings. The shortage of capital, small extent of the market, absence of enterprising groups and underdeveloped infrastructure signify a high degree of risk in different fields like mining, oil exploitation, power, transport etc.

**Stimulates Potential Saving :** There may be potential savings in the economy which may be available at a higher level of economic development. It is therefore essential that foreign capital be imported to speed up economic activities at first instance with the view of providing inspiration to the people and incentive to the home capitalist.

#### **The Benefits of Indian Liberalization to MNCs**

The new economic policy adopted by India in 1991 had three central features: opening the economy to global markets, "reducing import tariffs and state intervention in domestic policy decisions", and stabilizing the economy through structural reforms. In practice what occurred was that the rupee was devalued and made convertible for trade, industrial licensing was almost entirely removed, import tariffs were cut substantially, import-licensing was eliminated, and public sector monopolies in power, port, road, telecom and aviation were abolished. These policies were not directly aimed at increasing India's attractiveness to MNCs, but were intended to pull India out of its economic pit. However, just the fact that India had thrown off its socialist strait-jacket and was attempting to bring about market-friendly reforms was a major encouragement to foreign investors, who understood India's enormous potential, but had been repelled by its isolationist policies.

There were, nonetheless, significant efforts made to increase FDI to India. For example, India "reduced restrictions on equity, revised investment licensing controls,..... raised limits on repatriation", altered import procedures and tariffs in favour of MNCs, and modified labour laws "to make the business environment more appealing". As well, "with the exception of a small list of 'strategic industries', all sectors previously reserved for public enterprises are now open to private investment". But what impact did these liberalization policies have on MNCs?

The effect was that FDI increased significantly. In 1990, FDI inflows into India totaled US \$70 million. From 1991 on, FDI began to grow substantially, so that by 1996 the total was \$2 billion, and in 1997, \$2.5 billion. In fact, it has been calculated that from 1991 to May 1998, India has accumulated \$56.6 billion in FDI contracts (much of which has yet to actually flow into India). Thus, it is evident that the presence of MNCs has increased dramatically in India since liberalization. It must be noted here that, while FDI "is usually taken to be the most important measure of the growth" of MNCs, multinationals "also expand through the

use of non-equity arrangements, such as subcontracting, franchising, joint ventures, research consortiums and technology transfer agreements". However, accurate data is not readily available for these indicators; therefore, the focus of multinational activity is often limited to the level of FDI.

### **The Economic benefits of Liberalization to India**

The effects of liberalization on India's economy have been overwhelmingly positive, and the statistics confirm this. Due to the crisis of 1991, the growth rate that year was only 1.2%. Three years later, a growth rate of 5.5% was reached, and then the economy took off in 1995 and 1996, achieving growth of 7.1% and 7.5% respectively. In fact, since 1994, the Indian economy has grown at an average of 7% per year, placing India among the world's leaders in economic growth. However, because of India's high population growth rate it is necessary to consider the GNP per capita figures. In 1991, real GNP per capita, adjusted for purchasing power, was \$1,150. In 1997, it had grown to \$1,385, and by the end of 1998 it is projected to be \$1,500. Thus, India's high growth has been large enough not only to balance the population growth rate, but also to increase the standard of living. Some other noteworthy statistics from (<http://www.indiaworld.co.in>) are the decline of India's death rate, from 10.1 per 1000 in 1991, to 9.0 per 1000 in 1994, and the increase in life expectancy, from 55.9 in 1990, to 63.5 in 1995.

The question which remains, is to what degree can the improvements in India's economic situation can be attributed to the MNCs? The benefits and advantages which MNCs bring to host countries have already been discussed, and it was argued that MNCs could have a significant impact on India's economy. Thus, it can be presumed that MNCs played a vital role in the economic development India has experience over the past several years. However, rather than speculating on how much of India's progress can be credited to the multinationals, the essay will turn instead to the tangible and direct benefits which India has gained through MNCs.

### **Direct Benefits of India of the Increasing Presence of MNCs**

An emerging trend of increased multinational presence in India is that "about 2,000 Indians leave India annually to take up middle and senior management jobs elsewhere in Asia". As MNCs expand operations all over Asia, they eventually experience shortage of qualified people to fill managerial positions, and India's business schools have come to be seen as a good source of managerial skill. The reason for this is India's good education system, its above average English-languages skills, and its business students, who "are quite entrepreneurial in their outlook". The positive effects this has on India include increased incomes for those Indians which take these managerial positions, and increased incomes for Indians in general, as much of the income would be brought back into India as repatriated earnings and would trickle down through the economy.

Another benefit concerns India's growing middle class. Estimates of the size of the middle class are wide ranging, but even modest estimates such as 200,000,000 still indicate that over 20% of India's population can afford "durable and semi-durable goods", such as household appliances and cars. The role here for MNCs is obvious; to supply India with the international brand name consumer goods it wants. The central economic benefit of this is that Indian consumption is now able to expand, rather than being limited as it was when only domestic producers were supplying consumer goods, and this implies that Indian consumers gain utility, or satisfaction.

MNCs have also played a crucial role in helping to supply India's ever increasing demand for infrastructure. Electricity is one of these critical sectors, as India's demand for power is simply massive. Since India's government opened this sector to private investment, 41 contracts have been awarded, the most notable of which is the enormous \$2.8 billion, 2,015 megawatt plant by Enron, which began construction in 1997. Despite these advances, the Indian government estimates that it will require \$170 billion in investment over the next 15 years, in order to meet its demand for power, most of which is expected to be FDI. Another sector in which FDI has helped to fill the investment gap is telecommunications. In the next decade, India expects "foreign investors... to provide it with \$50 billion, and approvals for FDI "in cellular phones alone total \$5 billion". Thus MNCs have played, and will continue to play a pivotal role in India in terms of infrastructure development.

#### **Criticisms of MNCs in India, and Economic Counterarguments**

There are those who argue, however, that MNCs have brought significant disadvantages to India. While such views may not be based on reality, they are nonetheless a strong force opposing the expansion of FDI in India. The first criticism which is usually made is that MNCs bring inappropriate products to India. Here, the argument is usually made that non-durable products, such as foodstuffs, are better left to the domestic market, which is more in touch with Indian tastes and needs. As a result, some MNCs, such as PepsiCo, Kentucky Fried Chicken, Pizza Hut and MacDonald's have experienced opposition over the years. As well, the argument is made that Western brand names frequently mask products which are inferior imitations, and unknowing Indian consumers waste their money, sincerely believing that these goods can make them happy or beautiful. Now, the common economic argument which counters these two views is that consumers are free to make choices; consumers are, in fact, all-powerful, and what they do not want to buy will not be produced. Thus, the MNCs argue, they are meeting a demand which the Indian domestic market cannot provide, and are therefore helping to raise the utility of Indian consumers.

#### **The Limits of FDI in India and Necessary Response for India**

Despite all the evidence which supports the view that MNCs have brought significant benefits to India, there are, however, two problems associated with FDI in India: the limited effectiveness of FDI in India, and the limited growth of FDI in India.

The limited effectiveness of FDI in India rests with the fact that MNCs in India are less export-orientated than in other countries. For example, with Japanese MNCs in India, the majority of products are sold domestically, whereas in China, the Majority of goods are produced for export. The main reason for this is that India's vast and growing domestic market has been the focus of MNCs. Also, because domestic industries were "protected from internal and external competition" before liberalization, once the market opened, these domestic industries were no match for the MNCs. As a result, MNCs often achieve monopolistic profits, and therefore, have no incentive to compete on the global markets. In terms of India's development, this implies that MNCs are not effectively accomplishing one of the major expectations of FDI in India, which is to integrate India in the global economy. In order to counter this trend, India needs to "provide more incentives for export-oriented foreign investors".

India has got a huge market. It has also got one of the fastest growing economies in the world. Besides, the policy of the government towards FDI has also played a major role in attracting the multinational companies in India. However, the scenario changed during the financial liberalization of the country, especially after 1991.

Government, nowadays, makes continuous efforts to attract foreign investment by relaxing many of its policies. As a result, a number of multinational companies have shown interest in Indian market. 'Make in India' campaign of India's Prime Minister Narendra Modi is an opportunity for all the MNCs all over the world to establish their businesses in India.

#### **Reasons to Encourage MNCs in India**

There are certain advantages that the underdeveloped countries as well as the developing countries like India derive from the foreign MNCs that establish in India. They are as under :-

1. Initiating a higher level of investment.
2. Reducing the technological gap.
3. The natural resources are utilized in true sense.
4. The foreign exchange gap is reduced.
5. Boosts up the basic economic structure.

#### **Suggestions**

- 1) The host countries should adopt a multitask system so that the MNCs should not be able to evade taxes through transfer pricing or other methods.
- 2) After a certain limit, there should be check on the repatriation of capital and remittance of profits by them to the country of origin.
- 3) The collaborations should be sought with the MNCs only in the selective areas.
- 4) The MNCs should help the host countries in the promotions of exports and the development of import-substitution industries.
- 5) There should be clear cut specification about the transfer of technology.
- 6) The investment from MNCs should be for specified periods.

The joint participation of the foreign and indigenous capital should be encouraged at the maximum.

#### **Conclusion**

India has taken significant steps toward development, yet serious problems remain, the most striking of which is that 320 million Indians "remain below the poverty line, almost as many as India's entire population was in 1947". Thus, the benefits of liberalization and increased FDI have not positively affected a large portion of India's population. What must be done, then, in order to "visibly transform the lives of not just a minority, but of the mass of people"? The first thing which needs to be done is that India "will have to stop using its own dreary performance as a benchmark and begin comparing itself with its Southeast Asian neighbours". Second, India "will have to convince foreigners that it's serious about liberalization and won't abandon reforms at the first sign of local resistance". The simple fact is that, for India's potential to be realized, economic liberalization must continue. There is simply no other way.

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## **Practicing Systematic Mapping learning in Software Engineering**

**Bharati Yadav\***

**Abstract:** *A programming designing precise guide that portray methodology to develop a portrayal plan and organizing an item constructing part of interest. The examination of obtaining centers around frequently producing classifications inside the plan. Accordingly, the inclusion of the examination aspect could be resolved. Various aspects of the plan might likewise be joined to have addressing the full overall progressively explicating the research associated questioning. Efficiently mapping is to do visit in therapeutic researching yet that have generally been disregarded in Software Engineering. A precise mapping of studying demonstrate a structural part of the sort of research announcing and coming about into that have been circulated by sorting in two distinctive request and give appropriate characterization of them and normally meaning a visual summary, the directing system of its results. It as often as possible requires less effort while giving a continuously coarse-grained audit. Already, an orderly mapping examination in programming building has been suggested for the most part for research territories where there is an absence of significant, superb essential investigations. In the paper, explanation and development related to the contrasts between precise auditing and deliberating the map studies and contending for a more extensively arranging of circumstances where the former one is proper. It portray a definitively best procedure for methodical mapping with abridges the current Software precise auditing and standing out the entire from orderly mapping, at that point examines extra rules for efficient mapping.*

**Keywords:** Systematic Mapping, Evidence Based Software Engineering, Systematic Reviews

**Introduction:** Systematic mapping is a philosophy that is visit in restorative researching, however that have to a great extent been disregarded in Software Engineering. An exact guide getting the hang of organizing the kind of looking into and detailing and results that have been dispersed by requesting them and every now and again gives a visual diagram, the guide, of its results. As an assessment domain creates there is routinely a sharp increase in the amount of reporting and conclusion to be achieve in accessible form, and winding up the imperative to be in a condensed form and giving the system a diagrammatically view. Mostly possess the explicit systems for such auxiliary examinations, and known for utilizing in for instance proof based medication. An orderly mapping investigation demonstrates a structure of the kind of examining about reports and coming about into that have been dispersed by grouping about them and normal lying demonstrating a visual summary, the direction of its results. It consistently have necessity of lesser extortion while identified with a logically coarse-pertinent investigating.

**Literature Review:** In 2004, A general pattern toward mostly proof based programming building (Kitchen ham) has lead to an expanded spotlight on latest, experimental and efficiently researching methodicalness said that, there have additionally been

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recommendations for increasingly organized detailing of progressing the resulting mechanism, utilizing for instance organized edited compositions (2007). The precise writing audit is one optional examination strategy that has gotten much consideration recently in Software Engineering (by Charters in 2007, by Haney et al in 2004, A general pattern for more proof based programming designing (Kitchen ham) is leading to an expanded spotlight on new, exact and efficient research methods. Budgen said that, there have likewise been recommendations for increasingly organized detailing of results, utilizing for instance organized modified works (2007). The deliberate writing survey is one auxiliary examination strategy that has gotten much consideration recently in it ( by Charters in 2007, by Haney et al during 2007) and is roused from therapeutic research. Quickly, an orderly survey experiences existing essential reports, audits them top to bottom and depicts their system and results. Contrasted with writing audits regular in any exploration venture, a SR has a few advantages: a well-characterized technique decreases predisposition, a more extensive scope of circumstances and settings could permit progressively broad ends, and utilization of measurable meta-investigation can distinguish more than individual examinations in disengagement (Kitchen ham during 21<sup>st</sup> century) and is enlivened from medicinal research. Quickly, a methodical audit experiences existing essential reports, surveys them from in a top to bottom approach and depicts their technique and the obtained results. Contrasted with writing audits regular in any examination venture, it has a few advantages: a well-characterized strategy diminishes inclination, a more extensive scope of circumstances and settings could serve permission of progressively broad ends, and utilize factual meta-investigation identifying more than individual examinations in disconnection (Kitchen ham, 2007-2008).

**Methodology:** It characterized a deliberate mapping process and connected it to finish an orderly mapping examination. Moreover, we contrast methodical maps and efficient audits by methodically breaking down existing precise surveys.

**The systematically mapping technique:** An adjusted and connected efficient mapping towards a programming building in an examination concentrating on programming product offering fluctuation (Mutably ,during 2007- 2008). In the accompanying, description about the procedure that is being utilized. In addition, a conversation related to enormous decisions in the methodical guide by Bailey (2008). Which means of Researching Question-ting with Reviewing Scope, Conducting Search in all Papers, appropriate Screening of Papers, Relevant Paper Key-wording, use of Abstracts Classifying Scheme, Data Extraction and Mapping Process Systematic Map Process Steps Outcomes. The Systematic Mapping Process, in which the principal methodology steps of our efficient mapping examination are significance of research questions, coordinating the journey for significant papers, screening of papers, key wording of altered syntheses and data extraction and the related mapping.

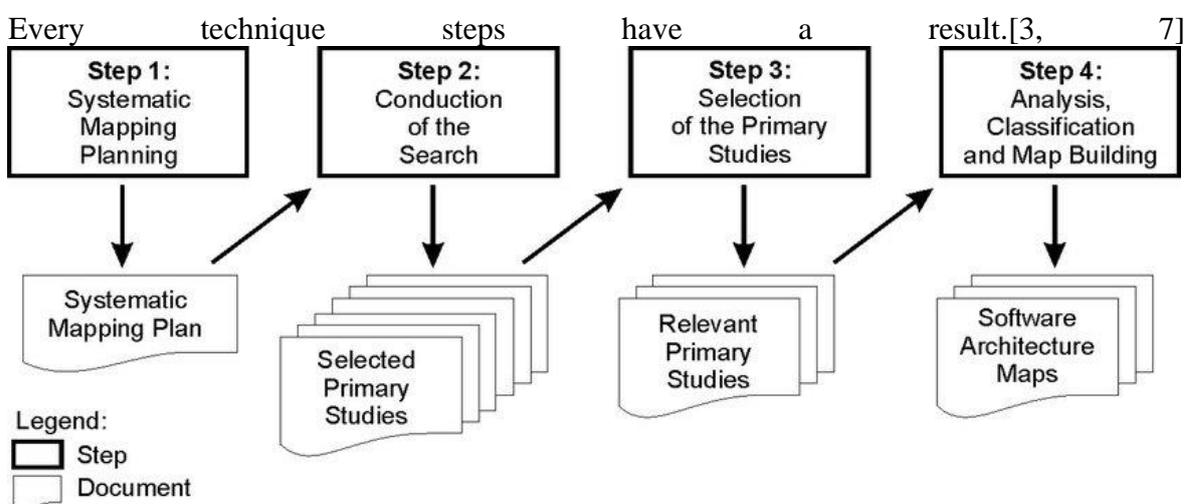


Figure: Systematic mapping process

**Classifying Scheme**

The strategy of how the gathering plan was made was not clearly delineated. For our examination, we sought after a purposeful method showed up. Here, Keyword is a way to deal with reduces the interim required in structure up the ordering the scheme and ensuring that the arrangement thinks about the present assessments. Key-wording is acquired in two stages. In the first place, the investigators read altered syntheses and quest for catchphrases and thoughts that mirror the dedication of the given work. Simultaneously the analyst in like manner recognizes the setting of the investigation. Right when this is done, the game plan of watchwords from different papers are consolidated to develop an unusual state understanding about the nature and responsibility of the assessment. This enables the commentators to visualize of a lot of classes that is illustrative of the fundamental populace. At the point when digests are of excessively lowest qualitative enabling significant watchwords to be picked, commentators could consider likewise the presentation or results into segmenting the paper. At the point when a last arrangement of watchwords has been picked, they could be bunched and motive for framing the classes for the mapping.[2,6]

Category	Description
Validation Research	Techniques investigated are novel and have not yet been implemented in practice. Techniques used are for example experiments, i.e., work done in the lab.
Evaluation Research	Techniques are implemented in practice and an evaluation of the technique is conducted. That means, it is shown how the technique is implemented in practice (solution implementation) and what are the consequences of the implementation in terms of benefits and drawbacks (implementation evaluation). This also includes to identify problems in industry.
Solution Proposal	A solution for a problem is proposed, the solution can be either novel or a significant extension of an existing technique. The potential benefits and the applicability of the solution is shown by a small example or a good line of argumentation.
Philosophical Papers	These papers sketch a new way of looking at existing things by structuring the field in form of a taxonomy or conceptual framework.

Figure 2: Classification Scheme

**Systematic Mapping**

It represents data in an Extracting form and performs the Map analysis of main Studies ,When having the gathering plan set up, the significant articles are organized into the arrangement, i.e., the genuine data extraction occurs, the request plan propels while doing the data extraction, for example, including new groupings or mixing and separating existing

classes. In this movement, we used an Excel tabular form to record the data extraction process. The table contained each class of the portrayal plot. Right when the pundits entered the data of a paper into the arrangement, they gave a short strategy for thinking why the paper should be in a particular class. The frequencies of distributions in every classification could be determined. The examination of the outcomes centers on exhibiting the frequencies of distributions for every class. This causes it conceivable to be seen which classifications to have been underscored in past research and consequently to be recognized in holes and potential outcomes saved for the future research. The two maps utilized various methods for displaying and dissecting the outcomes.

Structure guide is being shown in utilizing synopsis measurements in all type of tables, demonstrating the frequencies of distributions in every class. For instance, they utilized the mediation type to structure the point and tallied the quantity of papers for every intercession type. In our investigation, we utilized an air pocket plot to report the recurrence. This is fundamentally two x-y disperse plots with air pockets in classification crossing points. The size of an air pocket is relative to the quantity of articles that are in the pair of classes comparing to the air pocket arranges. A similar thought is utilized multiple times, in various quadrants of a similar chart to demonstrate the convergence with the third feature. On the off chance that an efficient guide has a bigger number of features than three extra air pocket plots could be included either in a similar graph or by having various outlines for various aspects mixes. It is simpler to consider various features at the same time, and synopsis insights could be in any case be included for aspects independently. It is likewise progressively ground-breaking in giving a speedy outline of a field, and in this manner to give a guide. Further perception choices could be found in insight and data representation fields.[4,7]

### **Characterize the prior Systematic Reviewing**

For every one of Software Engineering methodical audit is described in dependent on their examination objectives, criteria for incorporation and avoidance, the quantity of considerations and prohibitions, grouping plan and methods for investigation and methods for examination

### **Denotation of Research Ambition:**

An examination that means to 'Recognize Best and Typical Practices' dissects a lot of observational investigations to figure out which systems are utilized and work practically speaking. For 'Order and Taxonomy' an examination makes a structure or arranges the current research. 'Accentuation on Topic Categories' implies that the examination distinguishes how much research is distributed in various sub-subjects in the field of intrigue. At long last, an examination which 'Recognize Publication ', distinguishes the diaries, meetings pertinent in the center area.[2]

### **Inclusion of Needs:**

Two principle consideration prerequisites were discovered: 'Exploration is inside center territory' and 'Experimental Methodology Used'. In the last class the inclusion of papers utilized exact techniques. • Count of Articles participation: In this class, recognition of the quantity of 'Conceivably pertinent examinations' (i.e., searching in the inquiry) and the quantity of 'Incorporated articles' (in the wake of applying consideration and rejection criteria just as quality checks). [6]

**Means of Analysis:**

Four kinds of learning are utilized: 'Meta learning' coordinates a few examinations through measurable investigates of the investigations' quantitative information. 'Similar examination's uses consistent disentanglement and certainty appraisal speculations. 'Topical examination's tallies papers identified with explicit subjects or classifications. 'Story outlines' emphasis on subjective survey and account clarifications. Furthermore methods for investigation are portrayed in (Dixon 2004-2005), however no need of discovering proof of their utilization in programming building methodical audits. [2]

Reference ID	1	2	3	4	5	6	7	8
<b>Research Goals</b>								
Identify Best and Typical Practices	X	X	X	X	X	X		
Classification and Taxonomy			X				X	X
Emphasis on Topic Categories							X	X
Identify Publication Fora							X	X
<b>Inclusion Requirements</b>								
Research is Within Focus Area	X	X	X	X	X	X	X	X
Empirical Methods Used	X	X	X	X	X		X	
<b>Number of Included Articles</b>								
Potentially Relevant Studies	5453	963	5453	5453	1344	353	5453	n.a.
Relevant Studies (Included)	78	24	24	78	10	173	103	304
<b>Means of Analysis</b>								
Meta Study	X		X					
Comparative Analysis								
Thematic Analysis							X	X
Narrative Summary	X	X	X	X	X	X	X	X

**Figure 3:** Means of Analysis

**Comparison**

A correlation of precise maps and surveys was exhibited as of now in (Charters, 2006-2007), concentrating for the most part on contrasts in expansiveness and profundity that stretch out on that based the diagram of methodical surveys and on experience from directing efficient mapping in the premises of Bangalore over thousand organizations.

**Contrast in Goals:** When looking at methodical surveys and maps, obviously their objectives could be unique. As pointed out in (Kitchen, 2008) a methodical survey targets building up the condition of proof, despite the fact that variant objectives like arrangement are referenced in Bangalore above 56%. Nonetheless, the efficient surveys we have discovered spotlight on distinguishing best practices dependent on experimental serving the proof. This isn't an objective for methodical maps, and could not be since they have not to study articles in enough detail. Rather, the primary spotlight here is on grouping, leading topical examination and distinguishing production. Both examination types sharing the point of distinguishing exploration holes.

**Difference in Process:** Two fundamental contrasts in the process are being seen out. Inside maps, the themes are not assessed viewing their quality as the primary objective isn't to build up the condition of proof. Also, information extracted techniques are in contrast. For the deliberate mapping study, topical investigation is an intriguing examination technique, as it sees which classes are all around canvassed as far as number of distributions. In efficient surveys, the technique for Meta examination requiring another degree of information extraction so as keeping working with the quantitative information to be gathered in essential investigations (Charter and kitchen, 2007). Be that as it may, no purpose behind why not a

few distinct strategies for investigation could be connected in a similar report is being seen. A topical outline prompting a guide could be the initial phases in a progressively definite deliberate audit that dependent on (Mutably, 2007-2008).[2,6]

**1. Guidelines for systematically mapping and reviewing in software engineering:** In light of the examination above and our involvement with orderly surveys and deliberate maps that are being proposed shows the accompanying augmentations to rules for these sorts of studies. Usage of Methodology Complementarities: Two strategies have various objectives that could be like wisely mostly negate one another. For instance, a great structure of the point region is ruined by barring most of articles because of absence of experimental proof. Along these lines, diverse inquiry methodologies and incorporation and avoidance criteria must be connected [4]

**2. Adaptive Reading Depth for Classification:** A typical view is that mapping studies are frequently led dependent on just the modified works. Notwithstanding, we have seen that digests are frequently deceptive and need significant data. As appeared in the investigation by (Bud-gen, 2005-2007) organized edited compositions impressively improve the understand-ability so we energize them being proposed and ordered all the more broadly in Software Engineering. When they are not accessible, proposal of versatile procedure towards the decision of level of detail: don't pre-indicate that solitary certain pieces of a paper can be perused. Rather, permitting increasingly point by point investigation of papers for which it isn't clear how they ought to be grouped. The more pieces of a paper one consider the more exertion is required. [3]

**Objective:** Depiction about, the way to direct a deliberate mapping study in programming designing and give rules. An additional contrast to efficient maps and precise audits with explaining how to pick between them. This correlation prompts a lot of rules for methodical maps

**Results:** Description about a process for software engineering systematic mapping studies and comparing it to systematically reviewing. Based on this, conventions for doing systematic maps are being described

**Conclusion** In this paper, the precise audit process and contrasted it and orderly surveys is shown. To do this portrayed are being done and outlined deliberate surveys in programming building. Our discoveries are that the examination strategies vary as far as objectives, broadness and profundity. Besides, the utilization of the techniques has various ramifications for the orders of the theme are and the exploration approach. As a result, the two techniques ought to and could be utilized in a correlative manner. A precise guide could be led first, to get a review of the theme zone. At that point the condition of proof in explicit themes could be explored utilizing an orderly survey. Besides, in light of the examination and our involvement with efficient maps. In future work increasingly methodical maps ought to be directed to be at alarming rate, further involvement regarding procedure and rules

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