

## HIGHER RESEARCH BASED EDUCATION AND KNOWLEDGE MANAGEMENT; IT'S IMPACT ON STUDENTS PRODUCTIVITY

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### ABSTRACT

This is an attempt to find out the effect of higher education on the productivity of students and professionals getting this education. We analyzed the results on the basis of literature available around the world. Many researchers determine this impact in different countries on different levels of knowledge management. We consider the course content and its delivery methods and their output on the productivity in this regard. 5 likert scale questionnaire utilized to attain the results from the students. Correlation and Regression analysis used to determine the impacts of these variables. The Conclusion is very positive and optimistic, which said that students are feeling motivated and they feel that their productivity is immensely increased.

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### A CASE STUDY OF KARACHI MPhil. PhD STUDENTS

A Quarterly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories  
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gate, India as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

International Journal of Research in Social Sciences  
<http://www.ijmra.us>

## 1 Introduction

After the Second World War the question which resisted the human development most is how knowledge been produced, applied, spread to the well-being of the poor countries in general and war torn countries in particular. In 1998/99 World bank's World Development Report chose the knowledge system as their central topic of discussion. In that report the point which was considered most vital is how the poor countries can be converted into knowledge based economies. The reason why they have discussed the point more that the easiest way of development is knowledge based economies. In such economies governments invest their maximum revenues on to their people, education, training and development in general and in a booming trade in particular. (UNO, 2006)

Because it required more resources and time to develop on the basis of natural resources, it also has more chance of failure and extreme competition. Knowledge strategies paid best dividends in the last two decades for the countries adopted them. India, China, South Korea, Malaysia, Singapore all based on their knowledge levels. Which are extremely high as compared to more mature and developed countries like EU, US, Canada.

Transfer of knowledge from developed countries to under developed countries is not easy as well. Political, social, financial restrictions are hindering the process commonly. Under developed countries are not looking for reinvention of wheel or automobiles, but the technology transfer can help them significantly. This will narrow the gap of knowledge more rapidly than normal circumstances. (Knowledge Management : Strategy, 2007)

In the modern world not only countries but the companies also focused on customers and in the process adopted knowledge based methods to satisfy the demands of customers of new century. On the other hand the uprising of knowledge based solutions of all the major problems in business and industry is a common approach. Companies developed and adopted these solutions for their better performance and attract new customers to achieve huge financial success in smaller period of time." Knowledge management's overall goal is to build an organization that can 'see' the customer (customer-focused), for it is the customer that drives any business". Peter

Drucker, enclosed the modern paradigm of the business and the importance of the relationship between customers satisfaction and knowledge management. (CADER, Yousuf, 2006)

Knowledge management adoption is common factor of nearly all the modern organizations, which included even educational institutions. These institutions adopted nearly all the modern techniques such as IT based tools for admissions, registration, student performance evaluation, faculty assessments, and also all the admin procedures. Business schools in particularly adopted knowledge management as their part of procedural design so their performance also enhanced to the highest level. (RANJAN, Jayanthi and Khalil, Saani, 2007)

These institutes also utilize these modern techniques to enhance the students productivity especially in the fields of research and design, research and development, and many others in general. The development of such skills enhances the capabilities of their students to a very high mark, where the acceptability of these students as a market leader are absolutely sure. That is why they called themselves as knowledge houses. (PETRIDES, Lisa A. and Nodine, Thad R., 2003)

### 1.1 Research Question

What are the applications of Knowledge Management applied in the target area universities higher education students?

How much result these applications generated in the field of productivity due to higher education?

#### Objectives

- To find out the impact of higher education on a student life.
- To determine the effect on productivity during and after the higher education.
- To analyze the results of questionnaire based statistics on productivity.

## 2 Literature Review

Knowledge management has been the topic of research for many scholars and researchers in the industry and educational institutes all over the world for the last decades so as to help find the better ways to improve organizations performance. (ALLEE, 1997). Knowledge management is a broad and multi-dimensional term which focuses on organizational objectives such as enhanced performance, competitive advantage, originality, incorporation and continuous improvement of the organization (HREF1) however our main objective of study is to analyze the true meaning and basic idea of the knowledge management which will help for the proper implementation of it, and the challenges faced during development of knowledge management practice.

### Knowledge Concept

The concept of knowledge has been the center of study for centuries from Greek philosopher which gave the idea that correct belief can be turned into knowledge by putting it through the means of reason. Aristotle thought that knowledge of a thing involved understanding it in terms of the reasons for it. In Western philosophy, knowledge is perceived as abstract, universal, independent and logical. It is considered as a stand-alone artifact that could be confining into technology (HREF2).

Defining knowledge precisely is rather difficult as it is evident from literature that fundamentally it is an ambiguous term, as different disciplines refer it to different things, However “knowledge is the expertise, experience and capability of staff, integrated with processes and corporate memory” (OXBROW, Abell &, 2001). Knowledge has always been bound to persons and corroborate in the context of application.

Various writers have addressed the dissimilarity among data, information and knowledge (ALLEE, 1997). There is a hierarchical relationship between data, information and knowledge this hierarchical relationship has data as its base, followed by information, and then knowledge.

“Data refers to codes, signs and signals that do not necessarily have any significance as such” (SUURLA, Markkula and Mustajarv, 2002). In other words it is a set of discrete objective facts about an event or a process which have little application by themselves unless converted into information. Data for example are numerical quantities or other characteristics derived from observation, experiment, or calculation. When data organized for some purpose which has some

meaning, it can be converted into information (BOONE, M., 2001). Information is a collection of data and associated explanations, interpretations, and other textual material regarding a particular object, event, or process. By learning and adoption, information can be converted into knowledge (SUURLA, Markkula and Mustajarv, 2002).

.Knowledge is based on information that is organized, or summarized to enhance comprehension, awareness, or understanding. Knowledge represents a state or potential for action and decisions in a person, organization or a group. It could be changed in the process of learning that causes changes in understanding, decision or action.

The concept of explicit and tacit knowledge is first elaborated by Michael Polanyi (Skyrme, 2002). Polanyi (1966) cited in uitBeijerse (1999, p.99) stated that “personal or tacit knowledge is extremely important for human cognition, because people acquire knowledge by the active creation and organization of their own experience”.

This means that most of the knowledge is tacit and becomes explicit when shared. Tacit knowledge is personal in nature and is therefore difficult to extract from the head of individuals. (ALLEE, 1997). Explicit or “codified” knowledge, on the other hand, refers to knowledge that can be explained in systematic language (Nonaka and Takeuchi, 1995).

In other words, explicit knowledge is expressed as information in various formats that include published materials and manuals of rules, routines and procedures. Knowledge and management of knowledge appear to be regarded as increasingly important features for organizational survival (Martensson, 2000). In addition, knowledge is a fundamental factor, whose successful application helps organizations deliver creative products and services.

### **The changing role of universities**

The business of universities is all about knowledge. They have employed many researchers and teachers spread knowledge, sponsored libraries to store and distribute knowledge, and acculturated students into the ways of disciplines. Reid (2000) argued, “Traditionally, universities have been the sites of knowledge production, storage, dissemination and authorization”. Similarly, (RATCLIFFE-MARTIN, Coakes and Sugden, 2000) expressed that universities traditionally focus on the acquisition of knowledge and learning.

The advent and increase use of IT in higher education system has drastically changed the mode of learning in traditional education system. A variety of Internet-based distance-learning courses, are now part of the universities' curricula. (Hailes&Hazemi 1998; Jones & Pritchard 1999; Rada 2001; Tschang 2001).

This continuous change, advancement and introduction of new information technologies require new knowledge management practices and creating new teaching and learning cultures.

Universities and other higher education institutions face similar challenges that many other non-profit and for-profit organizations face (ROWLEY, 2000;).

Among these challenges are financial pressures, increasing public scrutiny and accountability, rapidly evolving technologies, changing staff roles, diverse staff and student demographics, competing values and a rapidly changing world (NAIDOO, 2002).

Reid (2000) argued, "higher education is undergoing transformations due to a range of external forces such as market competition, virtualization and internationalization, giving rise to new ways of understanding the role and function of the university".

This implies that the present day economic, social and technological context is bringing about changes to which universities must also adapt (CRUE, 2002).

Abell and Oxbrow (2001, p.230) pointed out that, "As with all organizations, academic institutions have recognized that their strength in the market may in future hinge on their ability to build collaborative and strategic partnerships". These demands require the development of partnerships between universities and curricula customized to meet students' needs.

### **Role of knowledge management in universities**

Academic institutions are present to create knowledge, and thus, they have a role to play. Knowledge management should have implication in higher education institutions. Sivan (1999) argues that before an organization can adopt a knowledge management strategy, it must develop

a knowledge management culture. Sivan constructs culture as consisting of beliefs and practices.

Sallis and Jones (2002, p.74) pointed out that education ought to find it easier to embrace knowledge management ideas, processes and techniques than many other organizations.

Oosterlink and Leuven (2002) emphasized that with a suitable and multifaceted approach to knowledge management; universities can guarantee their own survival and at the same time prove that they are essential to modern society.



The focus of universities, is based on making individual knowledge reusable for the achievement of the missions of the university. However, (RATCLIFFE-MARTIN, Coakes and Sugden, 2000) argued that: Universities do not generally manage information well. They tend to lose it, fail to exploit it, duplicate it, do not share it, do not always share it, do not always know what they know and do not recognize knowledge as an asset.

### **Academic libraries and knowledge management**

Academic libraries facing the same type of challenges as many other organization are dealing with (BUDD, 1998). The changing environment of academic life demands new competencies in academic librarians (MAHMOOD, 2003).

Online documents have largely replaced the hardcopy documents. Online libraries provide large database of referencing system via networked access. Library user can request form a information source and material may downloaded by the user.

Although the widespread use of technologies has completely changed and revolutionized the way the education used to be, there are various challenges ahead that have to be addressed. These challenges have been discussed in the GDN 2007.

#### **Target 1: Creating synergy between technological and social approaches to knowledge management**

It has been noted by the delegates of the conference, that knowledge management programme typically involve information and communication technologies (ICTs) from the developed countries which do not necessarily suitable for developing countries or allow for the various means though which knowledge is created (tacit, explicit, indigenous, modern, etc.).

Danofsky (2005), highlights the fact that even the more ubiquitous ICTs are beyond some African People's reach, with millions never having made a telephone call.

#### **Target 2: Prioritizing resources**

In order to introduce technology and basic infrastructure to support it governments in the region must be persuaded to invest in the knowledge management however, it has been noted that these government also face the intimidating challenge of poverty and high literacy rate.

### **Target 3: Ownership of the knowledge creation process**

In order to develop an effective knowledge management strategy “home grown solution” Should be followed that is to generate and capture knowledge which is more relevant to the local realities thus provide better local policy process. The Cairo conference concluded that “home grown solutions” a key part of an effective knowledge management strategy and Steinlin, in particular, pointed to the largely untapped potential for indigenous knowledge to help a broader group of people (GHONEIM, Sherine and Brown, Cheryl, 2011).

### **Target 4: Sharing knowledge**

There is need to find ways where the experiences of the stakeholders involved in knowledge management: government, businesses, networks, academic institutions, nongovernmental organizations can be incorporated (GDN, 2007).

### **Target 5: Equity in knowledge**

Another challenge faced is the equality in the knowledge creation and use of development as there is a huge gap between developed and third world countries in the knowledge creation process (AHMED et al.).

### **Target 6: Partnerships**

According to delegates in the Cairo conference (GDN, 2007), success factor for ground-breaking and creative knowledge management strategies, is collaboration and teamwork. This require implication of certain criteria for planners and funders of capacity development of knowledge management such as: capacity building works when it is demand-driven and guided by local contexts, these program need to take place within a clear monitoring and evaluation framework,



aligned to development Based on the review of the Challenges identified in 2007, and from GNet's experience, policymakers and donors Should look for opportunities to support building the capacity of local institutions which can then provide the enabling environment so necessary for capacity development at other levels, Coordination is needed among donors that fund knowledge management programs to avoid duplication of effort and to agree to share learning on measuring its effectiveness. (GHONEIM, Sherine and Brown, Cheryl, 2011)

### **Knowledge management in Industry**

Industrial companies are becoming increasingly aware of the importance of knowledge management they accept the fact that knowledge is a resource requiring explicit management methods if the knowledge is to be processed efficiently: storing knowledge, communicating, building links and synergy between each individual's knowledge, and generating new collective knowledge. Other than that the role of knowledge management is to encourage all kinds of innovation to improve the company's productivity and competitive advantage. Different factors can promote knowledge management. ICT are spreading, creating new requirements while making some knowledge outdated. ICT make possible the computerization of some tasks and make it possible to outsource other tasks. But mainly ICT promote the access to knowledge and technological growth. Companies have tried different knowledge management practices, in which knowledge sharing taking the lead which affect not only knowledge management but all business functions.

### **3 Methodology**

This is an exploratory research which will be used to determine the level of productivity increased due to the higher education in universities of Karachi. We will use 5 likert scale questionnaire to find out the result. This type of result is which is used to cater the "what" question regarding the result. Main focus is the result analysis.

We will use correlation and regression analysis to find out the level of impact on different variables of the equation. The correlation will tell us the relationship strength whereas regression will provide the degree of relationship about these variables.

## 4 Model and Result Analysis

### Dependent Variable

Personal Development and Productivity

### Independent Variable

Course Content and Structure

Course Delivery

Student Feedback

### Correlation Analysis

Correlations

		CourseCont.Str ucture	CourseDelivery	Pers.Dev.Produ ctivity
CourseCont. Structure	Pearson Correlation	1	.765**	.718**
	Sig. (2-tailed)		.000	.000
	N	200	200	200
CourseDelivery	Pearson Correlation	.765**	1	.789**
	Sig. (2-tailed)	.000		.000
	N	200	200	200
Pers. Dev. Productivity	Pearson Correlation	.718**	.789**	1
	Sig. (2-tailed)	.000	.000	
	N	200	200	200

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis explains the numerical measurement of significant figures of the variables. We have found the Pearson correlation to calculate the strength of dependent variable with independent variable. In above table we have found the significance figures among

variables and independent variable 'Course Delivery' (.765\*\*) is highly correlated with dependent variable. Similarly another independent variable 'Development Productivity' (.718\*\*) is also highly correlated with dependent variable.

## Regression Analysis

### Course Delivery

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.765 <sup>a</sup>	.585	.583	.51428

a. Predictors: (Constant), CourseDelivery

In above model summary we have found out the results from SPSS (statistical Package for social sciences). The correlation value is R defines the strength of relationship between dependent variable and independent variable. R-square is the coefficient of determination that measures the independent variation in explanatory variable. Therefore the R-square of 'Course Delivery' (.585) around 58.5% of dependent variable is explained by predictors. Further there is another element of statistics is adjusted R square which describe the adding of new variable explained by predictors. The value of adjusted R-square (.583) which is around 58.3% variation of predictor variable in dependent variable and the standard error of the estimated value is (.51428) which indicates that 51.42% fluctuation in samples.

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	73.876	1	73.876	279.324	.000 <sup>b</sup>
	Residual	52.368	198	.264		
	Total	126.244	199			

a. Dependent Variable: CourseCont. Structure

b. Predictors: (Constant), CourseDelivery

The sum of squares is to define the dispersion of data points within the sample size. The objective of this statistical approach that how good the data could fit the model and also known as grand mean of all samples.

The f-test indicates the distribution of meeting points of data in model that is 279.324 which is higher because of large sample size of data.

Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	.959	.174		5.511	.000
	CourseDelivery	.736	.044	.765	16.713	.000

a. Dependent Variable: CourseCont. Structure

We have determined the statistical measurement of descriptive data of above sample. We have concluded the hypothesis results based on above numerical facts and determination. The standard error of constant is (.174) which is around 17.4% fluctuation in overall variable similarly the standard error of predictor 'course delivery' is (.044) which is 4.4% fluctuation by independent variable in dependent variable.

The T-test ratio of independent variable is 16.713 of 'course delivery'. The standardization of T test indication shows that if T-test value is exceeds from 2.5 or significance level (.000) then null hypothesis rejected and alternate hypothesis accepted and vice versa. In this situation the T-test value is greater than 2.5 that drawing the alternated hypothesis is accepted and null rejected.

## Development Productivity

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.718 <sup>a</sup>	.515	.513	.55602

a. Predictors: (Constant), Pers. Dev. Productivity

In above model summary we have found out the results from SPSS (statistical Package for social sciences). The correlation value is R defines the strength of relationship between dependent variable and independent variable. R-square is the coefficient of determination that measures the independent variation in explanatory variable. Therefore the R-square of 'Development Productivity' (.515) around 51.5% of dependent variable is explained by predictors. Further there is another element of statistics is adjusted R square which describe the adding of new variable explained by predictors. The value of adjusted R-square (.513) which is around 51.3% variation of predictor variable in dependent variable and the standard error of the estimated value is (.55602) which indicates that 55.602% fluctuation in samples.

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	65.031	1	65.031	210.353	.000 <sup>b</sup>
	Residual	61.212	198	.309		
	Total	126.244	199			

a. Dependent Variable: CourseCont. Structure

b. Predictors: (Constant), Pers. Dev. Productivity

The sum of squares is to define the dispersion of data points within the sample size. The objective of this statistical approach that how good the data could fit the model and also known as grand mean of all samples.

The f-test indicates the distribution of meeting points of data in model that is 210.353 which is higher because of large sample size of data.

Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.327	.175		7.579	.000
Pers. Dev. Productivity	.665	.046	.718	14.504	.000

a. Dependent Variable: CourseCont. Structure

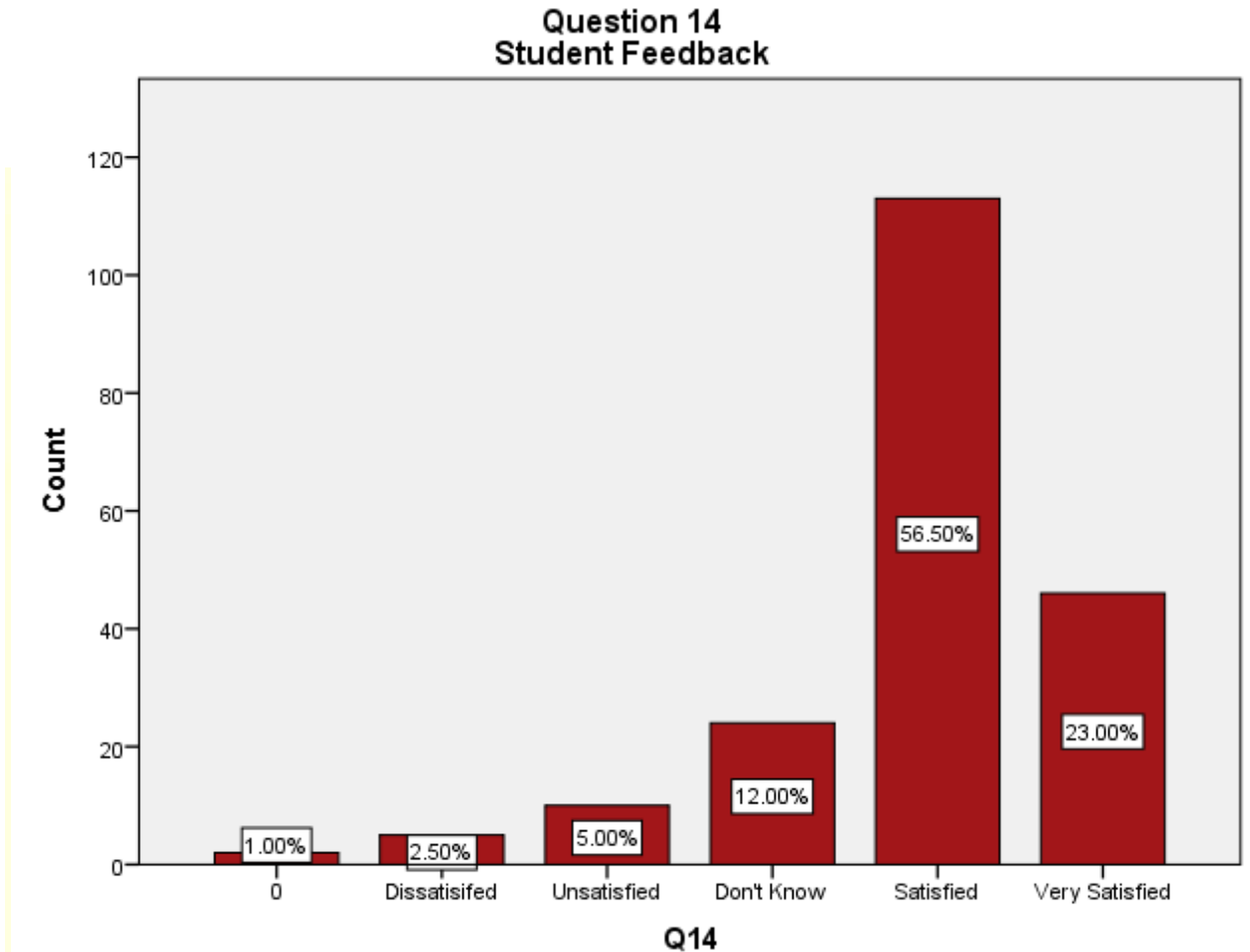
We have determined the statistical measurement of descriptive data of above sample. We have concluded the hypothesis results based on above numerical facts and determination. The standard error of constant is (.175) which is around 17.5% fluctuation in overall variable similarly the standard error of predictor 'course delivery' is (.046) which is 4.6% fluctuation by independent variable in dependent variable.

The T-test ratio of independent variable is 14.504 of 'Development Productivity'. The standardization of T test indication shows that if T-test value is exceeds from 2.5 or significance level (.000) then null hypothesis rejected and alternate hypothesis accepted and vice versa. In this situation the T-test value is greater than 2.5 that drawing the alternated hypothesis is accepted and null rejected.



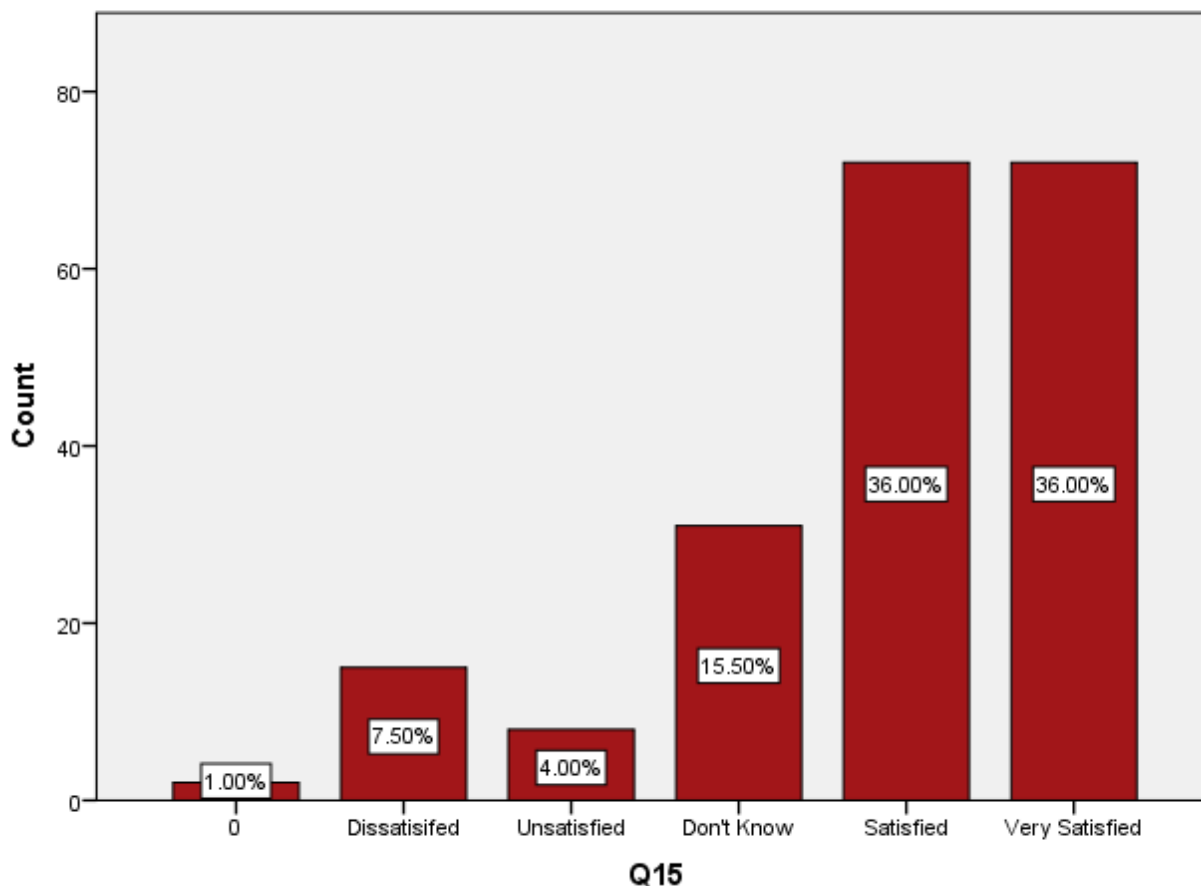
## Graphs

### Students Feedback



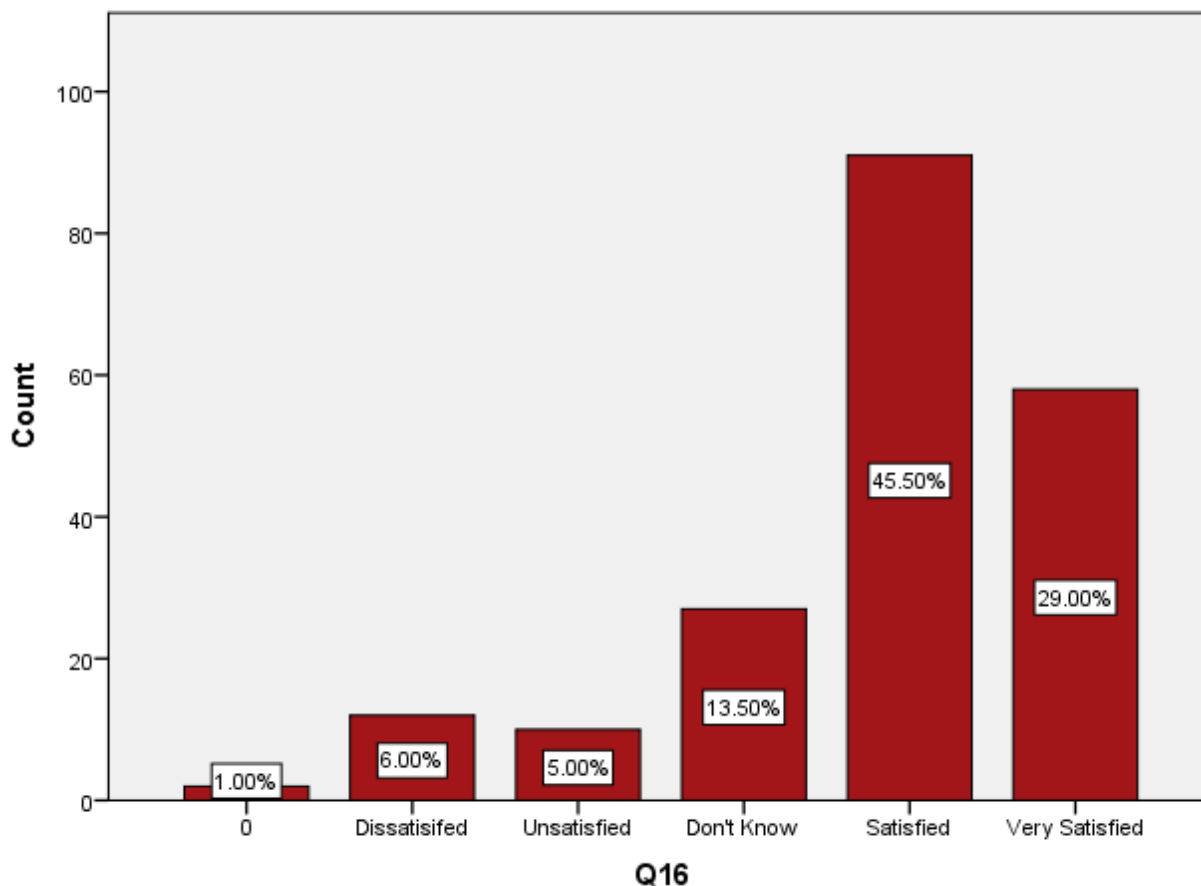
In this statement student claimed that he or she has immensely supported by their institute. The graph shows that almost 57% is satisfied by the services provided by their institute. 23% are extremely satisfied, whereas 7.5% are the total size of unsatisfied group. There are two basic reasons for that response. First the general facilities are quite good as compared to public universities. Second the private universities pooled some good faculty from around the country.

Q15  
Student Feedback



This statement is also very compelling. The private sector universities offer very good response to their students. Due to which 72% of respondents are extremely satisfied with their feedback system. However 28% remaining students are either highly unsatisfied or hide their response in this regard.

Q16  
Student Feedback



The students learning attitude is positive. They feel that their return on investment is high. They have gained full value of their money. 75% are satisfied students only 25% have some problems of different degree.

## 5 Conclusion

The statistical results clearly indicated that the variables are highly correlated. Which means that the students productivity and development are highly dependent upon the course content and course delivery methods.

The questionnaire results are also shown that the students are gaining the momentum in to the right direction, especially after the induction of private universities in the system. Students are availing the opportunity for personal development. They are also utilizing their new skills in their respective fields. Due to which their motivation is high. An estimate from HEC there is almost 6000 students registered for PhD in last 2 years. There are also more than 10,000 PhDs studying abroad on Scholarships. It means after 5 years Pakistan has more than 15,000 active PhDs available for their skill development plans. There will be no dearth of hi-tech thinkers and researchers in Pakistan.

### 5.1 Recommendations

- Outsource solution companies should be set up by entrepreneurs to fetch the business from international market.
- Online service industry is the best job provisions for these researchers.
- Think tanks or thinkers group can be set up these students themselves to promote job and business.

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