

## **REVIEW AND ANALYSIS OF EXISTING DOCUMENT MANAGEMENT SYSTEM IN INDIAN ELECTRONIC INDUSTRIES FOR DESIGNING A NEW MODEL**

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### **Abstract**

Generally Document Management System (DMS) is a computer based programming system through which any company or organization can store, indexed and retrieve documents or information securely as and when required. In Electronic Industries millions of documents are generating through different channels within the individual organizations. Hence, a suitable Document Management System is required to archive and retrieve those documents for future needs. This article is a scholarly paper and an endeavor has been made to understand the existing document management system of the Indian Electronic Industries which they are following to managing their internal documents as per Statues, Acts, & Rules of the country. An in-depth analysis and review of the survey conducted based on the electronics organizations who are doing business and proposed as well as designing a model system for those organizations so that they can centralized their document management process and improve the efficiency and productivity of the business through maintaining compliance.

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### ***Keywords:***

Document Management System (DMS);  
Document;  
Document Management (DM);  
Electronic Industries in India;  
Designing a Document Management System

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## 1. Introduction:

Everybody know the importance of documents of human life since birth to end of the life, for example human beings need to preserve their birth certificate since birth. In the same way organization also need to keep and preserve the statutory documents which are generating within the business across all channels. However there is a difference between human beings and organization from documents preservation & maintenance ground. Human beings deals with a very few documents in their life however organizations need to deal with millions of documents during their business life and sometime after the business also. As the electronics business industries are falling under same group so they need to archive their documents also as per respective country laws where they are doing business. Hence, a suitable Document Management System is required for these industries.

Document Management (DM) is generally used to managing the organizations documents or information by implementing a suitable system. When the Document Management is combined with computer system then it's termed as Document Management System (DMS). Sometime it may be interactive or can only use to track and store electronics documents, digital documents/ images and other digital files/assets. The concept of DMS has also been changed today due to rapidly development in the area of Information & communication Technology. Hence, the way organizations and/or companies communicate with each other are not only confident with paper documents or verbal information, modern communicate methods such as email, internet forms, digital video and sound files, accelerated business process and gave the term document a new definition. Today, many companies rely heavily on electronic business documents.

As with paper documents, successfully recording, controlling and completing business process requires securely archiving electronic documents with immediate access for authorized users. To optimize their process and add value to their services and products, companies need a good Document Management System first. A complete DMS comprises five main elements –

- Scanning
- Storage
- Indexing
- Archiving
- Retrieval
- Access

## **2. Objective of the research:**

The main objectives of this research are as follows-

- i. To conduct a study on the current situation so that a system can be designed to provide an easy access of all documents which need to maintain across all channels of any electronic organization as per different Statutes, Acts and Rules
- ii. To designing a model/prototype of a Document Management System that can avoid loss or damage or unauthorized access of documents of any Electronic Business Organizations
- iii. To designing and outline a model/prototype functions of such applications that can provide scattered information under central control in the right context so that Employees, Auditors, Fiscal & Legal team can get information immediately, correctly and timely
- iv. Helps Electronics Business organizations as well as management to formulate the policies and procedures with regards to their organizations to conduct business ethically & efficiently

## **3. Scope & Purpose of the Research:**

In India, all business organizations need to preserve and retain their statutory documents as per the following Acts & Rules:

- The Companies Act, 1956
- Income Tax Act, 1961
- Central Excise & Customs Act, 1944
- State and Central Sales Tax Acts
- Indian Limitations Act
- Government Import / Export Policies
- Factory Act
- The Finance Act, 1994
- GST Acts, 2017

Keeping in mind the same the research is being conducted to help Electronics Business Enterprises to designing and frame out a common DMS to increase their functional as well as operational strength by evaluating the following scopes:

- a. Conduct business in orderly, efficient and accountable manner

- b. Helps deliver services consistent & equitable manner
- c. Policy formation & smooth managerial decision making
- d. Consistency, continuity and productivity
- e. Continuity in the event of disaster
- f. Prevent inappropriate and unauthorized access to confidential documents
- g. Meets statutory and regulatory requirements
- h. Support in litigations & ricks
- i. Protect the interest of the organization and stakeholders
- j. Quicker retrieval & improve productivity
- k. Frees up valuable office space by moving inactive records to achieve

The purpose of the research are as follows –

- To understand the existing process of some electronics organizations and how they are utilizing the documentation technique/system to improve their business productivity and services
- What feature should such system have
- How they are benefited using the system
- What are the barriers to implement any new system
- Is there any scope for further standardization
- How will the market of such system evolve
- What is the actual impact of the system in the specific business
- To understand and justify the system following by the companies to conduct their business
- Is the existing system helping to control the task centrally
- Design & outline a fruitful model/prototype system for the organization
- How to act on change environment after implementing the model/prototype system

#### **4. Research Methodology:**

To achieve the above objectives and scopes the research is been conducted using following methods:

- Survey – using questionnaire
- Case study and understanding the existing system of some selected electronics companies

- Based on some hypothesis
- Systematic observation of users at their workplace
- Action research - where the developers/ employees has participated in the development of the system
- Design a common & helpful model/prototype system

## **5. Hypothesis:**

Here with taken the below hypothesis to conducted the research in present scenario –

- Industries/Business Enterprises would like to manage their documents In-House using their own infrastructure
- Where a group of professional/trained persons are involved in Document Management activities of the said Industries/Business Enterprises
- Functional diagram and authority matrix of the Industries/Business Enterprises are more or less same
- All functions of the Industries/Business Enterprises are managing by any ERP (Enterprise Resource Planning) system/software

## **6. Limitation:**

Like other research here we have some limitation in this research also and those are as follows –

- i. As LIS professional are not the expert to develop any application or software hence, we need to take help of any IT business partner. That's why I am not included the physical development of the model Document Management System & live test in Web in this research.

Only designing part of the said model is included in this thesis.

- ii. Another limitation is here to get the survey out put under individual company seal as General Business Policy of the individual companies are not allowing the representative to share their internal process with outsider. Hence, we will not be able to show the name of any specific company in this research.

## **7. Overview of Literature and Statement of Problems:**

A literature review is a text of a scholarly paper, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. Literature reviews use secondary sources, and do not report new or original experimental work (**Literature review, 2014**). The role of research and development activities in diverse fields and disciplines has become phenomenal in the present world. Millions of people are involved presently either in academic and research, or in application activities. The impact of such activities has brought a dynamic and multidimensional growth in information world, which is evidenced by a large volume and wide variety of literature.

Considering the above, here an endeavor has been made through literature search for this research work by analyzing the different facets of this research topic such as – Document, Information, Knowledge, Documentation, Record Management, Document Management, Information Management, Knowledge Management, Document Management System (DMS) as well as Electronic Document Management System (EDMS) and Designing a Document Management System to get a comprehensive overview of existing literature pertaining to this research.

The major portion of data are collected from Library and Information Science Abstracts, April'2012-Nov'2014 and other internet sources or URL like Emerald Insight, August'2014-Nov'2014

### **7.1 Observations :**

At the time of reviewing the existing literature available on the above research topic it is observed that some micro and/or aligning facets on subject are existing and that need to study also before entering in to the main topic. Hence, the detail of the observations from review of literature are being conducted under individual facets and the outcome of the observations are as follows –

- Documents are very important to run a business efficiently and smoothly as per statue of the country
- Huge documents are generating and accumulating within a business enterprise
- Business enterprise need a suitable system to store, track, access, retrieve, replace and keep secure of their documents

- Many companies facing problem in managing their documents since long back
- There is no unique and/or fruitful system is available in the market to solve the problems of individual organizations
- Some companies were implemented document management system (DMS) or electronic document management system (EMDS) to prevent loss of documents and increase productivity
- Some outsourcing vendor and/or IT business partners are solving issues related to specific organization by developing application or keep the business documents at their own storage
- In the advance IT age, business required more specific system for faster & securely retrieval of their own documents as per need of different statues, acts and rules
- Organizations want to do business ethically fulfilling all compliance as per laws by developing their own system

## **7.2 Statement of Problems:**

The statements of problems are identified for this research work are as follows -

- Electronics business organizations are not giving emphasis to keep statutory documents: As a result organization are facing revenue leakage at the end of the year due to non-compliance ground.
- Lack of central control: As a result documents generating within the organizations are scattered in different channels and nobody knows who is keeping what.
- Lack of consciousness: As a result documents misplaced & ultimately top management is facing to answer questions to authority. Subsequently, penalty hits to organization
- No concrete policy/guidelines for documents retention by management: As a results unstable organization & unethical business practices within business.
- Don't want to spend money in non-profit making services: As a result revenue leakage in non-compliance ground.
- Outsourcing of activities to 3<sup>rd</sup> party vendor: As a result nobody in the organization knows what are laying with them, what to retrieve from which box – no cost effective out come

## **8. Review and Analysis of the Document Management System using by Electronic Industries In India**

The Indian Electronics Industry had its origin to the year 1965 with an orientation towards space and defense technologies. This was rigidly controlled and initiated by the government. This was followed by developments in consumer electronics mainly with transistor radios, Black & White TV, Calculators and other audio products. Colour Televisions soon followed. The period between 1984 and 1990 was the golden period for electronics during which the industry witnessed continuous and rapid growth.

From 1991 onwards, there was first an economic crises triggered by the Gulf War which was followed by political and economic uncertainties within the country. Pressure on the electronics industry remained though growth and developments have continued with digitalization in all sectors, and more recently the trend towards convergence of technologies. After the software boom in mid 1990s India's focus shifted to software. While the hardware sector was treated with indifference by successive governments. Moreover the steep fall in custom tariffs made the hardware sector suddenly vulnerable to international competition. In 1997 the ITA agreement was signed at the WTO where India committed itself to total elimination of all customs duties on IT hardware by 2005. In the subsequent years, a number of companies turned sick and had to be closed down. At the same time companies like Moser Baer, Samtel Colour, Celetronix etc. have made a mark globally ([https://smallb.sidbi.in/sites/default/files/knowledge\\_base/reports/electronics\\_industry\\_in\\_india.pdf](https://smallb.sidbi.in/sites/default/files/knowledge_base/reports/electronics_industry_in_india.pdf)).

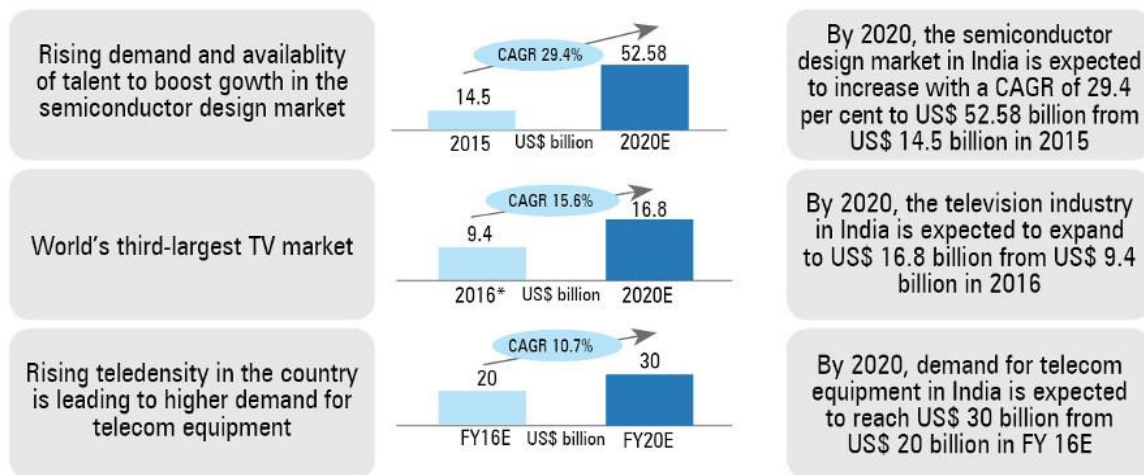
The impact on IT during 2000 -2005 onwards are bust up the business again and in present age consumer can't do any think without the products of this industry.

The Indian electronics market is one of the largest in the world and is expected to reach a turnover of US\$ 400 billion in 2022, up from US\$ 69.6 billion in 2012. According to an Indian Brand Equity Foundation (IBEF) report, the market is projected to grow at a compound annual growth rate (CAGR) of 29.4 per cent during the period 2015-2020 (Figure 1).

Total production of electronics hardware goods in India is estimated to reach US\$ 104 billion by 2020. (<http://www.electronicb2b.com/wp-content/uploads/2017/02/Fig1.jpg>)



The growing customer base and the increased penetration in the consumer durables segment has provided excellent scope for the growth of the Indian electronics sector. Also, greater digitisation could lead to increased broadband penetration in the country and open up newer avenues for companies in the electronics industry.



Source: Ministry of Electronics & Information Technology; India Semiconductor Association; FICCI, TechSci Research

Notes: CAGR – Compound Annual Growth Rate; E – Estimated, \*2016 – Data has been projected till December 2016

The Major Players in Indian Market within this industries are Samsung, Philips, Siemens, GE, Havells, Sony, Bajaj Electronics, Honeywell, 3M India, Bosch, Crompton Greaves, Surya Roshni Ltd, Samtel Group, HP, Dell, Exide, Bharat Electronics limited, Syska LED, Century LED, Electronics Corporation of India Limited (ECIL), Videocon, Everady and HCL etc.

A survey has been conducted by visiting the offices of the above organizations to understand the process and Documents Management System is using by them in India through formulating a few research questions like below –

- What problems your organization is faced to access documents on time?
- Do you have any Central Document Management System for your organization?
- What system do you have?

- How your company is managing the documents now or What Model the organization is following?
- Do you face any problems to managing files or documents using existing Model?
- Do you think the existing system is suitable for your organization?
- Do you want a unique & centrally controlled Document Management System for your organization?

And it is observed that there is no uniform or common system or process are maintained by the organization to organize their business documents. Some organizations like to use their own system and want to keep records under their own facility however some are interested to outsource the activity to 3<sup>rd</sup> party vendor and others do not have any specific system for document management. Hence, based on the survey conducted on the above 23 business organizations in electronics industries here with categorized the existing system of the organizations under below models –

- In-House Model
- Outsourcing Model
- Mixed Model

The details about the models are as follows –

## **8.1 In-House Model:**

It is observed that many companies keep and maintain their records within the organization by developing their own document management system and/or the traditional way. This method of keeping and managing statutory and non-statutory documents within the organization by the company is generally termed as In-House model of documentation. This model is also subdivided into two

### **8.1.1 Modern Way**

In this system some companies have created their own documentation units and manage well by implementing their own system. They have employed professional persons in this area also so that the organization can ensure the availability of their all statutory documents or records as per

laws or statues. The great reference in this area is Philips India Ltd. Philips has its own documentation unit which is handling by professional team and developed their own system to manage the entire Information Storage & Retrieval process.

### **8.1.2 Traditional Way**

On the other hand, some companies are still following the old/traditional system of keeping documents with respective units process i.e. individual employees who are processing the documents through different channels are responsible for their own records/ documents and keeping their records/documents in a room under lock & keys condition. In this situation they do not follow any unique system, the processor is the key resource to identify the documents and in case he/ she moved or left from the organization then it is really critical to retrieval the old documents for their future needs for the organization.

## **8.2 Outsource Module:**

The outsource model of records management is that, the parent organization do not take the responsibility or risk of preserving & maintain their own documents within the company. They generally hired an agency or third party company who are generally providing the record management or documentation services in the market on behalf of the parent organization and charged against their services. The individual record management company has their own system and they keep the records of multiple companies at a time by using their own system.

In India, several records management companies are now keeping the records of other companies in their own location and providing the files/documents retrieval related services on behalf of their clients company against some charges. They are also maintaining specialized software to track and retrieve the files of Clients Companies and providing some general services like - active file/records management solution, accessible file by file details or information and scanning or digitization solution. Name of some major companies who are providing these type of services in Indian market are – P N Writer, Crown Records Management Company, Iron Mountain etc.

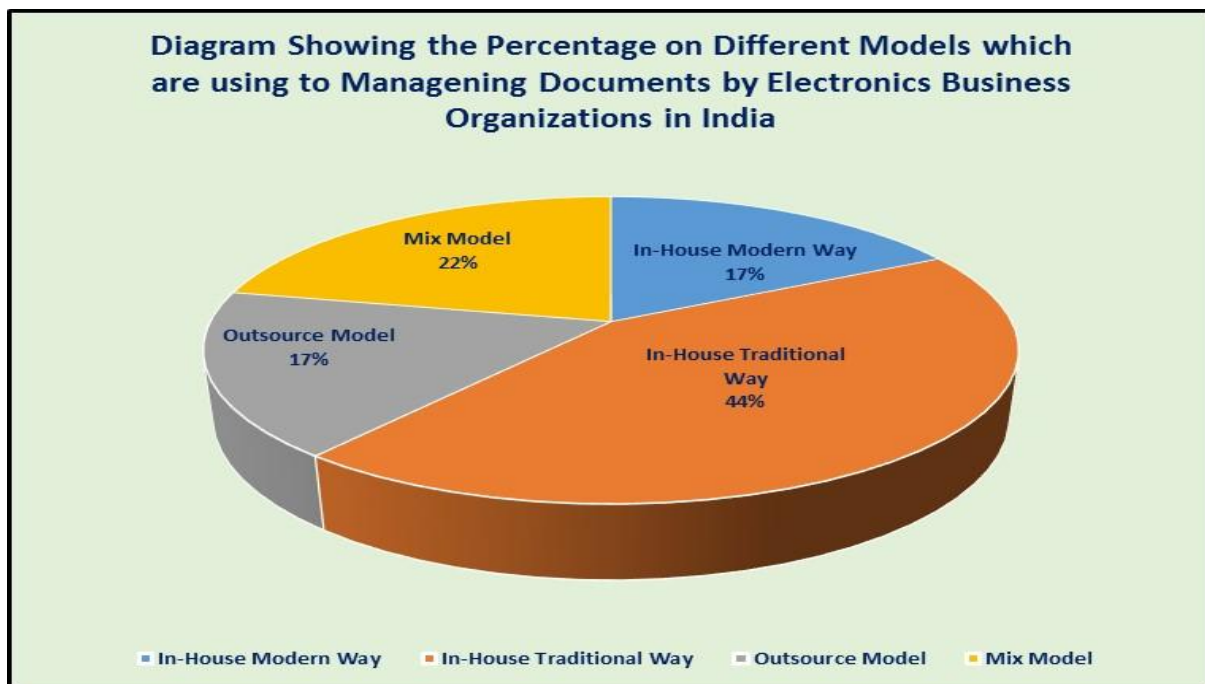
Some giant electronics companies are also keeping their records through this outsource model.

### 8.3 Mix Model:

In mix model the some companies are keeping their important statutory documents like legal, personnel & payroll related documents In-House using old/traditional way and archive the other commercial documents through any outside agency who are providing the general record management services in market.

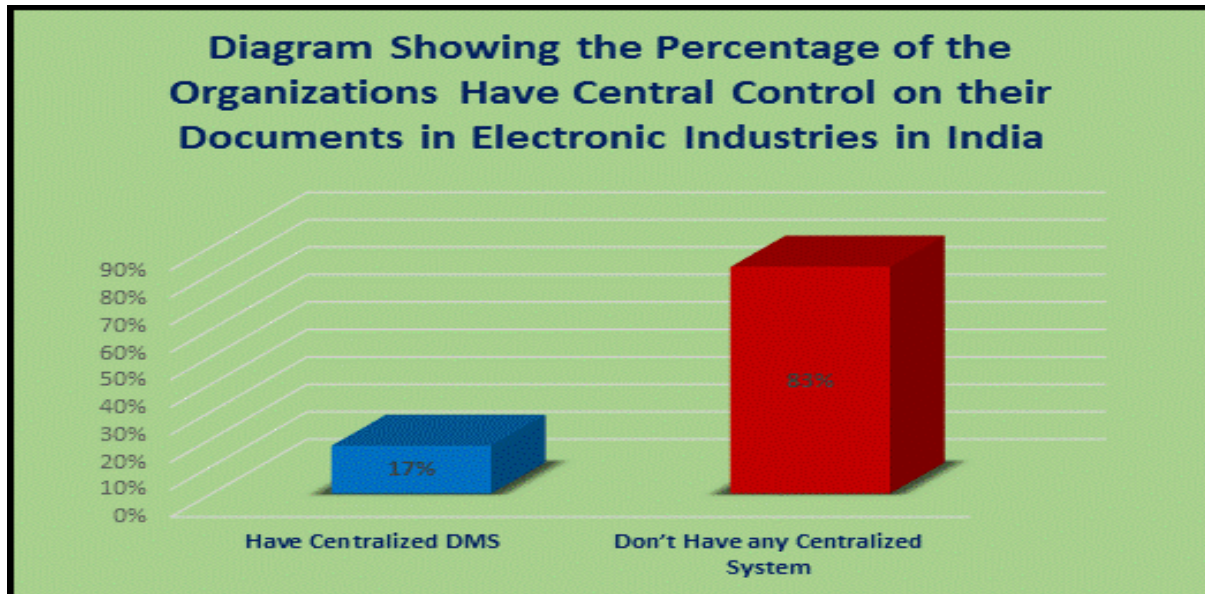
It is noticed during the survey that maximum electronics business enterprise in Indian are involved in this practice of keeping documents and they neither outsourced the entire documents of their business and nor maintaining the proper In-House model.

Based on the survey reports and after analysis of the data it is observed that 44% of the companies are following In-House Traditional Model, 17% are in Outsource Model, 22% are following Mix Model and rest 17% are following In-House Modern Way. The below diagram is representing the result –

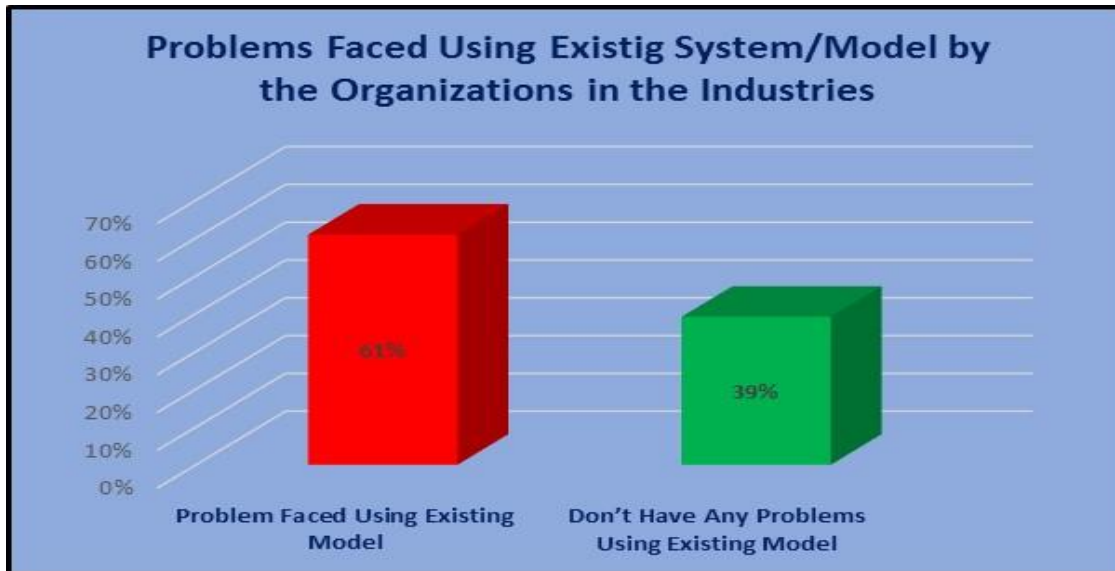


Result comes based on the analysis of research question about Central Control of the organization on their Documents that 17% of the organizations have Centralized Document

Management System however, 83% do not have any Centralized system. The below diagram represent the result –



At the time of analysis of research question about problem facing by organization using existing system it is noticed that 61% organizations are facing problems using their existing system however rest 39% of the organizations do not have problems as their system is more less organized. The result under this question is representing the below diagram –



Further it is identified through the analysis of the answer from research questions related to interest of those organizations who wants to upgrade or modify their system to conduct the business in modern environment that 22% of the organizations have a strong & fruitful system and 43% of the organizations wants to improve & upgrade by implementing a suitable system however, 39% of the organizations don't want to change anything due to several internal reasons. The below diagram showing the result –



So, from the above analysis it is clear that a common and suitable Document Management System is required for business organizations who are engaged in electronic business industries in India. Hence, model system is designed in the next based on the feedback of the existing system using by the organizations in this industries.

### 9. Designing a Model Document Management System for Electronic Industries in India:

In this area a Model Document Management System (MDMS) is being designed to considering the today's needs of the organizations who are involved in the business of Electronics, Semiconductors and Health care goods productions as well as assimilation. As every organizations are following a general ERP package to manage their functions like – Procurement, Manufacturing/Production, Quality Control, Supply Chain, Sales, Innovation, Research and Development, Human Resource, Legal, Fiscal, Treasury, Information Technology, Environment Health & Safety, Facility Management, Finance & Accounting (P2P, C&C, R2R) in the same way there will be a professional team who will manages the organizations documents through Documentation or Library unit by implanting the process in In-House Model through Modern Way. The authority matrix and functions of this Model Document Management System will be as follows –

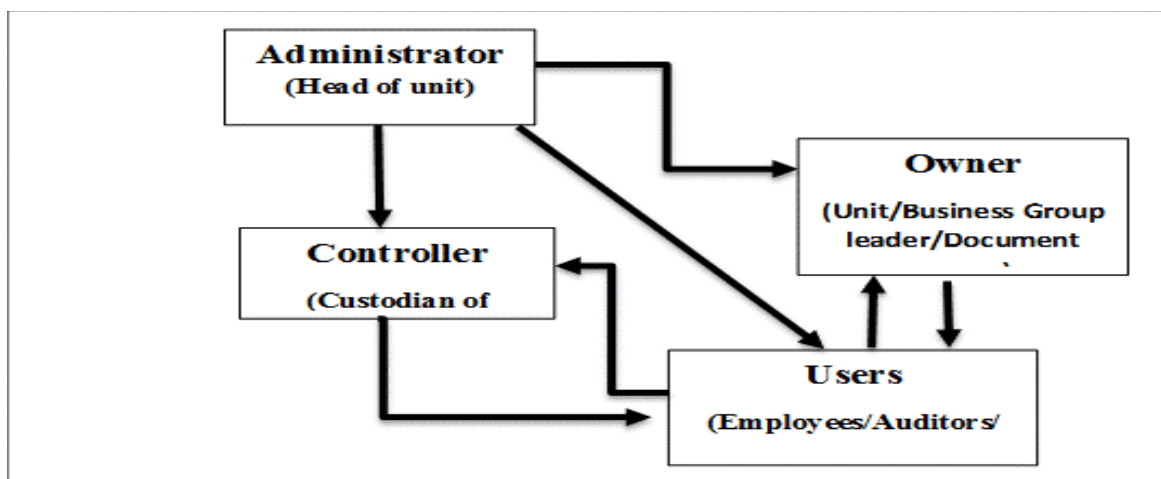


Diagram representation the relation between actors/modules

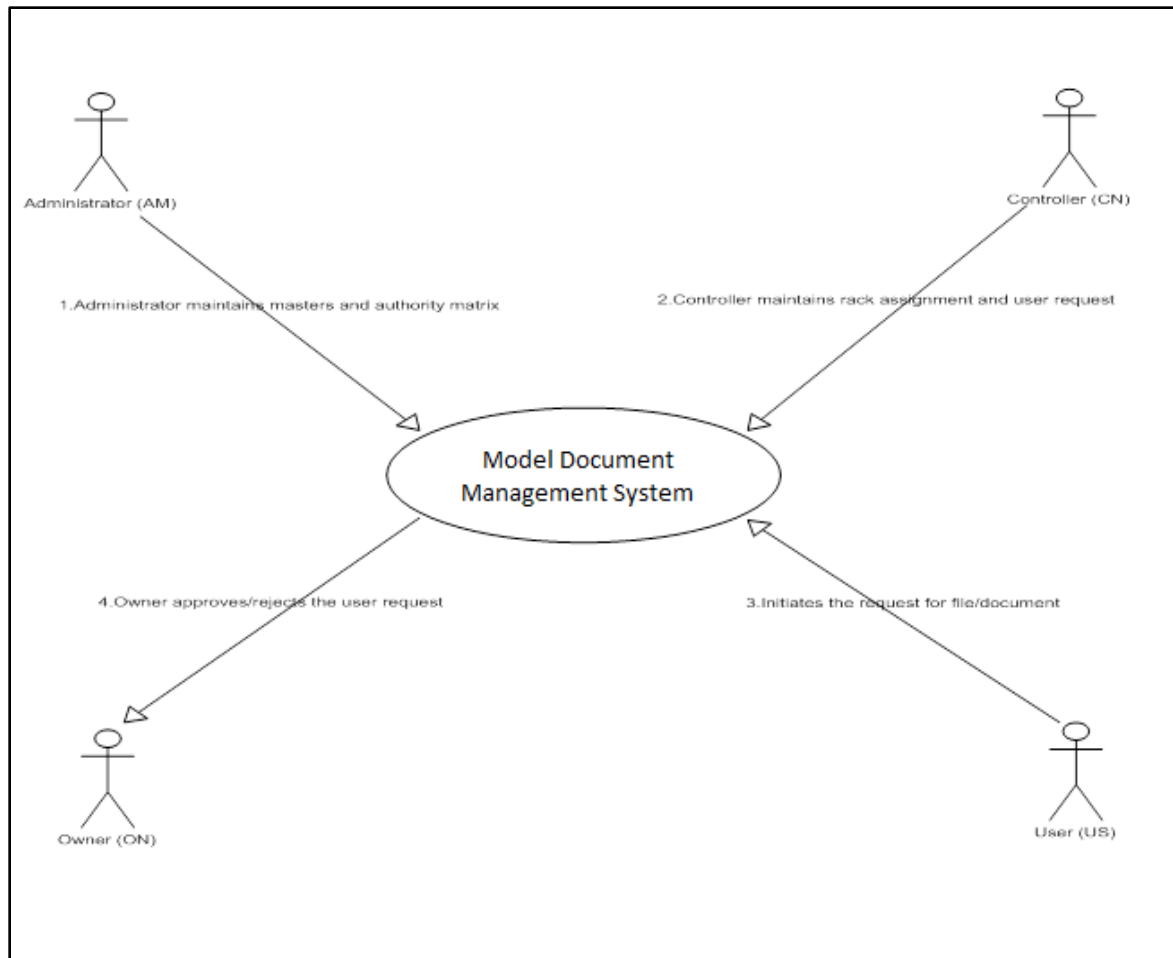
## 9.1 System Overview:

The Model Document Management System (MDMS) is an Intranet application used to automate the document tracking and retrieval process. MDMS is designed to handle Document Tracking from request stage to retrieval by Controller. The following list gives a high level overview of the system requirements:

- It should be web enabled and integrated with mail server.
- Only original document requests get processed through MDMS.
- It should support digitization system files/documents.
- There should be a feature for bar coding of documents for easy access.
- There should be a provision to create new role enabled site per location.
- It should support File/Document indexing for easy search and retrieval.
- There should be a workflow to track the File/Document request process
- There should be provision for bulk upload of file/document details.
- The system should provide reports to retrieve information on system transactions.
- It should support deletion of expired and log files.

The below diagram represented a high level overview of the system -





## 9.2 Parameter Selection - Actors/Modules

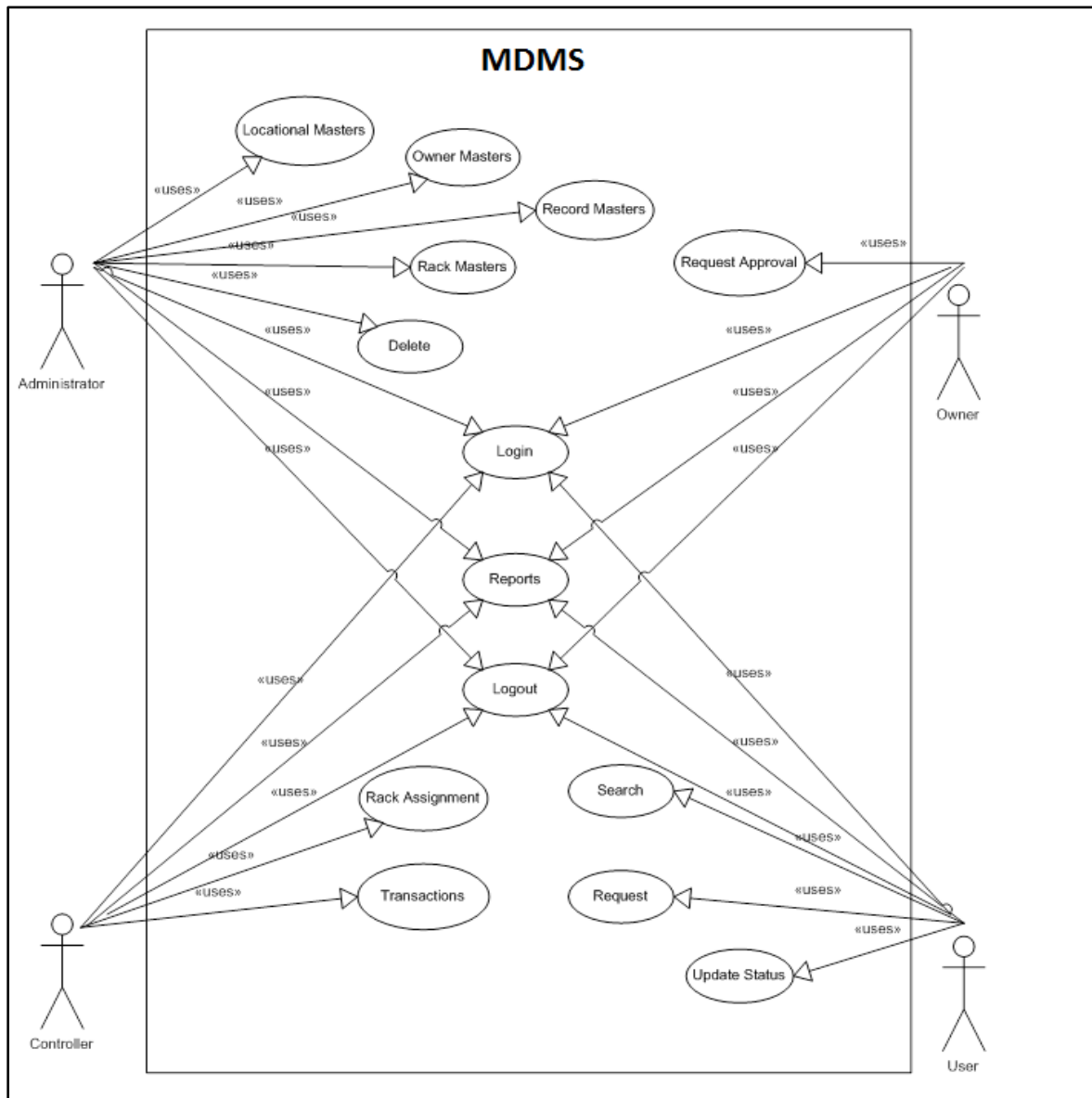
The below are the actors which are using in the application.

<i>Actor title</i>	<i>Activities</i>
Administrator	<ol style="list-style-type: none"> <li>1. Create/Maintain all master data.</li> <li>2. Maintain the authority matrix for registered users.</li> </ol>
Controller	<ol style="list-style-type: none"> <li>1. Maintain the rack assignment using the masters created by the administrator.</li> <li>2. Maintain the file and document information within the system.</li> <li>3. Issue/Collect Documents upon request and approval of the same.</li> <li>4. Issue/Collect Documents upon request and approval of the same.</li> </ol>

- |       |   |
|-------|---|
|       | 5. Update the status of the request to reflect the transaction as required by the system. |
| User  | 1. Initiate a new request for a file.<br>2. Update the status of the request.             |
| Owner | 1. Approve/Reject pending request for file(s) from the registered user(s).                |

### 9.3 Use case diagram of the system

The following use case gives a high level overview of the application: The diagram is intended to present an overview of the function areas within the application.



All the functions of the model system has been enumerated in the above diagram that need to incorporate with the application and the prominent deliverables of application are as follows-

➤ Interface for all role players

- Login
- Reports
- Log out

➤ Interface for Administrator

- Locational Masters
- Owner Masters
- Record Masters
- Rack Masters
- Delete
- Search

➤ Interface for Controller

- Rack Assignment
- File Details Entry
- Document Details Entry
- Search
- Update Status

➤ Interface for Owner

- Pending Approval

➤ Interface for User

- Search
- Request
- Update Status

## 9.4 Interaction Specification

Elements that will interact with users of the application like web/internet access, Location based site creation, File/Document upload, Interface to access individual items within a document, View the scanned documents, File expiry status, Archiving of log information, Provision to maintain scanned documents, Provision to request for password and Barcode Interface are incorporated in this area.

## 9.5 Application Security

### *Web security*

This section describes specific security requirements for the web application. The following web security requirements are in effect:

- Only valid MDMS users who have been configured within the application with some roles will be allowed access to the application.
- All users on web would need to be authenticated once per session.
- Only functions that have been assigned to the configured role of the web user will be allowed to be accessed / executed.

## 9.6 Nonfunctional requirements

In this area the design of Server size, usage matrix, Data migration, and Users manuals etc. are incorporated.

## 9.7 Assumptions, dependencies & risk

All users have code ID & Intranet access, all web users will access the application through IE 6.0 /Mozilla Fire Fox or above, and all users of this system will be registered in MDMS

## 9.8. Review and Analysis of the System

After implementation the system need to review and analysis under change management scenario by the organization as well as Industry and also required to take precautions for reduction of risk

or loss by ensuring risk management. Also need to check whether the organization are getting the following benefits from the system or not like –

- Improvement of the organization productivity in documentation level
- Reduce corporate risk through good governance practices
- Archiving data on safe media
- Enabling disaster recovery

Also need to outline First Roll-Out Work Plan in implementation strategy area and review of the strength of the model system.

## **10 Conclusion:**

From the above research work it is cleared that this research helped to understand the gap of Document Management activities within Electronic Industries and assisted to designing a simplified common Model Document Management System (MDMS) for them so that they can do the business by maintaining Statues, Acts & Rules of the said country and can manage their documents centrally to improve the productivity of the business organization. The model system can organize & share the electronics as well as hard copy documents and can secured them from the uncertainty of information scattered within the organization. Further the system can help to plug the revenue leakage by providing required documents on time and can save the organization from non-compliance practice. It can also save the organization in case any emergency will happen due to disaster. After fruitful implementation the electronic business organizations can improve the efficiency of their personnel and show corporate agility in modern business.

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