M.Phil.

CHAPTER I

RESEARCH METHODOLOGY

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CHAPTER I RESEARCH METHODOLOGY

1.1INTRODUCTION

Information Technology implementation process is the study of design, development and implementation of computer-based Information Systems, particularly in software applications, computer hardware & networking. The Information Technology is relatively large field and covers many aspects. Traditional ways of operations can be transformed into interactive and collaborative ways to help management to take appropriate and precise decisions to increase efficiency and awareness of an organization.

The use of Information Technology in the sugar factory administration is for generating online day to day transaction reports, keeping employees' records, financial records, online purchase as well as factory products sell, checking online results and other reports that help management in decision making. The electronic data entry system helps managers to keep a record and take appropriate decisions while achieving desired goals. In the sugar factory environment few decisions can affect the entire organization and external environment as well.

Sonhira Sahakari Sakhar Karkhana Ltd; Vangi was established in 1994. The founder of this sugar factory is Dr. Patangrao S. Kadam. Sonhira sugar factory has implemented Information Technology in the year 2000-2001. They have implemented IT but not up to the mark which can fulfill competitive requirement of the current market. In order to manage Information technology in an effective manner, they need to deliver high quality information to the decision makers at right time, automate the process of data collection as well as arrangement and refinement. Hence, the researcher hereby intends to study and investigate problems and prospects of IT implementation in Sonhira Sahakari Sakhar Karkhana.

1.2MANAGEMENT PROBLEM

In today's competitive world each sugar factory is interested giving better competition to other sugar factories in the market. To achieve better competitive skill they need to adopt best management and Information Technology techniques. This will increase goodwill but at the same time the cooperative sector may encounter several problems. The Co-Operative sugar factory is facing problems while implementing Information Technology like, lack of computer literate staff, latest technology awareness and trainings, lack of IT maintenance skill as well as selection criteria for best technology adoption. The cost of production is also high due to non-atomization in the sugar factory. No strategic future planning as well as fewer profit margins from side products are also some of the management problems. More specifically, this study will address the management and organizational issues that have a direct relationship to IT and related processes implementation needs.

1.3STATEMENT OF RESEARCH PROBLEM

This research project addresses the issues mainly affecting Information Technology deployment. The issues represented in this study are addressed in the context of IT implementation processes, especially with regard to the needs and perceptions of IT administrators in the Sugar factory. In addition, this study will provide an exploratory look at the problematic issues surrounding IT implementation as well as benefits of IT and related processes. Researcher would like to suggest few solutions on the basis of management problems as well. There are manual processes in place which can be replaced by the use of computer. The operating systems as well as software used in the factory are very old. Lack of trained staff and inadequate Network Infrastructure has indicated need of research for latest trends and technology to upgrade entire IT infrastructure in the sugar factory.

To find and identify the problems and prospects of latest IT implementation in the Sugar Industry area the study has been undertaken titled as 'Problems And Prospects of IT Implementation in Sugar Factory With Reference to Sonhira Sahakari Sakhar Karkhana Ltd; Vangi'.

1.4HYPOTHESIS

Hypothesis is a tentative assumption of the proposed problem, which could be tested for validity while doing the study.

1. Computerization improves the performance of the sugar factory.

2. Effective & efficient IT implementation depends on expert IT personnel available in the factory.

1.5OBJECTIVE OF THE STUDY

Information Technology (IT) plays a critical role in the survival and growth of business organizations. Increasing investment in IT and the strategic role played by information systems make IT implementation an important research issue within various industries. Even though much research has been done to understand IT implementation, there is a lack of effort to implement the same in Sugar industries. The objective of this study is to explore the IT implementation research in one of the sugar factories. Research work is initiated by identifying the problems in computerization, technology and trained staff implementation in the sugar industry. The following objectives are set while conducting the research:

- 1. To study the present Information system of sugar factory
- 2. To study the present networking infrastructure of the sugar factory.
- 3. To study the operating system environment of computer system in the sugar factory.
- 4. To find the problems of IT implementation in sugar factory.
- 5. To give the suggestions to overcome the problem for IT implementation in selected sugar factory.

1.6IMPORTANCE OF THE STUDY

An in-depth understanding of the specific issues related to IT implementation is essential for the establishment of appropriate principals and effective approaches with regard to the management of information systems in an organization. Each individual problem is important in its own context as well as producing multiple impacts which affect the organization and implementation of ITs within it.

Today's era is of Information Technology and almost all are trying to keep themselves updated with latest technology to give better competition to their competitors. Amanufacturingsector is not an exception to thiscomputerization. The computerization is done in an administrative as well as 'production planning and control' section of manufacturing units. Many of the manufacturing industries have implemented automation with help of new machinery and computerization in the production environment as well.

The sugar industry is also a large scale industry nowadays and acquires computerization in some of its sections. The computerization helps sugar industry to store various product data as well as do its analysis on regular basis. Researcher will find problems in implementing IT in one of the sugar industry and give suggestions to overcome these problems so that they can improve their overall productivity and efficiency.

This research will help in developing interdepartmental coordination, which is major factor in effective IT implementation, of Sonhira Sakhar Karkhana Ltd., Vangi. Also, it benchmarks levels of existing infrastructure connectivity, as well as measures of future potential and important determinants affecting day to day production abilities to adopt and make use of rapidly evolving technologies. Finally, it is shown that the expertise level of executives with regard to IT has proven to be a contributing factor to effectiveness of the IT implementation process. This research is the way to suggest appropriate Operating System as well as Network Infrastructure and areas of IT that helps to improve the performance of the sugar factory.

1.7SCOPE OF THE STUDY

This research will be conducted in the 'Sonhira Sahakari Sakhar Karkhana Ltd; Vangi.' It includes concept like different performance Parameters, department wise computerization status, availability of hardware, software and network infrastructure, also status of trained staff of IT department and problems related to IT implementation.

1.8LIMITATIONS OF THE STUDY

In the selected sugar factory respondent were unenthusiastic to give real information because they thought that it is part of enquiry conducted by apex organization. The performance parameter is based on comparisons of percentage of computerization. That is study assume that other factors (Soil, trained manpower, professional management and resources) affecting on performance considered as constant.

1.9RESEARCH METHODOLGY

The study is descriptive case study type of research. The data is to be collected to investigator by questionnaire & survey methodology

1.9.1 DATA REQUIRED

The study requires profile of sugar industry, various management areas, computer applications in sugar industry also the performance aspects & problems of IT implementations in Sonhira Sahakari Sakhar Karkhana Ltd;Vangi. Data regarding perception towards computerization, software, hardware infrastructure, networking infrastructure, training, security, status of MIS report generation, performance of sugar factory and problems of IT implementation will be collected from employees.

1.9.2DATA SOURCES

The above data is collected using different sources like survey, observation, questionnaire, interview method and using also e-mail service.

a. Primary Data: The data regarding existing IT implementation efforts of Sonhira Sahakari Sakhar Karkhana Ltd; Vangi. Present computerization in various departments ,Status of Software development in Last Five Years problems faced in manual working, sufficient availability of hardware infrastructure, Available software, sufficient availability of software infrastructure, sufficient availability of network infrastructure, frequency of backup system ,system security measures apply in organization,Status ofEffective & Efficient IT Implementation, status of IT personnel, status of IT training imparted ,Status of MIS report generation ,problem occurrences for implementing IT and performance parameters of factory is to be collected with the help of questionnaire by taking interviews of employees in that firm such as managing director ,EDP manager, IT personnel, accountants, time officer, chief engineer, chief chemist, agriculture officer, civil manager, head of E.T.P. department, head of security department, head of vehicle department, head of purchase and store departments, head of co-generation and distillery department.

b. Secondary Data: The data not collected originally but collected by other researcher or agency and available in published or unpublished form like reference books, periodicals and office records of the organization.

1.9.3INSTRUMENTS

A structured schedule will be prepared to collect data. To collect data conduct interviews of the respondents, EDP manager and programmer in Sonhira Sahakari Sakhar Karkhana Ltd.; Vangi. General information which includes name, address, establishment year, capacity, data about IT infrastructure and problems occurred for implementing IT.

1.9.4 DATA ANALYSIS

In order to accomplish the objectives of the study, the data collected from primary and secondary sources have been analyzed using statistical tools i.e. tabulation & percentage. Hypotheses have been tested using spearman's rank correlation. There are about 14 departments in Sonhira sugar factory & from each department persons respond taken for study.

1.10LITERATURE REVIEW

INTRODUCTION

Review of literature is related to the study of previous research work done on 'Problems and prospects of IT implementation in the Sugar Industry' and other problems related to it. This review is one of the most important components in the research process which introduces research gaps as well as research direction to the researcher. The earlier research study associated with sugar industry, related books, Ph. D thesis, published research articles and published proceedings of conference papers were reviewed to understand the research gaps in the chosen research field.

BOOK REVIEWS

Ajay Kumar Ray and TinkuAcharya (2004) in their published book 'Information Technology', has almost covered all aspects of Information Technology. All these aspects are divided into following three parts.

Part I covers basic issues and concepts such as the Internet, database management systems, telecommunication systems, computer networks, image processing and multimedia technology.

Part II covers the development of Information Processing such as data and image compression, audio and speech coding, security issues, advanced

database systems, soft computing, content based information retrieval and the World Wide Web.

Part III focuses on a number of application areas such as bioinformatics, Information Technology in healthcare, e-commerce, remote sensing and global information systems color image analysis, information technology for rural development and application of information technology in the industry, load forecasting, mining and geology.

Efraim Turban, Ephraim Mclean and James Wetherbe (2007)In their published book 'Information Technology for Management' 16 regular chapters.

There is an overview of IT in the organization. The three chapters introduce the drivers of the use of information technology in the digital economy. It also presents the foundations of information systems and their strategic use. Also introduces the web based technologies and applications, starting with telecommunication network and the role of the internet, intranet and extranet in contributing to communication, collaboration, and information discovery.

Basic IT applications in the transaction processing, functional applications, customer relationship management, supply chain management and web-based enterprise systems. Planning for technology and the necessary organizational restructuring is also discussed.

There is a discussion about the many ways in the information systems can be used to support the day to day operations of a company, with a strong emphasis the use of IT in the managerial decision making. Also discussion is given to innovative applications of knowledge management, data analysis and data management, and decision support and intelligent support systems.

Also explores several topics related to the implementation, evaluation, construction, and maintenance of information systems, Implementing and managing IT. It gives the strategic objectives and planning, economics of IT, IT Application Acquisition and options, Establishing and managing IT Security and Impacts of IT on Individuals, organizations and society.

Alexis Leon (2007) in their published book 'ERP Demystified' discussed. It is divided into eight sections.

The first section give an introduction to ERP, explains the basic concepts, demystifies the common ERP myths, discusses the risks and benefits of ERP and help in justifying the ERP investment and explain why it is imperative that the organization should implement ERP.

The second section ERP and Technology gives an overview of the technology that are related to ERP and are necessary to improve the capacities of the ERP system and that help in transforming discussed include business intelligence (BI), E-Business and E-Commerce, BPR, Data warehousing, Data Mining line analytical processing (OLAP), Product Life Cycle Management (PLCM), Supply Chain Management (SCM) & Customer Relationship Management (CRM).

Section three deals with the ERP implementation issues. Some of the topics that are discussed are package selection, implementation lifecycle, implementation methodologies, implementation costs, and implementation team, role of vendor and consultants, contracts with vendors and consultants and so on. It also discusses the factors that determine success and failure of the ERP system.

The fourth section ERP in Action deals with the post implementation scenario.

Section five deals with the major modules in an ERP package and how each . module functions. The sixth section is about the ERP market place and the major players in the ERP market.

The seventh section deals with the technological advancement that will change the nature of today ERP packages. This section includes topics like turbo charging the ERP system, enterprise integration application (EIA) ERP and E-Business, ERP, Internet and WWW, ERP and Total Quality Management and future direction and trends.

Henry C. Lucas, Jr. (2008), in his published book 'Information Technology for Management' discussed about technology to play an active role in managing information Technology. Whole aspects of IT for management are covered in six parts

Part I focuses on the role of Managers in IT; using technology to transform the organization, Interpreting and understanding information and Information Technology in Perspective

Part II focuses on Organizational Issues like the impact of information technology on the organization, Strategic issues of IT and International business and IT.

Part III focuses on IT discus fundamentals, a proportion of computers, Software DBMS, Communications, Networks and electronic commerce and IT Architectures.

Part IV focuses on System Analysis and Design; Building systems: creativity with Technology, Building Systems: Future Developments

Part V focuses on Existing directions in systems; supporting knowledge workers, organization support systems; DSSs, GDSSs, and Multimedia Intelligent system.

Part VI focuses on Issues for Senior Management; Management control of IT, IT issues for Management, Social implications and the future with technology.

Ph. D THESIS REVIEWS

A G Anikhindi (1995) conducted study of computerized cost based Information system for decision making in selected organizations from Kolhapur district. Researcher selected four sector viz. private, public, service and cooperative. He concluded private organizations are using computer based information system and others are lagging behind in this regard. Researcher has suggested model for computer based information system and observed benefits of computer based information system in private organization are Reduction in cost and product life cycle, Inventory control, Optimum utilization of capacity and Decision making is more effective.

Suzanne Beaumaster (1999) carried out research study onInformation Technology Implementation Issues: An Analysis. This research project addresses the issues affecting information technology development and deployment. The research in this study suggests that there are three primary results, which are shown here. The first is that-strategic planning for IT is fundamental to the ultimate effectiveness of IT implementation. Planning with regard to IT acquisition and deployment has proven to be a difficult accomplishment regardless of organization type or sector. This study specifically addresses many of the issues surrounding this problem, as it is integral to the implementation process as a whole. Secondly, it is shown that Interdepartmental coordination has proven to be a major factor in effective IT implementation. Previous studies in this area have shown a propensity over the course of the development of IT towards decentralization of the acquisition and management of technologies. This trend speaks directly to the issue of interdepartmental coordination and the difficulties local government managers face when attempting to implement ITs in their organizations. Finally, it is shown that the expertise levels of executives with regard to IT have proven to be a contributing factor to effectiveness of the IT development and deployment process.

Yashwant S .Patil (2001) carried out research study on Computerized Management Information Systems for Sugar Cooperatives in Maharashtra State. The research exposes that, the computerization of three sugar factories in particular and of the 7 sugar factories in general. It is observed that the computerization in sugar cooperatives is in first stage. The study also exposes hurdles before the cooperative sugar factories for computerization. The researcher has identified many hurdles and main hurdles include Lack of support from the top level management, Lack of awareness of computerization and its benefits for effective and efficient Management, Non availability of computer qualified and experienced manpower locally, No separate provision for funds on the lines of other departmental budgets.

The researcher has suggested a need for systematic approach in computerization and its integration into various information systems, with the participation of top level personnel of the sugar factories and departmental heads. Besides, the researcher has also made valuable suggestions for effective and efficient usage of computerization which includes formation of IT committee, networking of sugar cooperatives and other regulatory agencies for whole information flow.

REVIEWS OF RESEARCH ARTICLES, SEMINAR AND CONFERENCE PROCEEDINGS

Deshpande S.M and Hapase D.G (1992) presented case study of Dnyaneshwar SSK Ltd. on implementation of computerized harvesting program in DSTA conference.

In this study, authors show the feasibility of computer in developing efficient harvesting program in order to improve sugar recovery from available sugarcane. Authors collected and analyzed data regarding to recovery before and after the computerization of harvesting program.

Also, authors expressed economic aspects of computer based harvesting program and considered benefits of Computer based harvesting schedule are as follows:-

- 1) Definite rise in recovery was observed.
- 2) Farmer knows it clearly when his sugarcane will be harvested.
- All possible harvesting information is really available which improves working efficiency.
- Manager requirement for the data analysis is very less as compared to the manual process.

Jaiswal M.P and Singh N.P (1993) presented research paper, titled 'Information Technology Network in Co-operative Management' in second state level sugar conference. This paper broadly classified areas of computerization in sugar co-operatives in two, one is factory automation and the second one is transaction processing and information systems with subsystems in each area. Study made a comparison of IT applications in three sugar co-operative units Viz. Ajinkyatara SSK Satara, Vasantdada SSSK Sangli and Yashwantrao SSK Theur.

This paper provides the basic frame work for computerization of sugar cooperative in Maharashtra and a need for information sharing between the different co-operative sugar units and top organization. Krishnamaraju A.V (1989) discussed about how to utilize computer for better advantage to the Cane Management in his article. Also various activities of cane management function and identified requirement of Computerized Cane Management System. At end part of the paper author discussed benefits of computerized cane management & necessity of trained Computer Professional for design and developing Computer based applications.

Acharya G.N and Balwe T.K (1993) presented paper in the second state level sugar conference at Malegaon Tal Baramati Dist. Pune. In the paper authors identified different areas of computerization and suggested phased program for computerization and infrastructure for computerization. Also discussed about the various software modules developed by VSI and observations and result of maturity wise harvesting module implemented in Dnyaneshwar Sahakari Sakhar Karkhana Ltd. Dnyaneshwarnagr Dist. Ahmednagar.

Saxena A.K, Kumar Gyanendra and Singh S.L (1998) presented paper in S.T.A.I annual conference on 'Process Computers for Sugar Industry'. In this paper, author underlined a need of Microcomputer based distributed digital control system in spite of conventional instrumentation. Also explained features of computer based control systems and criteria for selection of process for implementation of computer controlled system. The different areas identified by authors to implement computer controlled process are Boiler house, evaporation station, Pan Stored P_H control etc.

At the end of paper, authors summarized resulting advantages of computer based distributed digital control systems implemented in private sugar factories in Tamilnadu.

Munkyold B E (1999)published research article on "Challenges of IT implementation for supporting collaboration in distributed organizations" in European Journal of Information system. In this article author designed and developed six case studies of IT implementation projects, focusing on the challenges in the implementation process as seen from the perspective of the implementation team. The study is an exploratory nature; the study has identified a large number of issues that have influenced the different stages in the implementation process.

PratapDeshmukh (2002) deliver seminar on 'Atomization in Sugar Industry'. In this seminar author highlights importance of atomization. He explains advantages of atomization, details of section wise atomization required for sugar plant. Also he explains results achieved in some plants like Juice Mass Flow Metering system with stabilizer of M/s. Vittalraoshinde S.S.K. Ltd., Madha. Boiler Drum Level Control of M/s. Rana Sugars Ltd., Punjab.Combustion control & pan atomization of M/s. Chh. Shahu S.S.K Ltd., Kagal.Condenser Atomization of M/s.TatyasahebKoreS.S.K.Ltd., Warana. Also author explain results of full sugar plant atomization these results will vary from plant to plant.

T.K. Balwe (2004) examined the designed and developed ERP software package known as VSI Sugar ERP for Indian sugar Industry. Author discussed features of package, advantages, required infrastructure, detail in implementation process and experiences of sugar factories who have implemented VSI Sugar ERP. It is a software package aimed to prove an integrated, low cost, software solution for sugar and allied industry with full and assured maintenance backup. The expected benefit of the package as expressed by the author are the availability of relevant information, low cost of production, efficient and smooth working of whole setup and profitable business. The salient features of VSI sugar ERP are user friendly, Easy and flexible for implementation and customization, ensured security rights wherever and whenever required and adoptable to need based modifications for additional development. The author highlighted the necessary of this package to the sugar industries so as to bring a transformation in the operations of the sugar cooperative industries.