



INFORMATION TECHNOLOGY IMPLEMENTATION IN DAIRY INDUSTRY: A CASE OF KERALA CO-OPERATIVE MILK MARKETING FEDERATION LTD

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Abstract:

During the 1970's and 1980's, Information Technology was widely used just as a means of doing routine clerical and administrative activities such as processing data related to accounting and book keeping . But today, the role of Information Technology has changed and it becomes a competitive and innovative tool that can reengineer the industry structure as a whole. Based on this observation, the researcher has decided to conduct a study on the implementation and impact of Information Technology in Dairy Industry with a special reference to Kerala Co-operative Milk Marketing Federation Ltd. (KCMMF). The sample under study was comprised of 50 employees whose job is associated with technology enabled working pattern. Based on the statistical analysis of data, the study suggests that the use of Information Technology in KCMMF have a positive impact on the strategy of business functions. The study also suggests that the Information Technology usage could induce KCMMF to bring many changes in the organisation and thus increase the efficiency of business operations. The study concludes that Information Technology in Dairy Industry can greatly help improve operational efficiencies especially in the areas of milk procurement, distribution, transactions with Co-operative societies and manufacturing.

Keywords: Co-operative Societies, Dairy Industry, ERP, Information Technology, Milk,

I. Introduction

Dairying is considered as a sub-system of the farming system in India. It is an important component of Indian agriculture providing various products and services to the society. Dairying has been an ancient practice mainly because of its complementarities with farming. The livestock sector accounts for about one-fourth of the agricultural gross domestic product (Gilson, 2007). Next to agriculture, live stock is the largest source of income and employment for the rural population (Lakshmanan, 2008). India is the highest milk producing country in the world. In India, milk production has grown from 17 million tonnes in 1950-51 to 90.7 million tonnes in 2004-05 (Economic Review, 2004). The livestock contributes substantially to the food and nutritional security, stability and sustainability of household income and growth of agricultural production in the country (Gilson, 2007).

Despite being the largest producer of milk in the world, the Indian dairy industry is a very small player globally due to poor quality and the relatively high costs of milk production, processing and marketing. Technology adoption, whether the automation of the milk collection process or deployment of enterprise resource planning solution in the back end , is emerging as a key factor for improving the Indian dairy industry to compete globally(www.07.ibm.com) .

According to Joshi (2010), the focus of Dairies on increasing efficiencies, reducing costs, and ensuring compliance with food regulations over the whole supply chain are hampered by a number of non integrated processes and system which is affecting the efficiency as well as overall growth of the industry. To overcome

these road blocks there is a need to standardize all the scattered processes and information on a single platform (Nishant Joshi, 2010).

The growth of milk dairy business since 'Operation Flood' led by Dr. Kurien through the highly innovative co-operative model has created a unique model for the milk industry (www.essindia.com). Under this unique model, the smallest of farmer or cattle owner owns a share of the business and gets the benefit from its growth. As this is a unique Indian model, there are no standard management solutions or IT solutions can fit it readily (www.essindia.com). Even though, most Dairy organizations have well defined systems under ISO certification, only few people are using IT in Societies and plants for milk procurement and billing system and accounts (www.essindia.com). Some dairies or unions have partial automation with islands of computerization along with manual systems (Nishant Joshi, 2010). So the primary objective

of the present study is to look into the level of information technology implementation and its impact on business operations and strategic decisions.

II. Survey of Literature

The literature on various aspects of dairying and information Technology implementation is quite wide. It covers such aspects like production, consumption, marketing of milk, setting up of animal husbandry, level of IT implementation, Success and Failure of IT Implementation etc. But the researcher reviews only those studies which dealt with the overview of Indian dairy industry, general IT implementation strategies and IT solutions in Dairy sector.

In 2007, Gilson John conducted a SWOT Analysis in Indian Dairy Industry in which he highlights Strength, weakness, Opportunities and Threats. The study throws light in to the detailed analysis of Indian Dairy Industry.

Figure: 1

SWOT Analysis of Indian Dairy Industry

Strengths	Weaknesses
Conversion of low / no value crop residues to milk. More equitable distribution of value generated. Almost year round employment. Food and livelihood security for the poor. Well developed dairy support industry. Veterinary health care infrastructure. Successful models like AMUL Anand Pattern Dairy Cooperatives underpinning the democratic polity.	Numerous producers and small volumes. High transaction costs. Quality problems. Too many organized players chasing too small market segments. Political and bureaucratic interference. Weak research and development. Poor cattle management system. Low capital formation.
Opportunities	Threats
High value addition products. Collaboration and consolidation. Established R&D institutions, for breed improvement and disease control. Emerging technologies like biogenetics. Intermediate product marketghee, <i>chana</i> , <i>khoa</i> , <i>paneer</i> . Fortification of milk and milk products with pharma herbal and mineral medicines.	Non tariff barriers to exports. High level subsidies to dairy industry in developed countries. Competition in the market from highly subsidized dairy products from developed countries. Short supply to over supply markets.

Source: (Gilson John; 2007)

Based on the analysis of data, Gilson John (2007) pointed out the importance of implementing the information Technology and ERP solutions in Indian Dairy Industry. According to him, ERP implementation in Dairy Industry will enhance the operational efficiency and turn over.

In 2010, Nishant Joshi (Business Development Manager with Eastern Software Systems) conducted a study and came up with smart ERP Plan for Dairy Industry. In his opinion, ERP in Diary Industry will increase efficiency, reduce cost and ensure compliance. He also explained

the important features of ERP for Dairy Industry (www.essindia.com).

Features of an ERP for Dairy Industry:

- For Milk procurement which is the most complicated function in a dairy, one needs to define Co-operative Societies (Suppliers) attached to a particular district or region's Union's Dairy and details such as Address, Route, Collection time and society information like date of registration, Membership, directors, Bank Accounts etc (www.essindia.com).
- Routes can be defined on factors like Societies covered, Distances, Truck arrival time, type of milk, Transporter and contract details (www.essindia.com).
- Details of Transporter including the details of vehicle, the route which they cover, contact information etc (www.essindia.com).
- Daily Milk Receipt quantity needs to be captured automatically from the Milk Weighing machine with details like Fat and SNF contents etc (www.essindia.com).
- Many Unions have Chilling plants in remote locations if distances are higher and milk has chances of getting spoilt in the bargain. These chilling plants need to capture similar data and work on-line or offer data upload at any given interval that can be automated or done manually (www.essindia.com).
- Quality Control – Set of quality parameters can be defined for milk with basic information like Cow milk, Buffalo milk or mixed milk, capture quality of milk from individual societies for all parameters like Fat content and SNF. The data may be entered manually or can be captured from the instruments directly if milk analyzer provides interface files. Raw milk procurement rates are linked to quality parameters of milk for billing purpose (www.essindia.com).
- Society-wise billing cycle can be 3 times in a month or fortnightly or weekly etc. This billing has to take into account other deductions or bonus etc. for supplies done to the society while preparing these bills, apart from quality based billing etc (www.essindia.com).
- Billing cycle is fully integrated with Finance, general stores and cattle feed plant to capture details of supplies done to societies. This can also be linked to veterinary services module if it is operational within the ERP so that medical services can also be debited to society account (www.essindia.com).
- Cattle feed manufacturing, procurement for its raw material and distribution/sales is a separate business process that is created and integrated with the ERP. Procurement cycle needs to cover the concept of broker/adatiya for 'sauda', advances, weigh-bridge integration, quality based rate variance for billing purposes and its linkage to society accounts for supplies done to them (www.essindia.com).
- Veterinary services are an important service offered by the Unions to their members to take care of their cattle stock. ERP should be able to plan and monitor field visits, medicines supplied, vehicle management and their spares, expenses monitoring operations. It can provide information about prevalence of diseases, their seasonal effect, spread across villages and Doctors' performance. It needs to be linked to stores, finance and HR (www.essindia.com).
- Being a perishable commodity and low margin activity due to nature of business, the system would need to keep track on wastages due to spoilt milk or other products that may turn sour due to limitations of expiry, returned goods. These critical issues can provide or take away hidden margins not generally visible in normal operational data (www.essindia.com).
- Packing material consumption, its rejection due to quality issues, spares consumption that could indicate problems with any plant machinery also form an integral part of ERP (www.essindia.com).
- At macro-level an ERP for dairies would need to keep an eye on expected production from given quantities of procurement, variance from the norms, thus provide indicators about the health of operations at procurement and manufacturing levels, losses due to returns, tracking sources of such losses and cost escalation can provide the right kind of controls required in ERP Solutions for dairy industry (www.essindia.com).

III. Objectives of the study

1. To study IT implementation strategies of KCMMF.
2. To study the effect of IT implementation on employees of KCMMF.
3. To analyze the effect of Information Technology in the different business process of KCMMF.
4. To provides suggestions for the improvement and development of Information Technology infrastructure of KCMMF.

IV. Research Methodology

The research design adopted in the present study is descriptive research. The primary data was collected through questionnaire method and observation whereas the secondary data were collected through company manuals, company website and published books. The sample consists of 50 employees whose job is associated with technology enabled working pattern were selected randomly from the finite population. The samples were selected using simple random sampling technique.

The research instrument used for this study is semi-structured questionnaire. The scaling technique used for questionnaire is Likert five point scales. In addition to general five options (Strongly Agree, Agree, Strongly Disagree, Disagree) 'No Comment option' also added to response column in order to get the best result. The data collected through survey method are being analyzed by using percentage analysis and simple descriptive statistical techniques.

V. A case of Kerala cooperative milk marking federation (KCMMF)

Kerala cooperative milk marking federation (KCMMF), popularly called MILMA was registered as a co-operative society in 1980 with its head office in Thiruvananthapuram. It was brought under the Operation Flood programme of the National Dairy Development Board. KCMMF is a Federation of Regional three Regional Milk Unions, the ERCPMU, TRCPMU and MRCMPU. It follows a co-operative structure and one of the most profitable cooperatives in Kerala State. In 1983, it took over (absorbed) the production and milk marketing facilities under the Kerala Livestock and Milk Marketing Board. The board was later renamed to Kerala Livestock Development Board (www.milma.com).

A few decades ago, Kerala was seen as a dairy unfriendly State and had to depend primarily on the neighbouring States for its milk supply. However, today, Kerala is almost self-sufficient in milk production. The credit for this largely goes to Kerala Co-operative Milk Marketing Federation and its three Regional Co-operative Milk Producers Unions, for the creation of a procurement and marketing network, introduction of quality products, customer friendly policies, modern management and most important of all the integrated co-operative participation by the farmers. The State wide network of Dairy co-operatives now operating is doing yeoman service by assuring a steady market and stable price to dairy farmers for the milk produced by them (www.milma.com).

The KCMMF operates on the truly democratic lines of "of the farmer, by the farmer and for the farmer". The Organisation has a three tier structure with the primary milk Co-operative societies at the village level, Regional Milk Producers' Unions at the middle level and an apex body at the State level which is the Kerala Co-operative Milk Marketing Federation Ltd. There are three Regional Co-operative Milk Producers' Unions operating at present. The revenue districts of Thiruvananthapuram, Kollam, Alappuzha and Pathanamthitta come under the jurisdiction of the Thiruvananthapuram Regional Co-operative Milk Producers' Union (TRCPMU), the districts of Ernakulam, Thrissur, Kottayam and Idukki under the Ernakulam Regional C0-operative Milk Producers' Union (ERCPMU) and the six northern districts of Palakkad, Kannur, Malappuram, Kozhikkode, Wayanad and Kasaragod under the Malabar Regional Co-operative Milk Producers" Union (MRCMPU). The three-tier structure ensures that the farmer members are directly responsible for policy level decisions for the marketing of their produce (www.milma.com).

The farmer memberships which stood at 45000 during takeover of dairies from the erstwhile Kerala Livestock Development & Milk Marketing Board during 1983 has grown to over 8.0 lakhs through 3100 milk Co-operatives by the end of 2013-14. Similarly, milk procurement has also shown a phenomenal growth from 52,000 litres per day during 1983 to over 10,00,000 litres per day in 2013-14. The success of the marketing network and customer acceptance has been proved by the growth in

sales from 55,000 litres per day during 1983 to 12,10,000 litres per day by the end of 2013-14 (www.milma.com).

Keeping pace with development of milk procurement and sale, milma has concentrated on infra structural development with financial assistance from the National Dairy Development Board, Swiss Development Co-operation and other agencies. As on date, there are 13 milk processing plants with a combined processing capacity of 12.50 lakh litres per day with further expansion envisaged and 8 Milk Chilling Plants scattered across the State. A Milk Powder Plant having a capacity for production of 10 MT of milk powder per day and two cattle feed plants, one at Pattanakkad (300 MTPD) and other at Malampuzha (300 MTPD). The Pellet cattle feed manufactured in these plants are well accepted by the Dairy farmers and in the open market (www.milma.com).

The Kerala Co-operative Milk Marketing Federation, in its 34th year of operation, has been one of the successfully run co-operatives of Kerala state. The peoples' strength has been seen time and again in the functioning of our organization and this has helped us to grow as this was run by the dairy farmers for the dairy farmers. Kerala Co-operative Milk Marketing Federation is a testimony to the success of co-operative development in the hands of the people themselves (www.milma.com).

After the detailed analysis of data collected from employees of KCMMF, the researcher came up with the following findings.

- The information technology that has been implemented in the KCMMF is highly effective. It has made the business function more efficient.
- The system provides majority of information required for the functioning of departments. By this it has made a great impact on the business functions in the KCMMF.
- Most of the employees in the organization who are related to Information Technology often use the IT modules.
- Involvement of the IT in every department of KCMMF is high. System Modules installed as a part of implementation of IT covers every functions in the department.
- Implementation of information technology in KCMMF has helped the business

functions in the organization by reducing time gap.

- The real time up gradation and process of information in the systems are slow. Employees are not satisfied with this.
- The systems used in the department of KCMMF are not user friendly to the employees as they expected. Employees find hard to understand the system.
- The inter-departmental communications in KCMMF has increased due to the implementation of the Information Technology in the organization. As a result communication gap has reduced.
- Even though IT implementation has a positive impact on its business function in KCMMF, there is a need for more advanced and fast technology in the organization.
- Implementation of Information technology has made data and information retrieval from the database much easier and faster.
- Implementation of IT has increased the functional coordination within the department. This resulted in high outputs from the departments.
- KCMMF is providing training for employees for enriching their IT skills. Training sections are also given to the employees for familiarizing the technology that has been implemented.
- IT implemented in KCMMF has created better relationship with the company's customers.

Based on the findings of the study, the researcher has put forwarded the following suggestions in which the researcher highlights the importance and relevance of immediate implementation of ERP solutions in KCMMF.

- More advanced information technology is need to be implemented in the organization for better function.
- Enterprise Resource Planner (ERP) should be implemented in the organization. It can help the company to manage its resources efficiently. Real Time up gradation of information can also be achieved by implementation of ERP.
- Even though KCMMF has conducted many training programs for its employees, the number in-depth training is very less. The company should be given more emphasis on training programmes.

- The interface used in systems should be more user friendly to the employees. So that employees can use the technologies more efficiently.
 - More functions in the departments should be integrated with modern technology.
 - Systems which have more integration level must be used in the organization to get higher interdepartmental communication.
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CONCLUSION

KCMMF is one of the largest Diary Company in India. It has been in the diary sector since 1980. Implementation of Information Technology in KCMMF had a huge impact on its business functions. The study found that the basic Information system was used first, and then it was upgraded to higher level information systems. MS DOS and Microsoft Excel was used in the beginning to store, retrieve and do other functions like generating reports, billings etc. Later on the newer version of MS Excel has been installed. But it has some limitation to do every function efficiently.

KCMMF is a company which is growing day by day. The existing Information Systems is incapable of fulfilling every requirement of the organizations in future. There is a need for powerful Enterprise Resource Planner (ERP) in KCMMF which is regarded as a game changer in the area of Management Information Systems. Since KCMMF is very big processing company with high number of suppliers and customer base, it has to implement ERP solution soon. It is also observed that KCMMF has to maintain a good customer relationship and optimum use of its resources which can be achieved using ERP.

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Websites and Web Links

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- <http://www.indianmirror.com/indian-industries>