19-20

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"EVALUATION OF TOTAL PRODUCTIVE MAINTENANCE (GLOBAL MANAGERIAL PRACTICE) A CASE STUDY OF AMOLI ORGANICS PVT. LTD.."

Introduction:

In today's global manufacturing scenario huge losses occur in the operations in the shop floor. Various wastes are due to operators, maintenance personal, process, tooling problems and non-availability of components in time etc. Other wastes are in terms of idling of machines, idle manpower, break down machine, rejected parts etc . With this certain circumstances, a revolutionary concept of TPM has been adopted in many industries across the world to solve the above said problems.

Total productive maintenance is a program which involves a nearly defined concept for maintaining plant and equipment in good condition. Objectives of the TPM system is to markedly increase production while, at the same time, increasing employee morale and job satisfaction. TPM has basically 3 objectives - Zero Product Defects, Zero Equipment unplanned failures and zero accidents. It realizes these goals by Gap Analysis of previous historical records of Product Defects, Equipment Failures and Accidents.Dhanashree Industries is the supplier of auto components of the major automobile industries. They have implemented Total Productive Maintenance previously but not getting results according to that.

So Study focuses on evaluating the present system with respect to TPM parameters. So that problem in it can be identified.

Review of literature:

F.T.S Chan(2005) studied the effectiveness and implementation of the TPM system for an electronics manufacturing company. Through a this example of execution of TPM in an electronics manufacturing company, the practical features in inner and beyond basic TPM theory, complexities in the adoption of TPM and the hurdles encountered during the implementation are framed and analysed.

C.J Bamber(1999) framed suggestions to improve the TPM development and implementation plan of the case study organisation. Further development of the research has resulted in a sequencewise program or generic directions for UK SMEs which is proposed as a model for the implementation or rejuvenation of an organisation's TPM program.

F.Ireland(2001) focuses on a study of total

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productive maintenance (TPM) in three companies. The companies implemented TPM because of the business hurdles they faced. In all three companies senior management had supported TPM and set up suitable organisational structures to facilitate its implementation.

Ranteshwar Singh(2012)shared experience of implementing Total Productive Maintenance and examined for a company manufacturing automobile component. Concept is implemented in the machine shop having Computer integrated manufacturing system with different capacity. Overall machine Effectiveness is used as the measure of success of TPM implementation.

Thavaraj(2015) found that good progress in operations output and also found the lead time progress due to TPM implementation on sewing machines as well as interaction effect with kaizen technique is also exist with respect to product lead time reduction.

K.P Ravikumar(2013)analyzed implementation of kaizen techniques in TPM Focus of his study was specifically on procedures & post kaizen scenario in TPM.

Pophaley (2010) argued that the nature of the trade-offs among manufacturing capabilities is more difficult than has been assumed. So, the study aims to prepare a new model and suggests its analysis for measuring the TPM implementation effectiveness as per the original definition of TPM.

Digalwar(2014) aims to know the utilization of Total Productive Maintenance (TPM) tools and proportion of its implementation in manufacturing industry. The paper reviews in detail the different cases of implementation of TPM through the existing literature. The techniques used for the implementation of TPM are selected from literature.

Objectives of the Study:

1. To study present TPM system.
2. To evaluate the system for TPM.
3. To find out problems in TPM system.

Scope of the Study:

The scope of the study is as follows:

1. The geographical scope of the study is limited up to the Production department in Dhanashree Industries in Satara.

2. The conceptual scope of the study includes all the parameter of TPM.

3. The analytical scope is confined to the comparative study of present system with respect to TPM parameters.

Importance of Study:

1. From this study management can evaluate present system with respect to TPM method in organization.

2. From this study organization can know effectiveness of TPM activity.

3. By knowing the gaps in TPM the organization can take corrective measures on it.

4. Thus end result of this study will lead to maintain standard TPM system.

Research Methodology:-

The type of this Research is Descriptive research.

Data Required:-

Discussion & observation with respect to all the parameters of the TPM system.Also

Secondary data required for this study such as concept of total productive maintenance, 5S, and information about all the parameters of the TPM.

Data Sources:-

Primary data is collected through discussion & observation with all departmental heads.

Secondary data is collected from organizations records, Maintenance Schedule list, various departmental manuals & registers, Book's, Internet etc.

Data Analysis:

Data analysis is done by doing comparative study of the present system with standard TPM system.

Table No-1 TPM system in Autonomous Maintenance

The following table shows that comparison of actual performance of organization with Respect to parameters of Autonomous Maintenance.

Sr. no	Standard	Actual
1.	Organization should form TPM team.	Organization form the TPM team with proper representation.
2.	Leader should distribute the different areas of equipment among different team members.	Leader distributes the different areas of equipment among different team members.
3.	Clean the most contaminated area first.	Cleaning the most contaminated area is priority for the organization.
4.	Each member must participate in cleaning and finding out abnormalities in their area.	Each me mber participates in cleaning but does not properly find out abnormalities in their area.
5.	Leader should rectify white tags abnormalities.	White tags abnormalities are rectified by organization.
6.	Red tags for the abnormalities where experts support is needed should be arranged.	Red tags for the abnormalities were attached to machines but frequently not schedule for red tag removal plan.

Interpretation:- The above table shows that organization is following the Autonomous Maintenance with respect to most of the parameters, but there are loopholes with regard to properly finding out abnormalities, not maintaining schedule for red tags removal plan etc.

Table No-2 TPM system in Planned Maintenance

The following table shows that comparison of actual performance of organization with Respect to parameters of Planned Maintenance.

Sr. no	Standard	Actual
1.	The organization should evaluate and record the present equipment status.	The organization evaluates and records the present equipment status and follow up the necessary changes of that equipment.
2.	The Organization should control deterioration and improve weakness.	The Organization taken measures on deterioration and working on improve weaknesses.
3.	The Organization should Build up inform ation management system regarding Maintenance.	The Organization is Building up integrated information system.
4.	The organization should improve reliability and maintainability of machines.	The organization is improving reliability and maintainability of machines with assuring right suppliers for it.
5.	The Organization should implement predictive maintenance system.	The Organization does not implement predictive maintenance system.

Interpretation :- The above table shows that organization is following the Planned Maintenance with respect to all parameters

Table No-3 TPM system in Focused Improvement

The following table shows that comparison of actual performance of organization with Respect to parameters of Focused Improvement.

Sr no.	Standard	Actual
1.	Organization should assure that problems are identified and resolved by cross -functional teams.	Organization is not assuring problems are identified and resolved by cross -functional teams.
2.	Organization should combines the collective talents of a company to create an engine for continuous improvement.	Organization combines the collective talents of a company to create an engine for continuous improvement.

Interpretation :- The above table shows that organization is following the Focused Improvement with respect to most of the parameters, but there is loophole with regard to identification and resolution of problems by cross-functional teams.

Table No -4 TPM system in Quality Maintenance

The following table shows that comparison of actual performance of organization with Respect to parameters of Quality Maintenance.

Sr. no	Standard	Actual
1.	The organization should do Effective implementation of operator quality assurance.	The organization is doing Effective implementation of o perator quality assurance by using the various quality assurance charts on the machine.
2.	The Organization should Focus on prevention of defects at source .	The Organization Focus on prevention of defects at sources with assurance of human error free pr ocess.
3.	The Organization should achieve and sustain customer complaints at zero level.	The Organization achieves customer satisfaction with. highest parameters of the quality.
4.	The organization should improve reliability and maintainability of mach ines.	The organization struggled to improve reliability and maintainability of machines.
5.	The organization should set standard conditions of the sub - process.	The organization provide process flow diagrams for the standard conditions of the sub -process but not mentions schedules.

Interpretation :- The above table shows that organization is following the Quality Maintenance with respect to most of the parameters, but there are loopholes with regard to struggling to improve reliability and maintainability of machines.

Table No -5 TPM system in Early/equipment management

The following table shows that comparison of actual performance of organization with Respect to parameters of Early equipment management.

Sr. no	Standard	Actual
1.	The O rganizat ion should Continuously Maintain equipment conditions,(i.e. Cleaning, Lubricati on, Inspection & Tightening)	Organization maintains equipment conditions with proper Cleaning, Lubrication, Inspection &Tightening.
2.	The organization should arrange regular inspection of machine	Organization does arrange regular inspection of machine . One time inspection in month is done.
3.	The organization should provide places for all tools, jigs.	Allocation area for tools, jigs near to the machine & cleaning of jig & tool done properly.
4.	Plan for Enhancing Equipment Reliability & Maintainability.	Enhancing Equipment 's Reliability & Maintainability is not implemented fully as per plan.

Interpretation :- The above table shows that organization is following the equipment management with respect to most of the parameters, but there are loopholes with regard to equipment's reliability & maintainability.

Table No -6 TPM system in Education and Training

The following table shows that comparison of actual performance of organization with Respect to parameters of Education and Training.

Sr. no	Standard	Actual
1	The organization should Set policies, priorities and checking present status of education and training.	The organization Set policies, priorities and checking present status and training officer build skill matrix for it.
2	The organization should Establish the training system for operation and maintenance of skill up gradation.	The organization Establish the training system for operation and maintena nce by using skill matrix chart updation are necessary to include in training.
3	The organization should provide Training program to employees for all TPM work.	The organization provides Training program to all employees and separate training on TPM work updation are necessary to include in training.
4	The organization should Prepare training calendars.	The organization Prepare training calendars as per the each operator skill level.

Interpretation :- The above table shows that organization is following the training system with respect most of parameters but there is loophole that training regarding updates in the TPM system is not assured by the company.

Table No-7 TPM system in Safety Health Environment

The following table shows that comparison of actual performance of organization with Respect to parameters of Safety Health Environment.

Sr. no	Standard	Actual
1	The organization should Provide induction on safety, training and clear safety rules in the workplace.	The organization Provide i nduction on safety, training and clear safety rules in the workplace.
2	The Organization should provide safety equipment necessary to perform specific activities.	The Organization provides safety equipment necessary to perform specific activities by cate gory wise. Quality of safety is not assured.
3	All workers should use safety equipment and follow workplace policies.	All workers use safety equipment and follow any workplace policies.
4	The Organization should Keep work area tidy and remove an haza rds.	The Organization Keep work area tidy and remove any hazards.
5	The Organization should removes waste material as soon as from work areas.	The Organization remove s waste but not segregated that waste material not disposed from work areas.

Interpretation :- The above table shows that organization is following the Safety, Health and Environment system with respect to most of the parameters, but there are loopholes with regard to quality of safety equipments is not assured.

Table No -8 TPM system in Administrative and Support departments

The following table shows that comparison of actual performance of organization with Respect to parameters of Administrative and Support departments.

Sr. no	Standard	Actual
1	The organization should Provide awareness about office TPM to all support departments.	The organization provides awareness programs about office TPM to all support departments updation awareness is not assured.
2	The Organization should identify P, Q, C, D, S, &M. in each function in rel ation to plant performance.	The Organization identifies P, Q, C, D, S, and M in each function in relation to plant performance.
3	The Organization should Reduce administrative costs, inventory carrying cost by proper inventory control system.	The Organization Reduces administrative costs but failed to reduce inventory carrying cost by proper inventory control technique.
4	The organization should Clean and maintain pleasant work environment.	The organization developed new office Clean all areas and maintain pleasant work environment.
5	The Organization should Reduce breakdown of office equipment, Reduction of customer complaints due to logistics &Reduction in number of files.	The Organization used backup system to reduce breakdown of office equipment, Reduction of customer complaints due to good quality of product and service & all files are computerized.

Interpretation :- The above table shows that organization is following the Office TPM system with respect to most of the parameters, but there are loopholes with regard to, implementation of proper inventory control technique to reduce inventory carrying cost and updation awareness is not assured.

Findings:

1) Clause for Autonomous maintenance:-

Organization is following the Autonomous Maintenance with respect to most of the parameters, but there are loopholes with regard to properly finding out abnormalities, not maintaining schedule for red tags removal plan etc. (Table No.4.2.1)

2) Clause for Planned Maintenance:-

Organization is following the Planned Maintenance with respect to all parameters.(Table No.4.2.2)

3) Clause for Focused Improvement:-

Organization is following the Focused Improvement with respect to most of the parameters, but there is loophole with regard to identification and resolution of problems by cross-functional teams. (Table No.4.2.3)

4) Clause for Quality Maintenance:-

Organization is following the Quality Maintenance with respect to most of the parameters, but there are loopholes with respect to most of the parameters, but there are loopholes with regard to struggling to improve reliability and maintainability of machines. (Table No.4.2.4)

5) Clause for Early/equipment management:-

Organization is following the equipment management with respect to most of the parameters, but there are loopholes with regard to equipment's reliability & maintainability. (Table No.4.2.5)

6)Education and Training:-

Organization is following the training system with respect to most of the parameters, but there are loopholes that training regarding updates in the TPM system is not assured by the company. (Table No.4.2.6)

7) Clause for Safety, Health and Environment:-

The above table shows that organization is following the Safety, Health and Environment system with respect to most of the parameters, but there are loopholes with regard to quality of safety equipments is not assured. (Table No.4.2.7)

8) Clause for Administrative and Support departments:-

Organization is following the Office TPM system with respect to most of the parameters, but there are loopholes with regard to, implementation of proper inventory control technique to reduce inventory carrying cost and updation awareness is not assured.

(Table No.4.2.8)

Suggestions:

1. Organization should maintain schedule for red tag removal and display it.

2. Organization should design cross-functional teams for identified and resolved

of problems.

3. Organization should improve reliability and maintainability of machines

by procuring it from right supplier and assuring right maintenance.

4. Organization should assure training of TPM with all updates.

5. Organization should assure quality safety equipments in the organization

6. Organization should assure optimized inventory control techniques.

Conclusion:

Research study was focused on evaluating the present systems for TPM organization is following the TPM for most of the parameters. Problems exists with regard to sorting, color coding, reliability, maintainability, predictive maintenance, inventory control technique etc. If the organization takes corrective measures as suggested standard TPM can be implemented and it will be competitive advantage to the organization.

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Decision Support Systems for Crop Selection an Imperative for Enhancing Farmers Income

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ABSTRACT

Since ancient time India is a land of farmers. Agriculture sector play a vital role in Indian economy. The agriculture departments of Central and state government have been committed and set a target to double the income of the farmers by the year 2022. Various schemes have been introduced to help farmers for enhancing their income. Departments also incorporated ICT for proving information related to advanced researches, best practices, advances Seeds, Fertilizers, Pesticides In spite of numerous computers based applications were developed for enhancing the yield of the crop, farmers were not able using them. The reason was lack of knowledge and availability of technology. Now a day's most of the farmers are now using 2G mobile phones or smart mobile phones. These gadgets are employed to provide agriculture information to farmers. Many web based applications and Android based applications have been developed to provide information related to weed management, fertilisers management, pesticide management and water management in order to enhance the yield of the crop. Agricultural DSS assists farmers to take right decision at right time. With these systems farmers can get economically reasonable price to their crop and better yield. The farmers have been provided with various systems for enhancing the yields of the crop. But no system has been introduced till now to assist farmers to select the appropriate crop based on data of present season coverage of each crop, whether condition of respective geographic area and soil condition. This paper reviews of various DSS in agriculture, problems in the present systems, conceptual frame work of DSS for crop selection. Finally paper concluded with a need of a crop selection DSS for enhancing farmer's income by proving up-to-date information of present season crop coverage, weather and soil condition. This information will help farmers to choose the appropriate crop to be grown and it's planning.

Keywords— DSS, Agriculture, Crop coverage, Demand, Supply

I INTRODUCTION

The agriculture departments of Central and state government have been committed and set a target to double the income of the farmers by the year 2022. Ministry of agriculture as devised three departments Viz. Farmers welfare, agriculture research and education and animal husbandry in order to handle the various aspects of farming. Various schemes have been introduced to help farmers for enhancing their income. The government provides the seeds, fertilisers, pesticides and agricultural equipments weapons, pesticide scouting pumps, water pumps, tractors and its accessories at subsidised rates. Government also provided financial assistance of Rs. 6000, through Kisan Sanman Yojana. Departments also

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incorporated ICT for proving information related to advanced researches, best practices, advances Seeds, Fertilizers, Pesticides. Departments are striving hard to provide an assistance in doubling the income of farmers.

The parameters that play major role in the enhancing income of farmers are yield of the crop, rates of the crop grown and cost of production. The yield and cost of production parameters are depending on the method of farming and weather condition. The rates of agriculture crops are influenced by the demand and the supply of respective crop ie. Market condition decides rate of the crop. If the production of an agricultural crop is more, then the rates of the respective crop decline. On the contrary if the production of an agricultural crop is substantially less, then the rates of the respective crop will increase.

The production of agricultural crop is depending on two factors climate condition influencing the yield and area coverage of the respective crop. Weather condition and its forecasting information provided to farmers through various government sources and communication medium such news papers, TV, farmers Online help lines centres, web portals and other ICT tools. Weather information is provided voluntarily irrespective of demand and use by the farmers. Many web based applications and android based applications have been developed to provide information related to weed management, fertilisers management, pesticide management and water management. Earlier farmers were not able to access this information available on websites because lack of knowledge and availability of technology. But now a day's farmed are using 2G mobile phones or smart mobile phones. Now new applications are developed in such way that web sites, applications are accessible o mobile phones. Farmers are familiar with android based applications

II EXISTING SYSTEM TO ENHANCE CROP YIELD

DSS and ES for Fertilisers Management		
Sr. No.	Name	Purpose
1.	DSSAT	DSS for agricultural technology transfer is a syste that decide type of seed to be grown, prediction crop yield prediction, water scheduling for balanc irrigation, frequency offertilizer application. [3]
2.	CROP-9-DSS	DSS that Identify the paste scouting and cont disease, fertilizer management, water manageme on selective 9 crops of Kerala [4]
3.	Intelligent fertilization DSS Based On Knowledge Model and Web GIS DecisionFor Fertilization	The study constructed the basic frame of decisi support system for fertilization.[25]

DSS and ES for Water management		
Sr. No.	Name	Purpose
1.	CROPLOT	An Expert System that determined suitabilit agriculture plot for a given crop[5]
2.	CALEX	A DSS for cotton management of irrig schedule.[6]
3.	ESIM	Expert system for management Ofirrigation.[8]
4.	AQUAMAN	Web based DSS for irrigation scheduling of pear [21]
5.	TUNGGUL	Development model DSS for rain water manage in semi arid area[2]
6.	CROPWAT	A system for irrigation management.[11] .

DSS and ES for Weed management		
Sr. No.	Name	Purpose
1.	CropSyst	Deep alluvial loamy sand typic Ustripsamment under hyperthermic regime [9]
2.	CROPGRO	DSS that assist in increasing soybean yie limited water environment based on clima data [10]
3.	IPM	This DSS is mainly used by the farmers of bengol to get climate date to decide the crop. This system has provided comprehensive awareness paste management[2]
4.	MKRISHITM	A DSS applied by the farmers in maharastra t ac the cliemate data for particular crop. The sy helped the farmers to schedule the scouting of and nutrients.[15]

DSS and ES for Selection of crop		
Sr. No.	Name	Purpose
1.	Android Based ADSS	Android based DSS to select the crop va according to whether conduction and availabili water[24]

ICT Agriculture and extensions services		
Sr. No.	Name	Purpose
1.	CROPMAN	A DSS used by farmers in Punjab to get site specif climate data.this system has helped farmers enhance the yield by changing the transport schedu from May to June[11]
2.	Rayat Mitra	The web portal creted by Department of Agricultu to provide Agricultural Extension services to farme and to transfer the latest technical knowledge to t farming community, introduction of high yieldi varieties, laying demonstrations, impaing training to farmers to improve skills & knowledge to boost the agricultural Production and productive[12]
3.	Farmer web portal	This web portal to make available releva information and services to the farming communi and private sector through theuse of information an communication technologies, to supplement t existing delivery channels provided for by t department. Farmers' Portal is an Endeavour in th direction to create one stop shop for meeting informational needs relating to Agriculture, Anima Husbandry and Fisheries sectors productio sale/storage of an Indian farmer.[14]
4.	Bhoomi	This portal is the project of online delivery an management of land records in Karnataka. provides transparency in land records manageme with better citizen services and takes discretion awa from civil servants at operating levels.[15]
5.	eSagu	A agricultural DSS that helped the farmers of Tam Nadu to farm specific decisions in order to enhan the yield of by assessing the crop specific clime data from the system[25]
6.	DAIRY MGT	A DSS for management of the Dairy business[23]

III. PROBLEMS IN EXISTING DSS AND ES

The coverage area information of each crop is collected by both agriculture department and revenue department from each taluks/tahasils and consolidated at district and state and further at national level through statistics department of government. The consolidated state wise, districts and tahasils wise report of coverage area of each crop is published on the web sites on the end of the year. Obviously these reports are helpful for analysing the normal area of each crop, yield, production and rate of each crop in past years. But the rates of crops in present year are depending on coverage of in the present season. There is no provision for disseminating present season crop coverage to farmers. If this information is available during the process of selection of thee crop, farers will be in better position to select their crop to be grown base on these facts.

Traditionally farming decisions India is not data driven rather they are based on their own experiences and expert judgments. Most farmers select their crop based on the rates of crop they received in the past year, but the rates of present season crop are purely influenced by the production of crop in present year. This leads to substantial imbalance of demand and supply of agriculture products. As an illustration we have been experiencing the impact of imbalance in demand of supply of onion since last 6 months. On the contrary onions were thrown on roads when there was excess coverage of onion crop. Similar situations were experienced with other crops in different seasons.

Due to the imbalance of crop coverage most of the time farmers does not get appropriate price for their crops. As result of this farmers committed to suicide every year in spite of financial and technical support by the government. As per farmers report 2014 every year 10000 to 18000 farmers committed to suicide.[2] To overcome this situation Decision Support Systems for crop selection become imperative.

Eventually along with providing assistance of technology and methods for enhancing the yield of the crop, farmers must be provided with some system for selecting the appropriate crop based on current year crop coverage, weather forecast, geographical and soil condition. Further data with respect to crop selection should be provided on single platform that can accessed any where any time through computers, mobile phones of both versions Symbian operating system based 2G phones and Android based smart phones as well. Researchers deem better if this assistance is given through Decision Support Systems.

Decision Support System is a tool that help decision maker to take decision and choosing the best solution among the set of alternative solutions, that is social, economic and environmental point of view. DSS is computerized system, which uses models and databases in decision making. [1].

IV. CONCEPTUAL MODEL OF DECISION SUPPORT SYSTEM FOR CROP PLANNING

The conceptual model shown below consist of three types of users viz. Farmers, Agricultural Officers, and Agricultural Experts Such as University Professors, scientists and five functional components viz. User interfaces, Network Interface, database Management system, Knowledge base system and model management system.[17]

1. Users

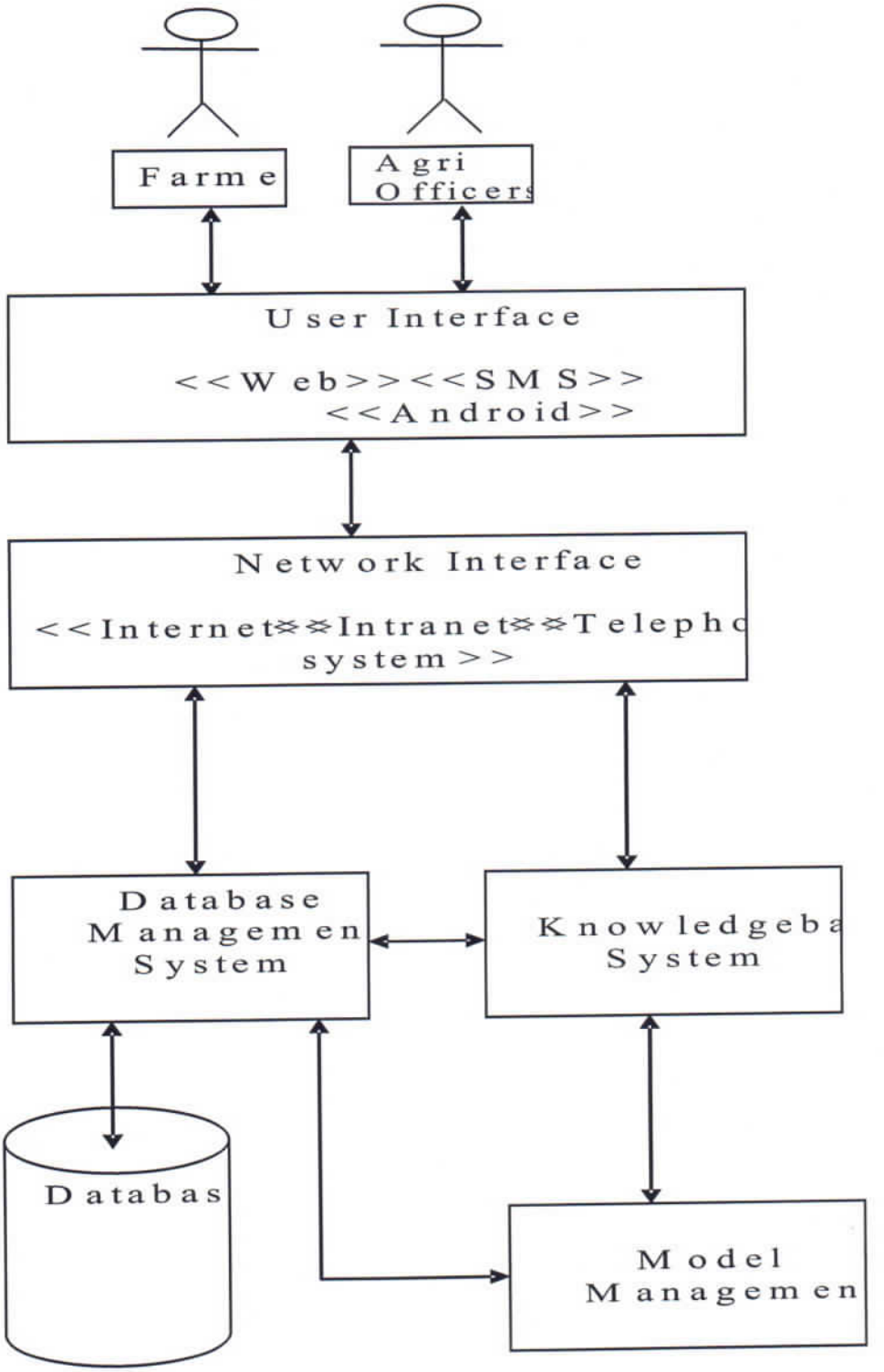
   i. Farmers

Although there are many types of stake holders of the system the focus of developing the system of enhancing the income of the farmers.

   i. Agriculture Officers

In the agricultural department at district level there is a Joint Director. An Assistant Director at each Taluk provides current status of crop cultivation information every week to joint director.

An Agriculture Officer at each hobli center collect information from village accountant and gives it to Assistant Director. Village accountant provides the current crop cultivation through pahani (Survey) from farmers and provides it to the Tahasildar and agricultural officers.



2. User Interfaces

The system should provide three types viz:

i. Web Portal: farmers and agriculture officers who are connected through internet and computer literate can use this interface to access the information and inter the crop cultivation information

ii. Android Application: Farmers and agriculture officers who are connected through internet and using smart phones can use this interface to access the information and inter the crop cultivation information

iii. SMS: most of the farmers are still illiterate so they cannot use neither computer nor smart phones to access the information for crop selection. Every farmer has simple mobile phones they can receive SMS on these phones. The present status of crop cultivation of proposed crop can be accessed through SMS irrespective internet connection on simple (2G) mobile phones.

3. Database Management System

Database management system manages the data required for DSS. The system need to maintain the records of the farmer's details, land details, crop details, cultivation of crops, yield and price of agriculture products, harvesting etc.

4. Knowledgebase Management System

This module is heart of the DSS which actually deduce the information from the database and the model management system. This module accepts the user input parameters and search the information from database and model management system required for the selection of crop

5. Model Management System

Each crop has certain requirements like type of soil, fertilizers requirement, water schedule, pesticide schedule, weed management, season, etc. This system maintains the standard requirements of each crop based on expert suggestions and best practices of farmers.. This pattern is used for selection of crop.

CONCLUSION

Various decision support systems have been provided the farmers with for water management, weed management, fertiliser management, pesticide management and climate information. These systems will be used for enhancing the yield of the crop. But none of the system has been provided to ensure reasonable price for his crop. This paper has provided with conceptual framework of DSS that helps the farmer to select the crop based on the information of demand and potential supply of crop

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Information Technology Policy for Banks

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Abstract - *Based on the study undertaken on IT governance in banks in Western Maharashtra, it is found that there is ample scope for implementation of IT governance in terms of its usage for efficient and effective use of IT assets. Hence, it is suggested that banks should provide attention on IT governance implementation. Standard IT Governance framework would enable a bank to perform its business in an orderly and effective manner improves the customer service and aid in its own survival and growth.*

***Key Words*: Information Technology, IT Governance, IT Policy, Hardware/Software Acquisition, Security etc.**

1. INTRODUCTION

Banks extensively depend on Information Technology (IT) to execute its mission and provide services to the customers and banks' business partners. Information Technology policies are an essential requirement to sound IT usage and IT Security. They are designed to preserve the confidentiality, integrity, availability, and value of IT assets, as well as ensure the continued delivery of services. They also establish the appropriate focus and standards for acceptable IT practices across an organization. This policy is based on IT Act guidelines and highlights banks' goals and requirements for protecting its IT assets.

All bank components must comply with the basic requirements of this policy and its associated operational standards and technical documentation.

1.1 Purpose

Every organization that uses computers, email, internet and software on a daily basis should have information technology (IT) policies in place. It is important for employees to know what is expected and required from them when using the technology provided by their employer, and it is critical for a company to protect itself by having policies to govern areas such as personal internet and email usage, security, software and hardware inventory and data retention. It is also important for the business owner to know the potential lost time and productivity at their business because of personal IT usage.

Without written policies, there are no standards to reference when both sticky and status quo situations arise.

1.2 IT policy areas

IT policy address following areas:

1. **Acceptable Use of Technology**: Guidelines for the use of computers, fax machines, telephones, internet, email, and voicemail and the consequences for misuse.
2. **Security**: Guidelines for passwords, levels of access to the network, virus protection, confidentiality, and the usage of data.
3. **Disaster Recovery**: Guidelines for data recovery in the event of a disaster, and data backup methods.
4. **Technology Standards**: Guidelines to determine the type of software, hardware, and systems will be purchased and used at the company, including those that are prohibited (for example, instant messenger or mp3 music download software).
5. **Network Set up and Documentation**: Guidelines regarding how the network is configured, how to add new employees to the network, permission levels for employees, and licensing of software.
6. **IT Services**: Guidelines to determine how technology needs and problems will be addressed, who in the organization is responsible for employee technical support, maintenance, installation, and long-term.

Purpose of IT policy is to set direction and provide information about acceptable actions and prohibited actions or policy violations.
Guidelines are created and provided to help organization, branches and individuals who are part of bank community to understand how bank policy applies to some of the significant areas and to bring conformance with stated policies.

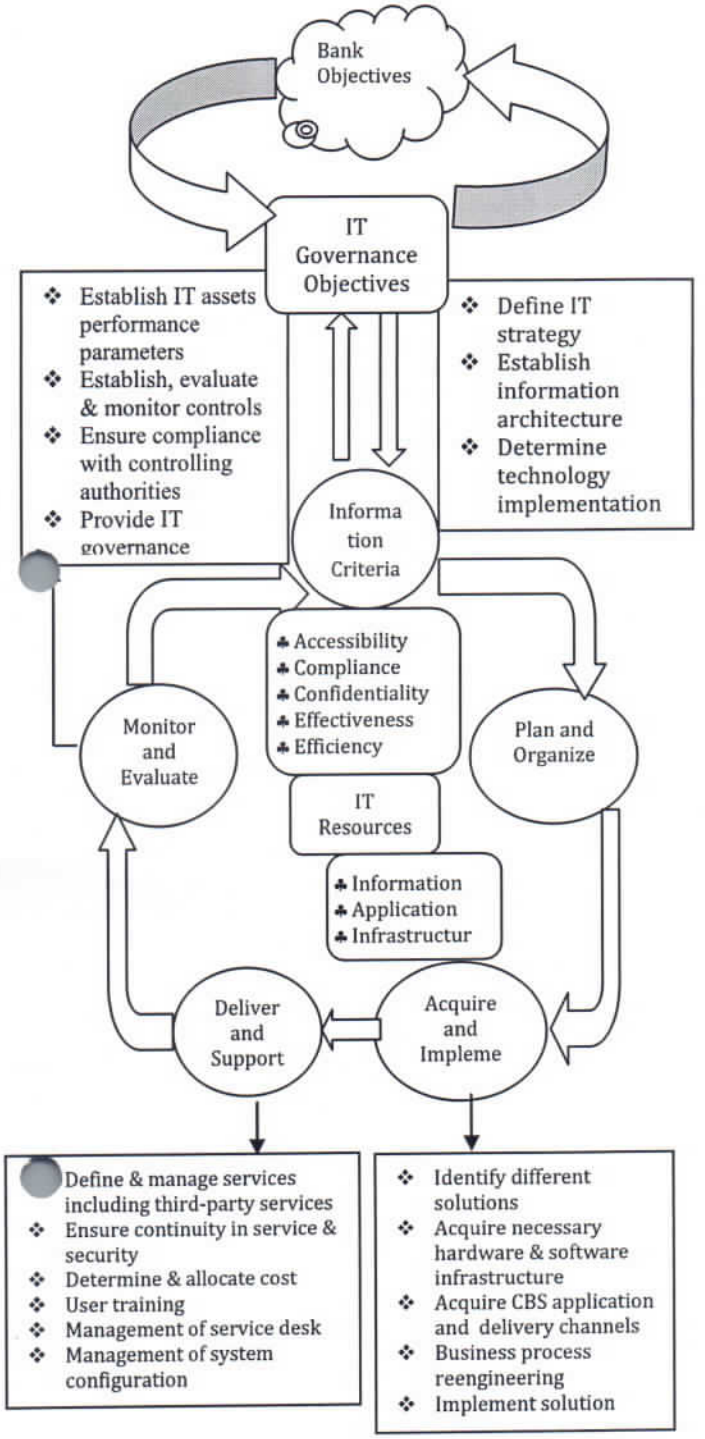

Fig -1: IT Governance Framework

2. CLASSIFICATION OF IT POLICY

IT policies may be classified into following groups:

1. Hardware Acquisition, Installation and maintenance Policy
2. Software Acquisition, Installation, maintenance and Licensing Policy
3. Network (Intranet & Internet) Use Policy
4. Security Policy
5. IT usage Policy

2.1 Hardware Acquisition, Installation and Maintenance Policy

Steering committee prepare hardware requirement schedule for necessary hardware in consultation with technical advisor.

Bank should acquire required hardware of reputed brand by using standard purchasing method suggested by state government and RBI.

Hardware required for HO and branches is purchased at HO level. In case of emergency branches purchase hardware and peripheral items by taking permission of HO. (The price of said purchases should not exceed RS._____ per month)

Purchased material will be verified through technical consultant if any deficiencies observed at the time of inspection. The deficiencies will be communicated to vendor and necessary action as per purchase order terms will be taken by Head Office.

Bank should make maintenance agreement with reputed and authorized vendors only.

Terms and conditions of maintenance contracts are decided at HO level in consultation with IT department of a bank and technical consultant of a bank.

2.2 Software Acquisition, Installation, Maintenance and Licensing Policy

It is the policy of banks to manage its software assets and to ensure that banks installs and uses only legal software on its PCs (including portables) and servers. Banks will take all steps necessary to prohibit its users from duplicating any licensed software or related documentation for use either on bank premises or elsewhere unless bank is expressly authorized to do so by agreement with the licensor. Unauthorized duplication of software may subject users and/or bank to both civil and criminal penalties under the IT Act. Bank must not permit any employee to use software in any manner inconsistent with its applicable license agreement, including giving or receiving software from clients, contractors, customers and others. It is the policy of the bank to acquire copy, distribute, transmit and use software in accordance with the software management policies of the bank and the terms and conditions in any license agreement accompanying a particular software product.

2.3 Network (Intranet & Internet) Use Policy

Bank offers employees access to its bank computer network and the Internet for only official work assigned to respective employee.

If you or anyone you allow to access your account (itself a breach of this policy) violate this policy, your access will be denied or withdrawn. In addition, you may be subject to disciplinary action, up to and including termination.

2.4 Security Policy

A Security policy includes the overall importance of security within the organization, identifies what is being protected, identifies key risks and mechanisms for dealing with those risks and provides for on-going and regular monitoring and feedback to ensure the polices are enacted and enforced. Regular updates are needed to reflect changing business needs and practices. The policy enumerates the roles and responsibilities of all information systems users for protecting the confidentiality, availability and integrity of information assets.

2.5 IT Usage Policy

All members of the bank community are obligated to use bank's IT resources in accordance with applicable laws, with Bank policies (including its work policy, and its standards of honesty and personal conduct), and in ways that are responsible, ethical, and professional. Recognizing the need to ensure the preservation and availability of the official records of the Bank for legal, administrative, and historical purposes, the bank has adopted the following archival policy.

All records generated or received by the various branches. Administrative and Head offices of the Bank in the conduct of their business, regardless of the form in which they are created and maintained, are the property of the Bank and constitute archival material. The records covered by this policy include official printed material, correspondence, machine-readable files, record books, minutes, committee files, financial records, and associated papers.

All branches, administrative officers of the bank and Officers of the HO, as well as those members of the staff who, by virtue of administrative responsibilities either of a continuing or occasional nature, possess files, records, or documents relating to their official duties, are requested to observe the following regulations:

The use of bank's IT resources is restricted to Bank business and incidental personal use. Incidental personal use may not interfere with bank work, nor may it result in additional direct cost to bank. Bank's computers and other IT resources must be used in a manner consistent with bank's status as professional financial Institution, and so, for example, cannot be used for the benefit of personal businesses or other organizations unless permitted by bank policy. Unauthorized access to and use of bank's IT resources violates this policy

3. CONCLUSIONS

It is concluded that, the study throws light on status of IT governance implementation, impact of IT governance and problems faced by banks while IT governance implementation. Many direct and indirect factors affect on the progress of IT governance implementation in banks in general and banks under study in particular.

The analysis of the data pertaining to IT governance implementation clearly indicates that there is an ample scope for furthering IT governance implementation. The study reveals that It governance implementation in private and public bank is satisfactory but IT governance implementation in co-operative banks is infancy stage, because of lack of top management awareness about IT governance.

IT governance implementation in banks would greatly influence by involvement of top level management and may expand vertically and horizontally to ensure all the business requirements. This could happen only when –

- Top management associates themselves as IT user
- IT objectives are clearly defined
- Adoption of IT strategy/policy and furthering as per technology and business changes
- Establishes separate IT department with required qualified professionals
- Business processes are reengineered

Besides above mentioned factors the involvement of regulatory agencies with mandatory and minimum standards in terms of technology governance would also work as driving force. The study carried out on selected banks clearly indicates that there is an urgent need to act and deploy standard IT governance framework which could cover all areas of IT governance activities under one umbrella. The suggested IT Policy is based on the study would probably provide a roadmap for banks and put the IT as a business driver rather than business enabler.

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