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Research Paper

Manufacturing as a Global Strategy with a Systematic Approach

Engineering

KEYWORDS : Economic growth, Global context, Lean Technology, re organization.

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ABSTRACT

Traditionally manufacturing has been developed to suit a licensing system of planned economic growth and protected market. Recent policy in business changes have resulted in de-licensing a number of industries. It has resulted in direct foreign investment. The business has become market oriented. Industries are now open to competition both domestic and international markets. To overcome these challenges company should take up number of medium and long term measures. The scope of this paper is to look for both short term and long term measures. Companies which are reluctant to change are swallowed by the market and hence it becomes more important to see value in every process and implement lean technology. In order to compete in the present global context many organization need significant reorganization

1. INTRODUCTION

In this paper we analyze and review on the manufacturing process and the functional activities of conventional manufacturing system. The study also focuses on reorganization of its present structure which would help them to compete in this competitive world. The analysis of its manufacturing activities would also be in such a way that whether they are globalized if not so we would analysis on use of global strategies in this present practice. The study will also focus on integration of management technology with product process technology.

We also study on various bottle necks and problems prevailing in manufacturing activities and review on the use of techniques such as lean so that it would help them to be a global competitor. Since in this ever changing world the business they do should be of globalized standards. The company's present organizational structure would also be revised and reviewed so that they would be of such a kind that they get adaptable to any changes. Manufacturers face an increasingly uncertain external environment as the rate of change in customer expectations, global competitions, and technology accelerates. Flexibility is the organizations ability to meet an increasing variety of customer expectations without excessive costs, time organizational disruptions or performance losses [1].

The competitive environment is characterized by new sources of information , new technologies, new management practices , new competitors and shorter product life cycle[2].The flexible approach to make manufacturing a concept to go with the organizational development would also consider the knowledge based approach to compete in the ever-changing market. Quality Management offers one initiative approach that firm uses to improve performance [3].

We consider the manufacturing system with certain specific arrangement which is dealt in the coming part for our research is explained below.

2. ORGANIZATIONAL AND MANAGEMENT STRUCTURE:

The conventional organization comprises of Human Resource Department, Logistics, Manufacturing, Finance, Sales & Marketing. The organization is build such a way that they are horizontally distributed by acting individually. The departments are not linked to each other and they fail to share information usefully. They have their own system to function within the department and are not integrated and unified. This kind of organization is useful for daily operations. The reporting is horizontal to the management.

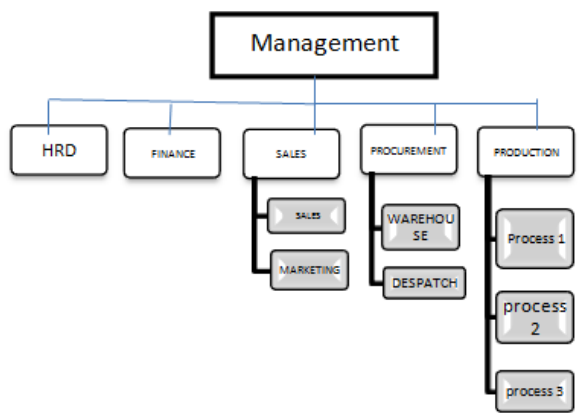

Figure 1: Organizational Structure

2.1MANAGEMENT STRUCTURE:

The management structure is a conventional top down management where the information flows from top to bottom with independent functions depending upon the departments. This kind of structure is such a way that the top management decides on management decisions and allows it to flow down the hierarchy.

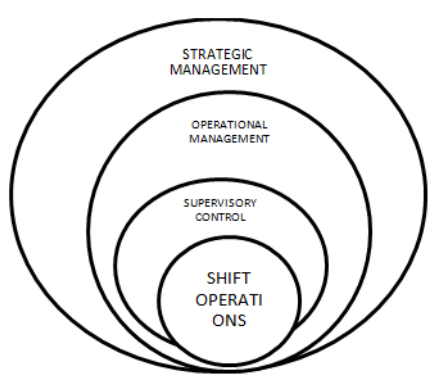

Figure 2: Management Structure

The strategic management is carried out by top management every month and then follows the operational management which is scheduled weekly as per the strategic management. Then follows the supervisory control which is a daily activity.

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The strategies are done every day. The final is the shift operation which takes place every shift and here the operators are asked to give their shift production report to the supervisor. The supervisor updates daily production report and informs to operation mangers every week. The manger reports the weekly production report to the top management every month. Based on the monthly report the top management draws strategies and allows that information to flow down the management.

The manufacturing activity is in such a way that it involves various functions and stages to make the grey threads into a final product. Considering the company's current supply chain is in form where they have multiple suppliers for different materials that they use to produce. Their suppliers for are different and they have two different markets for their products. The multiple suppliers make the supply chain really a tough task to coordinate as when they have fluctuating demand for one market and a constant demand for another market. The supply chain in such a way that the raw materials from market are stored in store house from there it is carried to the manufacturing floor when order is received. The material is converted into product and then stored in warehouse and when the customer order is released the product is shipped to distributor and it reaches the customer.

2.2 CASES AS ISSUES

(i) The company is horizontally structured which makes the flow of information between departments a critical issue and they work independently which make co-ordination a tough task.
(ii) The company is horizontally structured which makes the flow of information between departments a critical issue and they work independently which make co-ordination a tough task.
(iii) The multiple suppliers make the supply chain a confusing and would cause a delay in supply of material to the stores. This also results in broken information flow between the supplier and the customers.
(iv) The company has two kinds of market and with this kind of value stream; the time to market may vary with the time of supply of material for manufacturing.
(v) Quality control problem as the materials are from different suppliers situated at different regions.

2.3CAUSE AND EFFECT DIAGRAM:

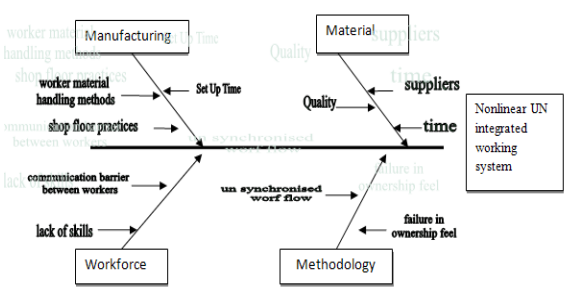

Figure:3 Fish Bone Diagram

The above cause and effect diagram clearly explains the root causes of the firms present bottlenecks. They are as follows

- ✓ Workforce
- Lack of skills
- Communication between workers
- ✓ Material
- Multiple suppliers
- Material Quality
- Time to deliver to company
- ✓ Manufacturing
- Shop Floor Practices
- Set Up time
- Worker material methods
- ✓ Methodology
- Unsynchronized work flow
- Failure in Ownership feel

The above bottlenecks in the concern are studied and these problems are to be rectified so that the company would attain a better place in the market and will be able to sustain its position to hold its market.

3. MANUFACTURING IN GLOBAL PATH:

On investigating the possible ways by which a manufacturing firm would face bottlenecks and issues that is being dealt in the issues. The paper would come out with some possible ideas considered as a global perspective. Product customization considered as key aspect of flexibility [9] in line to the customer need and market change.

After careful analysis and review of manufacturing processes and activities, work culture, we have learned the bottlenecks and issues such as island of information, Excess inventory, Demand loss due to lack of sales forecast, Communication Barrier between departments. To overcome these manufacturing problems we have decided to come out certain manufacturing concepts to improve the efficiency and effectiveness of the company. The proposed standards for the firms manufacturing are

i. Implementation of Advanced Toyota Production System(TPS) Strategy
ii. Vertical Integration of architecture to improve communications between departments.
iii. 5s implementation in production floor to enhance working practices.

3.1 ADVANCED TOYOTA PRODUCTION SYSTEM(TPS)[4]:

Advanced Toyota Production System uses the core principles of New JIT. The New JIT which not only uses the core principle of production process as used in conventional TPS, but also to form core principles in other supporting fields such as marketing, human resource, design and development etc and thereby creating an healthy integrated environment for making the manufacturing

The Advanced TPS model which is considered as a next generation management technology is an theoretical and systematic analyses proposed by KAKURO AMASAKA and HIROHISA SAKAI, School of Science and Engineering, Graduate School of Science & Engineering, Aoyama Gaskin University, 5-10-1 Fuchinobe Sagamihara-shi, Kanagawa-ken, 229-8558, Japan in his journal titled " EVOLUTION OF TPS FUNDAMENTALS UTILIZING NEW JIT STRATEGY: PROPOSAL AND VALIDITYOF ADVANCED TPS AT TOYOTA". They have developed this new model of Advanced TPS based on evolution of conventional JIT. It is also considered as a development strategy established through Global production and management system which uses New JIT.The Advanced TPS has the four main category in its improvement program (I) creating an intelligent quality control system, (ii) Renovated work environment (iii) Operator development (IV) Reliable work system. The reliable work system can be made by deploying advanced TPS. The concept of The Integrated High Linkage network system 'V-MICS' is been proposed for making administration of production facilities an integrated concept.

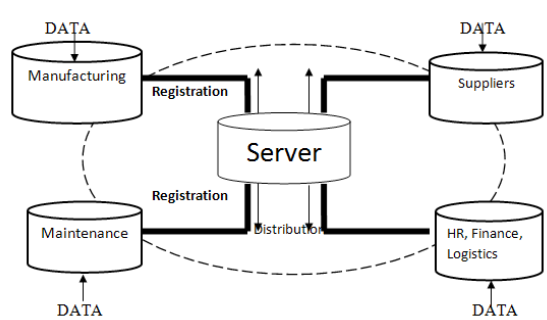

Figure 4: Advanced TPS V-MICS Structure

The system architecture is in such a way that we provide with each individual server at every department and are linked to each server. The servers used to provide access for the workers who work in different department. The each department server is synchronized with a single server which accepts and sends the necessary data and information need by the users. The system is designed in such a way that the department servers are licensed such a way only the respective departments are allowed to make entries while the rest have access to view changes for reference. The employee invovlement with respect to change which mainly depend on individuals because implementation of most of the manufacturing practices requires negotiating changes in work where unionization will resist changes[8].

This helps in making the production process systemized and helps in updating the current position of an order that has been sent. It is one of the tracking systems to monitor the process and product. This also helps in improving the supplier-Buyer relationship and its information sharing capabilities[5].

3.2 VERTICAL INTEGRATION ARCHITECTURE:

The architecture is vertically integrated bringing the information sharing more efficient and the department are synchronized with the V-MICS which avoids the bottlenecks between departments and also provides crucial linkage between them. The Flexibility also depends on level of business, extent of product complexity, degree of process intricacy, level of success of the firm [6].].The integration of six major components Materials, Process, Equipment, Facilities, Logistics and people [7] would develop a system futuristic to change and reactive to adverse need.

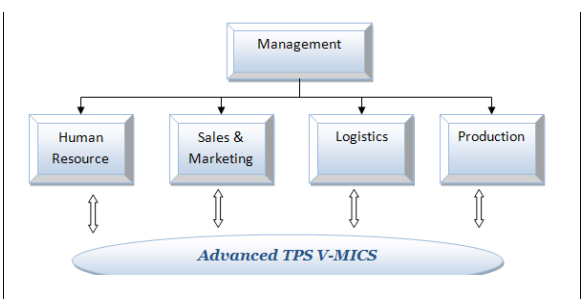

Figure 5: Vertical Integration Architecture

4. CONCLUSIONS

The implementation of Advanced TPS V-MICS would make the company manufacturing global. The company has a strong commitment to change which would help in making it successful in global perspective. The implementation of this would bring a better scope and place in its competitive world. The company's initiative and adaptability to change would definitely result in making the company one among the best in its global market.

Despite the advantages of Advanced TPS it has its own demerits where the cost is high and the training required make the workers get used to it will be more. It would be a better option for the company to implement Advanced TPS in its near future if the management is ready to spend money to make its manufacturing and management activities global. For the time being the company would focus on making the architecture vertically integrated and also implementing 5s in the shop floor initially to make the workers practice of better standards to produce quality products.

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