

Productive industrial management to establish sustainable growth in micro and small scale industries with using advance production theories like JIT, TQM and customer satisfaction

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Abstract— Resources like Raw, management system and customer satisfaction is important aspects in sustainability strategies of a production or manufacturing company. For improving above mention topic, consumption awareness, practical usable indicators, efficient management practice is required. This work focuses to establish sustainable Productive industrial management growth. Productivity improvement is one of the core strategies towards manufacturing excellence and it is necessary to achieve efficiency and operational performance. It enhances customer satisfaction and reduce time and cost to develop, produce and deliver products and service. This work also focus on productivity as a positive and significant working process, inventory levels and on time delivery. For productivity improvement, three modern management systems are concluded in this research work. Thesis contains JIT (Just in time) work system, TQM (Total quality management) to increase plant efficiency and improve customer satisfaction. This work also counters the challenges in implementation of JIT and TQM and remedies for the same. Thesis also suggests way to improve the customer satisfaction through JIT and TQM. Customer satisfaction will participate to build a strong growth in micro and small-scale industries.

Keywords— JIT, TQM , Customer satisfaction, Quality Improvement, On time delivery, Inventory level management, Resources Management, Sustainability.

INTRODUCTION

Resources -The facilities, permanent or temporary assets of a company by the use of which a company perform the task is called resources.

Resources Management - The arrangement of the resources to ensure the best performance of available resources and also for arrangements of required resources is termed as the resources management.

In the management of resources is a try or effort for using a company's resources in the most efficient possible way. These resources can include tangible resources such as goods and equipment, financial resources, and human resources such as employees or labors. Resource management is done to manage all the required resources in minimum cost and availability at the time of requirement. Resource management includes ideas such as making sure the organization or company has enough physical resources for one's business or process of making products or outputs.

Raw - The word **raw** is termed for all the materials, information, energy etc which required to be as a input for further processing to get the final product or output. The basic material from which product is manufactured or made, raw materials is continuing to rise despite every effort to increase productivity of resources. We now live in a world in which product cycles are becoming ever shorter and the products of our industry. Raw materials are all these substances that turn into different things during industrial process.

Management of systems - Documented and tested systematic method aimed at smooth functioning through standard practices. Used primarily in franchising industry, management systems generally belongs to collection and flow of detailed information regarding the points which are important for the organization by the management point of view, these information may be related to the following:

- Organizing process of an enterprise.
- Setting and implementing corporate policies.

- Establishing accounting, monitoring, and quality control procedures.
- Choosing and training employees,
- Choosing suppliers for getting the best value from them, and
- Marketing and distribution etc.

Sustainability - The traditional industrial view shows the parts of sustainability are product design and process technology typically determine the types of pollutants emitted, solid and hazardous wastes generated, resources harvested and energy consumed. But including above points also many other points are matters in sustainability of a production company or any organization. An organization will be as much sustainable as well it will be up to date production systems, strong communication to support the ill in all the levels of work. By the use of a overall healthy management it will establish the sustainability. With addition some authors with the acronym of sustainable supply chains (SSQ), require a fundamental shift from fragmented and functional approach to an holistic one, with a fundamental reassessment of the value creation. New sustainability concept and constructs, as well as high level structures.

Strategies of a company - The success of the company is largely influenced by decision taken by strategic management. A whole range of models of strategic management is used in practice. The paper develops a methodology of strategic model implementing into the engineering company. Furthermore, the methodology recommends procedures while solving an up-to-date worldwide task of the definition of the company strategy.

Efficient management practice - Effectiveness is concerned with 'doing the right thing', and relates to inputs and what the manager does. (Laurie J. 1996) posit that Efficiency "is concerned with 'doing things right', and relates to inputs and what the manager does". This however involves balancing the amount of resources used to achieve an objective, against what was actually accomplished. Here the more favorable the ratio of benefits to costs, the greater the efficiency. It is the achievement of ends with the least amount of resources. Most Organizations who are more profit oriented rather than satisfying their customers, end up running into loss that they least expected. A scenario is a block industry that moulds/produces blocks to sell for erecting building. If for every 100 blocks to be mounded or produced, the quantity of sand to be used to produce a quality product (block) is one tipper load of sand and the quantity of cement needed to produce that same quality is thirty (30) bags, the company is said to meet the needs of the consumers. This also goes in achieving the objective of the Organization. In some industries where inefficiency does not exist, and the management in the quest to maximize profit rather than maximizing quality.

Literature Review

Marcel T. Ngambi (2015) said that - the development of total quality management from 1950 onwards can be credited to the works of various American experts such as Edward Deming, Improve every process: improve constantly and forever every process for planning, production and service. Institute training on the job: institute modern methods of training on the job. Institute leadership: adopt and institute leadership aimed at helping people and machines to do a better job. Drive out fear: encourage effective two-way communication and other means to drive out fear throughout the organization. Break down barriers: break down barriers between department and staff areas. Eliminate exhortations: eliminate the use of slogans, posters and exhortations Eliminate targets: eliminate work standards that prescribe numerical quotas for the workforce and numerical goals for people in management. Permit pride of workmanship: remove the barriers that rob hourly workers and people in management.(A- 12). Masao Nakamura(1998) stated - A fully recognized and implemented quality management system, will ensure that the customer is satisfied by meeting their requirements, and will thus enhance the confidence of the customer. Attaining customer satisfaction is a great achievement for the organization that will assist in capturing the market, or increase the market share (A- 25). Swapnil S Dange (2016) stated that - Just in Time (JIT) means, making only what is needed, when it is needed, and in the amount needed. For example, to efficiently produce a large number of automobile parts, which can consist of around 40,000 parts, it is necessary to create a detailed production plan that includes parts procurement. Supplying what is needed, when it is needed according to this production plan can eliminate waste, inconsistencies, and unreasonable requirements, resulting in improved productivity. In addition, these goals should be achieved by paying utmost respect to the humanity of the employees who make the system work. Sometime, the difficulty of achieving the goals lies in the complexity of manufacturing operations. It is not difficult to build the high quality product, but is extremely difficult to do so while maintaining excellent quality, and at some time respecting the humanity of people who do the actual work of building that product (A- 5). Ogbari, Mercy (2015) - Globalization has resulted in making the world 'smaller'. This means that organizations now have a wider reach and this has led to fiercer competition between rival companies. In other to survive and remain profitable, organizations must come up with cost efficient Over the years, JIT has evolved to a relatively low cost, flexible and simple process of manufacturing whereby the production rates are determined by the end user and not the manufacturer. But despite the evolution, one thing has remained in the JIT philosophy and that is the quest to eliminate waste from all stages of manufacturing.

Application of JIT Manufacturing should be founded on the following sys-teems:

- Improved inventory control system
- Quality improvement system
- Maintenance improvement system
- Set-up time improvement system (A -10)

Swapnil S Dange (2016) - Just in Time (JIT) means, making only what is needed, when it is needed, and in the amount needed. For example, to efficiently produce a large number of automobile parts, which can consist of around 40,000 parts, it is necessary to create a detailed production plan that includes parts procurement. Supplying what is needed, when it is needed according to this production plan can eliminate waste, inconsistencies, and unreasonable requirements, resulting in improved productivity. In addition, these goals should be achieved by paying utmost respect to the humanity of the employees who make the system work. Sometime, the difficulty of achieving the goals lies in the complexity of manufacturing operations. It is not difficult to build the high quality product, but is extremely difficult to do so while maintaining excellent quality, and at some time respecting the humanity of people who do the actual work of building that product (Part A- 5). Mohammadi (2016) - Mixed-Model assembly lines are often used in manufacturing based on just-in-time techniques. The effective utilization of these lines requires a schedule for assembling the different models be determined. The objective is to minimize the total deviation of actual production rates from the desired production rates. Mathematical method with the optimization algorithm is proposed here to solve this problem. To prove the efficiency of the proposed algorithm, a number of test problems are solved. The results show that the proposed algorithm is an efficient and effective algorithm which gives better results with the large problem sizes. This paper presents a practical procedure to minimize total product variation rates, and easy to use by practitioner (Part A - 6). J. Schonberger (2015) - Each small reactor makes a different grade; the JR is to run every grade every day at their daily sales rates. Finished goods store the most value. Thus, for its promise of slashing FOI, JIT holds great attraction to the process/commodity industries. Additionally, there is a substantial derivative effect: raw material reductions. This effect comes from moving away from batches and making some of each formulation every day, which means the supplier can count on a known daily usage rate for raw materials a rate that can be stabilized usually for 2-4 weeks. This offers hope for working out true just-in time delivery schedules for barges, barrels or bales of raw material.(A -8). Raj Urs S (2014) - On time delivery is a measure of process and supply chain efficiency which measures the amount of finish goods or services delivered to customers on time and in full. It helps determine how efficiently we are meeting our customer's or agreed deadlines. If the figure is too low or below the benchmark it could be used as a signal that somewhere along the supply chain there are bottlenecks, inefficient or time consuming processes which are not adding value and warrant further investigation or a slower delivery method is being employed(A -14). Neeraj Malhotra (2012) - Processes need management in the same way our people and systems do. If we don't manage our people, we risk knowledge/skill gaps. If we don't manage our systems, they become inefficient (I'm sure we have experienced a brand new computer getting slower and slower over time!) Without good process management. our processes will fall out of alignment with our people and systems. Management of People, Processes and Systems is proactive action. But if we don't manage them. we become reactive. Reactive action to improve existing processes can be termed as "Process Simplification" (A-21). Better quality is a form of beneficial change. It is applicable to both the kinds of quality that are summarized in Product features; these can increase customer satisfaction(C-5).

Proposed Methodology -

This proposed methodology suggests implementing the JIT and TQM techniques in a combination to perform the following modification:

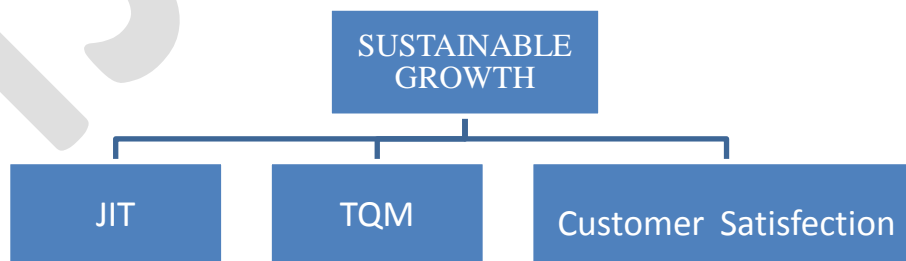


Figure: 1 Hierarchy of work.

With use of Just in time system an effort is made to minimize the required resources. At least the requirement time can be delay so the investment in storing inventory can be reduce further it provide the more working space to a micro scale industry no need to build unnecessary construction area, storing expenditure will reduce and also risk on the entrepreneur or owner will reduce with reduction in

requires raw. Total quality Management system will support industry to overall growth in all dimensions from maintenance to production process. The paper guide the leadership of an organization must be committed to be visible throughout all layers of management. Management must "walk the talk." Only when management is committed will employees excel at what they do. It takes time to change work cultures and work habits, but with perseverance, the message of enlightened management will prevail. Employees want to do a good job. All they need are the right tools and the right systems. Only management can supply these.

The research work starts from the resources or resources management, and show the important role of JIT and TQM in management system, inventory management, sustainable growth, productivity improvement, industrial performance, and on shop benefits. At the conclusion work show that the JIT and TQM improve plant efficiency continuously at play an very important role for optimization, cost reduction, reduction in delivery time and enhance the customer satisfaction.

Modification through TQM:

1 Management of systems:

Arrange a system which full fill all the requirement to run the industry in a smooth and profit full way without any kind of barrier with well known atmosphere for the each employee of the industry. A process and step should be well defined and easy to understand or everybody. There should not be any condition of confusion; It should be no space for hidden steps to any employee whatever is related to his/ her work.

TQM modification:

Pre planed healthy strategies of a company -A well manage system will give the ability to management level to plan how to react at the situation of any critical condition. It give the strategy which help for the future planning and action – reaction related to particular situation of the industry.

Efficient management practice -As per TQM the daily routine of production, work must be documented in a the systematically and regularly in an each stage at the time of current processes or before, ask the subordinates to review and evaluate with the following critical questions.

Operational performance - Technical training and motivation should be provided to all level of employee to perform better those particular job at the industry. A regular process of thinking should be going on for performing better in daily job operational process.

Continues improvement in working process -There should be a regular process of improvement in the working process development of the industry.

Simplifying the process -We should select the simplest way to perform any action on the job, and the process of doing the work should be selected after following question: 1. Is this step in necessary for the process?, 2. Can some of the steps be automated to free up time?. 3. Is this step a bottleneck?. 4. Are we waiting too long for this step to complete and why?

Quality Improvement - Quality improvement activity should be carry on in is department of industries care should be taken for quality from starting to end raw material management to production the finished product.

Sustainability - Apply a fundamental shift from fragmented and functional approach to an holistic one, with a fundamental reassessment of the value creation. New sustainability concept and constructs, as well as high level structures of production management.

Customer satisfaction - Use TQM to reduce customer frustration over having to deal with multiple personnel to get service Quality improvement to reduce deficiencies that create chronic waste may consist of such actions as Increase of the yield of factory processes Reduction of the error rates in offices Reduction of field failures.

Modification through JIT:

Efficient Resources Management-The raw material for producing the final product should not be stored in stock in bulk quantity but it should be purchased on the basis of actual requirement at instant of orders. It will save the money blockage, work space and reduce the uncertainty of market risk.

Increasing the working space -Do the effective management of work space as efficient inventory level the unnecessary stocking it will reduce the wastage of work space. It can cause company high productivity. There for it must be a regular improvement activity for the purpose of effectively manage a diverse workspace.

Elimination of unnecessary steps -Identify Inefficiencies, in the form steps of process, mark the Bottlenecks and waste activities introduce changes in technology as per business needs. Initiate to change in the attitude of employees like habit "It's always been done." Encourage your staff to get out their magnifying glasses once a year to uncover roadblocks and inefficiencies.

Increase Labor Productivity -Creating a system for measuring productivity, Determination of reserves of labor productivity growth by growth factors, taking into account the resource potential of the enterprise Develop an plan to increasing productivity; 25 - Develop incentive schemes for staff to achieve the planned targets, Training of employees more efficient ways of working. Implementation of

new system One of the most important methods of increasing productivity is successful organization operation or implementation of new management personnel

Productivity improvement -By increasing the labor productivity means cost savings of labor (working hours) for the manufacture of a product unit, or an additional amount of output per unit of time, which directly affects the efficiency of production, since in one case, reduced operating costs per unit of output and in another - in a unit time producing more products.

Reduces time and cost - Create customized transformational solutions to deliver more efficient back office functions and reduce the cost of citizen communications. Reduced cost– We will manage your print communications more effectively, reducing wastage and warehousing costs and using our procurement expertise, Innovative -procurement system and unrivalled print spend leverage to drive down costs. Improved interaction, our innovative, technology-led solutions enable us to create powerful communications in the most suitable formats for your audience.

Supporting On time delivery -Using JIT above mention techniques complete assignments on the time and deliver the projects to the customer before dead line.

CONCLUSION

This proposed methodology suggest for **Efficient Resources Management** and guide to not store raw materials stock in bulk quantity but purchase on the basis of **actual requirement at instant of orders**. JIT proved detail techniques **avoiding the excess inventory**. Methodology support the opinion that the instant amount of raw materials or finished goods must be in the range of actual requirement or meeting to the nearest planed future duration requirement that a organization required for his work as per current orders. Present demand, of the product should be observed regularly to deciding the producing quantity. It will **reduce the wastage of work space**. It can cause **company high productivity**. There for it must be a **regular improvement** activity for the purpose of **effectively manage a diverse workspace**. After **efficient system management** further step becomes **Elimination of unnecessary steps** in which identify inefficient steps in the process. Then developing a system for measuring productivity & determination of **labor productivity growth**. With increasing the labor productivity directly affects the **efficiency of production**, since in one case, reduced operating costs per unit of output and in another - in a unit time producing more products. Create customized transformational solutions to **reduced cost and delivery time**. Through TQM. It is suggested to arrangement of a system to **smooth and profitable run** of industry. Avoiding the condition of confusion, **Pre planed healthy strategies** of a company will be prepared by following the prefers points in the methodology, and such system will give the ability to management level to plan **Efficient management practice**. Technical training and motivation will help the staff to **increase the Operational performance**, so the industry **Continues improvement** in working process will start to take place, TQM also add the **Simplification of the process**, and simplified process make easy to **maintain the Quality Improvement plans**. Quality improvement activity would be carry to produce **Sustainability**, with a fundamental reassessment of the value creation **Customer satisfaction will enhanced** simultaneously chances of customer frustration will tense to reduce. Overall output will be the in the form of profitability of the industry.

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