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IMPLEMENTATION ASPECTS OF JUST-IN-TIME IN INDIAN INDUSTRIES

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Abstract

The objective of this paper is to analyze the barriers for implementing JIT in Indian industries. The aim of this study is to significantly find out the factors affecting the implementation of JIT practices in Indian manufacturing firm. This paper examines the implementation of Just-in-Time (JIT) based managerial philosophies in the Indian industries. Specifically, JIT benefits and reasons for slow implementation of JIT in Indian industries are investigated through a on-line emailed survey. The results of this survey support the notion that JIT has potential to increase the organizational performance of Indian industries. However, to achieve this potential, Indian industry must be willing to modify their procedures and operations. In this research paper, the critical elements of the JIT in the context of Indian manufacturing industries were identified using a online survey approach. The online questionnaire email sent to 65 industries and 48 industries responded and found suitable for study, making responses rate 80 per cent. Primary data of this study take review of the literature related to JIT from several books, journals, reviews and relevant websites. Secondary data on-line survey, Mailed questionnaire prepare The questions are on the company's profile, JIT benefits, JIT implementation and related problems First part of questionnaire is targeted to know about profile of the organization & level of JIT implementation. Second part of the questionnaire is design to know presence & importance of the various elements of JIT in manufacturing process in organization. Online survey In First part of questionnaire, It is strongly believed that after adopting this key points & success factors we can reduces or eliminate the all effects of barriers to JIT implementation in any organization. In Second part – Different organization relevance that JIT important for the production of the organization majority of the organization believe that JIT is very helpful for improving the performance of Indian manufacturing firm in productivity & quality.

Keywords— just in time, organizational performance, manufacturing organizations barriers.

INTRODUCTION

JIT system was originally developed at Toyota Motors Company in Japan in mid of 1970 by taiichi ohno. The objective of just in time is to encourage employee for participating the programs which is relevant to improvement of work, so that profiles increases through quality improvement, reduction of cost & reducing inventory. The implementation of JIT in industries is lead to marked improvement in competitiveness & ability to respond to rapid changes in market demand. JIT having concept of provide raw material when required & producing products when there is a requirement. The focus of JIT is to minimize the all kind of inventories like work in process ,raw material & finished goods, the main aim of just in time is to eliminate all type of manufacturing wastes from the entire supply chain through continues improvement. It is now well known that just in time is not a collection of techniques but it is a philosophy. The main idea behind the JIT is to solve the hidden problem & involve all employees to remove the problems, so that the requirement of high stock level will not arise. JIT technique help the Indian manufacturing firm to become more competitive by enhancing their products in world market, but it is observed that some barriers like political, cultural & social matters have a significant role on JIT in different parts of world.

JIT PURPOSE

The purpose of JIT manufacturing to eliminate waste hence better inventory control, better product quality and better overall financial and operational procedure can be achieved. The main objective to achieve that the manufacturing time is less than or equal to customer requested lead time. Companies use a Just-in-Time manufacturing and inventory management system to improve the efficiency of the company and reduce costs. The system requires manufacturers to purchase only when customer orders create a demand. Companies must develop a relationship with vendors to ensure parts reach the facility in time to manufacture products for the customer request. Businesses only produce inventory when there is a customer order in place. The system does not allow the business to produce or store excess inventory. Just-in-Time systems work in large and small organizations and those that produce products or services. With adjustments, the principles of Just-in-Time inventory management and manufacturing can work in any business. The list of seven wastes is the target for continuous improvement in the production process.

GLOBAL AND INDIAN PERSPECTIVE OF JIT IN INDUSTRY

Reduce Wastage

The JIT inventory management model eliminates excess inventory and overstocking. You can have low inventory levels, significantly reducing the risk of inventory going unsold and sitting unused in the warehouse. You can also minimize the losses incurred due to defective products by easily identifying and addressing defective inventory items when production volumes are low.

Improve Efficiencies

The JIT model reduces the costs of procuring, managing and storing excess raw materials and inventory. This results in a higher inventory turnover which in turn prevents inventory from sitting in your warehouse for too long and becoming obsolete. You can also receive and store deliveries in the smallest possible quantities, virtually eliminating excess raw material inventories. Local sourcing ensures that your suppliers are located near your company's production facilities, enabling timely deliveries and reducing the need for safety stock.

Increase Productivity

JIT inventory management increases productivity by reducing the time and resources required for manufacturing. This ensures faster production and shorter production runs. You can also implement product changes quickly as there is less raw material stock. Product damage is also reduced because of having lower inventory levels.

Optimize Production

JIT inventory management can eliminate bottlenecks and delays across the entire production cycle, by reducing product defects and automating processes. Shorter production cycles enable on-time deliveries and increase customer satisfaction. JIT production scheduling ensures that jobs are scheduled exactly when they are needed, meaning that your production runs start and end just in time for shipping.

Reduce Costs

As it requires very low inventory levels, JIT inventory reduces the working capital required for inventory purchases as well as storage costs. Your business can purchase raw material only when needed, so any available cash can be better utilized by the company. Labor costs are also lower as fewer factory workers are required in JIT manufacturing as compared to full-time production.

Improve Quality

JIT inventory management involves having fewer items moving on the shop floor at any given time. This allows your management to focus on optimizing processes and building high-quality products. High-quality products with fewer defects improve customer satisfaction and reduce wastage. In the JIT manufacturing model, suppliers guarantee quality, so the deliveries go directly to production and avoid any delays due to inspection.

OBJECTIVES OF THE STUDY

The objectives of this study have follows

1. To find out those elements which are important for implementation of JIT in Indian industries.
2. To find out those elements which create a hurdle for implementation of JIT.
3. How to reduce barriers for implementing just in time in Indian industries.

Review of Literature

The paper prepared by Kumar Vikas, Garg Dixit And N P Mehta (2004) Supports that JIT has the capacity to increase the operational efficiency, quality and organisational effectiveness of Indian industries. But it is difficult to implement some basic systems in the current or existing production system. To get all the benefits of JIT Indian industries should modify procedures, operations and training the employees to create organisational culture. The issues related are the standardisation, simplification, dealing with suppliers, and re-engineering process. If these issues are not addressed the JIT efforts are bound to encounter human and supplier related problems. However the art of designing the right strategy for implementing JIT in Indian industry is debatable.

Garg, Vrat and Kanda (2007) have explored the specific cultural changes required in JIT environment and also reported their presence in Indian industries. They have stated that trust, locality, responsibility, development, motivation, authority, long-term relationship and respect for human beings mark work culture required in JIT environment. It is critical for industries to make conscious and deliberate efforts to change the work culture for successful implementation of JIT. These changes require top management commitment and worker participation in decision making, and massive education and training to the people concerned

In 2010 Satpal Singh, Jagjit Singh, Lakshya Aggarwal, Department of Mechanical engineer MOU, Sodhpur they studied on Just in Time (JIT) system in the context of a manufacturing and service industry in India, they analyzed that the JIT concept has found various benefits in Japan and USA firms. However, in India the full potential is yet to be explored, due to the pending research and management nod to the strategy. The JIT concept not only encompasses the Just In Time deliveries but it also includes a complete implementation package of zero wastage, full management of supply chain. It was also observed that in novelty the JIT Technology can also be applied to service sector in addition to the manufacturing industry.

In 2013, JIT Based Quality Management: Concepts and Implications in India by VIKAS KUMAR researched on implementation strategies and benefits of Just-in-Time (JIT) Based Quality Management in detail. JIT Based Quality Management makes outstanding improvements in area of cost and quality through best use of human resources by focusing on simplicity, waste elimination and continuous improvement. It allows the workers to become participant in decision-making by putting the trust and responsibility in their hands. Several Indian industries are implementing the JIT with belief that it would be helpful to face the global competition. Yet, its effectiveness would depend upon qualities, attitudes and values of Indian work force. In the end, it is hoped that would initiate the necessary changes in their existing production system for adopting the JIT Based Quality Management to gain maximum benefits.

The paper prepared by Dr A K Gupta (2011) reviewed JIT in Indian industries as the Indian Industries are in poor condition and to cope up with the global market they should implement the techniques like JIT, which helps to boost the performance of the industries by improving productivity. In reality the implementation of JIT is very difficult as it results in complete change of the organization. JIT also helps in service sector, case studies will help to realise how JIT is useful in this areas.

Sandeep Phogat, Dr. A. K. Gupta (2012) In their paper States that JIT is the basic thing behind the manufacturing and the service sectors which helps to produce high quality products at lower price i.e. reducing the cost of production. Global competition is forcing companies to improve the quality of their products and their customer service while reducing the cost of their operations. JIT also can be implemented in the service sector. The activities that would most likely show the greatest potential for the improvement of services through the use of JIT concepts were analysed and discussed. The philosophy of JIT can bring impressive advances in productivity and quality to the increasingly service-dominated economies of the future.

Kumar, Abhishek. "INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY." In October (2013). This study investigates JIT implementation practices and performance in manufacturing organizations in the India. For this, literature related to JIT usage and performance is reviewed. A literature classification scheme is suggested in this paper for surveyed literature considering thirty-seven JIT attributes. To aid this classification, thirty-seven identified attributes of JIT production system are classified into five main categories. The frequency of citation of an attribute in the literature is assumed to be measure of its importance. Thus, relative importance of such attributes is also highlighted

In, 2014 Swapnil S. Dange¹, Prof. Prashant N. Shende², Chetan S. Sethia³ Scholar M.Tech¹, Assistant Professor², Scholar M.Tech³ Department of Mechanical Engineering Nagpur. researched on A Systematic Review on Just in Time (JIT) & How many people in the automobile industry, manufacturing industry, and electrical industry can truly say that they have not heard about JIT? They conclude that most of employees know about the JIT & also JIT importance Just in Time (JIT) manufacturing made outstanding improvement in area of cost and productivity through best use of human resources by focusing on simplicity, waste elimination and time reduction.

According to Ritesh Kumar Shrivastava, Dr. Sridhar K (2015) this there are barriers to implement the JIT system in Indian industries. By analysing key points and success factors the barriers can be eliminated. Critical Success factors for successful implementation of JIT in any organization some of them are Top management commitment & culture of an Organization, Employee involvement & commitment, Quality, Production etc. The successful implementation of JIT in Indian industries can be achieved by bringing out successful cultural changes & management commitment.

In 2017 Anil Kumar Gupta (Department of Mechanical Engineering, Deenbandhu Chhotu Ram University of Science and Technology, Murthal, India) They examine expected maintenance waste reduction benefits in the maintenance of organizations after the implementation of just-in-time (JIT) managerial philosophy. For this, a structured questionnaire was designed and sent to the 421 industries in India. The Conclusion On the basis of the 133 responses, hypothesis testing was done with the help of Z-test, and it was found out that in maintenance, we can reduce a large inventory of spare parts and also shorten the excessive maintenance activities due to the implementation of JIT philosophy. All the four wastes: waste of processing; waste of rejects/rework/scrap in case of poor maintenance; waste of the transport of spares, and waste of motion, have approximately equal weightage in their reduction.

Problem statement / Rationale /of the study

JIT production is based entirely on existing orders, it is not the most efficient system for dealing with the unexpected. A Company that uses this strategy may be ill-equipped to handle a sudden surge in demand for product.

Research Methodology

Primary data of this study take review of the literature related to JIT from several books, journals, reviews and relevant websites.

Secondary data on-line survey, Mailed questionnaire prepare the questions are on the company's profile, JIT benefits, JIT implementation and related problems. .

DESIGN OF QUESTIONNAIRE

First part of questionnaire is targeted to know about profile of the organization & level of JIT implementation.

Second part of the questionnaire is design to know presence & importance of the various elements of JIT manufacturing.

First part-According to our questionnaire the first part of the questionnaire is to target to know about profile of organization & level of JIT implementation in organization. According to this send some questionnaire to organization like

1. Do you have any knowledge of JIT production system if yes, then what is JIT according to you?
2. Do you think your company is implementing or planning to implement some aspects of JIT?
3. According to you, what are the essential requirements for JIT implementation?
4. How do you rate the JIT efforts in your company?
5. In JIT environment the following aspects of JIT are critical successful factors for implementing JIT in any industries, therefore rate them according to the level of their practice in your company

For, not at all use 1, for low use 2, for medium use 3 & for high use 4.

Second part-According to questionnaire which is send to different organizations the relevance of the reasons of JIT implementations, these reasons are

1. Increase links to customers
- 2 Increase links to suppliers
3. Increase links to others department
4. Increased quality of products and process
5. Increased preventive maintenance
6. Setup time reduction
7. Lot size reduction
8. Material handling reduction
9. Transport cost reduction
10. Inventory reduction.

Sources of Data

Primary data of this study take review of the literature related to JIT from several books, journals, reviews and relevant websites.

Secondary data on-line survey, mailed questionnaire prepare The questions are on the company's profile, JIT benefits, JIT implementation and related problems.

This on-line survey questionnaire was emailed 65 industries located globally. Initially responses were poor. To get more responses various social networking websites were used and emails were sent to concern specific persons. In all 48 industries responses were completed and found suitable for study, making responses rate 80 per cent.

Data analysis & Interpretation

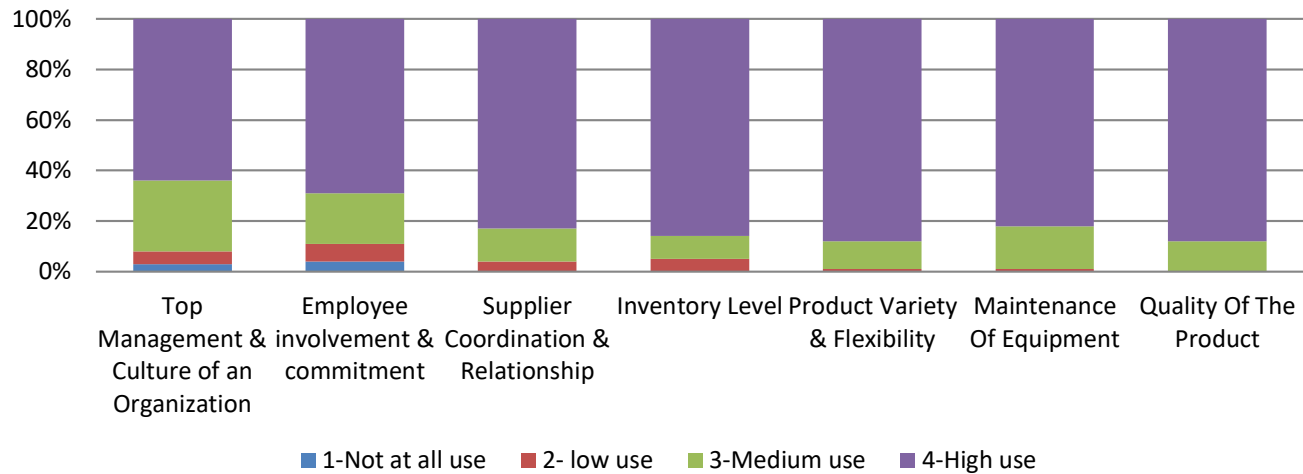
Types of Company	Automobile :11 Chemical industry :7 Electronics :5 Pharmaceutical company : 15 , others :10
1.Knowledge about JIT	Yes: 32 No: 16
2.Implementing or planning to implement some aspects of JIT?	Agree 30% strongly Agree 65% Disagree 5%
3.Training to employees	Yes 65% No 35%
4. rate the JIT efforts in your company? In the star rate form.	5 star 67% , 4 star 20% , 3 star 13%

5. After implement of JIT in your company, give a level of JIT use in your organization.

For, not at all use 1, for low use 2, for medium use 3 & for high use 4.

Sr.NO	ASPECTS	Percentage
1	Top management commitment & culture of an organization	1-3% , 2- 5% , 3 – 28% , 4.-64%
2	Employee involvement & commitment	1-4% , 2- 7% , 3 – 20% , 4.-69%
3	Supplier coordination & relationship	1-0% , 2-4% , 3- 13% , 4- 83%
4	Inventory level	1-2% , 2-3% , 3 -9% , 4-86%
5	Product variety & flexibility	1-0% , 2-1% , 3 -11% , 4-88%
6	Maintenance of equipment	1-0% , 2-1% , 3- 17% , 4-82%
7	Quality of the product	1-0% , 2-0% , 3- 12% , 4-88%

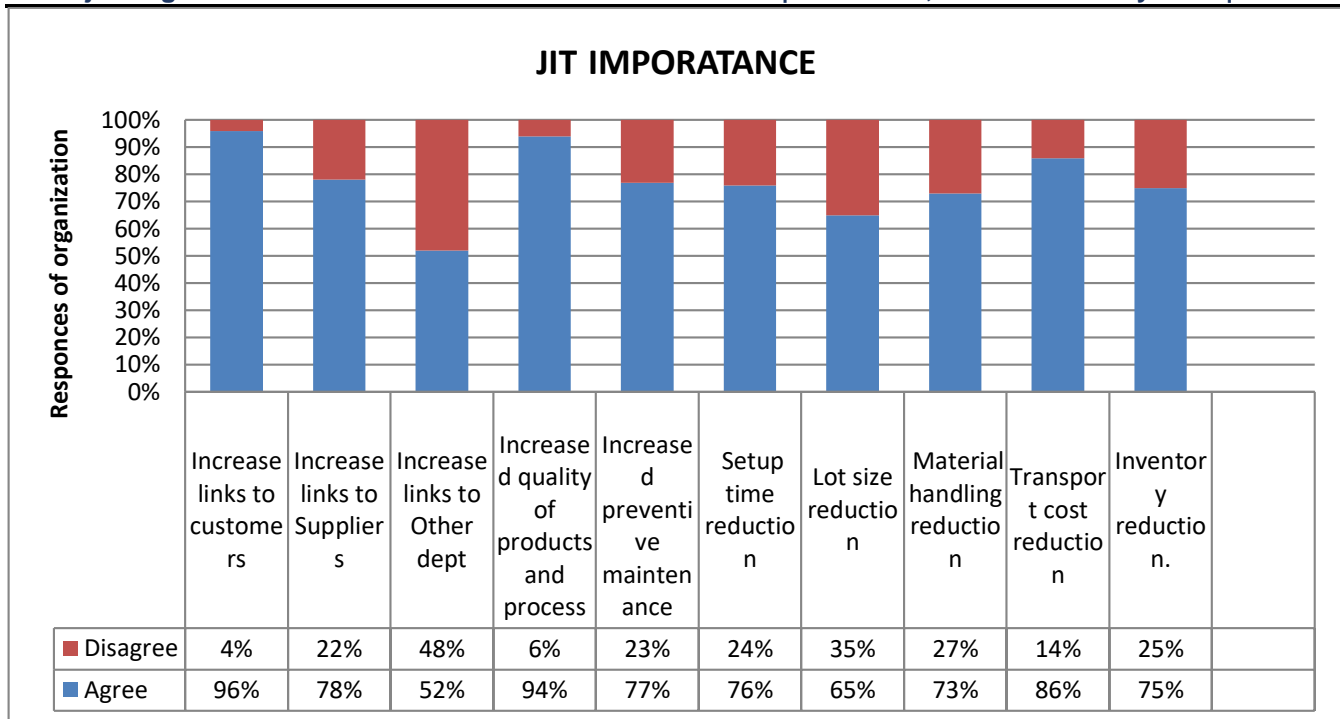
JIT LEVEL USE IN ORGANIZATION



Online survey In First part of questionnaire , It is strongly believed that after adopting this key points & success factors we can reduces or eliminate the all effects of barriers to JIT implementation in any organization.

In Second part -According to questionnaire which is send to different organizations the relevance of the reasons of JIT implementations, there is reasons of how JIT important for the production of the organization select one option either agree or disagree.

Sr.No	Reasons	Agree	Disagree
1	Increase links to customers	96%	4%
2	Increase links to suppliers	78%	22%
3	Increase links to others department	52%	48%
4	Increased quality of Products and Process	94%	6%
5	Increased preventive maintenance	77%	23%
6	Setup time reduction	76%	24%
7	Lot size reduction	65%	35%
8	Material handling reduction	73%	27%
9	Transport cost reduction	86%	14%
10	Inventory reduction.	75%	25%



According to this graph different organization relevance that JIT important for the production of the organization majority of the organization believe that JIT is very helpful for improving the performance of Indian manufacturing firm in productivity & quality. JIT improve organizations maintenance performance, productivity, reduce costs, unnecessary downtime, and utilization of resources

Result & Discussion

After survey of the **first phase**, JIT Implement in organization, it is strongly believed that after adopting this key points & success factors of JIT, we can reduce or eliminate the all effects after JIT implementation in any organization.

Majority of the organization is strongly believed that Implement of JIT.

1) Top management commitment & culture of an organization.

- Responsibility and authority are clearly defined for each employee in organization.
- Kaizen & teamwork
- Formal means for listening to employee suggestion.

2) Employee involvement & commitment.

- Enhances skill & competencies of employee.
- Self motivated project teams & problem solving groups.

3) Supplier coordination & relationship.

- Reduction in delivery time.
- Lot size reduction.

.4) Inventory level.

- Raw material inventory reduction.
- Work in process inventory reduction.

- Reduction in inventory of finished goods.

5 Product Variety & flexibility.

- Reduction in cycle time to produce new product.
- Manufacturing system can handle different delivery sequences.
- Gain in product categories.

6) Maintenance of equipment.

- Improving equipment availability, reliability, maintainability.
- Reduction in unplanned downtime.
- Reduction in numbers of stoppages.
- Enhancement in equipment utilization.

7) Quality.

- Improvement in product quality.
- Reduction in total process defects & rejections
- Reduction of waste & rework scrap.

Online survey **In First part** of questionnaire, It is strongly believed that after adopting this key points & success factors we can reduce or eliminate the all effects of barriers to JIT implementation in any organization.

In Second part – Different organization relevance that JIT important for the production of the organization majority of the organization believe that JIT is very helpful for improving the performance of Indian manufacturing firm in productivity & quality.

Suggestion

After First & Second part of questionnaire the different organization of the different company strongly agree with reasons of JIT implement.

The organization agree that the implement of JIT eliminate waste hence better inventory control, better product quality and better overall financial and operational procedure can be achieved. The manufacturing time is less than or equal to customer requested lead time. improve the efficiency of the company and reduce costs. Companies agree the relationship with vendors to ensure parts reach the facility in time to manufacture products for the customer request. The organizations also believe that product only produce inventory when there is a customer order in place. The system does not allow the business to produce or store excess inventory.

CONCLUSIONS

Just in time inventory system is a Japanese concept which is globally accepted. JIT helps industries in global participation. The concept is very useful for manufacturing concerns which helps in increasing productivity by reducing cost of production. JIT focuses on inventory levels of the manufacturing industries. The company should have optimum allocation of resources, organized in such a manner that it wouldn't result in wastage. JIT is only one part of the organization that gives customer satisfaction. JIT can solve almost all the problems in the organization which will result in improvement of the organization. JIT practices help the Indian industries to become more competitive by enhancing their export in world market.

Indian manufacturing firm are going through hard competition & have to improve in order to become competitive globally. JIT can be very helpful for improving the performance of Indian manufacturing firm in productivity & quality. This study shows the critical elements & barriers for successful implementation of just in time in Indian manufacturing firm. It has also been found in the study that successful implementation of JIT in Indian industries can be achieved by bringing out successful cultural changes & management commitment. Moreover, it can be concluded from the study that

successful JIT implementation need to implement initiatives successfully, so as to improve organizations maintenance performance, productivity, reduce costs, unnecessary downtime, and utilization of resources.

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