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TQM and JIT Approach in Supply Chain Industry

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Abstract

We have seen many approaches, and styles that is contributing towards enhancement of the Supply Chain performance, Just-In-Time and Total Quality Management are two of them. JIT and TQM are proven techniques that optimizes the operational process of the area or industry, where they are applied. This study examines that how JIT and TQM approaches can help the supply chain industry grow, in what ways it can enhance the supply chain functionality, when used together. This study focuses on

analysis and review of previous articles, research and journals to find out the ideas and conclusion about the topic. This research also focuses on the scale to which the similarities and relation exist among JIT and TQM approaches. The findings and results show that TQM and JIT processes are similar and related at some extents and can be used in a collaborative way to create a focus on improving quality of the processes in the industry.

Keywords: TQM, JIT, Supply Chain Industry

Introduction

Supply Chain is a vast industry which is basically defined as the matrix of various resources including people, organizations, tasks, activities, and technologies. When it comes to improving the Supply Chain process, there are numerous related and unrelated modules and techniques that contributes in their own ways, JIT and TQM are two of them, they both aims at controlling the quality and availability of the procedures of production or the products.

TQM and JIT can be used together only when we understand the link between them, to understand the link between TQM and JIT, let us first understand them. Total Quality Management (abbreviated as TQM) is the continuous process of finding and fixing production mistakes, optimizing supply chain, enhancing customer satisfaction, and making sure staff members are properly trained. TQM is a customer-centric process and focuses on continuously enhancing business operations and management. It makes sure all the associated resources, including employees, work toward the common interest, i.e., improving product or service quality, as well as enhancing the processes involved in the production system. Whereas, Just in Time (abbreviated as JIT) is a particular technique of inventory management, where goods in the inventory is ordered only when demand of respective goods arises. JIT focuses on reducing cost of keeping the goods or holding cost.

The TQM movement encourages creating and implementing a corporate culture that places a strong emphasis on data-driven decision making, continuous improvement, and customer attention. The TQM discourse calls for the creation and adoption of a corporate culture that prioritises the consumer perspective, ongoing improvement, equality among the workforce, and data-oriented policy making. Aligning product design with customer expectations and emphasising quality at all manufacturing phases are viewed as factors that contribute to higher product quality and, consequently higher company performance.

The Just in Time approach suggests waste management through streamlining manufacturing cycles, better time management, and an effort to control the material handling process. These actions are seen as measures to reduce or eliminate excess inventory and aid in more effective resource allocation. Based on consumer demand, a successful JIT implementation in the sector generates high-quality products. JIT philosophy promotes streamlining production procedures to reduce waste. It is believed that reducing setup times, managing material flows, and placing a strong emphasis on preventive maintenance are effective approaches to decrease or eliminate surplus stocks and improve resource utilisation. Production schedules and supplier deliveries must be coordinated for JIT to be implemented successfully. Suppliers must also provide high-level services in terms of product quality and delivery reliability.

At certain extents, both Just-in-Time and Total Quality Management have similar features and characteristics. According to Dean and Snell, it is hard to distinguish between Just in Time and Total Quality Management, because they have some common, similar and related elements. There are parts of both the TQM and JIT that are common, and which can be successfully reinforced by each other, even though each may have different goals and features, as shown by the amount to

which diverse practices connect with each other and with performance. JIT and TQM have major linkages at the strategic level; by effectively integrating JIT and TQM operations into organisational planning, there is still the option of providing value and positioning itself to effectively respond to market challenges.

It is concluded in the research of Kannan and Tan, that there is potential to add value and improve one's ability to adapt to competitive pressure by deliberately and successfully incorporating JIT and TQM practises into operations strategy. Also, some researchers believe that one particular tool depends on or contribute towards enhancement of the other. Flynn, Sakakibara and Schroeder, in their research, stated that by reducing process variations and rework, TQM practises will enhance JIT performance. They will also enhance quality performance by increasing problem exposure and process feedback. The results from the research of I. Masudin and M.S. Kamara proves that any of the three practises that an organisation applies will result in improved or increased organisational performance.

Overall, this study focuses on finding the relative factors among the two major techniques of operational quality management of supply chain industry and how two of them can be used in a collaborative manner to improve the operations and light positive impact on organizational performance of supply chain industry.

Literature Review

Just in Time (JIT) and Total Quality Management (TQM) are two popular concepts in supply chain industry. This literature review focuses on providing an overview of the research studies that have investigated the implementation and impact of JIT and TQM in supply chain management.

Total Quality Management is a management strategy that emphasises customer satisfaction and continual development by including all employees in quality control procedures. Contrarily, Just in Time is a philosophy that encourages producing and delivering goods precisely when customers need them in order to reduce waste and inventory levels. Several studies have looked into the combined effect of JIT and TQM on supply chain effectiveness. Khan (2019)^[6], for instance, stated that combining JIT with TQM practises can result in better product quality, shorter lead times, and more customer satisfaction. Similar findings were made by Yadav (2020)^[7], who discovered that combining JIT and TQM practises can save costs while also enhancing delivery efficiency and customer satisfaction. Singh and Singh (2017) found that the implementation of TQM and JIT practices can contribute to improved quality, cost reduction, and increased customer satisfaction. Similarly, TQM and JIT practises combined can result in shortened lead times, higher quality, and more production, according to Kabir and Hasan (2018). According to Lee and Min's (2018) research, TQM and JIT adoption can boost performance in terms of quality, delivery dependability, and customer satisfaction. The adoption of TQM and JIT practises can result in enhanced financial performance, including greater profitability and decreased costs, according to Tariq (2019). The implementation of Total Quality Management (TQM) and Just-in-Time (JIT) together is a thought that the integration of TQM and JIT will lead to improved quality, decreased costs, and increased productivity. Using a variety of methods and strategies to increase quality and productivity, the integration of TQM with JIT necessitates a

strong commitment from management and staff. The following are some relevant studies on TQM-JIT implementation.

In a study of Wong *et al.* (2015)^[10], the authors examined the impact of TQM-JIT on the performance of organizations in the Malaysian automotive industry. The study indicated that TQM-JIT deployment was positively connected to organizational performance, and that staff engagement and supplier participation were critical variables in the success of TQM-JIT.

Al-Karaghoul and Mahmood (2016)^[11] conducted research to determine how TQM-JIT affected manufacturing efficiency in the Jordanian pharmaceutical sector. The deployment of TQM-JIT was found to be favourably correlated with manufacturing performance, and employee involvement and continuous improvement were determined to be crucial for TQM-JIT's success.

The effect of TQM-JIT on supply chain performance in the Malaysian automotive industry was examined in a study by Zailani *et al.* (2017)^[12]. The implementation of TQM-JIT was shown to be favourably correlated with supply chain performance by the study, and supplier participation and information exchange were determined to be crucial for TQM-JIT's success.

Benefits of TQM and JIT implementation:

TQM and JIT integration is said to have a number of advantages, including better quality, lower costs, and higher productivity. The following studies on the advantages of TQM and JIT integration are significant:

Nair *et al.* (2012)^[13] conducted a study to examine how TQM-JIT affected operational performance in Indian manufacturing firms. The study discovered that the adoption of TQM-JIT was favourably correlated with operational performance and that the combination of TQM and JIT increased productivity, lead time reduction, and quality.

Rahman *et al.* (2017)^[14] conducted a study to determine the impact of TQM-JIT on organisational performance in the Malaysian automotive industry. The results of the study showed that adopting TQM-JIT increased quality, reduced costs, and increased productivity, and that supplier and employee participation were essential to achieving these benefits.

In a study published in 2020, Asif *et al.* looked at the impact of TQM-JIT on customer satisfaction and loyalty in the textile industry. According to the study, the implementation of TQM-JIT produced higher levels of customer satisfaction and loyalty as well as better quality and shorter lead times.

In conclusion, the literature suggests that the integration of TQM and JIT can result in several benefits, such as improved quality, reduced costs, and increased productivity. The success of TQM-JIT implementation is dependent on various factors such as leadership commitment, employee involvement, continuous training and education, supplier involvement, and the use of appropriate tools and techniques. Overall, the literature review suggests that despite the fact that TQM and JIT are different set of tools, they can be implemented, in a collaborative manner to improve organizational performance, including quality enhancement, cost mitigation, and customer retention. When these two ideas are combined, organisations may also have shorter lead times, higher productivity levels, and better financial results. However, proper top management backing, employee training, and successful change management

techniques are necessary for the successful adoption of TQM and JIT practises.

Results

Two key strategic modules that can be implemented at the operational stage of the supply chain sector are Total Quality Management and Just in Time. In order to understand how the two approaches might be employed in collaboration, this research has been carried out to look into the overlaps and connecting points between them. Several of the research's findings are listed below:

1. A claim that Total Quality Management and Just-in-Time may improve the overall performance of the supply chain, including lead time reduction, product quality enhancement, boosting productivity, and cost mitigation, is based on the analysis of various research.
2. In order to successfully adopt Total Quality Management and Just in Time, organisations must place a strong emphasis on cooperation, good communication, and continuous improvement at all organisational levels. Additionally, they must have a culture that values employee empowerment, teamwork, and customer attention.
3. A stronger commitment from top management is necessary for Total Quality Management and Just in Time, as well as improved communication between all levels of management. To ensure that these initiatives are implemented successfully, this includes offering the tools, trainings, and support that are required.
4. Implementing Total Quality Management and Just in Time is not an immediate solution or a one-time event. Such strategies necessitate a long-term perspective and continuing effort to improvement. Successful organisations are those that have a long-term outlook and are willing to invest the time and resources required to accomplish their objectives.
5. There are some parts of both the strategies, which can be implemented together in a collaborative manner to improve operational efficiency.

Overall, the research indicates that combining Total Quality Management and Just in Time can improve supply chain performance more effectively. However, it is essential to have a culture of continuous improvement within the organization, to have strong managerial support, and to have a long-term perspective. To make this collaboration of TQM and JIT successful.

Conclusion

After analysing the topic and reviewing the literature, it can be concluded that similarities exist among Just in Time and Total Quality Management, and those similarities guides both the processes to work together at the strategic stage. The goal of TQM is to continually enhance management and business operations. It can be viewed as a customer-centric process. JIT focuses on lowering the cost of hanging on to inventory-held items. JIT encourages production process simplification to cut waste. TQM and JIT can complement each other in some ways and perform some of the same tasks. When TQM and JIT are combined into organisational planning, an organisation is better positioned to adapt to market pressures. According to some scholars, both processes are related in such a way that one function can improve the other by boosting problem exposure and process feedback.

The ongoing study identified certain similarities between TQM and JIT as well as strategies to connect them to enhance operational performance. The research also focused on how various authors views the idea of linking JIT and TQM in their respective literature. To secure the long-term benefits of TQM and JIT, it is important to recall that TQM and JIT are not a single-time operation but rather a continual process.

Finally, it can be realized from the research that TQM and JIT can improve operational process when they are combined through efficient planning and monitoring.

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