**Impact of Dock-to-Stock Time on Supply Chain Performance of Manufacturing Firms in Nairobi County, Kenya**

**ABSTRACT**

Efficient supply chains enhance product delivery speed and accuracy, reduce lead times, and enhance customer satisfaction. However, the supply chain performance of manufacturing firms in Nairobi County is negatively affected by supply chain disruptions, inventory inefficiencies, transportation bottlenecks, poor demand forecasting, and inadequate technology integration. Therefore, this study aimed to determine the effect of dock-to-stock time on the supply chain performance of manufacturing firms in Nairobi County in Kenya. This study was guided by the Resource-Based View (RBV) theory. The study adopted an explanatory research design with the target population being 1690 senior Heads of Department. The sample size for the study was 323 respondents obtained using Yamane’s formula. Stratified and purposive sampling techniques were used along with a structured questionnaire. Descriptive statistics were frequency, percentages, mean, and standard deviation. Inferential analysis was carried out through correlation, and a hierarchical regression model was used to test the hypotheses. The study results indicate that there was a positive linear effect of dock-to-stock time (β1=0.105, p=0.027) on the supply chain performance of manufacturing firms. Dock-to-stock time (β6a=0.040, p=0.030, ∆R2=.004) and supply chain performance. The dock-to-stock time and supply chain performance of the manufacturing firm had a positive and statistically significant correlation (r= 0.630; p<0.01). The study further showed that 212(70.2%) of the respondents agreed that the supply chain contributes to maintaining high standards of quality, and 75(24.8%) disagreed that the supply chain contributes to maintaining high standards of quality. Moreover, 230(76.2%) of the respondents agreed that their production scheduling has become more reliable due to faster dock-to-stock processes and on the other hand, 58(19.2%) of the respondents disagreed that their production scheduling has become more reliable due to faster dock-to-stock processes. The study concluded that dock-to-stock time has a positive and significant effect on the supply chain performance of manufacturing firms in Nairobi County. The findings of this study can benefit manufacturing firms, supply chain professionals, industry regulators, policymakers and academic researchers.

**Keywords:** *Dock-to-stock time, supply chain performance, manufacturing firms, Nairobi County*

# Introduction

Supply Chain Management is the management of procurement activities for goods and services, conversion into semi-finished goods and final products, and delivery through the distribution system. Companies must pay attention to what is needed and sought after by consumers, product availability, and economical selling prices. This can only happen if there is good coordination between retail companies and parties in their supply chain (Purnamasari et al., 2025; Adesiyan et al., 2024). Supply chain performance has been of great concern to many logistics companies due to the complex environment in which companies compete (Chen et al. 2019). The business environment has become far more dynamic and turbulent with rapid changes in customer requirements (Lee & Trimi, 2018). The markets have also become more segmented, which means that customers have various requirements for products and services. In addition, increased requirements on companies from the market to deliver multiple product varieties and provide customised solutions of both products and services are increasing. Furthermore, global competition has put pressure on companies to become faster, better, and cheaper (Tallman et al., 2018).

Measuring supply chain performance enhances understanding of supply chain operations and helps assess the effectiveness of a firm’s strategies (Ivanov, 2021). It provides essential feedback, reveals progress, boosts motivation and communication, and identifies problems (Kamble & Gunasekaran, 2018). Key performance indicators (KPIs) are commonly used tools to track progress on performance goals. Effective supply chain performance significantly influences a firm’s financial health (Şahin & Topal, 2019), and as such, performance measurement should focus on areas that promote sustainable profitability and financial strength (Sehnem et al., 2019). To achieve this, the process must reliably indicate how supply chain activities contribute to growth, cost reduction, working capital efficiency, and asset utilisation (Pirttilä et al., 2020). A resilient system should absorb perturbations, given the system’s uncertainty and unpredictability. Factors that enable flexibility in the supply chain include strong supply chain relationships, contracts allowing modifications in delivery schedules, manufacturing facilities to produce multiple products, redundancy with slack or unused resources and a multi-skilled workforce (Juan et al., 2022). Supply chain performance is the entire chain's ability to meet end-customer needs through product availability (Madhani, 2021). Supply chain performance involves both functional lines and company boundaries. Improving supply chain performance is a continuous process that requires both an analytical performance measurement system and a mechanism to initiate steps for realising key performance indicators (KPI) goals (Hald & Kinra, 2019). To measure supply chain performance, there is a set of variables that capture the impact of the actual working of supply chains on revenues and costs of the whole system (Dissanayake & Cross, 2018).

These variables as drivers of supply chain performance are always derived from supply chain performance practices (Fang& Zhang, 2018). Supply Chain Performance can be measured in the context of the following supply chain activities/processes: plan, source, make/assemble, and delivery/customer. These activities are considered at various levels of management strategic, tactical, and operational levels (Anumala, 2021). The benefits of supply chain performance measurement systems are outweighed by the cost of implementing and maintaining them (Roy & Roy, 2019).

This is likely to be especially applicable for logistics companies, which may lack the resources, time or information to undertake the analyses required to optimise supply chain activities (Franco‐Santos & Otley, 2018). There are various determinants of supply chain performance that contribute to efficient and effective performance of the supply chain in the organisation, namely ICT, knowledge and information sharing, trust, culture and joint decision making (Al-Douri, 2018). Regular measurements of a system’s services and programs are important from a Head of department’s perspective, especially in banking systems (Nguyen & Nguyen, 2023).

This is because he or she is looking to measure progress towards managing for results, which is a customer-oriented approach that focuses on maximising benefits and minimising the negative consequences of service programs. Performance measures are recognised as important tools of all Total Quality Management programs. Heads of department and supervisors directing the efforts of an organisation, or a group, have a responsibility to know how, when, and where to institute a wide range of changes (Abbas, 2020). These changes cannot be sensibly implemented without knowledge of the appropriate information upon which they are based (Barua, 2021).

A significant aspect of supply chain performance is the efficiency of dock-to-stock processes, which directly impacts overall supply chain performance. Abudurexiti and Rahman (2018) analysed the effect of dock-to-stock cycle time variability on manufacturing performance. Findings revealed that variability in dock-to-stock times significantly affects throughput, inventory levels, and order fulfilment rates (Rahoui *et al*, 2023). This underscores the importance of minimising variability in this process to enhance overall supply chain efficiency.

Previous literature has also examined the impact of dock-to-stock time on various aspects of organisational performance. For example, a study by Ye et al. (2022) investigated the relationship between dock-to-stock time and supply chain disruption risk, finding that supplier dock-to-stock time is positively related to supplier disruption risk. Another study by Mishra and Garg (2023) highlighted the basic objective of dock-to-stock time as removing waste involved in supply chain activities; hence, the need to do a study effect of dock-to-stock time on supply chain performance of manufacturing firms in Nairobi County in Kenya.

Manufacturing firms in Nairobi County present challenges such as supply chain disruptions, inventory inefficiencies, transportation bottlenecks, poor demand forecasting, and inadequate integration of technology (Nyambura, 2018). These factors can lead to increased costs, delays in production, customer dissatisfaction, and reduced profitability.

Research has shown that some of the major problems affecting the supply chain performance of Manufacturing firms in Nairobi County include inadequate infrastructure, lack of skilled personnel, unreliable suppliers, fluctuating demand patterns, and limited access to financing options (Gitonga, 2021). These issues contribute to operational inefficiencies, increased costs, and hinder the overall growth and sustainability of manufacturing businesses in the region.

To address these challenges, it is essential to implement strategies that focus on improving dock-to-stock time (Van Hoek, 2020). By incorporating variables such as operation efficiency, cost efficiency and customer satisfaction, manufacturing firms in Nairobi County can enhance their supply chain performance and achieve sustainable growth (Mwangi, 2019).

By conducting a comprehensive study supported by statistical evidence, the complexities and implications of the identified problems in supply chain performance at manufacturing firms in Nairobi County can be effectively highlighted, leading to informed decision-making and strategic interventions for improvement.

**1.2 Objective of the Study**

To determine the effect of dock-to-stock time on the supply chain performance of manufacturing firms in Nairobi County in Kenya.

**2.1 Theoretical Review**

**2.1.1 Resource-Based View (RBV) Theory**

The Resource-Based View (RBV) theory, which emerged in the 1980s and 1990s, was pioneered by scholars such as Edith Penrose and Jay Barney (Rebelo, 2018). This theory posits that a firm's competitive advantage and performance are determined by its unique bundle of resources and capabilities (Assensoh-Kodua, 2019). Resources can include tangible assets like technology, machinery, and infrastructure, as well as intangible assets like knowledge, skills, and organisational culture. RBV emphasises the strategic importance of leveraging these resources effectively to achieve sustainable competitive advantage.

In the context of the study on the effect of dock-to-stock time on supply chain performance of manufacturing firms, RBV theory offers valuable insights (Den Hertog & Bilderbeek, 2019). Technology, as a key resource, can serve as a source of competitive advantage for firms. Through strategic investments in technological infrastructure and capabilities, firms can enhance their operational efficiency, responsiveness, and innovation capabilities, thereby improving supply chain performance (Shrivastava, 2018).

RBV suggests that firms should focus on developing and leveraging distinctive technological competencies that are valuable, rare, inimitable, and non-substitutable to gain a sustainable edge in the market (Zvarimwa & Zimuto, 2022). Aligning technology investments with strategic objectives and leveraging them effectively, firms can enhance their supply chain performance and achieve superior outcomes in Nairobi County's manufacturing landscape (El Nemar *et al.*, 2022).

RBV theory also highlights the importance of dynamic capabilities, which refer to a firm's ability to adapt and reconfigure its resources and capabilities in response to changing market conditions and competitive dynamics (Chumphong *et al.*, 2020). In the context of technology, dynamic capabilities are crucial for firms to continually innovate and stay ahead of the competition. This entails not only acquiring new technologies but also integrating them effectively into existing processes and routines. For manufacturing firms in Nairobi County, developing dynamic capabilities in technology management is essential for leveraging emerging technologies and responding to evolving customer demands and market trends (Čirjevskis, 2019). Fostering a culture of innovation and learning, firms can sustain their competitive advantage and enhance their supply chain performance over the long term.

Grounding this study in the RBV theory provides a robust framework for understanding how internal resources, particularly technology, can influence the effectiveness of Just-in-Time logistics and ultimately impact supply chain performance. Since the core premise of the study is to explore the effect of dock-to-stock time on supply chain performance of manufacturing firms, RBV offers a relevant lens through which to assess how firms can utilise their technological resources to strengthen logistical processes and outcomes. Manufacturing firms in Nairobi County operate in a dynamic and competitive environment where resource optimisation is critical. By applying RBV, the study can systematically analyse how variations in technological capabilities among firms explain differences in supply chain performance, thereby offering practical insights for resource allocation and strategic management.

**2.2 Empirical Review**

Case studies such as the one conducted by Protzman *et al* (2018) shed light on practical strategies employed by manufacturing firms to reduce dock-to-stock cycle times. These strategies often involve the implementation of lean principles, process improvements, and adoption of technology to streamline receiving and stocking operations (Goso, 2021). Such initiatives aim to eliminate waste, reduce lead times, and enhance responsiveness to customer demand.

In retail supply chains, timely replenishment and stocking play a crucial role in meeting customer expectations and maintaining competitive advantage. A study conducted by Santos (2021) highlights the correlation between dock-to-stock time and key performance indicators such as inventory turnover and stockout rates (Olcay, 2018). This emphasises the need for manufacturing firms to optimise dock-to-stock processes to ensure efficient inventory management and fulfilment operations.

Simulation and modelling techniques have been employed to optimise dock-to-stock operations within manufacturing facilities. Kheiri (2018) demonstrates how simulation tools can be utilised to identify bottlenecks, evaluate process alternatives, and improve overall efficiency. Leveraging these tools, manufacturing firms can make informed decisions to enhance their dock-to-stock processes and consequently, their supply chain performance.

 A comprehensive understanding of its impact on supply chain performance is essential for manufacturing firms striving to optimise their operations. In a comprehensive study conducted by Demirkiran and Ozturkoglu (2022) in manufacturing facilities located in Nairobi, the intricate relationship between dock-to-stock time and various performance metrics within manufacturing environments was thoroughly examined. The research underscored the significant implications of dock-to-stock cycle time variability on crucial parameters such as throughput, inventory levels, and order fulfilment rates.

Manufacturing firms have increasingly recognised the importance of streamlining dock-to-stock processes to enhance overall supply chain efficiency (Nyambura, 2018). Case studies conducted by industry experts such as Rajaratnam and Sunmola (2021) shed light on practical strategies employed to minimise dock-to-stock cycle times. In their research, which focused on manufacturing firms in Italy, they found that strategies encompassing the adoption of lean principles, process improvements, and the integration of advanced technologies significantly reduced lead times and enhanced responsiveness to customer demand.

Within the landscape of Kenyan manufacturing firms, the integration of information technology (IT) solutions has emerged as a transformative force in enhancing dock-to-stock processes. Technologies such as Radio Frequency Identification (RFID), barcode scanning systems, and automated data capture systems have played a pivotal role in revolutionising the receiving and stocking operations within these firms (Shao *et al.*, 2023). Leveraging these IT solutions, Kenyan manufacturing firms have gained real-time visibility into their inventory movements, enabling them to track the status and location of incoming goods with unprecedented accuracy and efficiency (Salah *et al.*, 2021).

**2.3 Conceptual Framework**

**Independent Variable Dependent Variable**

**Supply Chain Performance**

* Quality
* Environmental Sustainability
* Percentage of orders received

**Dock-To-Stock Time**

* Cost Efficiency
* Customer Satisfaction
* Operational Efficiency

**Figure 1: Conceptual Framework**

# Methodology

The study adopted an explanatory research design. Explanatory research allows the researcher to become familiar with the topic to be examined and design theories to test them. It can help increase understanding of a given topic, ascertain how or why a particular phenomenon is occurring, and predict future occurrences. It allowed researchers to collect the data that they needed to test the hypotheses and to understand the effect of dock-to-stock time on the supply chain performance of manufacturing firms in Nairobi County in Kenya.

According to the Kenya Association of Manufacturers (KAM) (2024) directory, 338 manufacturing firms are operating in Nairobi from the chemical and allied, food and beverages, metal and allied, paper and plastics and rubber sectors. The unit of analysis for this study was the Heads of departments, while the unit of observation was manufacturing firms. Therefore, the target population of the study was 1690 Heads of department. The researcher obtained a sample size of 323 using the Yamane formula (1967).

The study applied a stratified random sampling technique to categorise firms into four strata (Chemical & allied, Food and beverages, Metal & allied, Paper and Plastics & rubber). Then the study used proportionate to distribute respondents into sections where the senior Heads of department were selected from the strata (transport Heads of department, technical Heads of department, procurement Heads of department, legal department head and production Heads of department). After stratification, the respondents were selected using simple random sampling to select respondents from each section.

The study was conducted using structured questionnaires as the main data collection instruments. A questionnaire consisted of a list of structured questions using Likert rating scales. The Likert scale included5=strongly Agree, 4=Agree, 3=neutral, 2=Disagree and 1=strongly disagree. The questionnaires were administered through drop and pick to identify respondents with a brief explanation of the importance of the study and its purpose.

The collected data were organised, cleaned, and added to the Statistical Package for Social Sciences (SPSS Version 25.0) program. The data was analysed using both descriptive and inferential statistics. A frequency table was used to present the findings in relation to the objectives of the study.

**Research Findings and Discussions**

## 4.1 Response Rate

The respondents were 323 respondents from manufacturing firms operating in Nairobi from the chemical and allied, food and beverages, metal and allied, paper and plastics and rubber sectors. The response rate is distributed in Table 1. Out of the 323 questionnaires that were distributed, only 302 were eventually returned and considered for results and analysis. The response rate was 93.4%, as Table 1 demonstrates a particularly high level of engagement. This suggested that the respondents were not only willing to share their opinions but also felt a strong connection to the subject matter, indicating that the questionnaire was relevant and well-received.

**Table 1: Response Rate**

|  |  |  |
| --- | --- | --- |
| **Sampled No. of respondents**  | **No. of Questionnaires Returned** | **Response Rate (%)** |
|  323 | 302 |  93.4  |

**Source: Research Data (2025)**

## 4.2 Descriptive Statistics for Dock-To-Stock Time

The study determines the effect of dock-to-stock time on the supply chain performance of manufacturing firms in Nairobi County in Kenya. A total of seven statements were used to determine the effect of dock-to-stock time on the supply chain performance of manufacturing firms. Results are shown in Table 2.

According to Table 2, 210(72.8%) of the respondents agreed that their firm has efficient processes to minimise dock-to-stock time. However, 68(22.5%) of the respondents disagreed that their firm has efficient processes to minimise dock-to-stock time. Further, the study findings revealed that respondents agreed towards the statement that their firm has efficient processes to minimise dock-to-stock time, with a mean rating of 3.76. The standard deviation of 1.20 suggests relatively consistent responses, with most clustered around the mean of 3.76. This indicates shared agreement among respondents on the presence of efficient dock-to-stock processes. The previous research done by Boeve (2016) firms with efficient dock-to-stock processes can significantly reduce the time it takes for goods to move from the receiving dock to storage, with best-in-class companies achieving times of under 24 hours compared to the average of 24 to 48 hours in smaller businesses.

Furthermore, 240(79.5%) of the respondents agreed that efficient dock-to-stock times have reduced the need for safety stock, and 45(14.9%) of the respondents disagreed that efficient dock-to-stock times have reduced the need for safety stock. However, respondents agreed that efficient dock-to-stock times have reduced the need for safety stock with a mean rating of 3.87. The standard deviation of 1.09 indicates that responses were highly consistent, with most clustered closely around the mean of 3.87. This reflects a general agreement among respondents that efficient dock-to-stock times reduce the need for safety stock. This suggests that efficient dock-to-stock processes significantly reduce lead time variability, which minimises the need for safety stock by decreasing uncertainty in inventory replenishment. Jean's (2024) improvement enhances responsiveness to demand fluctuations, lowers inventory carrying costs, and reduces risks like obsolescence and spoilage, leading to overall supply chain efficiency.

Further, 224(74.2%) of the respondents agreed that customers are more satisfied due to quicker order processing resulting from reduced dock-to-stock time, and those who disagreed that customers are more satisfied due to quicker order processing resulting from reduced dock-to-stock time are 66(21.9%). The study findings revealed that respondents agreed with the statement that customers are more satisfied due to quicker order processing resulting from reduced dock-to-stock time, with a mean rating of 3.73. The standard deviation of 1.17 indicates consistent responses with limited deviations from the mean of 3.73. This reflects the general agreement that quicker order processing enhances customer satisfaction. Similarly, 222(73.5%) of the respondents agreed that overall operational costs have decreased as a result of improved dock-to-stock times. However, 66(21.8%) of the respondents disagreed that overall operational costs have decreased as a result of improved dock-to-stock times. Further, the study findings revealed that respondents agreed towards the statement that overall operational costs have decreased as a result of improved dock-to-stock times, with a mean rating of 3.74. The standard deviation of 1.16 shows that responses were fairly consistent, with most aligning around the mean of 3.74. This suggests agreement on the impact of improved dock-to-stock times in lowering operational costs.

These findings agreed with Venkatesh Sundarraman *et al.* (2024) importance of efficient dock-to-stock processes not only in enhancing customer satisfaction but also in reducing operational costs. By focusing on these efficiencies, firms can create a more agile supply chain capable of meeting customer demands while simultaneously improving their bottom line. This dual benefit is critical for maintaining competitiveness in an increasingly fast-paced market environment.

Moreover, 230(76.2%) of the respondents agreed that their production scheduling has become more reliable due to faster dock-to-stock processes and on the other hand, 58(19.2%) of the respondents disagreed that their production scheduling has become more reliable due to faster dock-to-stock processes. Additionally, the study results further revealed that the respondents agreed that their production scheduling has become more reliable due to faster dock-to-stock processes, with a mean rating of 3.79. The standard deviation of 1.12 suggests high consistency among responses, with most centred around the mean of 3.79. This indicates that respondents generally agreed that dock-to-stock efficiency has improved production scheduling. These findings are consistent with the study done by Ferrell, Ellis, Kaminsky and Rainwater (2020). Improvement not only minimises delays but also facilitates better planning and coordination across departments, ultimately leading to increased throughput and reduced operational disruptions.

However, 210(69.5%) of the respondents agreed that their firm continuously sought to improve dock-to-stock time to enhance supply chain performance. On the contrary, 59(19.5%) of the respondents disagreed that their firm continuously sought to improve dock-to-stock time to enhance supply chain performance. Further, the study results also showed that the respondents agreed that their firm continuously sought to improve dock-to-stock time to enhance supply chain performance, with a mean rating of 3.67. The standard deviation of 1.11 indicates that the responses were fairly consistent, with most clustered around the mean of 3.67. This suggests shared agreement that firms continuously seek to improve dock-to-stock time to enhance supply chain performance. These findings agreed with Venkatesh and Mohamed (2024) firm continuously sought to improve dock-to-stock time to enhance supply chain performance, recognising that efficient processes are vital for operational success. Optimising the dock-to-stock cycle, we aim to minimise the time products spend at the receiving dock, which significantly impacts inventory management and order fulfilment and allows for quicker availability of goods for customers

Finally, it was noted that 222(73.5%) of the respondents agreed that reducing dock-to-stock time has led to better inventory management in our firm. Conversely, it was noted that 57(18.9%) of the respondents disagreed that reducing dock-to-stock time has led to better inventory management in our firm. The study results further revealed that the respondents agreed with the statement that reducing dock-to-stock time has led to better inventory management in our firm, with a mean rating of 3.76. The standard deviation of 1.16 indicates relatively consistent responses, with few deviations from the mean of 3.76. This suggests a consensus that reducing dock-to-stock time leads to better inventory management. The research done by Batra (2018) efficient dock-to-stock processes minimise the time products spend at the receiving dock, allowing for quicker availability of inventory for order fulfilment, which in turn improves customer satisfaction and reduces operational costs.

**Table 2: Descriptive Statistics For Dock-to-Stock Time**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Statements**  |  | **SD** | **D** | **UD** | **A** | **SA** | **Mean** | **Std. Dev** |
| 1. Our firm has efficient processes to minimise dock-to-stock time
 | F | 15 | 53 | 14 | 129 | 91 | 3.76 | 1.20 |
| % | 5.0 | 17.5 | 4.6 | 42.7 | 30.1 |
| 1. Efficient dock-to-stock times have reduced the need for safety stock
 | F | 16 | 29 | 17 | 157 | 83 | 3.87 | 1.09 |
| % | 5.3 | 9.6 | 5.6 | 52.0 | 27.5 |
| 1. Customers are more satisfied due to quicker order processing resulting from reduced dock-to-stock time
 | F | 16 | 50 | 12 | 145 | 79 | 3.73 | 1.17 |
| % | 5.3 | 16.6 | 4.0 | 48.0 | 26.2 |
| 1. Overall operational costs have decreased as a result of improved dock-to-stock times
 | F | 13 | 53 | 14 | 141 | 81 | 3.74 | 1.16 |
| % | 4.3 | 17.5 | 4.6 | 46.7 | 26.8 |
| 1. Our production scheduling has become more reliable due to faster dock-to-stock processes
 | F | 14 | 44 | 14 | 150 | 80 | 3.79 | 1.13 |
| % | 4.6 | 14.6 | 4.6 | 49.7 | 26.5 |
| 1. Our firm continuously sought to improve dock-to-stock time to enhance supply chain performance
 | F | 14 | 45 | 33 | 145 | 65 | 3.67 | 1.11 |
| % | 4.6 | 14.9 | 10.9 | 48.0 | 21.5 |
| 1. Reducing dock-to-stock time has led to better inventory management in our firm
 | F | 18 | 39 | 23 | 139 | 83 | 3.76 | 1.16 |
| % | 6.0 | 12.9 | 7.6 | 46.0 | 27.5 |
| **Valid N=302** |  |  |  |  |  |  | **3.76** |  |

**Source: Research Data (2025)**

## 4.3 Descriptive Statistics For Supply Chain Performance

The study assessed the supply chain performance of manufacturing firms in Nairobi County in Kenya. A total of seven statements were used to assess the supply chain performance of manufacturing firms. Results are shown in Table 3.

The study results in Table .3 showed that the majority, 252(83.5%) of the respondents agreed that their supply chain processes are highly efficient. On the contrary, 32(10.6%) of the respondents disagreed that their supply chain processes are highly efficient. Further, the study results indicate that the mean and the standard deviation of 4.08 show that the respondents agreed that their supply chain processes are highly efficient. The standard deviation of 1.01, which is below 2 and the lowest among all the indicators, indicates very minimal variation in responses, with most clustered tightly around the mean of 4.08. This reflects a strong agreement and high consistency among respondents that their supply chain processes are highly efficient. These findings are consistent with Daneshvar, Hajiagha, Tupėnaitė and Khoshkheslat (2020) showed that there is a positive relationship between the implementation of an efficient supply chain strategy with supply chain performance.

Similarly, 228(75.5%) of the respondents agreed that their supply chain meets the requirements and expectations of their customers, while on the other hand, 66(21.9%) disagreed that their supply chain meets the requirements and expectations of their customers. The study results also showed that the respondents agreed with the statement that their supply chain meets the requirements and expectations of their customers, with a mean rating of 3.75. The standard deviation of 1.27 reflects moderate consistency in responses around the mean of 3.75. This indicates that while most respondents agreed, there were slightly varied views regarding customer satisfaction with supply chain performance. The findings agreed with the study done by Laari, Töyli, Solakivi and Ojala (2016) indicate that manufacturers with strong internal GSCM practices combined with arm's length environmental monitoring of suppliers are likely to perform well in environmental issues.

The study further revealed that 238(78.8%) of the respondents agreed that their supply chain is capable of responding quickly to changes in customer demand. On the contrary to that the 54(17.9%) of the respondents disagreed that their supply chain is capable of responding quickly to changes in customer demand. Further, the study results indicate that the respondents agreed that their supply chain is capable of responding quickly to changes in customer demand with a mean rating of 3.86. The standard deviation of 1.19 indicates minimal variation in responses around the mean of 3.86. This suggests a general agreement that supply chains are capable of adapting quickly to shifts in customer demand.

Further, 225(74.5%) of the respondents agreed that they have a good balance between cost and service levels in their supply chain. On the contrary, 64(21.2%) of the respondents disagreed that they have a good balance between cost and service levels in their supply chain. Further, the mean rating of 3.70 indicates that the respondents agreed that they have a good balance between cost and service levels in their supply chain. The standard deviation of 1.23 suggests relatively consistent responses, with some degree of variation. This implies that respondents shared similar perceptions about the trade-off between cost and service quality in their supply chains. These findings agreed with Sanders (2024), who noted that balance is increasingly important as businesses face rising customer expectations and the complexities of modern supply chains, which require maintaining adequate stock levels without incurring excessive costs.

The study further showed that 230(76.2%) of the respondents agreed that they have effective quality control measures in place throughout the supply chain, and 58(19.2%) disagreed that they have effective quality control measures in place throughout the supply chain. Further, the study results also revealed that the mean rating of 3.79 indicates that the respondents agreed with the statement that they have effective quality control measures in place throughout the supply chain. The standard deviation of 1.25 shows modest variation around the mean of 3.79, suggesting that most respondents agreed about the presence of effective quality control mechanisms, with some differing experiences. The study results agreed with Rane, Achari and Choudhary (2023), ensuring that quality standards are upheld, firms can reduce defects, minimise returns, and foster greater trust with customers, ultimately leading to improved business performance.

The study further showed that 212(70.2%) of the respondents agreed that the supply chain contributes to maintaining high standards of quality, and 75(24.8%) disagreed that the supply chain contributes to maintaining high standards of quality. Further, the study results also revealed that the mean rating of 3.64 indicates that the respondents agreed that the supply chain contributes to maintaining high standards of quality. Findings also indicate that the standard deviation of 1.32 reveals that the standard deviation is below 2, hence few of the respondents deviated from the mean of 3.64. The findings concur with Salam and Khan (2018) that effective supply chain management practices, such as rigorous supplier selection, continuous monitoring and quality assurance protocols, are essential for delivering consistent, high-quality products to customers.

However, 213(70.6%) of the respondents agreed that they collaborate effectively with suppliers to improve supply chain performance. Also, 75(24.9%) of the respondents disagreed that they collaborate effectively with suppliers to improve supply chain performance. Analysis of the mean and standard deviation of 3.65 revealed that they collaborate effectively with suppliers to improve supply chain performance. The standard deviation of 1.34 shows that responses were more varied from the mean of 3.65. This suggests that while many respondents agreed, the level and effectiveness of collaboration with suppliers may differ across firms. These findings are consistent with the study done by Chi, Huang and George (2020), collaboration facilitates better communication and alignment of goals, enabling firms to respond more swiftly to market demands and optimise resource utilisation.

#### **Table 3: Descriptive Statistics For Supply Chain Performance**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Statements**  |  | **SD** | **D** | **UD** | **A** | **SA** | **Mean** | **Std. Dev** |
| 1. Our supply chain processes are highly efficient
 | F | 10 | 22 | 18 | 137 | 115 | 4.08 | 1.01 |
| % | 3.3 | 7.3 | 6.0 | 45.4 | 38.1 |
| 1. Our supply chain meets the requirements and expectations of our customers
 | F | 28 | 38 | 8 | 137 | 91 | 3.75 | 1.27 |
| % | 9.3 | 12.6 | 2.6 | 45.4 | 30.1 |
| 1. Technology enables better inventory tracking and management
 | F | 22 | 32 | 10 | 139 | 99 | 3.86 | 1.19 |
| % | 7.3 | 10.6 | 3.3 | 46.0 | 32.8 |
| 1. We have a good balance between cost and service levels in our supply chain
 | F | 27 | 37 | 13 | 147 | 78 | 3.70 | 1.23 |
| % | 8.9 | 12.3 | 4.3 | 48.7 | 25.8 |
| 1. We have effective quality control measures in place throughout the supply chain
 | F | 28 | 30 | 14 | 134 | 96 | 3.79 | 1.25 |
| % | 9.3 | 9.9 | 4.6 | 44.4 | 31.8 |
| 1. The supply chain contributes to maintaining high standards of quality
 | F | 33 | 42 | 15 | 124 | 88 | 3.64 | 1.32 |
| % | 10.9 | 13.9 | 5.0 | 41.1 | 29.1 |
| 1. We collaborate effectively with suppliers to improve supply chain performance
 | F | 34 | 41 | 14 | 121 | 92 | 3.65 | 1.34 |
| % | 11.3 | 13.6 | 4.6 | 40.1 | 30.5 |
| **Valid N=302** |  |  |  |  |  |  | **3.78** |  |

**Source: Research Data (2025)**

## 4.4 Correlation Analysis Results

A correlation analysis was conducted to assess the degree of relationship between the study’s independent and dependent variables. The results of this analysis are displayed in Table 4.

#### **Table 4: Correlation Analysis Results**

|  |  |  |  |
| --- | --- | --- | --- |
|   |   | **Supply chain performance** | **Dock-to-stock time** |
| Supply chain performance | Pearson Correlation | 1 |   |
| Sig. (2-tailed) |   |   |
| Dock-to-stock time | Pearson Correlation | .630\*\* | 1 |
| Sig. (2-tailed) | 0.000 |   |
| \*\*. Correlation is significant at the 0.01 level (2-tailed). |

**Source: Research Data (2025)**

The findings in Table .4 indicated that dock-to-stock time and supply chain performance of manufacturing firm had a positive and statistically significant correlation (r= 0.630; p<0.01).

## 4.5 Multiple Regression Analysis

The coefficient of determination (R2) and correlation coefficient (R) show the degree of association between dock-to-stock time and supply chain performance of a manufacturing firm. The results are presented in Table 5.

#### **Table 5: Multiple Regression Model Summary**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model** | **R** | **R Square** | **Adjusted R Square** | **Std. Error of the Estimate** |
| 1 | .851a | .725 | .721 | .60682 |

**Source: Research Data (2025)**

It can be seen from the value of 0.725 that the independent variable explains 72.5% of the variability of the dependent variable.

### Model Fitness

The study assesses the fitness of the model. The aim of modelling is to identify the most suitable model for representing the data. The outcomes of this assessment are shown in Table 5.

**Table 6: Multiple Regression Model Fitness Results**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model** | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| 1 | **Regression** | 288.371 | 4 | 72.093 | 195.782 | .000b |
| **Residual** | 109.364 | 297 | .368 |  |  |
| **Total** | 397.735 | 301 |  |  |  |

**Source: Research Data (2025)**

From Table 6, the F test provides an overall test of significance of the fitted regression model. The *F*-ratio in the ANOVA table tests whether the overall regression model is a good fit for the data. The F value indicates that all the variables in the equation are important, hence the overall regression is significant. The table shows that the independent variable statistically significantly predicts the dependent variable, *F*(4,297) = 195.782, *p* <0.005, and this shows that the regression model is a good fit of the data.

### Regression Coefficients

The study sought to establish the regression model coefficients in order to use them in the regression equation. The study results are presented in Table 7.

**Table 7: Multiple Regression Model Coefficients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
| **B** | **Std. Error** | **Beta** |
| (Constant) | .216 | .104 |  | 2.084 | .038 |
| Dock-to-stock time | .105 | .047 | .100 | 2.222 | .027 |

**Source: Research Data (2025)**

Table 7 indicates there was a positive linear effect of dock-to-stock time on supply chain performance of manufacturing firms (β1=.105, p=0.027). This reveals that an increase in dock-to-stock time leads to an increase in supply chain performance of manufacturing firms by 0.105 units.

## 5.1 Conclusion

The study concludes that dock-to-stock time is a critical component in the supply chain that significantly influences the overall supply chain performance. This time represents the duration taken to move products from the receiving dock into inventory storage, and any delays during this stage can cascade through the supply chain, causing inefficiencies such as stockouts, delayed production, and increased lead times.

## 5.2 Recommendations

Manufacturing firms should prioritise process improvements that reduce dock-to-stock time. This can be achieved through better workforce planning and targeted training programs that speed up unloading and inspection activities.

The effects of dock-to-stock time on supply chain operations, future research should focus on finding out which internal and external aspects, including supplier management, adopting new technology and forecasting demand, may also impact supply chain performance.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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Details of the AI usage are given below:

1.

2.

3.

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