Emperor Journal of Operations Research

ISSN 2583-2735 **Mayas Publication®** **www.mayas.info**

Volume -III **Issue- VIII** **August-2024**

Streamlining Operations with Advanced SCM Practices

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Abstract

The study aims to investigate the impact of best SCM practices on operational streamlining and overall improvement of supply chain performance. Accordingly, the study uses four core variables - innovativeness, visibility, internal SCM practice, and CRM practice to measure their singular effects as well as their combined effects on supply chain efficiency and effectiveness.A review of the literature will be conducted to synthesize all the existing knowledge available on these variables and establish a theoretical framework for the study. It is a quantitative study that uses data gathered from 160 professionals working in different industries related to supply chain management, thus providing insights into the applicability of advanced SCM practices in various sectors. This study explores how these new approaches in SCM enhance operational performance and competitive advantage, as well as brings to light the role of visibility in decision-making and risk management. The impact of internal SCM practices on cross-functional integration and efficiency in operations is further probed. The influence of CRM practices on customer satisfaction and responsiveness of the supply chain is explored as well. Findings from this research add value to both theory and practice in the use of advanced SCM practices. The findings have immense value to practicing

supply chain professionals who are interested in streamlining their activities for improved overall performance. The study has also identified avenues for future exploration on the interaction of variables with their long-term effects on sustainability and resilience of supply chains.

I.INTRODUCTION

Supply chain management has gradually risen to become the differentiating element in an organization's success, something that typifies the modern rapidly changing world of global business. Supplying a product or service from a supplier to a customer involves a complex network of activities, people, resources, and information that needs an innovative approach if the company is going to be competitive. Resilience and efficiency in supply chains have been put under a microscope as businesses now face various challenges, from global pandemics to geopolitical tensions and climate change.

Supply chain management is one concept that has continually changed ever since its inception in the 1980s. It was born as a fledgling function of logistics and later metamorphosed into a trategic activity, with procurement, production, distribution, and customer service forming very large sets of activities around it. Today, modernized supply chain management is viewed as one of the key business performance drivers, affecting the operational efficiency of serving customers, satisfaction, financial performance, and quite, mportantly, gaining an overall competitive advantage.

Problem Statement

While firms are recognizing the critical role of efficient supply chain management, not many organizations can achieve or maintain a high level of performance in supply chains. Modern supply chains have become complicated, and rapidly changing market conditions and technological advancements make the operations even more daunting. Certain issues that supply chain managers face regarding the same are as follows:

Limited end-to-end visibility: In most of organizations, the extended supply chain lacks visibility, thus making it challenging to predict and respond effectively in case of disruption or opportunity.

Innovation resistance: The traditional ways of doing supply chains may have deep roots, which increases the resistance to implementing solutions that allow performance to be improved.

Organizational silos: The organization is poorly integrated functionally as procurement, production, and logistics are badly linked to one another.

Inadequate customer orientation: Without the supply chain aligned to customer needs and expectations, it's never able to create value, even though it works efficiently.

Scope of the Study

The scope of this research encompasses the following aspects:

1. Technological Integration: This will discuss how innovations in AI, Blockchain, and IoT affect supply chain efficiency.
2. Key SCM Practices: This investigates internal practices, visibility, and CRM and their influence on performance.
3. Industries and Geographical Contexts: The study will look at how advanced SCM practices can be applied in different industries across regions.
4. Economic Scope: The emerging role of SCM for new and emerging forms of businesses would require a tremendous change in the way supply chains have to operate. Supply chains will need to change in pace with changing consumer behavior as well as changing market dynamics.
5. Organizational Scope: Analyze the patterns of internal structures and management approaches by the potential changes that would be present in the future within the SCM organization. Examine the impact of higher cross-functional integration upon performance in the supply chain.

Litrature Review

Choi and Krause (2006) cited supply-based innovation as one of the enablers of competitive advantage. According to the study, the more diverse and innovative the supply base is, the more potential that lies in new ideas and technologies; hence, companies that promote and make a positive effort to support innovation among their suppliers are the ones that achieve the greater levels of performance in supply chains.

According to Thoumrungroje & Racela (2022), innovation is the creation of knowledge on organizational resources into new ways of processes, products, and services. Innovation in a supply chain is an ability beyond just creating new ideas to improve existing processes and techniques its real value lies in reacting to changes within and outside the organization (Perano et al., 2023).

Caridi et al. (2014) developed a comprehensive framework that measured supply chain visibility and presented four significant dimensions, namely: the quantity of information, quality of information, freshness of information, and accessibility of information. Based on their study, they demonstrated that improvement along these dimensions directly led to better

performance of the supply chain in both operational efficiency and customer satisfaction

Sundram et al. (2016), which made a comprehensive review of internal SCM practices and their performance outcomes, reveals some essential practices, such as information sharing, lean systems, postponement, and internal integration. Their finding was that these practices when implemented, would lead to significantly improved supply chain performance metrics in areas such as cost, quality, and delivery reliability.

Research Methodology

Research Hypotheses

1. Null Hypothesis (H0): Innovativeness in supply chain management practices does not influence supply chain performance.
2. Alternative Hypothesis (H1): Innovativeness in SCM practices positively influences supply chain performance.

Research Design

Research Philosophy

For this study, the positivist research philosophy has been followed. Positivism assumes the reality to be objective and may be measured and observed independently of the researcher. The approach agrees with the purpose of the present study since it aims at measuring and analyzing associations on a quantitative basis with the performance of supply chain management practices.

While this kind of research has its merits in this kind of research, one needs to acknowledge the shortcomings. Positivism itself would not be able to capture the subtle complexities of human behavior and organizational dynamics in supply chains. Given the above focus of the study, however, measurable practices and performance outcomes positivist approach was felt to be most appropriate.

Research Approach

The research approach followed in this study is a deductive approach. A deductive methodology develops hypotheses based on an existing theory. Based on the theory a research strategy is then developed to validate the hypothesis. A deductive methodology is used in this research because there are well-established theories that relate to supply chain management, and the intent here is to test specific relationships between variables. Data will be collected through a survey to test these hypotheses.

Research Strategy

For the current study, a cross-sectional survey research strategy was pursued. A cross-sectional survey research strategy allows for data elicitation from a large number of respondents at one point in time. Such a strategy, therefore, allows for the study of relationships that exist amongst various variables across a wide sample of supply chain professionals. Standardized questionnaires allow for consistency in collecting the data, hence allowing for possible comparison between different subgroups within the sample. The survey strategy allows the testing of hypotheses regarding the relationships between variables and the generalization of findings to a larger population.

Result and Analysis

Demographic Profile of Respondents

Understanding the demographic characteristics of the sample is very essential in the context of research findings and generalization. Moreover, it gives insight into the respondent profile in terms of the job position, gender, age, educational qualification, industry, and experience in SM.

Job Position

Table - 1: Distribution of Respondents by Job Position

	Frequency	Percent	Valid Percent	Cumulative Percent
Entry Level	59	36.9	36.9	36.9
Middle Level	45	28.1	28.1	65.0
Senior Level	56	35.0	35.0	100.0
Total	160	100.0	100.0	

The job position distribution is relatively balanced across the organizational hierarchy. There are 36.9% who reported as entry-level, and the senior level was just about that number at 35.0%. The mid-level constitutes 28.1% of the sample, which will allow for insights from a variety of organizational perspectives from newly engaged to extensive experience and strategic oversight.

Gender

Table-2: Distribution of Respondents by Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	79	49.4	49.4	49.4
Female	81	50.6	50.6	100.0
Total	160	100.0	100.0	

There is nearly an equal mix of genders in the sample, with 49.4 percent men and 50.6 percent women respondents. Balanced representation is significant in SCM fields, which are traditionally comprised solely of men (Treiblmaier et al., 2020). Equal gender distribution in the study may help focus on possible perceptions between genders regarding SCM practices and performance.

Age

Table - 3: Distribution of Respondents by Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Under 24	45	28.1	28.1	28.1
25 - 34	54	33.8	33.8	61.9
35 - 44	30	18.8	18.8	80.6
45 - 54	25	15.6	15.6	96.3
55 and above	6	3.8	3.8	100.0
Total	160	100.0	100.0	

The sample in terms of age distribution is oriented toward younger professionals as 61.9% of the respondents have their age less than 35 years. This may be due to an increase in younger professional students entering the field of SCM, thereby bringing novel views of technology adoption and innovative practices. On the other hand, the level of well-experienced professionals is balanced by 19.4% of professionals who are 45 and above years, thus opinions on SCM practices can be compared over generations.

Highest Qualification

Table - 4: Distribution of Respondents by Highest Qualification

	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor's Degree	63	39.4	39.4	39.4
Master's Degree	95	59.4	59.4	98.8
Doctorate	2	1.3	1.3	100.0
Total	160	100.0	100.0	

The respondents have an educational profile of being highly educated as 60.7% boasting a postgraduate qualification of Master's or Doctorate levels. Statistically, as it is high, among respondents, it can be interpreted to mean that the sample comprises professionals who are advanced in their fields, and this may have contributed to more informed perspectives on SCM practices and performance.

Industry

Table- 5: Distribution of Respondents by Industry

	Frequency	Percent	Valid Percent	Cumulative Percent
Manufacturing	45	28.1	28.1	28.1
Retail	24	15.0	15.0	43.1
Logistics	47	29.4	29.4	72.5
Technology	39	24.4	24.4	96.9
Healthcare	5	3.1	3.1	100.0
Total	160	100.0	100.0	

The industry distribution is very representative of the major sectors in which supply chain management plays a role. The sectors are constituted into Logistics at 29.4%, followed by Manufacturing at 28.1%, then Technology at 24.4%, which make up the majority. This is because SCM practices are considered core to these industries. Retail (15.0%) and Healthcare (3.1 %) add even more diverse perspectives with these having unmatched and often unique challenges that they face in their respective supply chains.

Experience in SCM

Table - 6: Distribution of Respondents by Experience in SCM

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 1 year	51	31.9	31.9	31.9
1 - 3 years	41	25.6	25.6	57.5
4- 6 years	38	23/8	23.8	81.3
7 - 10 years	16	10.0	10.0	91.3
More than 10 years	14	8.8	8.8	100.0
Total	160	100.0	100.0	

The experience profile of the respondents also depicts a balanced distribution of both new entrants and professionals in SCM, where 31.9% have less than a year of experience, while there are also those with considerable years of experience for example, 42.6% have experience of 4 years or more in SCM. Thus, it will be easier to contrast the views of newcomers with those of professionals in the experience profile.

Findings and Conclusion

Findings

Reliability of Measures

- All scales demonstrated good reliability with Cronbach's Alpha values above 0.8: ϖ
- Innovativeness: $\alpha = 0.801$ (5 items)
- Visibility: $\alpha = 0.830$ (5 items)
- Internal SCM Practices: $\alpha = 0.877$ (6 items)
- CRM Practices: $\alpha = 0.876$ (7 items)
- Supply Chain Performance: $\alpha = 0.894$ (8 items)

The relatively high value of internal consistency confirms the strength of the measurement instruments used and thus serves as a solid ground for all analyses and conclusions. The reliable measures lead to increased credibility of the findings and allow for more confident interpretation regarding relationships between variables.

Limitations

Although the research methodology is constructed in such a way that it would guarantee robustness, there are limitations, and they have to be acknowledged:

Cross-sectional type of study:

- The data capture will be taken at one point, which might not represent the trends in the long term or causal relationships.
- This will be brought out during the discussion of the findings and recommendations made for longitudinal studies.

Self-reported data

- Bias is introduced into the study due to the perceptual measures from respondents.
- Self-reported data wherever possible will be validated using objective performance measures and secondary sources.

II.CONCLUSION

The research here brings added value in understanding the drivers behind supply chain performance in the modern business environment. The findings presented here underscore the strategic importance of visibility and customer relationship management toward improved supply chain performance while also illustrating the complexity of the impact of innovation and challenging assumptions about SCM internal practices. Understand these key performance drivers more and more as supply chains continue to evolve over an increasingly dynamic and interconnected global economy. By focusing on the improvement of visibility, strengthening relationships with customers, managing innovation with care, and optimizing internal practices, organizations can forge greater resilience, efficiency, and responsiveness in their supply chains.

The path forward is to enact these findings but also to continue to investigate and adapt in response to new challenges and opportunities that arise in the study of supply chain management. Research into the future should unravel these complex interactions between various supply chain practices and performance outcomes, perhaps as longitudinal studies along with industry-specific analyses, and improved objective performance measure. This ability to enhance the understanding of supply chain management through theory will be beneficial in terms of practice guidance for organizations which find it challenging to expand their supply chain capabilities. The changes in the business environment, coupled with the practice of effective management and optimization of a supply chain, will remain one of the fundamental factors for determining success for organizations. By embracing the recommendations for consideration identified in this study and being dedicated to continuous improvement, organizations will be better positioned to thrive in this

increasingly complex and challenging world of modern supply chain management.

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