

Impact of Supply Chain Management on the Indian SME Operational Effectiveness

Sameer Yadav

Research Scholar, Department of Commerce and Business
Administration, University of Allahabad, Prayagraj, Uttar Pradesh-211002, India.
samuraisamu12112@gmail.com

Dr. Mahendranath Chowdary

Assistant Professor, Department of Social Work,
The Apollo University, Chittoor, Andhra Pradesh, India- 517127.
mahendranathmsw@gmail.com

Dr Veeramani G

Associate Professor, School Of Management Studies,
Vels Institute of Science, Technology & Advanced Studie(VISTAS),
Pallavaram, Chennai – 600117.
veeramanig10@gmail.com

Dr B R Celia

Associate Professor, Commerce Corporate Secretaryship,
Saveetha College of Liberal Arts and Sciences, SIMATS – 602105.
celiajaidhas@gmail.com

Subharun Pal

PG Scholar, Computer Science and Engineering,
Indian Institute of Technology Jammu, NH-44 , PO Nagrota, Jagti,
Jammu and Kashmir (UT) 181221.
subharunpal@gmail.com

Om Prakash C

Associate Professor, School of Management, CMR University,
5, Bhuvanagiri, OMBR Layout, Bengaluru 560043.
omprakash@cmr.edu.in

Abstract

Supply Chain Management (SCM) operational effectiveness refers to the ability of an organization to efficiently and smoothly execute its supply chain processes to achieve its strategic goals. This involves streamlining processes, minimizing waste, and leveraging technology to enhance visibility and control across the entire supply chain network. The efficacy of a supply chain is a critical determinant of an organization's success and competitiveness in today's globalized business environment. When effectively managed, it can lead to numerous advantages, such as reduced costs through streamlined processes and minimized waste, improved customer satisfaction through timely and accurate deliveries, and enhanced responsiveness to market fluctuations. It also helps in optimizing inventory levels, reducing working capital requirements, and promoting sustainability by minimizing environmental impact. The study concluded that the efficacy of a supply chain is not just a cost-saving measure; it is a strategic asset that can drive growth, profitability, and long-term success for businesses in a highly interconnected and rapidly *evolving* world.

Key words: Supply Chain, SMEs, Improved Inventory Management, Compliance and Sustainability

Introduction

The term "supply chain" (SC) is used to describe a system in which many different parties interact through the transfer of goods, data, and money. At the very end of the supply chain, clients pick up their purchases from the final location [1]. A profitable supply chain is essential to its success. Overall profitability, rather than profits from specific stages, is now taken into account when gauging SC performance. As part of its competitive strategy, a company considers the unique needs of its target market and works to meet those demands. Strategic alignment cannot be achieved without first assessing the supply chain's strengths

and weaknesses in terms of efficiency and adaptability. Therefore, finding the sweet spot between efficiency and responsiveness is essential for attaining strategic alignment [12].

Theoretical overview of the study

A profitable supply chain is essential to its success. Overall profitability, rather than profits from specific stages, is now the primary metric used to evaluate SC success. A company's competitive strategy is the comprehensive plan for meeting the needs of its target market with its products and services. Strategic alignment cannot be achieved without first assessing the supply chain's strengths and weaknesses in terms of efficiency and adaptability [7]. Strategic alignment can only be attained by striking a balance between speed and flexibility. The contemporary peer group places significant importance on smart manufacturing as a pivotal factor in deciding the efficacy and triumph of items. The value of your items is influenced by two main variables: flexibility and quality. The need for prompt responsiveness to client demands arises from the presence of intricate marketplaces, fierce competition, and dynamic shifts in demand [5]. Concurrently, it is imperative to acknowledge that quality is not merely an added benefit for the customer, but rather an essential prerequisite. The interdependence between inadequate quality and its associated consequences, such as expenses, productivity, and market share decline, has been widely recognized. Hence, it is advisable to carefully deliberate and exercise sound judgment in one's actions. This knowledge tends to be more comprehensive when supply managers perceive trust and satisfaction. The enhancement of logistical performance is anticipated through the increase in both internal and external collaboration [10]. Additionally, it is worth noting that international and domestic collaboration are mutually beneficial and supportive. The impact of internal collaboration on the performance of logistical services is significant, necessitating the establishment of cooperative and collaborative practices within organisations to enhance logistical efficiency.

Supply Chain Best Practices for Small and Medium-sized Enterprises (SMEs)

These enterprises form the backbone of many economies and often face unique challenges due to their limited resources and scale. However, by implementing supply chain best practices, SMEs can optimize their operations, reduce costs, and enhance their competitiveness in the market.

1. **Strategic Supplier Relationships:** Strategic supplier relationships are a critical component of success for Small and Medium-sized Enterprises (SMEs). SMEs often operate with limited resources and face challenges related to procurement, cost management, and supply chain efficiency. Establishing and nurturing strategic partnerships with suppliers can significantly impact their competitiveness and operational effectiveness. In these relationships, trust, communication, and collaboration are paramount. SMEs should work closely with suppliers to ensure a reliable and consistent flow of high-quality materials or goods. Negotiating favorable terms, such as pricing, payment schedules, and delivery schedules, can help SMEs manage costs and cash flow effectively. Furthermore, strategic supplier relationships enable SMEs to tap into the expertise and capabilities of their suppliers. This can lead to product or process improvements, cost reductions, and innovative solutions that might not be attainable through traditional, transactional supplier relationships. These partnerships are also essential in times of disruption or change. When faced with supply chain disruptions or evolving market conditions, SMEs with strong supplier relationships are better equipped to adapt and find solutions collaboratively, ensuring business continuity.
2. **Efficient Inventory Management:** Efficient inventory management is a crucial aspect of operations for Small and Medium-sized Enterprises (SMEs). SMEs often operate with limited financial resources, and the efficient use of working capital is paramount for their success. Effective inventory management practices can significantly impact an SME's financial health and overall operational efficiency. SMEs should adopt strategies such as the just-in-time (JIT) inventory system, which involves maintaining inventory levels that closely match actual demand. This approach helps reduce carrying costs associated with excess inventory and minimizes the risk of holding obsolete or perishable items. Technology plays a critical role in enabling SMEs to manage their inventory efficiently. Implementing inventory management software allows for real-time tracking of stock levels, which not only reduces the risk of stock outs but also helps avoid overstocking. Moreover, these tools often incorporate demand forecasting algorithms, which provide valuable insights for optimizing inventory levels. Regular inventory audits and adjustments are essential for SMEs. These processes help identify slow-moving or non-moving items that can be either discounted, repurposed, or discontinued. By eliminating excess stock, SMEs free up working capital that can be invested elsewhere in the business. Efficient inventory management not only reduces carrying costs but also improves customer service. SMEs can fulfill customer orders more promptly and accurately when they have a clear understanding of their available inventory. This, in turn, enhances customer satisfaction and loyalty.

3. **Technology Integration:** Leveraging technology is a game-changer for SMEs. Implementing inventory management software, transportation management systems, and order tracking solutions can improve transparency, efficiency, and accuracy within the supply chain. These tools provide real-time insights and data-driven decision-making capabilities.
4. **Streamlined Transportation and Logistics:** Efficient transportation and logistics are key to reducing costs and improving delivery times. SMEs can benefit from consolidating shipments, optimizing routes, and exploring multi-modal transportation options to reduce shipping expenses. This also contributes to sustainability by minimizing the environmental footprint.
5. **Lean Manufacturing Principles:** Applying lean principles to production processes can help SMEs eliminate waste, enhance efficiency, and respond to changing customer demands more effectively. Continuous improvement and waste reduction practices are at the core of lean manufacturing.
6. **Sustainability and Environmental Responsibility:** Incorporating sustainability into the supply chain is becoming increasingly important. SMEs can explore eco-friendly packaging options, optimize energy usage, and reduce their carbon footprint through transportation and production process improvements. Sustainable practices not only appeal to environmentally-conscious consumers but can also lead to cost savings in the long run.
7. **Risk Management:** SMEs should be proactive in identifying and mitigating risks within their supply chain. This includes developing contingency plans for supply disruptions, diversifying suppliers, and staying compliant with regulations to avoid legal and operational setbacks.
8. **Performance Measurement and Continuous Improvement:** Regularly monitoring supply chain performance using key performance indicators (KPIs) is crucial. SMEs should track KPIs related to cost, quality, delivery, and customer satisfaction. This data-driven approach helps identify areas for improvement and enables better decision-making.

Key performance indicators for supply chain performance measurement

The framework typically consists of key performance indicators (KPIs) that cover various aspects of the supply chain. These KPIs may include metrics related to cost efficiency, such as procurement and transportation costs, inventory turnover, and order fulfillment accuracy. They should also encompass customer-centric metrics, such as on-time delivery, order lead times, and customer satisfaction. Sustainability and environmental impact indicators are increasingly important in today's world, reflecting a growing concern for corporate social responsibility. Additionally, risk management KPIs related to supply chain disruptions, compliance, and security can be vital components. The data collected from these metrics enable organizations to assess their performance, identify areas for improvement, make informed decisions, and adapt to changing market conditions. A well-structured supply chain performance measurement framework is a valuable tool for optimizing operations, reducing costs, and enhancing overall supply chain effectiveness. Managers should be granted the opportunity to concentrate on identifying the sources of process variation, as the implementation of good measurement systems has the potential to foster a culture of continuous process improvement. Organisations have the ability to utilize insights obtained from performance feedback in order to proactively address and mitigate challenges. Process monitoring can be employed as a means to enhance an organization's ability to promptly address consumer problems [12]. Managers are inclined to notice deviations from pre-established process paths, as well as alterations in material or financial flow patterns, when they engage in a structured examination with a formal process description. The implementation of an automated system is necessary in order to collect pertinent monitoring metrics from various points throughout the supply chain, as there is a demand for real-time monitoring. This type of monitoring is referred to as inter-organizational monitoring. Supply chain management (SCM) places significant importance on the pertinence of company operations within the network of firms comprising the supply chain. Supply chain management (SCM) refers to the systematic coordination and integration of essential business operations, spanning from the ultimate consumer to the first suppliers [6]. The practice of supply chain management has the capacity to decrease total expenses while simultaneously improving operational efficiency. Moreover, it commonly requires the incorporation, synchronization, and cooperation of enterprises and supply chain allies, along with the monitoring of performance.

State of Indian SMEs

Indian SMEs are diverse and dynamic, representing a broad spectrum of industries and sectors. They are essential contributors to the Indian economy, constituting a significant portion of GDP and employment. However, they face several operational challenges, including limited resources, access to finance, technological constraints, and inefficient processes [3]. These challenges hinder their ability to compete on a global scale and impede their growth aspirations. These diverse and dynamic

businesses span a wide range of industries, from manufacturing and services to technology and retail. Often characterized by limited resources, SMEs face operational challenges such as access to finance, technological constraints, and inefficient processes. However, they are also known for their resilience and adaptability [8]. In recent years, various government initiatives and technological advancements have aimed to support and empower Indian SMEs, helping them overcome challenges, become more competitive, and contribute to India's economic growth and innovation. SCM practices can be a transformative force for these businesses, which often face operational challenges and strive to remain competitive in a dynamic marketplace. Effective SCM can streamline operations, reduce costs, and improve overall efficiency. Indian SMEs can benefit from optimized procurement, production, and distribution processes, leading to substantial cost savings. Additionally, efficient inventory management ensures that working capital is used judiciously, helping SMEs maintain financial stability [6]. Improved productivity and shorter lead times, made possible through SCM, enable SMEs to meet customer demands more effectively and expand their market reach. Furthermore, customer satisfaction is enhanced through SCM, as it ensures on-time delivery, quality products, and responsive service, contributing to customer loyalty and repeat business [1]. Ultimately, by embracing modern technology and data-driven decision-making, Indian SMEs can harness the power of SCM to not only address their operational challenges but also to position themselves for growth and success in a highly competitive business.

Purpose of scoping Review

The purpose of this literature research is to learn all I can about supply chain metrics and the many methods employed to measure them. [5]. The competition is not primarily confined to individual enterprises, but rather extends to encompass the interplay and rivalry across supply networks. The act of comparing performance measures related to supply chains allows for the discernment of a well-functioning supply network [2]. Supply networks that exhibit high levels of efficiency have the potential to sustain their operations over a prolonged period. In the coming decade, there will be a notable transformation in the workforce supply [14]. Based on the analysis conducted by experts, it is projected that emerging nations are poised to see significant economic expansion, whereas industrialized economies are anticipated to observe comparatively more moderate levels of growth. The consideration of this change in workforce supply is crucial in the strategic design of global supply networks by supply chain leaders [6]. The aforementioned trend is expected to persist and exert a substantial impact on personnel management strategies within the supply chain industry [3]. In the future, individuals will have the responsibility of coordinating operations, managing faults, and exercising control over the machinery inside factory settings. Additionally, the supplier's capacity expansion and its financial capability to support such expansion should be duly considered. A supply chain partnership refers to a collaborative effort between two individuals to work together. This form of contact primarily revolves upon cultivating a durable and enduring relationship, hence facilitating collaborative problem-solving and strategic planning. Developing strong relationships with suppliers is crucial for optimizing sourcing strategies and achieving enhanced effectiveness and success in procurement endeavors. The maintenance of a relationship holds equal significance. Merely conducting an analysis of customer or supplier performance is insufficient [9]. The examination of specific characteristics is imperative in the analysis of partnerships, as these factors play a vital role in the advancement and consolidation of such interactions [8]. Through the evaluation of partnerships based on these criteria, mutually beneficial linkages will arise, leading to enhanced efficiency and seamless integration throughout supply chains. The concept encompasses the practice of making decisions collectively and assuming collective responsibility for achieving desired outcomes [2]. Key dimensions in an academic context encompass a cross-departmental breadth, a demonstrated readiness to collaborate or objective among individuals or groups.

Importance of the study

Considerable emphasis should be placed on the enduring progress of the supplier, their prospective design capabilities [8]. It is important to take into account both the supplier's ability to increase output and the supplier's financial stability [2]. A supply chain partnership refers to a collaborative effort between two individuals to work together. This form of engagement primarily revolves upon cultivating a sustained and enduring relationship, hence facilitating collaborative problem-solving and strategic planning. Developing strong relationships with suppliers is crucial for optimizing procurement processes and achieving enhanced effectiveness and success in sourcing endeavors. Relationship upkeep is just as important [4]. It is not enough to just analyze customer or supplier performance. When evaluating partnerships, it is crucial to look at a few key factors that have a major impact in the development and maintenance of those ties. The degree to which suppliers work together to solve common problems is an indicator of the quality of their relationships with one another. By applying these standards to the evaluation of collaborations, more efficient and cohesive supply chains may be built through the formation of links that benefit both parties.

Objectives, Design, Methods and Measurement

The purpose of the study is to examine their opinion on supply chain management in SME .To enhance comprehension of the supply chain management phenomenon, the research methodology employed in this work was an empirical approach. A study was conducted on 100 samples of small and medium scale manufacturing enterprises. Indian SMEs would benefit greatly from improved supply chain management if only they had access to better information. Saving money, growing your business, working more efficiently, and making your customers happier are all possible outcomes. Therefore, Indian SMEs may contribute to the expansion of the Indian economy by investing in supply chain management practices that put them at an advantage in the global market.

Supply Chain Management on the Indian SME

It is an attempt to study the relationship between the nature of the respondents and their opinion on Operational Effectiveness. For which, the age and educational level of the employees are considered as important characters influencing their behaviour. The success of SMEs in India is heavily influenced by supply chain management (SCM). The key impacts of supply chain management on Indian SME operational effectiveness.

Table 1

Age of the respondents and their impact on supply chain management

	Variables	Age group	N	Mean Rank	Chi-Square value (df-2) / Sig.
1.	Vendor and Partner Relationships	Young	38	52.39	0.268 / 0.765
		Middle	32	51.75	
		Old	30	46.77	
2.	Cost Efficiency	Young	38	50.87	0.039 / 0.682
		Middle	32	48.44	
		Old	30	52.23	
3.	Enhanced Quality Control	Young	38	53.55	0.372 / 0.713
		Middle	32	44.81	
		Old	30	52.70	
4.	Improved Inventory Management	Young	38	51.71	0.127 / 0.827
		Middle	32	53.52	
		Old	30	47.88	
5.	Technology Adoption	Young	38	54.91	0.821 / 0.657
		Middle	32	48.42	
		Old	30	54.33	
6.	Compliance and Sustainability	Young	38	55.33	3.324 / 0.165
		Middle	32	56.66	
		Old	30	48.48	
		Total	100		

The result from the above table shows that young age respondents have preferred more **vendor and partner relationships** (52.39), Strong supply chain management promotes healthy relationships with suppliers, manufacturers, distributors, and other partners. These relationships can lead to preferential treatment, better terms, and a reliable supply of materials or components. **Enhanced quality control** (53.55), a well-structured supply chain allows SMEs to monitor and control the quality of raw materials, components, and finished products. This ensures that the final product meets quality standards, reducing defects, recalls, and associated costs. **Technology adoption** (54.91), Utilizing modern SCM technologies, such as software for demand forecasting, inventory management, and order processing, can streamline operations and improve efficiency. These tools can help SMEs make data-driven decisions and reduce manual errors. The middle aged respondents **Compliance and Sustainability** (56.66), Compliance and Sustainability: Supply chain management can help SMEs comply with local and international regulations, including environmental standards. Compliance with these regulations is increasingly important for market access and reputation. The old aged respondents **Cost Efficiency** (52.23). Effective supply chain management can help SMEs reduce operational costs by optimizing inventory levels, reducing wastage, and minimizing transportation expenses. This cost savings can directly contribute to higher profitability and competitiveness. **Improved Inventory Management**: SCM techniques like just-in-time (JIT) inventory management and demand forecasting can help SMEs maintain optimal inventory levels. Efficient supply chains enable SMEs to access a wider market by enabling timely deliveries and meeting customer demands. This expansion can lead to increased sales and revenue, fostering growth and sustainability. Ultimately, a well-managed supply chain ensures that products reach customers on time, in good condition, and as expected. The result from the Kruskal Wallis test indicates insignificant relationship between the opinion of the respondents about the different retention strategies and the age of the respondents. The calculated Chi-Square values are less than table value for the degree of freedom 2. Hence, the values of probability are more than 0.05. It is concluded that the opinion of the respondents about supply chain management in SME does not vary according to the age of the respondents.

Discussion and findings

Based on the previous chapter's findings, this one will offer some advice for further study. The recommendations should allow for the integration of supply chain aspects relevant to performance [3]. This section expands on the principles mentioned elsewhere in the text to draw attention to other factors influencing supply chain efficiency. The organisation and the community as a whole will benefit from the integration of past and present research findings. The entire inventory cost in the supply chain can be reduced by opting for a longer review period [9]. When all parameters are optimized, supply chain performance is enhanced. Supply chain best practices are not one-size-fits-all, and SMEs need to tailor these practices to their unique circumstances [14]. Nevertheless, by adopting the principles outlined above, SMEs can enhance their operational effectiveness, reduce costs, and boost competitiveness. As globalization and market dynamics continue to evolve, embracing these best practices in supply chain management is crucial for SMEs looking to thrive and grow in a rapidly changing business environment [10]. In summary, strategic supplier relationships empower SMEs to enhance their supply chain operations, reduce costs, and navigate the competitive business landscape more effectively. By fostering strong connections with their suppliers, SMEs can gain a competitive edge and position themselves for sustainable growth and success. One crucial supply chain best practice for SMEs is establishing strong relationships with suppliers. By nurturing partnerships based on trust and communication, SMEs can ensure a consistent flow of high-quality materials and goods. Negotiating favorable terms and collaborating with suppliers to enhance efficiency and reduce lead times is essential. Moreover, the involvement of international supply chain entities cultivates internal collaboration, hence enhancing the efficiency of logistical operations [2]. The necessity of collaboration extends to both intra-organizational and inter-organizational contexts. The advantages of this phenomenon have cumulative effects [6]. The act of collaborating and exchanging information allows organisations to allocate a greater amount of resources towards their operational activities, encompassing both social and financial aspects. Consequently, the ability to make more informed choices and mitigate risks is enhanced [2].

Conclusion

In the context of globalization and heightened competition, organisations are consistently seeking to enhance their operational effectiveness through the reassessment of internal business procedures. In summary, efficient inventory management practices are indispensable for SMEs looking to maximize their financial resources, reduce operational costs, and improve customer service. By implementing these strategies, SMEs can position themselves for growth and sustainability in a competitive market environment. Optimizing inventory levels is vital for SMEs, as it directly impacts working capital. Implementing just-in-time (JIT) inventory practices, utilizing technology for demand forecasting, and regularly auditing and adjusting inventory levels can help SMEs reduce carrying costs and prevent overstocking or stock outs. The notion of Supply Chain Management enables firms to engage in collaborative relationships with consumers and suppliers. The collaboration involves the exchange of vision, expertise, and information, with the ultimate goal of establishing a collaborative supply chain that may achieve a competitive

advantage. The study aims to investigate the influence of (SCM) practices on operational performance in (MSMEs) in India. Additionally, it seeks to explore the effect of inhibitors to supply chain management in affecting operational performance within this context. The purpose of this research was to empirically investigate the connections between (SCM) practices, SCM inhibitors, and operational performance in Indian MSMEs. Supplier collaboration, customer relationship management, IT efficiency, outsourcing, and logistical solutions are all examples of best practices.

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