Supply chain management (SCM) framework for small and medium manufacturing enterprises (SMEs) in Ghana

Mitchell Dodzi Morvey (a)*, Lawrence Mpele Lekhanya (b), Eric Kofi Boateng (c)

(a) Department of Management Science, Faculty of Entrepreneurship Studies and Management, Durban University of Technology, South Africa
(b) Department of Public Management and Economics, Faculty of Entrepreneurship Studies and Management, Durban University of Technology, South Africa
(c) Department of Accounting and Finance, Faculty of Business and Management Studies, Koforidua Technical University, Ghana

**Article Info**

Article history:
Received 19 March 2024
Received in rev. form 22 April 2024
Accepted 28 April 2024

Keywords:
Supply chain management, customer relationship management, sustainability, SCM practices and SMEs

JEL Classification:
M10, M11, M110

**Abstract**

Efficient supply chain management is essential for small and medium-sized enterprises (SMEs) in Ghana to guarantee a dependable flow of products and services, sustain competitiveness, and promote growth and job creation. The objective of this study is to analyse the current supply chain models utilised by manufacturing small and medium-sized enterprises (SMEs) in Ghana. Additionally, it intends to propose a prototype model that will aid manufacturing SMEs in achieving sustainability, growth, and future expansion in Ghana and other regions. The Conceptual framework was developed by examining variables identified in the existing literature on supplier management practices in small and medium-sized enterprises (SMEs), as well as inventory management approaches that are relevant to SMEs. A structured questionnaire was employed to collect data from the main source. This study employs a mixed method approach, which includes the participation of 363 respondents. Interviews and surveys were carried out with small and medium-sized enterprise (SME) owners and managers. The data was analysed using the SPSS (v 27.0) computer application, which involved both inferential and descriptive statistical analysis. The findings revealed essential components of the prototype, such as the implementation of supply management (SM), proficient information management (IM), streamlined distribution strategies, and strong marketing and sales strategies, in addition to customer relationship management (CRM) and effective post-sales services. Implementing these supply chain management (SCM) principles effectively can guarantee the sustainability, growth, employment generation, and overall performance of small and medium-sized enterprises (SMEs) in Ghana.

**Introduction**

Supply chain management (SCM) strategies are vital for the success of small and medium-sized firms (SMEs) in Ghana, as well as globally. However, certain SMEs struggle to survive in the ever-changing economic climate, resulting in a poor survival rate (Bowler et al., 2007). Study of entrepreneurship and management of small businesses. Efficient supply chain management (SCM) assists small and medium-sized enterprises (SMEs) in Ghana in effectively handling their inventory, hence minimising instances of stockouts and excess inventory that could potentially cause the firms to fail. Optimising working capital and enhancing cash flow are crucial for improving the financial performance of small and medium-sized enterprises (SMEs) and promoting job development. Small and medium-sized enterprises (SMEs) face challenges in their supply chain because of the implementation of the Just-In-Time (JIT) technique. This technique demands constant communication with suppliers and the need to expedite product delivery (Muchaendepi et al., 2019; Atnafu and Balda, 2018).

This study examines the knowledge and practices of supply chain management (SCM) in Ghana’s manufacturing small and medium-sized enterprises (SMEs) value chain and value system. It evaluates the SCM needs of manufacturing entities and assesses the impact of interventions on SCM practices (SCMPs) through both internal and external support received by manufacturing SMEs.

* Corresponding author. ORCID ID: 0009-0009-9666-842X
© 2024 by the authors. Hosting by Bussecon International Academy. Peer review under responsibility of Bussecon International Academy.
http://dx.doi.org/10.36096/ijbes.v6i2.528
Additionally, it investigates the barriers that hinder the utilisation of export services facilitated by external programmes, including those offered by the government of Ghana.

Establishing robust partnerships with suppliers is crucial for small and medium-sized enterprises (SMEs) in Ghana to guarantee a consistent and reliable flow of raw materials and components. Efficient supplier management can result in more favourable pricing, punctual deliveries, and greater product quality, all of which contribute to improved performance. Optimising logistics and distribution procedures can have a substantial effect on the performance of small and medium-sized enterprises (SMEs). Optimised transportation, warehousing, and distribution networks contribute to the reduction of lead times, cost reduction, and enhancement of customer satisfaction. SMEs should ensure that their relationships with suppliers are properly aligned to enhance coordination, resulting in improved relationships and timely material delivery, ultimately enhancing the performance of their supply chains (Madzimure, 2020).

By incorporating IT solutions like Enterprise Resource Planning (ERP) systems and supply chain software, the visibility and coordination throughout the supply chain can be improved. This enables small and medium-sized enterprises (SMEs) in Ghana to make decisions based on data, promptly adapt to market fluctuations, and enhance overall operational effectiveness. Implementing an Enterprise Resource Planning (ERP) system improves the operational efficiency of medium-sized enterprise (PMSE) organisations (Aremu et al., 2021).

Ghana's manufacturing small and medium enterprises (SMEs) are dedicated to providing superior items to ensure growth and sustained prosperity, hence generating revenue and employment opportunities. However, small and medium-sized enterprises (SMEs) in the manufacturing sector encounter numerous obstacles that have effectively hindered their growth and progress, leading to the closure of a significant number of SMEs in recent years (Ngibe 2020).

Efficient supply chain management methods are crucial for improving the performance and competitiveness of small and medium-sized enterprises (SMEs) in Ghana. SMEs may overcome problems and take advantage of possibilities in the ever-changing business environment by improving processes, utilising technology, mitigating risks, and promoting teamwork.

**Literature Review**

**Conceptual Framework**

Management of SC among SMEs vary in Ghana and depends on the specific industry, company, and available resources. However, there are some common SCM models and strategies SMEs in Ghana often utilise to improve their supply chain operations. Each SME may choose the SCM model or combination of models that aligns with their specific needs and goals.

![Figure 1: Conceptual framework for SCMPs and SME performance; Source: Author](image)

The illustrated conceptual framework (Figure 1) shows the relationship between SCMP and SME performance, where SSP, Customer Relationship, Level of IS, Quality of IS and Collaboration will act as the independent variables, while SME performance is the dependent variable. The framework is based on the review of literature on SCM to enable practitioners, managers and researchers to gain a complete perspective of SCMPs and performance of manufacturing SMEs in Ghana.

**Strategic Supplier Partnership (SSP) and Firm Performance**

According to Li et al. (2006), SSP is the relationship that exists between an organisation and its suppliers. The term partnership refers to a connection between two legally independent entities that provides equitable risk sharing and mutual benefits through collaboration (Chicksand 2015). Since the partners are willing to share the benefits of the products, strategic alliances with suppliers
provide efficiency or productivity (Li et al. 2006). Market-oriented objectives could be customer happiness or the company's market share, as two examples. Further to this, profit, ROI, and return on sales are all metrics used to evaluate a company's financial performance (Chang et al. 2016). Agus and Hassan (2008) reveal the practice and implementation of SSPs substantially impact product quality and business performance. However, Ittner et al. (1999) determined where companies use extensive supplier partnership practices, without using appropriate supplier selection and monitoring practices, they earn significantly less money.

**Customer Relationship Management (CRM) and Firm Performance**

CRM is at the heart of SCM procedures in dealing with customer complaints, developing long-term customer relationships, and increasing customer satisfaction (Li et al. 2006). Improving CRM can help sellers learn more regarding a linked buyer's utility, while also minimising coordination frictions (Shi 2016). According to Bettencourt et al. (2015), market success necessitates great customer exchanges, thus, businesses should cultivate intimate relationships with their clients. A good customer connection allows a business to differentiate its product from competitors, maintain customer loyalty, and provide value to its customers, resulting in a competitive advantage (Fathali 2016). Reimann et al. (2010) suggested CRM adds value to a company by enhancing its business strategies, which in turn, boosts performance. CRM tools enable SMEs to manage their sales and marketing activities more efficiently. By streamlining lead generation, tracking customer interactions, managing sales pipelines, and analysing marketing campaigns, SMEs can target their efforts effectively in the African market (Oyedele et al. 2019).

**Level of Information Sharing (IS) and Firm Performance**

The level of IS can have a significant impact on the performance of SMEs. Effective IS enables SMEs to access valuable knowledge, resources, and market insights, which can enhance their decision-making processes, operational efficiency, and overall performance. IS plays a crucial role in knowledge acquisition for SMEs. By sharing information with industry peers, participating in industry conferences or seminars, or accessing relevant research and reports, SMEs can gain valuable insights into industry trends, customer behaviour, and market dynamics (Li et al. 2020). This knowledge empowers SMEs to make informed decisions, develop effective strategies, and stay ahead of their competitors. IS facilitates smooth internal processes, effective SCM, and optimised decision-making within SMEs. By sharing information among different departments or teams, SMEs can ensure all relevant stakeholders have access to up-to-date and accurate information (Chen et al. 2020). This enables better coordination, reduces communication gaps, minimises errors, and streamlines operations, leading to improved efficiency and productivity.

**Quality of Information Sharing and Firm Performance**

In the context of a supply chain, IS refers to the extent to which critical and proprietary information is made available to supply chain members. Information that is shared can be useful in a tactical sense (Hsu et al. 2008). Other than the quantity of information shared, its quality is equally important for a company's success. The amount and quality of information provided across supply chain partners will lessen the good impact of general IS among businesses. Information exchange could, on the one hand, be aided by efficient and user-friendly IT systems (Yang and Maxwell 2011). In a study conducted in Malaysia by Sundram et al. (2018), IT and IS were found to have a considerable positive impact on performance. Firms that use IT and practice IS across supply chain partners are more likely to integrate their internal and external value chains, resulting in improved performance both within and across manufacturing firms in the supply chain (Sundram et al. 2018).

**Collaboration and Firm Performance**

Collaboration is defined as two or more organisations working together to address a common problem. It occurs when businesses realise working alone is insufficient to solve common problems. Collaboration among SMEs can result in greater inventory reduction, faster product-to-market cycle times, and lower costs and lead times (Prajogo and Olhager 2012; Zaridis et al. 2021). Collaborative advantage is an intermediate variable that enables supply chain partners to establish synergies and create superior performance, improves collaborative advantage and has a bottom-line impact on firm performance (Cao and Zhang 2011; Chakraborty et al. 2014; Solakivi et al. 2015; Zulu-Chisanga, Chabala and Mandawa-Bray 2021). Collaborative supply chain methods are good predictors of improved performance, while collaboration as a SCM technique, according to Omoruyi and Akuoma (2020), can assist SMEs to obtain long-term process planning and complete integrated processes, such as truckload usage, manufacturing scheduling, and warehouse management.

**Small and Medium Enterprises (SMEs) in Ghana**

In Ghana, an SME is defined under the Venture Capital Fund Act 2004 (Act 680) as a business, project, enterprise, or economic activity in the country that employs no more than 100 people and whose entire asset base, excluding land and buildings, does not exceed the cedi equivalent of $1 million in value. However, the National Board for Small Scale Industries (NBSSI) - now renamed Ghana Enterprise Agency (GEA) - describes Micro and Small Enterprises (MSEs) as those enterprises employing 29 or fewer workers. Micro enterprises are those that employ between one and five people, with fixed assets not exceeding USD 10 000, excluding land and buildings. Small enterprises employ between six and 29 persons or have fixed assets not exceeding USD 100 000, excluding land and buildings (NBSSI 2003). The definition of a SME varies depending on the workforce size, revenue, and assets of the company. An organization is considered small if its operational scale is below the industry average (Quaye et al. 2014). According to Kayanula and Quartey (2000) SMEs can be classified as urban and rural firms. One might further categorize the former into
“organized” and “unorganized” firms. While the unorganized category is primarily made up of artists who work in open spaces, temporary wooden structures, or at home and employ little to no salaried workers, the organized ones typically have paid personnel and a registered office. Mostly, they rely on their relatives or apprentices. The majority of rural businesses are run by family groupings, lone artisans, and women who grow food from their own crops.

**Contributions of SMEs to Ghana’s Economy**

Small and medium-sized enterprises (SMEs) make significant contributions to the economy through five key means: 1) generating employment opportunities, 2) swiftly adjusting to changing conditions due to their adaptable nature, 3) promoting entrepreneurial activities, 4) distinguishing their products through specialised production methods, and 5) functioning as a sub-sector within larger corporations. Of all these characteristics, the most noteworthy attribute of SMEs is their substantial impact on employment. Typically, small and medium-sized enterprises (SMEs) utilise labor-intensive manufacturing techniques have considerable social and economic importance (Erdin & Ozkaya 2020; Ndubisi, Zhai & Lai 2021). Small and medium-sized enterprises (SMEs) have a crucial and important function in the efforts of every government to achieve economic growth, and Ghana is not an exception to this. Small and medium-sized enterprises (SMEs) are being recognised as powerful catalysts for economic growth and prosperity in African nations (Zafar & Mustafa 2017; Obi et al. 2018). Small and medium-sized enterprises (SMEs) are the primary catalysts for generating new employment opportunities in most African countries. Small and medium-sized enterprises (SMEs) are believed to exert a substantial influence in reducing both unemployment and poverty rates. According to Amoah et al. (2022), small and medium-sized enterprises (SMEs) are accountable for creating over 70% of all employment opportunities, as reported by Apenteng and Doe (2014) and Kwaku Amoah (2018). On a global scale, small and medium-sized enterprises (SMEs) play a crucial role in generating employment opportunities and fostering economic growth.

**Challenges faced by SMEs in Ghana**

Despite the numerous roles played by SMEs worldwide, SMEs encounter difficulties that affect their survival. Stakeholders such Ghana Enterprise Agency (GEA) formerly National Board for Small Scale Industries (NBSSI), Association of Ghana Industries (AGI) and Ghana Union of Traders (GUTA) are there to assist SMEs to grow, sustain and perform effectively and efficiently but some of the SMEs are struggling to survive. According to Thompson Agyapong et al. (2018) the expansion of SMEs in Ghana is influenced by factors such as government regulations, competition, low levels of education, inadequate energy supplies, and access to outside financing. The SMEs in Ghana are faced with challenges such as access to market, regulatory difficulties, access to finances and lack of infrastructure (Amoah & Amoah 2018). In Ghana, small and medium-sized businesses encounter numerous obstacles when attempting to obtain funding from official financial institutions. Financial institutions offer lending facilities to SMEs at a higher interest rate than to larger firms because they view SMEs as a riskier industry (Avevor 2016: Owusu 2019). Government and the state agencies should do their best to support the SMEs to overcome those challenges in order for the SMEs to survive and create more jobs for the teeming unemployed youths.

**Research & Methodology**

The Conceptual framework was formulated through variables identified by analyzing existing literature on supplier management practices in SMEs, inventory management techniques applicable to SMEs. The researchers used non-probability sampling to select the sample size for the study. The population comprised all SMEs in Ghana, with the sampling frame made up of all manufacturing SMEs in the Greater Accra, Eastern, Volta, and Central, Ashanti, as well as Ahafo, Western and Western-North regions of Ghana. The study was done in metropolitan, municipal and district capitals of the selected regions of Ghana. The following small and medium businesses participated in the study; sandcrete and pavement block makers, textile and kente weavers, tailors and dress makers, soap and detergent makers, cane and basket weavers, metal works and fabrications, leather works and pottery. The data used in this study were collected from primary and secondary sources. Structured questionnaire was used to gather data for the primary source. Interviews and surveys with SME owners and managers to understand the significance of supplier management and interviews with industry experts and SME practitioners to identify challenges and best practices in inventory management and operations of SMEs. A non-probability, convenience, and purposive sampling technique was adopted, while a closed and open-ended questionnaire and interview were used as primary data collection tool. Pilot testing was conducted to streamline issues before data collection. Inferential and descriptive statistical analysis of the data was undertaken using the SPSS (v 27.0) computer package. The review of the literature was a key resource for determining and choosing the variables that helped to construct this study (Figure 1).

Based on the literature analysis, it can be said SME owners and managers within the manufacturing SME sector face a variety of difficulties that can seriously impede their growth and development. To provide the research study a focus, these difficulties were recognised and grouped into research themes.

As seen in the conceptual framework (Figure 1), key factors that affect manufacturing SME performance and ability to grow sustainably include education and training, technical skills, resources, and government regulations, as well as government support, and environmental barriers.

The proposed prototype model was developed and illustrated below (Figure 2). These variables were utilised to create the questionnaire and were scientifically tested.
Results and Discussion

The organization has a strategic supplier partnership

In a bid to ascertain whether organizations, while doing business, have built a strategic partnership/relationship with their suppliers, Table 1 show almost half the respondents (161 or 44.4 percent) strongly agreed and 112 (30.9 percent) agreed they have been able to build a strategic partnership over the course of doing business with suppliers.

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Disagree</td>
<td>39</td>
<td>10.7</td>
<td>10.7</td>
<td>10.7</td>
</tr>
<tr>
<td>Neutral</td>
<td>51</td>
<td>14.0</td>
<td>14.0</td>
<td>24.8</td>
</tr>
<tr>
<td>Agree</td>
<td>112</td>
<td>30.9</td>
<td>30.9</td>
<td>55.6</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>161</td>
<td>44.4</td>
<td>44.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>363</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

These findings are supported by a Chi-square test conducted to determine SCMP influence on SME performance. The results indicate \(\chi^2 = 1422.282; df = 36; P = 0.000\) for this variable, reflecting SCMPs are understood to have a significant influence on SME performance. While 51 (14 percent) respondents remained neutral, 39 (10.7 percent) disagreed with the statement their organization has a strategic supplier partnership.

Sharing information with suppliers

Table 2 show more than half (192 or 52.9 percent) respondents agreed and a further 100 (27.5 percent) strongly agreed with the statement that their organizations do share information with suppliers. These findings are supported by a Chi-square test conducted to determine SCMP influence on SME performance. The results indicate \(\chi^2 = 1422.282; df = 36; P = 0.000\) for this variable, indicating SCMPs are understood to have a significant influence on SME performance.

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Disagree</td>
<td>34</td>
<td>9.4</td>
<td>9.4</td>
<td>9.4</td>
</tr>
<tr>
<td>Neutral</td>
<td>37</td>
<td>10.2</td>
<td>10.2</td>
<td>19.6</td>
</tr>
<tr>
<td>Agree</td>
<td>192</td>
<td>52.9</td>
<td>52.9</td>
<td>72.5</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>100</td>
<td>27.5</td>
<td>27.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>363</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Furthermore, 37 (10.2 percent) respondents were neutral on the matter, with 34 (9.4 percent) respondents, however, who disagreed saying their organizations do not share the needed information with suppliers, while no respondents strongly disagreed. Sharing of information had a weak but large impact on supplier synergy and a somewhat favourable and considerable impact on supplier trust (Pooe et al. 2015; Mathu 2019). The study offers a valuable framework for analysing interactions between supplier performance, supplier synergy, supplier trust, and information sharing in SMEs. The latter plays a vital role in enhancing SME performance in Africa. By improving access to market information, technology, finance, and business support services, as well as policy updates, and fostering collaboration, information sharing platforms contribute to the growth, competitiveness, and sustainability of SMEs, thereby driving economic development in the region (OECD 2017).

Existing SCM model

In a bid to ascertain the form of SCM model manufacturing SMEs are using in the administration of their businesses, the study discovered 164 (45.2 percent) respondents indicated they prefer to use a Traditional/Linear supply chain model, while 147 (40.5 percent) prefer the Collaborative supply chain model. A moderate number of 34 (9.4 percent) respondents claim to use an outsourced supply chain model, while five (1.4 percent) use the E-Commerce/D2C supply chain model.
Morvey et al., *International Journal of Business Ecosystem & Strategy*, 6(2), (2024) 01-12

Figure 2: Existing SCM model the organization uses in its operations?

Few respondents (four or 1.1 percent) prefer to use the Sustainable and Responsible supply chain model, three (0.8 percent) use Fast supply chain model, with six (1.7 percent) respondents stating they do not use any form of supply chain model, at all as seen in figure 1. SCM models play a crucial role in enhancing SME performance in Ghana. Effective SCM can lead to improved efficiency, reduced costs, increased customer satisfaction, and overall business growth.

Examining existing supply chain model used by manufacturing SMEs in Ghana

Variation of SCMPs in SMEs in Ghana depends on the industry and company type. Some common SCM models and strategies are, however, frequently employed by SMEs in Ghana to improve their supply chain operations. According to the study, 147 respondents (40.5%) prefer the collaborative supply chain model, while 164 respondents (45.2%) said they prefer to use a traditional/linear supply chain model. 34 respondents (9.4%) claim to utilize an outsourced supply chain model, compared to five respondents (1.4%) who claim to use an e-commerce/direct-to-consumer supply chain approach. Four respondents, or 1.1 percent, said they preferred to use the sustainable and responsible supply chain model. Three respondents, or 0.8 percent, said they preferred to use the fast supply chain model. Six respondents, or 1.7 percent, said they did not use any supply chain model at all. Therefore, SME adoption of SCM models in Ghana varies, contingent on factors including the industry, company size and resources available. Individual SMEs will thus select the SCM model or combination of models best aligned with their specific needs and goals.

Traditional/Linear Supply Chain model

Many SMEs in Ghana follow a traditional or linear supply chain model. This model typically involves a sequential flow of activities from suppliers to manufacturers, distributors, retailers, and finally, to end customers. The findings indicated 164 (45.2 percent) respondents prefer to use a traditional supply chain model in their operations.

Outsourced Supply Chain model

Some SMEs in Ghana opt to outsource certain aspects of their supply chain to external partners or service providers. This model allows SMEs to focus on their core competencies while relying on specialized third-party providers for specific functions such as logistics, warehousing, or distribution. By outsourcing, SMEs can access expertise and resources that may not be available in-house. SMEs in Ghana often partner with 3PL providers to outsource logistics and distribution functions. A moderate number of respondents (34 or 9.4 percent) in the study claim to use outsourced supply chain model.

Collaborative Supply Chain model

Another supply chain model observed in Ghana is collaboration among SMEs, where these enterprises enter alliances or partnerships in collaborating on a variety of supply chain activities, including joint procurement or marketing, as well as shared distribution. Through Collaborative supply chains, SMEs leverage collective strengths and capabilities, thus allowing them to pool resources, reduce costs, and improve efficiency. The CPFR model emphasizes collaboration and sharing information between supply chain partners. The findings of the study indicated 147 (40.5 percent) respondents indicated their preference in using the Collaborative supply chain model.

E-commerce/Direct-to-Consumer (D2C) Supply Chain Model

Another supply chain model some SMEs in Ghana use is the D2C model, motivated by and well-suited to the e-commerce and digital platform rise. With this model, SMEs are able to leverage online platforms and marketplaces, bypassing traditional intermediaries,
thus selling their products directly to customers, which allows SMEs to not only reach a wider customer base, but they also have greater control over channels for sales and distribution. The results of the study indicated five (1.4 percent) respondents use the E-Commerce/D2C supply chain model.

**Sustainable and Responsible Supply Chain Model**

The results of the study indicated four (1.1 percent) respondents prefer to use the sustainable and responsible supply chain model in their operations. The model focuses on minimising environmental impact and promoting sustainability, with SMEs in Ghana that use this model accordingly implementing eco-friendly practices. This includes waste reduction waste, transportation route improvements, and the use of renewable energy sources, as well as prioritising environmentally responsible suppliers as materials/product source.

**No Model**

Six (1.7 percent) respondents stated they do not use any form of supply chain model, at all, in the operations. It is believed they produce the raw materials and consume the end product, or they use a hybrid of any of the above stated models. Designing a prototype supply chain model to support SME sustainability, growth, and future expansion in Ghana requires a holistic approach that considers the specific challenges faced by SMEs in the selected regions under study.

**Supplier Management (SM)**

Manufacturing SMEs should identify reliable and cost-effective suppliers for their raw materials or products. Building long-term relationships with suppliers and ensuring timely delivery of quality inputs is essential. This may involve conducting supplier assessments, negotiating contracts, and implementing quality control measures. SM is a crucial aspect of the operations of SMEs in Ghana, as it directly impacts the efficiency, competitiveness, and overall performance of these businesses. Effective SM involves identification, evaluation, selection, and ongoing collaboration with suppliers to ensure a reliable supply of goods and services at competitive prices.

**Inventory Management (IM)**

Effective IM is crucial for SMEs to balance stock levels and avoid stockouts or excess inventory. SMEs should maintain an optimal inventory level to meet customer demand, while minimising holding costs. Implementing inventory tracking systems, forecasting demand, and adopting JIT inventory practices can help optimize IM. It plays a crucial role in the performance and success of SMEs in Ghana, as it does in businesses worldwide. Efficient IM can lead to cost savings, improved cash flow, enhanced customer satisfaction, and increased overall productivity.

**Distribution/Logistics**

Distribution is a crucial aspect of business operations for SMEs in Ghana. It refers to the process of moving products or services from the producer to the end consumers through a network of intermediaries or channels. An efficient distribution strategy can significantly impact SME success and performance in Ghana. SMEs need to plan and manage the distribution of their products to reach customers effectively, which may involve selecting appropriate distribution channels, managing transportation logistics, and coordinating with third-party logistics providers or delivery services. Efficient distribution helps ensure timely delivery, minimise transportation costs, and enhance customer satisfaction.

**Marketing and Sales**

Considered essential components of the supply chain prototype model for SMEs in Ghana, effective marketing and sales strategies should be used to promote SME products and attract customers. The supply chain prototype model, in this regard, indicates the processes and activities required for a product or service from inception to end user, with these being interconnected. The processes and activities include aspects such as market research, branding, advertising, and management of sales channels. To help reach a wider customer base and expand market reach, SMEs need to embrace digital marketing techniques and leverage online platforms.

**Customer Relationship Management (CRM)**

CRM plays a crucial role in the supply chain prototype model for SMEs in Ghana. IT is a strategic approach that focuses on managing and nurturing relationships with customers throughout the entire customer lifecycle, which involves the use of technology, processes, and data to enhance customer satisfaction, loyalty, and retention. Building strong customer relationships is crucial for SMEs in Ghana. SMEs should focus on providing excellent customer service, addressing customer inquiries, and managing customer feedback. This may involve implementing CRM systems and leveraging technology to enhance customer engagement and loyalty. CRM refers to all operations that take place where company and clients interact (Chopra 2019: 26). Customer happiness and financial performance of businesses are improved by CRM organisation (Dah et al. 2023).

The key success criteria include maintaining solid customer relationships, providing quality goods or services, being skilled at marketing, and developing a name that people can relate to (Douglas et al. 2017). Peter and William (2016) claim businesses that use CRM strategies to market their products and services to customers, employees, and other stakeholders are more successful and competitive.
**After-Sales Support Service**

A vital component of the supply chain prototype model for SMEs in Ghana, after-sales support comprises customer support and assistance once a purchase is completed. When successful, after-sales service results in satisfied customers who are loyal, along with overall SME success in Ghana. SMEs should, therefore, make after-sales support available to customers that are adequate, which include warranties, repairs, and customer assistance. Customer satisfaction and loyalty can be enhanced through a reputation built on reliable after-sales service.

**Sustainability and Social Responsibility**

As integral aspects of the supply chain prototype model for SMEs in Ghana, sustainability and social responsibility practices should be adopted throughout the supply chain. Not only would this benefit the environment and society, it will also contribute to SME long-term success and competitiveness in Ghana. To integrate such practices throughout their supply chain resources that are sustainable may be needed, with consideration for waste reduction and energy-efficient processes, in addition to the promotion of fair labour practices, and initiatives concerned with community development. According to Barney (1991, cited in Sibiya and Kele 2019), researchers using the RBV theory contend SMEs with non-replaceable, unique, valued resources have a long-lasting competitive advantage, frequently employed to boost market expansion. RBV theory offers valuable guidance for SMEs in Africa to identify, develop, and leverage their unique resources and capabilities to create a sustainable competitive advantage in their industries. By focusing on their strengths and finding innovative ways to overcome constraints, SMEs can position themselves for long-term success in the African market. Transaction Cost Analysis (TCA) is a theory initially propounded by economist Oliver E. Williamson in the 1980’s. This is another important theory in the field of economics and management, which focuses on understanding the associated costs in conducting transactions between economic agents, such as firms, suppliers, customers, or other entities. These costs include not only the monetary aspects but also the time, effort, and uncertainty involved in completing transactions. TCA provides insights into the decision-making processes of firms and how they choose between various governance structures based on transaction costs. It is a popular model for understanding and analysing a broad array of strategic decisions of manufacturing firms (Madhok 2002). This study sees SME characteristics, government policies, government financial assistance and challenges of SCMPs as factors that influence manufacturing SME ability in Ghana to achieve sustainable growth and contribute significantly towards the economic growth of the country.

Furthermore, government barriers such as high taxes and duties, as well as SME registration, were also identified by the findings as critical components that affected SME growth and survival in Ghana. The findings in this study inform the practices of SCM in the manufacturing SME sector in Ghana.

**Proposed Prototype Model**

![Proposed Prototype Model](image)
Supplier Management (SM)

It was discovered that SM is crucial to SMEs. It is also essential to establish long-lasting partnerships with suppliers and to guarantee the prompt delivery of high-quality materials. This could entail evaluating suppliers, negotiating deals, and putting quality control procedures in place. SM is a vital component of SME operations in Ghana, since it has a direct impact on their effectiveness, competitiveness, and overall success (Kepher et al. 2015; Rasdien et al., 2024). It is thus, recommended SM be practiced religiously to ensure a reliable supply of goods and services at competitive prices, which will enhance manufacturing SME performance. The study findings are further supported by Reiss (2010) that the incorporation of suppliers in a company's networks is a useful strategy.

Inventory Management (IM)

Effective IM was identified as crucial for SMEs in the study. SMEs should maintain an optimal inventory level to meet customer demand, while minimising holding costs. Implementing inventory tracking systems, forecasting demand, and adopting JIT inventory practices can help optimise IM (Kasim et al., 2015; Agola & Amoah 2019). The study, therefore, recommends SMEs should efficiently use IM that can lead to cost savings, improved cash flow, enhanced customer satisfaction, and increased overall productivity.

Distribution/Logistics

An efficient distribution strategy can significantly impact SME success and performance in Ghana. This deals with getting products or services from the producer to the end consumer through a network of intermediaries or channels (Gacuru & Kabare 2015; Madzimure 2019). It is recommended SMEs plan and manage the distribution of their products to reach customers effectively. Efficient distribution helps ensure timely delivery, minimise transportation costs, and enhance customer satisfaction, thereby ensuring manufacturing SME stability, growth and performance.

Marketing and Sales

Marketing and sales can be considered essential components of the supply chain prototype model for SMEs in Ghana. The study identified marketing and sales as the key aspects with which owners and managers needed assistance (Dzisi & Ofosu 2014; Amin 2021). It is recommended SMEs should be able to develop effective marketing and sales strategies to promote their products and attract customers. It is further recommended SMEs leverage digital marketing techniques and online platform to assist in expanding its customer base and increase market reach.

Customer Relationship Management (CRM)

The study identified CRM as a vital approach in supply chain management that focuses on managing and nurturing relationships with customers throughout the entire customer lifecycle. CRM systems will allow SMEs to gain a comprehensive understanding of their customers by collecting and analysing customer data. This enables SMEs to identify customer preferences, needs, and behaviours specific to the target market (Bukola et al., 2019; Kajongwe 2020). The study recommended SMEs to use CRM in order to market their products and services to customers, employees, and other stakeholders to be more successful and competitive in the manufacturing business.

After-Sales Support Services

After-sales service is an important component of the supply chain prototype model for SMEs identified by the study. The service concerns support, and assistance provided to customers after they have made a purchase. Effective after-sales service plays a crucial role in customer satisfaction and loyalty, and this would lead to the overall success of SMEs (Baidoo & Odum-Awuakye 2015; Dubihlela & Omoruyi 2014). It is recommended SMEs should provide adequate after-sales support to customers, including warranties, repairs, and customer assistance. Building a reputation for reliable after-sales service can enhance customer satisfaction and loyalty.

Sustainability and Social Responsibility

Sustainability and social responsibility are integral aspects of the supply chain prototype model identified for SMEs by the study. Adopting and practicing sustainable and socially responsible practices throughout the supply chain is not only beneficial for the environment and society, it also contributes to long-term SME success and competitiveness (Wentzel et al. 2022; Masocha 2019). Therefore, it is recommended SMEs should integrate sustainable and socially responsible practices throughout their supply chain. This may involve sourcing sustainable inputs, reducing waste, adopting energy-efficient processes, and promoting fair labour practices, as well as engaging in community development initiatives.

Conclusion

Ultimately, it is essential to create a prototype supply chain model specifically designed to assist in the sustainability, growth, and future expansion of Small and Medium Manufacturing Enterprises (SMMEs) in Ghana. This model will effectively handle the distinct issues encountered by these entities.
The main components of this prototype consist of the implementation of Supply Management (SM), proficient Information Management (IM), streamlined distribution strategies, and strong marketing and sales techniques, in addition to Customer Relationship Management (CRM) and excellent after-sales service supply.

The support of the government is essential in creating a favourable climate for the success of Small, Medium, and Micro Enterprises (SMMEs) and the progress of the national economy. The government is expected to provide essential support in the form of finance, programmes to grow capacity, a regulatory environment that is friendly to business, and services that support businesses. This should be matched by efforts to facilitate market access, promote trade, and expand infrastructure. Lack of such assistance can have a significant impact on small, medium, and micro enterprises (SMMEs), resulting in financial difficulties and possible insolvency, impeding their ability to grow and pursue expansion strategies.

The study examined the commonly used supply chain management (SCM) models and tactics that small, medium, and micro enterprises (SMMEs) in Ghana apply to improve their supply chain operations. The implementation of these models differs based on criteria such as industry, firm size, and resource availability. Additional alternatives encompass conventional/sequential models, cooperative, contracted, and online business/Direct-to-Consumer (D2C) models, along with sustainable, accountable, and expedited supply chain models. Manufacturing small and medium-sized enterprises (SMMEs) are advised to choose the model or combination that best suits their particular requirements and goals. This will help them enhance their supply chain efficiency and overall operational performance, leading to growth, sustainability, and job creation.

Acknowledgement

Author Contributions: Conceptualization, Mitchell Dodzi Morvey and Lawrence Mpele Lehanya; Methodology, Mitchell Dodzi Morvey; Validation, Mitchell Dodzi Morvey; Investigation, Mitchell Dodzi Morvey; Resources, Mitchell Dodzi Morvey, Lawrence Mpele Lehanya and Eric Kofi Boadi; Data Collection, Mitchell Dodzi Morvey; Formal analysis, Mitchell Dodzi Morvey; Writing—original draft presentation, Mitchell Dodzi Morvey; Writing—review and editing, Mitchell Dodzi Morvey, Lawrence Mpele Lehanya and Eric Kofi Boadi. Authors have read and confirmed the final version of the paper.

Informed Consent Statement: Informed consent was obtained from all respondents in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to restrictions.

Conflicts of Interest: The authors declared no conflict of interest.

References


Publisher’s Note: Bussecon International stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.