

Supply chain practices in a South African manufacturing SME

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Abstract

In today's globally integrated and interconnected industry, supply chain management (SCM) has demonstrated a vital aspect of strategies for all enterprises, regardless of size or area. The supply chain is a crucial component of organizational operations, and efficient administration of it will result in a strategic edge. This is true not only for major corporations yet moreover for small and medium-sized enterprises (SMEs). The presence of supply chain concerns may result in inefficiencies, which may ultimately hamper future corporate growth. This research looks at SCM difficulties and how effective it is in overcoming them in small and medium-sized manufacturing enterprises (SMEs) in South Africa (SA). Amongst widely known problems encountered by SA manufacturing SME firms are stockpile concerns, customer support, organizational factors, information management concerns and goods or delivery stream concerns.

Aim – This study aims to analyze the knowledge of supply chain management (SCM) practices in small and medium-sized firms (SMEs). The anchor of this research is to discover supply chain complexities faced by SMEs in the South African manufacturing sector and to assess the intensity of every concern. For this initial investigation, surveys were done with a manufacturing firm located in Johannesburg, a metropolitan city in SA.

Methodology – This paper offers a literature-based study to explore SCM difficulties for manufacturing SMEs. The literature was based on a careful examination of various research publications from high-quality worldwide journal articles—primary data were collected through a questionnaire filled out by 49 employees from the manufacturing firm in Johannesburg. Thus, the study used a case study approach with a quantitative analysis approach. In addition, company visits were also conducted for observation purposes. The survey instrument's main variables include motives, impediments, prioritized investments, procurement strategies, and effectiveness.

Results: The results suggest that the company has a clear channel of SCM which is very good. In addition, the management and floor level employees are familiar with SCM practices, even though some are more used and valued than others. Results showed that a good link between the supply chain concept and the company's logistics operations is essential for a good SCM.

Keywords

SME, Supply Chain Management, Globalization, Manufacturing firm.

1. Introduction

1.1 Problem statement

According to Kalidas et al. (2020), SMEs account for 82% of South African overall business establishments because of the small size of regional markets and the concentration of markets; SMEs need to enter a new call to globalize their business in other words. Technological advances and decreasing barriers to trade not only give large corporations the opportunity but also allow SMEs to become more international, faster and more productive. Good supply chain strategies are needed to enter new markets, particularly across borders. Companies of various kinds have enormous prospects for success in a globalized economy (Frederico et al., 2019). Yet, because of multiple assets, skillset and

capital limitations, this has proved difficult for SA small and medium enterprises (SMEs) in developing economies to compete internationally. Efficient supply chain management (SCM) could contribute to SMEs' growth in the South African market when establishing efficient SCM, whereas SMEs encounter numerous operational obstacles.

This research intends to investigate numerous practices related to the practical application of SCM in SA manufacturing SMEs. As a result, it attempts to analyze and identify the supply chain practices typically used by SA manufacturers and the severity of the concerns.

1.2 Aim of the study

This study aims to analyze knowledge on SCM practices in SMEs and highlight.

1.3 Objectives of the study

The following are listed objectives of this study: (1) To accord to the preexisting collection of information on supply chain concerns affecting the SAs manufacturing industry; (2) To comprehend the SA SCM analysis framework for small and medium enterprises; (3) To highlight supply chain practices in SA manufacturing SMEs.

1.4 Scope and limitations of the study

This study is focused on a manufacturing company in the city of Johannesburg in SA; the company's main focus was the supply chain and procurement departments. Because the study follows a case study approach, it is most likely that its results will mostly be about the company rather than the entire manufacturing sector in SA. Nevertheless, it is believed that because the company shares some commonalities such as the location, the suppliers and customers with other existing companies, some findings can be related to other companies in the same field.

1.5 Value of the study

As SCM is the backbone of every organization (Simchi et al., 2012), it is necessary to understand its implication in an organization better. Thus, this study's importance is that organizations with a clear understanding of SCM are also more likely to be successful. This study is also essential in academia as it contributes to the vast body of knowledge on SCM.

2. Brief Literature Review

2.1 Definition of Supply chain

Simchi et al. (2012) define supply chain management as network management of relations between a company and the interdependent enterprise and the companies' units, consisting of distributors, manufacturers, logistics, procurement, production, advertising, and other relevant structures. While fostering forward incorporation and backward incorporation of raw resources, funding, knowledge, and products from the initial provider to the end-user to optimize the company's profits effectively and efficiently while adding towards the quality of the products, its value and customer satisfaction. In general, a wider range of supply chain concepts can include other related topics, such as pipeline operation, grid procurement, value stream and chain supervision.

2.2 The SCM Fundamentals in the SA Manufacturing SME industry

Figure 1 Key foundations in SCM (Bechtel and Jayaram, 1997)

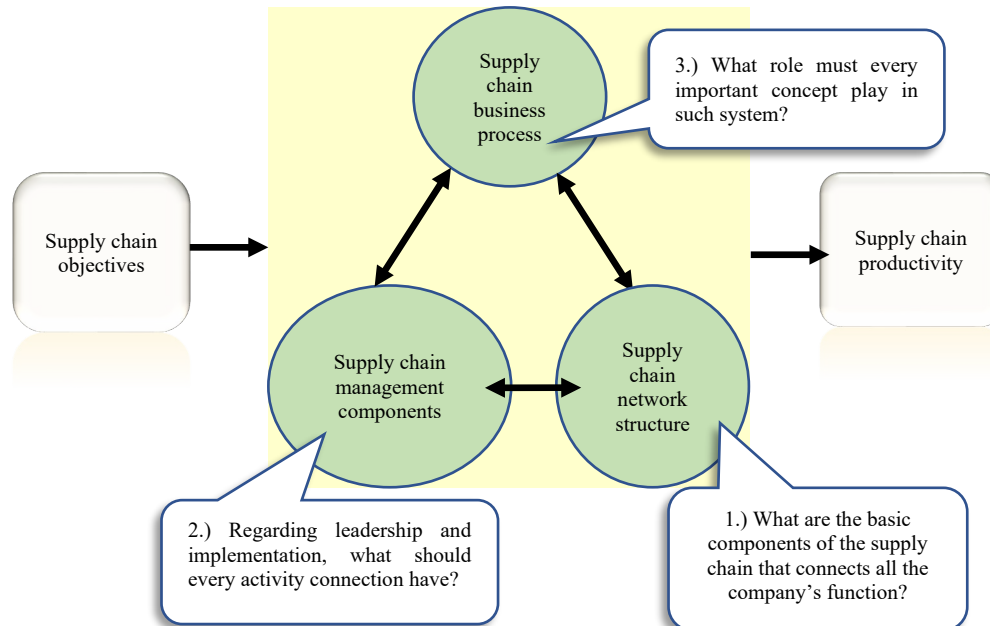


Figure 1 above portrays the key foundations in SCM by Bechtel and Jayaram (1997); the figure shows a relationship between the supply chain network structure, supply chain management components, and supply chain business process. Let us take a look at each one of them.

1) What are the essential components of the supply chain that connect all the company's functions?

Managers should choose the appropriate extent of engagement by every supply chain individual while keeping in mind that the corporation's abilities are limited in terms of time. Three fundamental characteristics influence the type of system layout in the supply chain, the horizontal and the vertical framework and the flat location of the firm. The horizontal framework determines the horizontal direction of the supply chain. The vertical framework identifies a horizontal sequence of consumers, while the horizontal placement demonstrates the corporation's true status. This is a crucial link in the supply chain system (Balcombe et al., 2016).

2) Regarding leadership and implementation, what should every activity connection possess?

The project manager of supply chain elements is in charge of connecting and regulating interactions across all supply chain operations. Every single component of the supply chain necessitates conceptual, experienced, and disciplined governance that views the supply chain as a coherent unit with the vision of attaining a consistent market presentation. This entails coordinating the operation and utilization of the entire supply chain's activities and processes. Kalr and Brewer (2013) identify two management element divisions. The first part contains the tactical and practical characteristics, which are the most measurable, verifiable, and straightforward to change. It contains: (a) the mobility and openness of information and relevant flow of data across the organization, (b) the continuous circulation of goods throughout the facility network, and (c) regulating and organizing the processes, as well as the tasks required for evaluating, producing, and assembling its products and items. The second part discusses the behavioural and management factors that explain leadership practices. It also identifies analytical and practical organizational features as it contains: (a) managerial approaches, tactics, and methods for company culture, attitude, and beliefs. (b) governance and authority framework and (c) employee benefit, incentive, and hazardous management programs (Bechtel and Jayaram, 1997).

3) What role must every important concept play in such systems?

Adequate supply chain management requires a shift from a single leadership approach towards a significantly better-integrated synchronization of all essential supply chain functions. Cooper and Ellram (2014) identified five company operations that can be consolidated with key supply chain affiliates. (a) customer services management is a technique that encompasses all operational or transactional engagements that a firm conducts with its clients, (b) the efficient interchange of the flow of information amongst the company and its vendors is known as the vendor management network. Vendor information is integrated within the purchasing system, and (c) the technique of forecasting demands is referred to as demand management. The management is accountable for and oversees all relevant data on the total requirement for semi-produced commodities, basic materials, and goods. The goal is to minimize surplus inventories while meeting marketplace needs, (d) Managing order processing includes the total number of terminated requests. It assesses and maintains whether the supply chain carries out a transaction along with the transmission procedure, (e) the stream management procedure incorporates all actions correlated with the deployment, monitoring, and supervision of product outflow versatility throughout the supply chain. It plans the item's/goods lead-time to guarantee that it is created according to requirements while also matching market demands. Because it is critical for transferring the items along the manufacturing line (Wieland, 2021).

2.3 Issues related to SCM

Table 1 lists three core problems followed by 12 subproblems when it comes to the obstacle concerning the problems faced in the supply chain of the South African SME manufacturing industry (Satgar et al. 2019).

Table 1 - Core issues and subproblems related to SCM (Satgar et al. 2019)

| Core issues | | |
|---|--|---|
| Supply chain assimilation: | Scheduling and policy: | Execution issues: |
| Sub-problems | Sub-problems | Sub-problems |
| 1) SME's broad areas in stock and transit operations. | 1) SMEs rising energy and commodity costs. | 1) Concentrating on key functions of SMEs and networks of businesses. |
| 2) SMEs market and business modernization. | 2) SMEs supply chain distribution and advertising. | 2) Restructuring of the SMEs (mergers and acquisitions). |
| 3) Global shifts in demography. | 3) SMEs preserved technological advances. | 3) SMEs behavioural operations. |
| 4) SME's green supply chain. | 4) SMEs are knowledgeable and professional users. | 4) SMEs sustainability expansion advancements. |

3. Methodology

3.1 Research design

Adewll, Footing and Meslenerh (2017) defines the study method as a structured behaviour used in the analysis by researchers. This study uses a case study approach focusing on a manufacturing firm in Johannesburg. Therefore, using a Likert scale to generate results, a quantitative method is used for reviewing, assessing, and analyzing an occurrence or problem. This involves using and interpreting data using other statistical approaches, for example, based on approval, importance, agreement and knowledge. Using quantitative analysis, variables play a vital role as they are validated and classified by the hypothesis. A variable is a value and quantity feature or characteristic of different people and objects. An independent variable is a predictor or analytical factor that can be adjusted experimentally to differentiate the effect on a dependent variable. While the variable usually depends on an independent variable (Newman and Gough, 2020)

3.2 Data collection

Figure 2 data collection methods (Tan, 2018).



Figure 2 above showcases the different types of data collection methods. Primary and secondary data were collected in this study. The author collected primary data (Christensen and Johson, 2019). These data were collected using surveys mainly; a questionnaire was designed and sent to respondents with close-ended questions built upon a Likert scale. On the other hand, secondary data were collected using different company reports and various literature sources from the literature review.

3.3 Data analysis

A deductive methodology was used to analyze data leveraging the answers of the questionnaire survey, document reviews and interviews conducted with the input of various departments. A descriptive analysis was undertaken to portray measures of central tendencies. Tables, figures, and graphs were also used to better view the results.

3.4 Population and sample

The study's population included all manufacturing firm employees, while employees from the supply chain and procurement department constituted the study's sample. A non-probability sampling technique using a convenience sample was deemed relevant for the study. Fifty questionnaires were sent to different respondents that varied between top management, supervisors and flow employees 49 responses were collected.

4. Findings

4.1 Demographics

Figure 3 Respondents years of experience in SCM

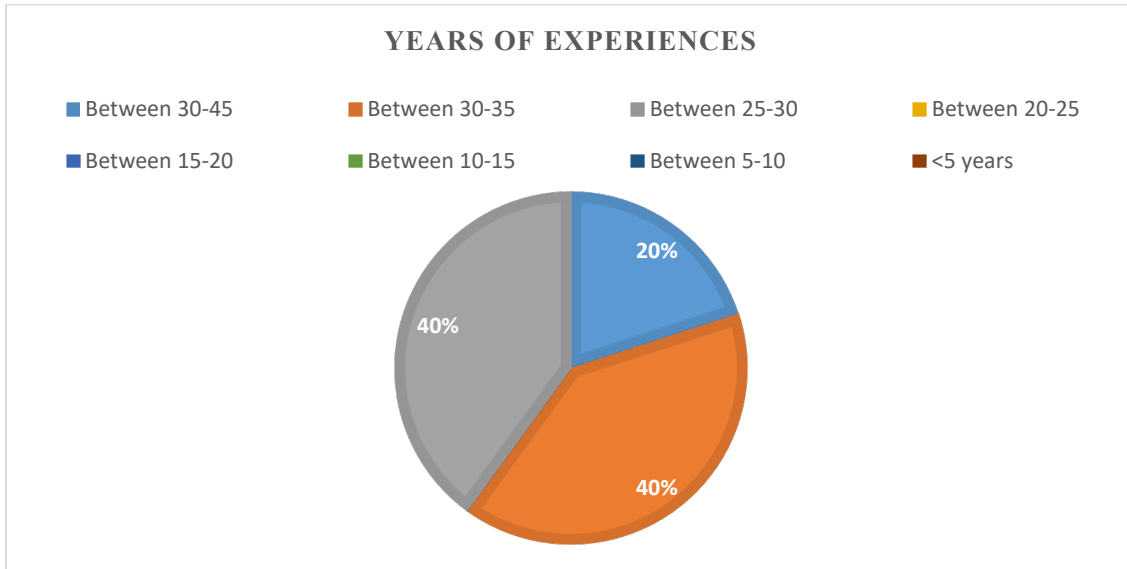
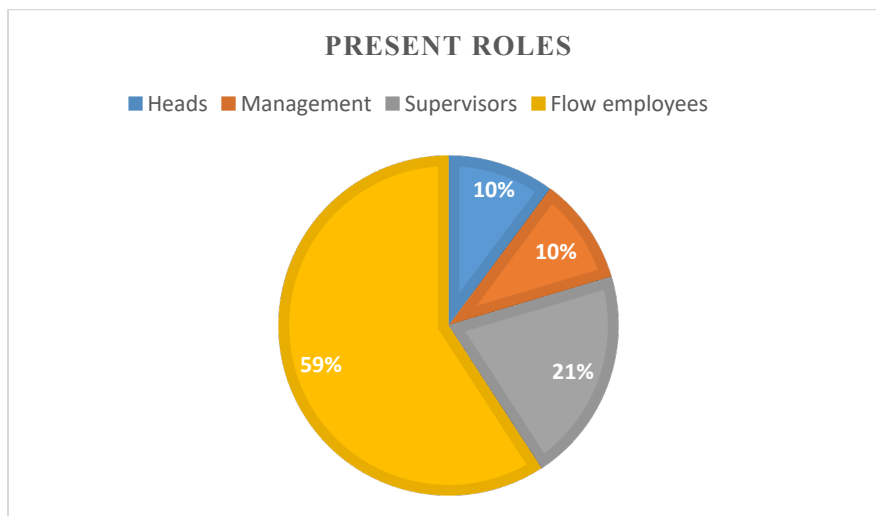


Figure 3 above shows that most respondents have 25-30 years of experience, and those between 30 and 35 years. This is extraordinary as most of the respondents are experienced in the field. This positively affects the study results as experienced employees are believed to be more likely to provide reliable and accurate answers since they know the field better due to extensive experience.

4.2 Respondent's position in the company

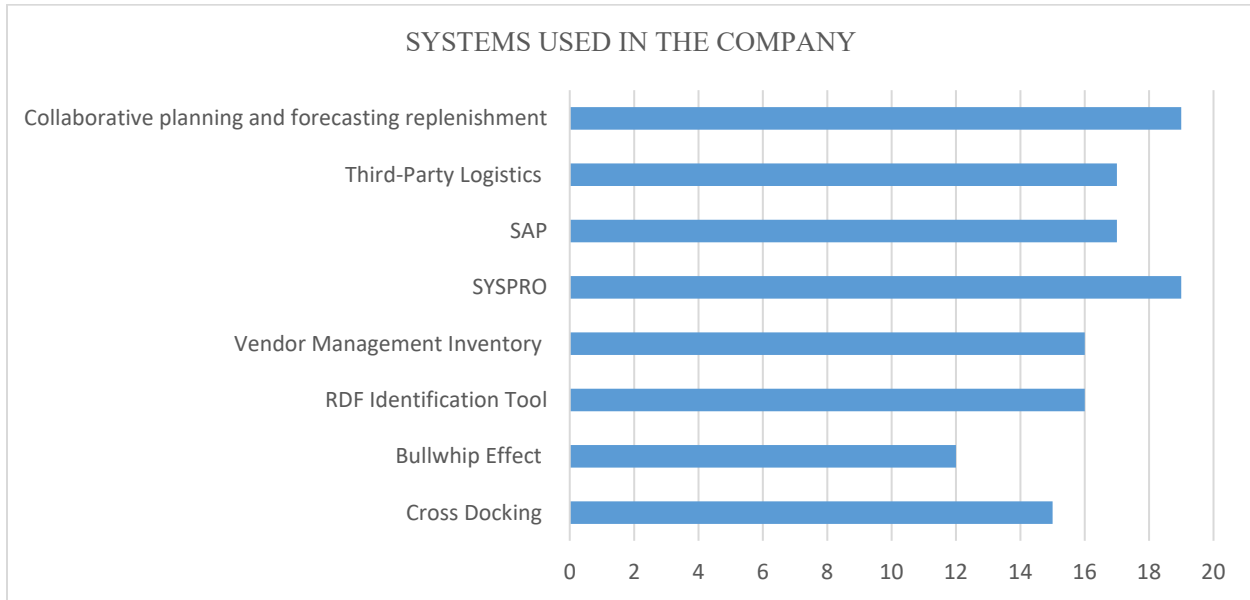
Figure 4 Respondents' role in the company



From figure 4 above, the vast majority of respondents are flow employees who constitute the major manpower in the SCM department, followed by supervisors and top management of the company.

4.3 SCM systems used in the company

Figure 5 SCM Systems used



The company uses different systems of SCM. This depends on the suppliers. These systems are fairly distributed even though some systems, such as collaborative planning and forecasting replenishment and SYSPRO (ERP software) are mostly used. No particular reason can justify why a system is used over another, as companies can use the system that fits their suppliers well.

4.4 SCM practice factors

Table 2 Respondents' perspective on the SCM practice factors

| SCM practice factors | Mean | Standard Deviation |
|--|------|--------------------|
| 1. There is currently a good link between both the supply chain concept and the company's logistics operations | 2.70 | 0.576 |
| 2. The company suffers from the unavailability of top-level dedication and engagement | 2.70 | 0.928 |
| 3. It would be conceivable for the company to produce a general source of financing and inventories by integrating or with LEs to meet shifting requirements | 2.69 | 0.833 |
| 4. Modern information processes are absent within the company | 2.55 | 0.441 |
| 5. Formalized procurement practices could assist the company in increasing the efficiency of its supply chain | 2.30 | 0.947 |
| 6. Sales statistics and data should be shared openly with the other members of the company | 2.30 | 0.598 |
| 7. Would you say there is a loss of faith and confidence among Mitra SK SC participants? | 1.72 | 0.895 |
| 8. The company is open to implementing IT to improve its supply chain operations | 1.67 | 0.472 |
| 9. The company could enhance its productivity by securing a suitable place in the supply network | 1.67 | 0.709 |
| 10. Collaborations help the company accelerate product creation and technological advancement | 1.25 | 0.431 |

Table 2 above shows the respondent's perspective on the SCM practice factors (practices) that the company can adopt to improve the SCM department. Ranked from the most suggested factor to the latest, most respondents believe there is a good link between the supply chain concept and the company's logistics operations. Some other respondents also believe that modern information processes are absent within the company. However, only a few respondents believe that collaborations help the company accelerate product creation and technological advancement.

4.5 Employees' perspective of SCM

Table 3 Employees' perspective on SCM practices

| Employees' perspective of SCM practices | Mean | Standard Deviation |
|--|-------------|---------------------------|
| 1. The company's demand predictions are precise | 4.15 | 0.647 |
| 2. The company needs to know where vendors and clients are located | 4.05 | 0.333 |
| 3. There is an appropriate value exchange system in place, as opposed to a profit-sharing contract involving the company and its suppliers | 3.90 | 0.548 |
| 4. Responding quickly to client needs improves the overall effectiveness of SCM in an organization | 3.90 | 0.866 |
| 5. Insufficient transit infrastructure contributes to ineffective SCM | 3.50 | 0.910 |
| 6. There is enough awareness, cooperation, and honesty across the company | 3.33 | 0.471 |
| 7. There is a scarcity of project managers and analysts in the company | 2.73 | 0.748 |
| 8. Purchasing from JIT vendors is beneficial to the organization's productivity | 2.50 | 0.118 |
| 9. There is an improper value forecasting framework in the company | 2.50 | 0.500 |
| 10. It is critical to saving inventory expenses | 2.15 | 0.632 |
| 11. The company's relationship with its clients is a long-term one | 1.37 | 0.259 |

Most employees believe that the company's predictions about product demand are generally precise, as it allows better management of the supply chain and coordination of activities. They also think the company must know where vendors and clients are located. However, only a few employees believe that the company's long-term relationship with its clients is long-term. Literature suggests that long-term relationships between a company and its suppliers are essential to business growth and even the quality of products.

5. Conclusion and future research

An adequate supply chain system is essential if small and medium size enterprises would like to grow their operations throughout international boundaries. As mentioned in the literature study, past research reveals that supply chain problems or concerns may impede company development. As a result, this research intended to determine what supply chain practices are presently used in manufacturing SMEs in South Africa. The paper investigated the current literature on SCM practices and difficulties confronting SA manufacturing SMEs. The study brought together disparate perspectives on SCM practice in manufacturing SMEs. The current status of the literature reveals commitments to implementing SCM strategies in manufacturing organizations. A significant portion of the research has concentrated on the usage or deployment of IT solutions in SMEs. The results suggest that the company has a clear channel of SCM which is very good. In addition, the management and floor-level employees are familiar with SCM practices, even though some are more used and valued than others. Results showed that a good link between the supply chain concept and the company's logistics operations is essential for a good SCM.

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Biographies

Wasab Negi is currently a student at the University of Johannesburg in the Department of Quality & Operations Management. He is a pragmatic, commercially astute, detail-focused inn with over three years of experience as an assistant operation manager, junior supply chain coordinator, junior warehouse & logistics manager and junior lecturer with leading supply chain and logistical activities in operation and project management on a regional basis.

Mr Eric Mikobi is a young academic and a PhD candidate in Quality Engineering at the University of Johannesburg. His research is centred around smart education and quality 4.0. He has made many contributions to international conferences such as IEEE, IAMOT and IEOM, where he got the best track paper in 2021 at the Monterrey, Mexico IEEE conference.

Dr Khathutshelo Mushavhanamadi is currently a Senior Lecturer in the Department of Quality and Operations Management, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa. She holds

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