

# Exploring the Impact of Common Supply Chain Management Practices on Supply Chain Effectiveness: Evidence from Supermarkets and Hypermarkets in the Retail Sector of Mauritius

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**Abstract**—At the dawn of this modern era, the emergence of new retail outlets in Mauritius has made the retail sector highly competitive. However, some supermarkets and hypermarkets fail to implement effective Supply Chain Management Practices in their operations; consequently, they cannot keep pace with the tough rivalry prevailing in the retail industry. Hence, this research paper aims to investigate the relationships between the common Supply Chain Management Practices and Supply Chain Effectiveness of Mauritian supermarkets/hypermarkets. Questionnaires were distributed among 101 procurement managers of the retail outlets, whereby only sixty managers responded. The data collected was interpreted through SPSS Software. To achieve the objective of the study, a conceptual framework was developed and tested through multiple linear regression analysis. An Exploratory Factor Analysis was done to ensure that the components influencing the variables of the model are well-grounded. The findings of the present study confirm that Customer relationships and Information sharing in the Mauritian retail outlets impact directly and significantly on the Supply Chain Effectiveness. Nevertheless, a weak relationship is found between Supplier partnerships and Supply Chain Effectiveness since suppliers are only considered as the providers of raw materials and finished goods. The conducted study provides a comprehensive insight of how to manage firms' operations effectively.

**Keywords**— Customer relationships, Information sharing, Supplier partnerships, Supply Chain Effectiveness, Mauritian Supermarkets/Hypermarkets.

## I. INTRODUCTION

Over the last few decades, Supply Chain Management (SCM) has created a significant interest in both scholars and practitioner groups by focusing on the cooperation of purchaser and supplier firms to enhance the efficiency and effectiveness of the entire supply chain.

Today, the key source of market rivalry lies beyond the wall of corporations and is dictated by how efficiently businesses relate their activities to supply chain stakeholders such as manufacturers, wholesalers, retailers and end-customers. Throughout the past years, the competitive

retail sector has shifted from providing highest quality or lowest priced products to responding rapidly to consumers' demands by delivering the right commodity to the right client at the appropriate moment. This change has forced supermarkets and hypermarkets to improve their supply chains. With good SCM implementation, retail firms are able to reduce their operational expenses. SCM is vital to the success and customer satisfaction of any organization (Wilson, 2017).

It is observed that there is lack of studies on the relationships of Supply Chain Effectiveness and Supply Chain Management Practices (Sabbaghi and Ganesh, 2008; Fugate *et al.*, 2010). Many retail outlets in Mauritius are still lagging behind in implementing SCM practices effectively. Therefore, this study seeks to fill in the gap by understanding the common SCM Practices and their impacts on Supply Chain Effectiveness in the Mauritian retail sector. The findings of this research will allow retailers to improve their retail supply chains by devising new strategies to manage their supply chain activities properly.

## II. LITERATURE REVIEW

### A. Supply Chain Management (SCM)

Supply Chain can be seen as a chain of interconnected enterprises that need to share information and allow the coordination of physical execution in order to make sure that there is a smooth, synchronized movement of products, services, data and capital through the pipeline as stated by Coyle *et al.* (2013). In today's world, competition is not only about opening several organizations on the market, but much focus is being placed upon competitive advantage in the midst of complicated supply chains. Hence, the handling of these complex systems and processes called for the introduction of Supply Chain Management.

Retail SCM, in which retailer assumes the leadership position of the entire channel has become a significant topic in modern SCM with the increasing power of massive retail firms (Agrawal and Smith, 2015). Davies (2009) stated that the continuous increase in demand of goods has made the

understanding of SCM from a retail perspective more vital. Supply chain in the retail sector plays a major role in managing the human resource, equipment, process and capital. Retail SCM system aims to cut down inventory cost, to enable proper delivery of goods, to manage resources efficiently and to achieve customer satisfaction. An effective retail SCM helps to boost the level of productivity and to maintain information flow between different intermediaries.

#### B. Supply Chain Management Practices (SCMP)

Sandhu *et al.* (2013) regarded SCMP as an array of operational activities that a firm undertakes to foster effective management of its supply chain while Basu *et al.* (2017) described SCMP as strategies used to meet short-term and long-term objectives of organizations such as to boost productivity, to manage inventories, to eliminate wastes, to increase market share and to maintain growth. Table 1 shows different SCMP that were developed and validated in various studies.

TABLE I: DIFFERENT SCMP

Researchers	Supply Chain Management Practices
Seven (2008)	Cooperation with supply chain partners, sharing of information and planning of supply chain activities.
Jabbour <i>et al.</i> (2011)	Collaborations with supply chain stakeholders, sharing of information and postponement.
Sundram (2011)	Sharing of information, established vision and mission, sharing risk and reward, close relationships with supply chain partners and postponement.
Ibrahim and Ogunyemi (2012)	Quality and level of information sharing and management of supplier and customer relationships

#### C. Common Supply Chain Management Practices

Based on the literature of SCMP, the three common SCMP, namely; managing customer relationships, managing supplier partnerships and sharing of information will be used in this study. Managing Customer Relationships; Wanger and Zubey (2007) described this SCMP as a structured combination of people, policies and technology which are meant to allow an organization to unify its customer experience. Managing Supplier Partnerships; according to Youssef (2018), this practice is the mechanism that determines how a firm deals with its suppliers, which include purchasing and fulfilment transactions, joint research and development and exchange of strategic information about marketplace conditions. Sharing of Information is the degree to which sensitive and confidential information is transmitted to one's supply chain partners is known as information sharing (Li *et al.*, 2006).

#### D. Supply Chain Effectiveness (SCE)

Melanie (2019) defined SCE as external criteria for how well a firm meets the demand of its customers, suppliers and other organization associated with its activities. The four measures of SCE identified by Lee *et al.* (2007) are used for the

purpose of this study: Delivery performance refers to the timely distribution made by suppliers. Flexibility performance describes the management of every activity done with ease regardless of how complicated the circumstances are. Customer responsiveness determines the frequently collection of timely feedback from customers. Time to market refers to the lead times taken to meet customers' requirements.

#### E. Managing customer relationships and Supply Chain Effectiveness

The management of customer relationships is a crucial tool for retail companies to compete in the competitive markets and to achieve success (Ghaith, 2013). Ngambi and Ndifor (2015) highlighted that interactions with customers in terms of meeting their requirements create a sense of belonging and closeness with the firm. This practice helps retail outlets to enhance follow up on customer reviews and to solve any potential problems quickly. Moreover, Dowling (2002) argued that building a good relationship with customers is the best way to achieve their loyalty and satisfaction.

#### F. Managing supplier partnerships and Supply Chain Effectiveness

Maintaining supplier partnerships plays significant roles in SCM strategies (Wisner, 2003). Organizations that work closely together with its suppliers can share risks and rewards. Thatte (2007) claimed that suppliers assist firms in the selection of better product launching, market and technology. Furthermore, Sahay and Mohan (2009) added that this practice promotes mutual collaboration and problem-solving efforts between trading partners. The study of Echtelt *et al.* (2008) also put forward that keeping good bonds with suppliers lead to better decision-making, improved information sharing, integrated skills and enhanced supply chain partner's performance.

#### G. Sharing of information and Supply Chain Effectiveness

Fawcett *et al.* (2007) declared that sharing of information between supply chain partners is important for a responsive supply chain. Additionally, Ali *et al.* (2017) argued that this practice provides firms the opportunities to make better planning as well as to respond accordingly to accurate information. It makes sure that data about demand or product availability flows in an orderly and systematic manner. Technology used in supply chains offers business partners the chances to exchange integrated information across distribution networks, thereby improving the performance of organizations (Lu, 2011). Moreover, Khurana *et al.* (2011) suggested that information sharing encourages better communication between different departments and supply chain members as well. It also enhances the control of supply chain's operations, minimizes

product design times, shortens and maintains production lead-time and ensures consistent quality of products and services.

*H. Hypothesis Development*

The hypotheses of this study were originated as follows:

The findings of Schniederjans *et al.* (2012) supported that collaborations with customers improve the performance of firms. However, Fuxiang and Yuhui (2011) and Sukati *et al.* (2012) found that there is a weak relationship between customer cooperation and integration of effective supply chain. Therefore, the need to examine this relationship led to the first hypothesis.

H<sub>1</sub> : Managing customer relationships has a significant impact on SCE of supermarkets and hypermarkets in Mauritius.

The study of Forslund (2014) identifies a positive outcome for supply chain effectiveness if retailers manage adequately their supplier relationships. Nevertheless, the investigations of Sundram *et al.* (2015) prove that this practice has a partially significant impact on the integration of effective supply chain. Lambert (2010) also found that the link between supplier partnerships and SCM in an organization is weak. Hence, based on these arguments, this study hypothesized that:

H<sub>2</sub> : Managing supplier partnerships has a significant impact on SCE of supermarkets and hypermarkets in Mauritius.

While Somjai (2019) affirmed that representing the heart of supply chain collaboration, information sharing significantly affects the performance of business; Rashed *et al.* (2010), contrarily, put forward the fact that the extent of sharing relevant information that takes place depends on the willingness of an organization. Huge technological investments can be mitigated by the reluctance to share required information. To verify this relationship, this study therefore postulated that:

H<sub>3</sub> : Sharing of information has a significant impact on SCE of supermarkets and hypermarkets in Mauritius.

III. RESEARCH METHODOLOGY

A. Data Collection

For the purpose of the study, a quantitative research method was used to evaluate the relationships between common SCMP and SCE through numerical measurement. A survey questionnaire was designed and the degree to which the respondents agreed with the statements related to SCMP and SCE was measured on a five-point Likert scale.

The target population mainly included the procurement managers of the supermarkets and hypermarkets in Mauritius. Concerning the sample size, adopting a confidence level of 95% and a confidence interval of approximately 8%, the sample size was calculated to be 101 managers. Two procurement managers of each supermarket/hypermarket was targeted. The questionnaires were emailed to 101 managers but only 60 responses were obtained.

B. Exploratory Factor Analysis of the model (EFA)

The indicators of SCMP and SCE identified in the literature are used as the measured variables of an EFA. The EFA of the model for this study was done using Principal Components Analysis (PCA) method and Varimax Rotation. The outcome is the establishment of four latent factors, namely customer relationship, supplier relationship, sharing of information and supply chain effectiveness. These factors are explained based on the measured variable loadings.

The results of the EFA of the model (TABLE II) reveal that all the factor loadings of calculated variables are statistically valid, as they are all greater than 0.61. Thus, the squared factor loadings indicate that a satisfactory proportion of measured variance is explained by the respective latent factor. This is in line with the suggestions of Hair *et al.* (2005) who claimed that factor loadings of 0.55 or above 0.55 are regarded as statistically relevant for a sample size of approximately 100.

TABLE II: EXPLORATORY FACTOR ANALYSIS OF THE INDICATORS OF SCMP AND SCE

Variables	Customer relationships	Supplier partnerships	Information sharing	SCE
Customer complaints	0.871			
Long-term relationship with customer	0.840			
Customer satisfaction	0.721			
Customer expectation	0.836			
Customer feedback	0.788			
Supplier selection		0.764		
Problem solving		0.779		

Product quality	0.787			
Continuous improvement programs	0.705			
Goal setting activities	0.682			
Information about daily activities			0.768	
Information flow in a systematic manner			0.841	
Access of private data			0.614	
Establishment of plans			0.863	
Technology tools			0.831	
Flexibility performance				0.872
Delivery performance				0.803
Customer responsiveness				0.813
Time to market				0.832
Eigenvalues	3.306	2.771	3.109	2.758
Cumulative variance %	66.127	55.413	62.187	68.956

**A. Reliability Test**

Reliability test has been done for the for the four latent factors and the values of the Cronbach’s alpha coefficients are shown in TABLE III. The coefficients confirm the reliability of the latent factors, according to Hair *et al.* (2005).

TABLE III: SCMP AND SCE – MODEL RELIABILITY

Variables	Cronbach’s Alpha
Managing customers relationships	0.867
Managing strategic supplier partnerships	0.796
Sharing of information	0.846
Supply chain effectiveness	0.849

**IV. IMPACT OF COMMON SCMP ON SCE**

The impact of SCMP on supply chain effectiveness is determined through multiple linear regression analysis and their relationships are shown in the figure below

**COMMON SCMP**

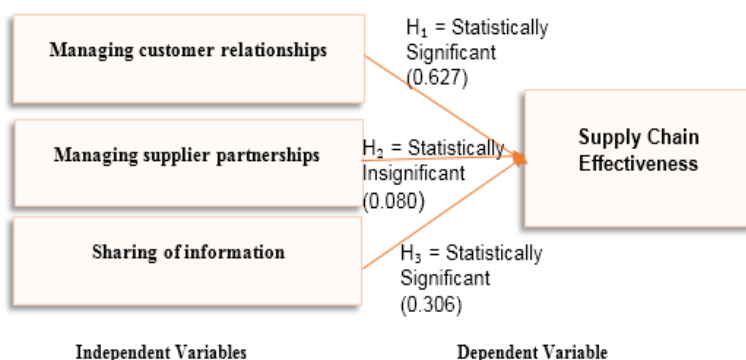


Fig. 1. The relationships between SCMP and SCE

The assumptions required for linearity, homoscedascity and normality were tested. Based on the recommendations of Hair *et al.* (2005), specific tests were carried out for each assumption to check for violations. These tests reveal that the assumptions are respected. Furthermore, it was found that the model does not suffer from multicollinearity (Average VIF= 5.674) and auto-correlation (the value of Durbin-Watson test is 1.575). The Anova test reveals that a significant regression model was established ( $F(3, 56) = 123.722, p=0.000 < 0.05$ ), with an  $R^2$  of 0.869. Therefore, the model can account for 86.9% of variance in supply chain effectiveness which is explained by the regression model. It is better than using the mean since the model is fit for the study.

The hypothesis 1 is accepted since the p-value of managing customer relationships is 0.000 and it is concluded that the relationship between this SCMP and SCE of retail outlets in

Mauritius is statistically significant. It can also be observed that the practice of managing customer relationships is the strongest predictor of SCE ( $\beta = 0.627$ ). The findings are supported by prior researchers such as Duque-Urbe *et al.* (2019) and Pandiyan *et al.* (2016) who affirmed that the customers’ integration has a strong positive impact on the implementation of effective SCM. In Mauritian context, supermarkets and hypermarkets believe that the collaboration with customers improves the performance of SCM in terms of cost, quality, speed of service provided to customers and higher market shares. The results prove that successful implementation of this practice in retail outlets such as King Savers helps to achieve customer satisfaction and loyalty, hence creating goodwill as supported by the literature of Russo and Confente (2017).

Since the p-value for managing supplier partnerships is greater than 0.05, this implies that hypothesis 2 is rejected. It is concluded that this SCM practice does not have a statistically significant impact on SCE of supermarkets and hypermarkets in Mauritius. Hence, the findings opposed the view of Yu *et al.* (2013) who argued that supplier partnerships are a strong element that positively impact the effectiveness of SCM. However, the result is supported by Oteki (2015) that lack of systematic approach towards supplier integration weakened the effectiveness of SCM. Ataseven and Nair (2017) also added that suppliers are perceived only as the providers of finished goods and raw materials which are not enough, and he believed that suppliers should be involved in the exchange of information, resources and knowledge. Likewise, the retail outlets in Mauritius partially collaborate with their suppliers and occasionally involve them in all the activities.

It can also be deduced that the relationship between sharing of information and SCE of Mauritian retail outlets is statistically significant since the p-value is 0.008 ( $<0.05$ ) and hypothesis 3 is accepted. The findings are consistent with the study of Mäkinen (2017) who highlighted that the exchange of information between supply chain partners has a strong impact on the effectiveness of SCM since this practice enables a smoother material flow which leads to various incentives such as reduction in lead times, better inventory control and increased flexibility. With the technological advancement in Mauritius, retail outlets are able to use sophisticated tools in their supply chains such as Electronic Data Interchange and Enterprise Resource Planning system.

## V. MANAGERIAL IMPLICATIONS AND CONCLUSION

### A. Managerial Implications

This research has brought forward some fascinating insights about the impacts of the common SCMP on SCE in the retail outlets of Mauritius. The procurement managers must consider these results in order to improve their operational processes and coordination with supply chain partners so as to enable a clearer system of distribution, purchasing and exchanging of data.

The main findings show that the relationship between managing supplier partnerships and SCE is weak in Mauritian

supermarkets and hypermarkets. Hence, the retail outlets must not consider their suppliers only as vendors. They must involve them in their activities such as promotions or releases of new products. Suppliers’ participation in product development enables organizations to make greater use of their expertise and technologies to deliver profitable goods (Teller *et al.*, 2016). Consequently, the relationships with suppliers must be strong and deep which are based on loyalty and trust. The firms must encourage regular communication with their suppliers where they keep them up to date with daily information on the strategies and plans. The retail outlets must set up a database on suppliers’ operations such as delivery schedules, complaints and quality control processes. Moreover, the supermarkets in Mauritius must use a collaborative approach towards its supply chain partners. A two-way communication with feedback is important to lessen any conflict or misunderstanding between members as well as to acquire excellence in supply chain activities. Sharing of right information in a transparent manner will help to develop mutually beneficial and long-term relationships with supply chain partners.

## VI. CONCLUSION

The study confirmed that maintaining a good bond with customers is the stronger predictor of SCE. It brought to light that managing customer relationships and sharing of information have a statistically significant impact on SCE of retail outlets in Mauritius. This shows that Mauritian supermarkets and hypermarkets successfully collaborate with customers and allow clear information flow in their activities. However, the results also highlighted that managing supplier partnerships has a statistically insignificant impact on SCE, which demonstrates the Mauritian retail outlets only consider suppliers as the providers of goods; they are reluctant to involve suppliers in other activities.

For future research, other research instruments such as interviews can be envisaged to learn more about the barriers to effective implementation of SCMP. Furthermore, the fact that the data collected represents subjective opinions of the company managers, bias may be an issue in the present study with regards to the assessment of supply chain management practices and supply chain effectiveness. So it is suggested that future studies should incorporate opinions of customers as well, especially with regards to the assessment of supply chain effectiveness and seek to collect data from multiple members of the retail outlets.

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