

## Supply Chain Management Adoption and Its Effect on Profitability of Philippine MSMEs

Eric S. Parilla  
Northwestern University

Marc Edward M. Abadilla  
Northwestern University

— *Review of* —  
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— *Research* —

### ABSTRACT

The study investigates the effect of the adoption of supply chain management adoption on Philippine MSMEs' profitability and the mediating impact of organizational profile such as the number of employees, business, and business size. The study participants were the owners and operations managers of manufacturing firms in the Philippines, and they were chosen using a convenience sampling technique. The study employed a quantitative research design and a casual research approach to estimate the relationship between the adoption of supply chain management strategies and profitability as well as the mediating effect of organizational profile. Using simple structural equation modeling, the findings revealed a positive relationship between the adoption of supply chain management strategies and profitability. However, there was no established effect concerning the mediating effect of the organizational profile. Implications, conclusions, and recommendations are provided in the article.

Keywords: Supply chain, profitability, supplier-customer relationship.

### 1. INTRODUCTION

Supply chain management (SCM) represents one of the most significant paradigm shifts in up-to-date business management. It shows that individual businesses no longer compete as solely autonomous entities, but rather as supply chains (Lambert and Cooper, 2000). Competition is no longer between companies but between supply chains. Collaboration with members on both the supply and supply sides' distribution sides to make decisions that will benefit the whole organization is the key to success. The supply chain determines a substantial product cost and quality and many opportunities for responsiveness and differentiation. Most firms spend a considerable part of their sales on purchases. Relationships with suppliers are increasingly integrated and long-term because of an increasing percentage of an organization's costs are determined by purchasing.

Supply chain management describes all supply chain activities' coordination,

starting with raw materials and satisfying customers. It is a crucial subsystem of the value chain that focuses primarily on the physical movement of goods and materials and supporting information through the supply, production, and distribution processes. As companies merge and consolidate, they face many obstacles and challenges and must reevaluate their supply chains and location of facilities. The location of facilities, distribution centers, and service facilities establishes the supply chain's infrastructure and significantly affects profitability and operational efficiency. Supply chain management can be seen as part of a planning procedure that coordinates operational goals with a larger organization.

Literature suggests that a vital and crucial part of the success of MSMEs is its supply chain management strategies. Supply chain management is about nurturing a process to respond to different requirements of each customer. SCM practices may vary from one organization to another, small, medium, or large. Previous studies have identified the most common supply chain practices: benchmarking, outsourcing, supply chain collaboration, and supply chain integration.

This study provides awareness of MSMEs' supply chain management strategies in the Philippines and its operational efficiency. This study is expected to benefit the MSMEs as this will give them information on best practices of supply chain management of entrepreneurs.

## **2. LITERATURE REVIEW**

### *Supply chain Management*

Supply chain management is a philosophy that strives to integrate the dependent activities, people, and resources from the point of origin and ultimate destination in supply channels. It can be defined as systematic, strategic coordination of the business functions, processes, and transactions within the supply chain to improve the individual companies' long-term performance and the supply chain (Mentzer et al. 2000). It has four components, namely, logistics, operations, planning, and sourcing. Logistics is defined as the movement and storage of goods, services, and related information. (Leuschner,2019). It is essential in supply chain management because it brings together companies through transportation (trucks, trains, and airplanes), warehousing, and inventory management.

On the other hand, supply chain operations are defined as transforming inputs (raw materials, direct labor) into outputs (finished goods). This component is essential in today's global interconnected supply chains, where customers seek the best products at the lowest cost. It talks about lean production, a theory of constraints, and total quality management. Supply chain planning deals with is estimating future demand because a well-functioning supply chain is based on planning. Lastly, supply chain

sourcing is the part of supply chain management that deals with managing relationships with all the firm's suppliers. It is one of the critical and essential pieces of understanding of how a well-functioning supply chain is built.

Also, supply chain management is a business philosophy that should tackle the overall dependencies of activities, supply chain partners, and resources on an operational, tactical, and strategic level, from the point of origin of consumption in and between supply channels (Svensson,2002). Supply chain management looks to improve performance by closely combining and coordinating the inner functions within an organization and useful linking them with suppliers and customers' outside operations. A company must achieve a high integration to successfully apply supply chain management, which involves integration, coordination, and partnership across organizations and throughout the supply chain. □

Nowadays, manufacturing companies are faced with challenges created by global and local competitions. Manufacturing companies that do not keep up with their supply chain management would lose out to their competitors. They would lose access to quality, cheap, and readily-access raw materials and increase their transportation and delivery costs, which would increase their overall product cost. Modern times showed to the business world that manufacturing companies compete on price and introduce first innovative, creative, trendy, and high-quality products. Supply chain management can help the manufacturing companies achieve both cost and value advantage (Christopher,1998). Several researchers claim that supply chain management can result in better performance (Christiansee and Kumar,2002). Still, a few studies have been produced to assess the relationship of supply chain management adoption to operational efficiency in the Philippine context.

#### *Firms' Performance (Profitability)*

Profitability and business performance refer to how well a firm fulfills its financial and market goals (Li *et al.*, 2006). But what are its determinants? It can be said that there are many determinants for a manufacturing firm's performance and profitability. Among them are size, lagged profitability, productivity, and financial leverage have been considered as important determinants. This sector's profitability is crucial and critical in the point of view of shareholders' objectives and in growing the national economy. Supply chain management undoubtedly helps in attaining the objectives of companies. In the short-run, the supply chain management goals are reducing inventory and cycle times and increasing productivity.

On the other hand, the long-term penetration of new markets, increasing quality, and increased market share (Tan *et al.*, 1998). All of these short-run and long-term objectives of the supply chain contribute to the profitability of the firms.

Fraser (2006) suggests that firms should link every aspect to the financial matrix, and supply chain management goals are no exemption to achieve the highest profitability and business performance. In this study, since profitability is difficult to gather, the researchers asked the respondents their average sales and average expenses. Then, the researchers computed the profits as Sales fewer expenses.

### *Hypothesis Development*

#### Hypothesis 1. Supply chain adoption significantly affects the profitability of Philippine MSMEs.

Many researchers suggest that implementing a useful supply chain model will significantly affect organizations' profitability and productivity. But four studies were the basis of this research paper. These are the studies of Eugene, Miyare, Kalu, and the Supply chain 2020.

In a study by Eugene et al. (2017), it was found out that the supply chain management system contributes to the profitability of the company. A practical, realistic, and flexible SCM system has significant benefits for any business that maintains delivery schedules and increases productivity. That is, ERP systems are used in Teuscher Investment and ensures that the right materials are in the correct place at the accurate and appropriate time and in the correct amount. The supply chain management system provides materials are available for production and products are available for delivery to customers, and there are challenges faced when implementing supply chain management system. There are some challenges faced by employees, such as high maintenance, implementing, and training costs. These costs, however, were overshadowed by an increase in the productivity and profitability of the businesses. Supply chain management practices heavily core to profitability, where the adoption of best practices leads to increased profitability. This is because disruption in the supply chain in delivering products to the customers due to supply chain challenges would have probable downstream results for brand reputation, regulatory amenability, good safety, and other risks and problems.

Further, efficient supply chain management lowers financing costs. It saves company distribution costs hence increasing profitability, and according to Miyare, having skilled and competent human resources increased profitability and streamlined the supply chain. Therefore, investment in staff through education and proper training leads to better supply chain management practices and further increases profitability and productivity. Capable, skilled employees and systems to ensure continued staff growth lead to increased human productivity, which leads to a high firm's profitability. This further provides excellent and efficient supply chain management practices.

Moreover, Kalu (2014) concluded that holistic development in the designated

businesses (Flour mills) was evident in integrating strategic supply chain variables, exploiting knowledgeable human resources, and using an effective supply chain management strategy. In Nigeria, just like every other nation globally, when firms reach the peak of their maturity stage in their life cycle, it starts experiencing stunted growth in their profitability trend. The study concluded that organizations who have reached the highest stage in their life cycle should implement a supply chain strategy which will enable them to carry a high volume of products in transit as this will ensure increased profitability and productivity because cost components will be drastically decreased since profitability is measure in ratio to actual investment. Supply chain management is the center on which industries can contribute positively and with a high margin to their Gross Domestic Product (GDP). This is true because it was ascertained that effective and efficient supply chain operations translate into increased and sustainable profitability for the manufacturing industries. Better inventory management and supply chain management is positively related to profitability. More efficient inventory management, which is the heart of supply chain management, leads to improving manufacturing firms (Shin and Ennis, 2009). Lastly, Supply Chain 2020 (2005) determined the effect of different supply chain strategies on other firms' profitability. Supply chain integration and complexity management are the most critical supply chain practices linked to firm performance. The underlying reason for integration's linkage to account is reducing "silos" throughout the supply chain. To support profitability objectives, companies need to optimize supply chain performance effectiveness. Companies are challenged to improve their performance indicators and increase compliance continuously. Among operational metrics, customer service and responsiveness are the most critical.

Hypothesis 2. Organizational profile mediates the positive relationship between supply chain adoption and the profitability of manufacturing firms.

In SMEs' context, cost-effective SCM is critical for survival and growth, as purchasing cost makes up the largest share in sales revenue – approximately 80% (Quayle, 2003). Meehan and Muir (2008) conducted a study in SMEs in Merseyside, UK, to reveal SCM's perceived benefits to SMEs. In SMEs' context, cost-effective SCM is critical for survival and growth, as purchasing cost makes up the largest share in sales revenue – approximately 80% (Quayle, 2003). Meehan and Muir (2008) conducted a study in SMEs in Merseyside, UK, to reveal SCM's perceived benefits to SMEs. SMEs' subsistence and development can be hard in the current environment because of competition and the global market. Customers are very demanding of high-quality products, cheaper ones, more variety, and better service and delivery (Chow et al., 2008). It can be a problem to deliver the products and services at the right time with the best and lowest possible cost to the right customer (Chin et al.,

2004). Priority is given on inventory management and control to save SMEs from financial constraints because these two have capital tied up in inventory, and it can be huge (Meehan and Muir, 2008). Therefore, SMEs must strike a balance between responsiveness and efficiency. A higher inventory level may increase supply chain responsiveness; however, it increases inventory holding costs (Chopra and Meindl, 2010). Therefore, even how small or big a company is, supply chain management strategies such as vendor-managed inventory (VMI), JIT, and collaborative planning, forecasting, and replenishment should be adopted with the hopes of mitigating the bullwhip effect, minimizing demand uncertainty, reducing costs and in the end improving profitability (Sari, 2007).

There is no current study that relates supply chain management practices to profitability as mediated by organizational performance. This is the significant contribution of this research, aside from the fact that there is a minimal study of the impact of supply chain management adoption on profitability in the Philippine context.

#### *Research Problems*

Generally, this study determined the effects of supply chain management adoption on Philippine micro, small, and medium enterprises' operational efficiency. Specifically, it will answer the following specific research questions:

1. What is the organizational profile of the enterprises in terms of:
  - a. Type of Business
  - b. Form
  - c. The number of employees?
2. What is the level of adoption of supply chain management in terms of:
  - a. supplier-customer partnerships
  - b. Customer relations
  - c. Information sharing
  - d. Information technology
  - e. Internal systems?
3. What are the perceived benefits of supply chain management adoption to the manufacturing companies?
4. What are the challenges faced by Philippine manufacturing firms in supply chain management adoption?
5. What is the level of operational efficiency of Philippine MSMEs in terms of profitability?
6. What is the mediating effect of organizational profile in the relationship of the adoption of supply chain management to operational efficiency?

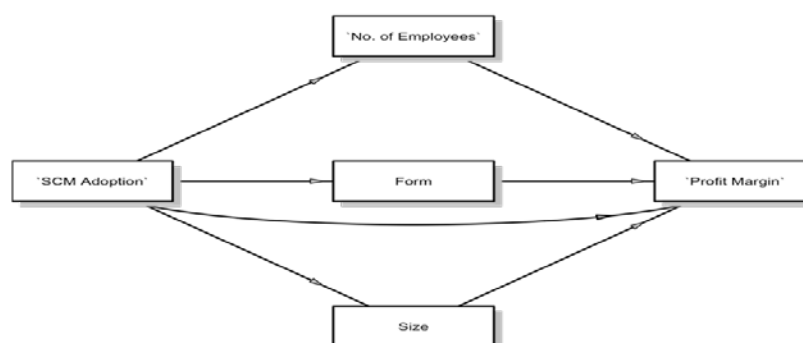


Figure 1. Research Framework

### 3. METHODS

#### *Participants*

The study respondents were selected using a convenience sampling technique, and they were the MSME owners of manufacturing companies in the Philippines. Using the Sample size calculator by Raosoft, with a 5% margin of error and confidence level at 95% and a total population of 24,200 manufacturing companies (PSA,2017), the full sample size is 379 respondents were computed. Notably, the participants were the owners or operations managers of these manufacturing companies. Out of 500 survey questionnaires floated and 379 respondents required, 392 were answered thoroughly and correctly by the respondents, a 78.4% response rate. The questionnaires' distribution was done in December 2018, and the instruments were retrieved in March 2019. This was done through the help of the researchers' students.

Table 1 revealed that 228 (58.13%) respondents are single proprietorship, while 134 (34.11%) are corporations. Only 30 or 7.75% are a partnership. It means that these manufacturing businesses are mostly backyard businesses, and most of them are just starting to establish their businesses. There are 153 (39.14%) small businesses in terms of the company's size, while 131 (33.33%) are microbusinesses. There are only 106 (27.13%) that are medium enterprises. This can be because since these businesses are manufacturing businesses, the facilities and equipment used are expensive and require capitalization. Lastly, there are 184 (46.90%) respondents with 1-10 employees, while 125 (31.78%) have 11-50 employees. Only 47 (12.02%) and 36 (9.30%) have 101 and above and 51-100 employees. The majority of the respondents have only less than ten employees. This is in connection with the fact that most of them are single proprietorship and small businesses.



Table 1. Organizational Profile

	Frequency	Percentage
<b>Form of Business</b>		
Single Proprietorship	228	58.13
Partnership	30	7.75
Corporation	134	34.11
Total	392	100
<b>Size of Business</b>		
Microbusiness	131	33.33
Small Business	153	39.14
Medium Business	106	27.13
No Response	16	.4
Total	392	100
<b>No. of Employees</b>		
1-10	184	46.90
11-50	125	31.78
51-100	36	9.30
100-above	47	12.02
Total	392	100

### *Research Instrument*

The research instrument used in the research was a questionnaire. There are four parts of the questionnaire. For the first part, the organizational profile, and the second part, the adoption of supply chain management practices. The corporate profile consisted of business, size of the location, and employees' number. On the other hand, the supply management practices were measured using the constructs developed by Dr. Siddig Ibrahim and Abdelsalam Hamid. These constructs are supplier-customer partnerships, customer relations, information sharing, information technology, and internal systems. Supplier-customer relationships mean having a good relationship between customers and suppliers. It improves the performance and enhances the speedy delivery of goods and services to their final destination. One of the common strategies is the Just-in-Time method. A close relationship with suppliers is maintained when there are fewer suppliers to work with, and prices and delivery scheduled dates may be easily negotiated when there is close contact with a supplier (Matsoso & Benedict,2014). Customer relations strategy means the supply chain should be structured so that there is a common link between the products as such and the end customer. It means that the manufacturing firms should focus their production on what the customer needs and want (Matsoso & Benedict,2014). Information sharing means distributing useful



information for systems, people, or organizational units. The term 'Information Sharing' can also be referred to as 'Knowledge Sharing' or 'Information Integration.' There exists a myriad of information in a supply chain, such as logistics, business, strategic, tactical, and many more (Lofti et al. 2013). Internal systems refer to the chain of activities **within** a company, precisely, purchasing, production, sales, and distribution. The internal supply chain has a substantial influence on a firm's success; operations need to run smoothly to create a collaborative working environment and an efficient workflow (Ibrahim et al.). All three constructs were measured using a 4-point Likert scale where 1 means no extent and four to a great time. The reliability and validity of the said constructs were gauged, as shown in Tables 2 and 3.

### *Data Analysis*

A quantitative design was used in the present study. Frequencies and weighted means were used to describe the extent of implementation, benefits, and challenges of supply chain strategies. Moreover, a causal research approach was utilized to measure the relationships of the supply chain adoption, organizational profile, and firms' profitability. The simple structural equation modeling (simple SEM) using Jamovi software was employed to estimate the parameters' mediation model. Moreover, GLM Mediation analysis was also utilized to test the model further. GLM mediation model estimates simple, multiple, and conditional mediation models with maximum likelihood regression.

## **4. RESULTS**

### *Reliability and Validity Measurements*

The results were analyzed to assess the measurement model, reliability, and validity (convergent and discriminant).

Table 2. Reliability Analysis

Scale Reliability Statistics			
	mean	sd	Cronbach's $\alpha$
s	2	0.	0.902
cale	.92	597	

**Adoption of Supply chain Management Practices.** The supply chain management practices and tactics are supplier-customer relationships, customer relations, information sharing, information technology, and internal systems.

Table 3. Level of Implementation of SCM Practices for Supplier-Customer Relationship

Tactic	Weighted Mean	VI
Managing customer-supplier relationship	3.30	HI
Lean Production	2.80	MI
Agile production	2.69	MI
Just-in-Time	2.95	MI
<b>Over-all</b>	<b>2.94</b>	<b>MI</b>

It can be deduced in table 4 that the overall weighted mean of supplier-customer relationship is 2.94 with a verbal interpretation of MODERATELY IMPLEMENTED. Supplier-customer relationships mean having a good relationship between customers and suppliers. It improves the performance and enhances the speedy delivery of goods and services to their final destination. One of the common strategies is the Just-in-Time method. A close relationship with suppliers is maintained when there are fewer suppliers to work with, and prices and delivery scheduled dates may be easily negotiated when there is close contact with a supplier.

Looking closer to the table, the most common tactic is managing the supplier-customer relationship with a weighted mean of 3.30 and a verbal interpretation of HIGHLY IMPLEMENTED. According to Chenhall (2005), if both parties (supplier and the customer) maintain and sustain flexible and open communication regarding matters that affect the value chain, their relationship would rise to greater levels, affecting the implementation of just-in-time production. □

On the other hand, the least implemented is the agile production with a weighted mean of 2.69 and a verbal interpretation of MODERATELY IMPLEMENTED. Elegant display refers to a methodology in the manufacturing industry that emphasizes the importance of responding to a customer's or client's needs promptly and making changes to adapt to the market. This is not a good indication for manufacturing firms in the Philippines because they take for granted quality control issues. Swift manufacturing employs technology and tools that make marketers, designers, and engineers share information on production capacities and problems in the manufacturing process, specifically where issues can lead to other and more severe problems downstream. Meaning, manufacturing firms in the Philippines do not immediately see manufacturing firms; thus, these problems might cause more severe problems.

Table 3.1 Level of Implementation of SCM Practices for Customer Relations

Tactic	Weighted Mean	VI
Supply chain collaboration	2.67	MI
Training in Supply chain issues	2.93	MI
<b>Overall</b>	<b>2.80</b>	<b>MI</b>

The table shows that in terms of customer relations as a supply chain management strategy, the overall weighted mean is 2.80, with a verbal interpretation of MODERATELY IMPLEMENTED. Customer relations strategy means the supply chain should be structured so that there is a common link between the products as such and the end customer. It means that the manufacturing firms should focus their production on what the customer needs and want. In the Philippines, it is moderately implemented.

Looking closely at the table, the higher tactic in terms of customer relations is on training in supply chain issues with a weighted mean of 2.93 and a verbal interpretation of MODERATELY IMPLEMENTED. Manufacturing firms regularly send their operations personnel to training and seminars about supply chain issues because they believe that these training pieces will help their companies solve supply chain problems.

Table 3.2 Level of Implementation of SCM Practices for Information Sharing

Tactic	Weighted Mean	VI
Supply Chain Benchmarking	2.81	MI
Information Sharing between suppliers and customers in supply chains	2.94	MI
Supply chain integration	2.71	MI
Supplier partnerships	3.22	MI
Formation of Strategic Alliances	2.81	MI
<b>Overall</b>	<b>2.90</b>	<b>MI</b>

The table shows that for information sharing, the overall weighted mean is 2.90, with a verbal interpretation of MODERATELY IMPLEMENTED. Information sharing means distributing useful information for systems, people, or organizational units. The term 'Information Sharing' can also be referred to as 'Knowledge Sharing' or 'Information Integration.' There exists a myriad of information in a supply chain, such as logistics, business, strategic, tactical, and many more (Lofti et al. 2013). This means that manufacturing firms in the Philippines integrate information into their supply chain systems and people.

Looking closely at the table, the tactic that most manufacturing firms implement is supplier partnership with a weighted mean of 3.22 with a verbal interpretation of MODERATELY IMPLEMENTED. According to an article by Industryweek (2011), a supplier relationship is a commitment over an extended time to work together to mutually advantageous both parties, sharing relevant information and the risks and rewards of the relationship. It means that manufacturing firms in the Philippines have an extended relationship with their suppliers based on confidence, credibility, and mutual benefit. These firms established more than just supplier-customer relationships; instead, they build a strong and reciprocal relationship. For example, are they invite them as their godfathers and godmothers during the baptism of their children, and they ask them in family gatherings.

Table 3.3 Level of Implementation of SCM Practices for Information Technology

Tactic	Weighted Mean	VI
Information Technology	2.69	MI
Vendor Managed Inventory (VMI)	2.65	MI
<b>Overall</b>	<b>2.67</b>	<b>MI</b>

Regarding information technology, the overall weighted mean is 2.69, with a verbal interpretation of MODERATELY IMPLEMENTED. This means that some manufacturing firms in the Philippines do not invest heavily in information technology because they are just backyard businesses, and their information technology is not that complicated. In some manufacturing firms in the Philippines, they only need simple technology and invest more in the workforce. For example, are manufacturers of corniks at Ilocos. They do not have complicated technology, but they invest heavily in workforce requirements.

Table 3.4 Level of Implementation of SCM Practices for Internal systems

Tactic	Weighted Mean	VI
Continuous Improvement	3.38	HI
Supply Chain Designs	2.79	MI
Internal Systems and Operation	3.08	MI
Inventory Management	3.29	HI
<b>Overall</b>	<b>3.14</b>	<b>MI</b>

The table shows that the overall weighted mean is 3.14, with a verbal interpretation of MODERATELY IMPLEMENTED in terms of internal systems. Internal systems refer to the chain of activities **within** a company, precisely, purchasing, production, sales, and distribution. The internal supply chain has a substantial influence on a firm's success; operations need to run smoothly to create a collaborative working environment and an efficient workflow.

Looking closely at the table, two strategies are implemented highly. These are continuous improvement and inventory management with weighted means of 3.38 and 3.29, respectively. Continuous improvement or kanban refers to zero defects. It seeks to improve every manufacturing company process by focusing on enhancing the activities that generate the most value for the customer while removing as many waste activities as possible. It is a lean methodology. The Philippines' manufacturing firms implement continuous improvement by removing all or minimizing the effects of "Muda" or all waste in processes such as transport, inventory, motion, waiting, overproduction, over-processing, and defects. They said that it is impossible to remove all the scraps in the production process but minimizing them is more realistic and achievable. On the other hand, manufacturing firms in the Philippines implement several inventory management tactics as simple as cycle counting to more complicated ones like economic order quantity. These manufacturing companies said that it is quite costly to maintain inventory, so it is necessary to employ inventory management.

**Perceived Benefits in Adopting Supply chain Management practices.** There are several benefits derived by implementing these supply chain management strategies.

Table 5. Supply Chain Benefits

Supply Chain Benefits	Weighted Mean	VI
Increased sales	3.54	HB
Better quality information	3.44	HB
Better quantity information	3.37	HB
Reduced uncertainty	3.18	MB
Reduced lead time	3.12	MB
Increased flexibility	3.27	HB
Cost-saving□	3.43	HB
Accurate Forecasting	3.07	MB
Better Operating efficiency	3.38	HB
Reduced inventory costs	3.26	HB
Increased coordination between departments	3.05	MB
More accurate costing	3.27	HB
Resource planning	3.19	MB
Increased coordination with supplier	3.39	HB
Increased coordination with customers	3.35	HB
Improved response to customer needs	3.43	HB
<b>Overall</b>	<b>3.30</b>	<b>HB</b>

As seen in the table, the adoption of supply chain management strategies such as but not limited to inventory management, continuous improvement, and supplier-customer relationship is HIGHLY BENEFICIAL to manufacturing firms in the Philippines. The first benefit is increased sales. Many companies perceived that their total production increased because they adopted supply chain management strategies, and their products' quality improved. Hence, it brought about an increase in their sales and profits. Moreover, by adopting supply chain management tactics, companies have better quality information. For example, because of the adoption of supplier-customer relationships, companies have better access to quality raw materials. They can get these raw materials with more comfortable convenience to their suppliers. Close relationships with customers and suppliers have helped SMEs

develop bounciness in hardship despite the SME sector's restrictions, such as a weak technological base, limited use of information technologies, and workforce poverty. SMEs can depend on the customer's and suppliers' capabilities and cooperative relationships. Most firms also believe a material dropped on their costs because of supply chain management adoption. For examples, because of the adoption of inventory management tactics inventory costs such as storage fee decreases. The adoption of inventory management will adjust the storage space for finished goods, which eliminates damaged resources. Another benefit of adopting supply chain management strategies is it improves the system's responsiveness to the actual customer requirements and preferences. Furthermore, one of the main advantages of supply chain management is that the firm can lower any delays in processes through communication. Since everyone is responsive to what they're doing and what others are doing, this will ease delays from vendors, logistical errors in distribution channels, and hold-ups on production lines.

**Challenges faced in the adoption of SCM strategies.** The adoption of SCM strategies has been established as beneficial and favorable to SMEs. But its adoption is not that easy because of the challenges and problems faced by the manufacturing firms.

The manufacturing firms in the Philippines are moderately challenged in their adoption of supply chain management strategies. The main problem faced by manufacturing firms in the Philippines in adopting supply chain management strategies is increasing customer satisfaction. Because of more demanding customers, firms need to adjust and adapt to these changing customer needs and preferences. More complicated supply chain management tactics should be adopted to predict these needs and wants. Tighter relationships with the suppliers need to be established to give the highest quality of raw materials. Another challenge faced by these firms is the high cost of raw materials and their associated costs. Because of fluctuations in inflation rates and TRAIN law in the Philippines, raw materials' costs had become unstable and prohibitive. Moreover, the prices of some raw materials have been very dependent on the weather in the Philippines. These reasons contributed to the increasing costs of raw materials for manufacturing firms. Another challenge is the high cost of doing business in the Philippines. There is too much bureaucracy in operating business in the Philippines. Red tape and corruption add up to these problems. Some many licenses and taxes need to be paid, and it is challenging to get a business permit and license. Lastly, access to modern technology is quite a challenge for MSMEs in the Philippines because it is quite expensive. Without technology, manufacturing firms in the Philippines will be left out by their competitors abroad.



Overall, by structuring the components effectively, these manufacturing businesses and putting the SCM levels in place, while capitalizing on the management and the skills of its people to mitigate the challenges of SCM, would increase its productivity, satisfying its customers, and increase their profit margin.

Table 6. Supply Chain Challenges

Supply Chain Challenges	Weighted Mean	VI
Access to modern technology	2.93	MC
Increasing customer expectations	3.11	MC
Access to domestic markets	2.80	MC
Lack of supply partnerships	2.47	SC
Lack of training in supply chain management	2.69	MC
The high cost of doing business	2.95	MC
Low-profit margins	2.83	MC
Lack of government support to SMEs	2.62	MC
Global financial crisis	2.41	SC
Global climate change	2.25	SC
The high cost of energy	2.91	MC
The high price of raw materials	3.01	MC
Foreign exchange rate fluctuations	2.57	MC
High-interest rates on loans	2.53	MC
<b>Overall</b>	<b>2.72</b>	<b>MC</b>

**The profitability of Philippine Manufacturing Firms.** The profits of the company ultimately measure the level of operational efficiency.

Table 7. Operational Efficiency

Profit Margin Ratio	Frequency	Percentage
Less than 25%	37	14.34
26%-50%	96	37.91
51%-75%	91	35.27
76%-100%	34	13.18
<b>Total</b>	<b>258</b>	<b>100</b>

Based on the study, 96 manufacturing firms, or 37.91%, have a profit margin that ranges from 26% to 50%, while 91 or 35.27% of the firms have 51%-75% profits.

Only 37 firms or 14.34% have 0%-25% profit while 34 or 13.18% have 76% to 100% profits.

The majority of the firms have profits ranging from 26% to 50%, which means that manufacturing firms in the Philippines are operating at an income. This is a good indication that despite the challenges faced by businesses in the Philippines, they are still gaining something from their operations.

### *Mediation Model Results*

Table 8. Simple Structural Equation Modeling Results

Mediation Estimates					
Effect	Estimate	SE	Z	p	% Mediation
Indirect	-0.0038	0.00567	-0.686	0.493	5.51
Direct	0.0667	0.02183	3.056	0.002	94.49
Total	0.0628	0.02251	2.791	0.005	100.00

Table 8 presents the model for a mediating effect of the number of employees significant tests. The path between the supply chain management strategies adoption and the mediator, the organizational profile, has a p-value of more than .05, which means no mediating effect. However, the path between supply chain management strategies and profitability has a p-value of less than .05, which means that the two variables are statistically significant.

Table 8.1 with the use of GLM Mediation Analysis further revealed no mediating effect of the three organizational profile to the adoption of supply chain management strategies and profitability of manufacturing firms (p values = 0.877, 0.556, and 0.520). However, it is further confirmed that their adoption of supply chain management strategies and the profitability of manufacturing companies are statistically significant (p value=0.01).

Table 8.1. GLM Model  
Indirect and Total Effects

Type	Effect	Estimate	SE
Indirect	SCM Adoption $\Rightarrow$ No. of Employees $\Rightarrow$ Profit Margin	-2.14e-4	0.00139
	SCM Adoption $\Rightarrow$ Form $\Rightarrow$ Profit Margin	-0.00316	0.00536
	SCM Adoption $\Rightarrow$ Size $\Rightarrow$ Profit Margin	0.00153	0.00238
Component	SCM Adoption $\Rightarrow$ No. of Employees	0.10628	0.09382
	No. of Employees $\Rightarrow$ Profit Margin	-0.00202	0.01292
	SCM Adoption $\Rightarrow$ Form	0.05154	0.08682
	Form $\Rightarrow$ Profit Margin	-0.06123	0.01396
	SCM Adoption $\Rightarrow$ Size	0.13442	0.07291
	Size $\Rightarrow$ Profit Margin	0.01141	0.01662
	Direct	SCM Adoption $\Rightarrow$ Profit Margin	0.05356
Total	SCM Adoption $\Rightarrow$ Profit Margin	0.05173	0.02009

## 5. DISCUSSION

The study's findings revealed that the adoption of supply chain management strategies has a significant and positive effect on manufacturing firms' profitability. This indicates that as manufacturing firms adapt to supply chain management strategies such as supplier-customer relationships, customer relations, information sharing, information technology, and internal systems, their profitability also increases. This is also true among previous studies (Eugene et al., 2017; Miyare, 2012; Kalu, 2014; Shin and Ennis (2009), Supply chain 2020, 2005). The adoption of supply chain management strategies significantly increases and improved companies' profitability (Shin and Ennis, 2009). This means that MSME-manufacturing firms can dramatically increase their profit margin ratio by adopting different supply chain management strategies. It implies that profitability could be achieved by effectively managing materials with particular attention on sourcing, receiving, storing, and issuing materials.

The mediation model revealed that organizational profile does not mediate the adoption of supply chain management strategies and profitability. It is secure to say, therefore, that whether the manufacturing company is small or that they have just started, the effect of adopting SCM strategies will still be the same. As long as the manufacturing firms strategically implement their supply chain management, they are assured that profitability will increase. It's not the form, size, or number of employees that affect profitability, but rather the proper implementation of SCM strategies. Choosing the right supply chain cost to maintain at a particular time increased turnover and boosted the company's profit. The firms should strive for effective and efficient supply chain operation since if properly integrated yields profitable returns on investment while wrongly done, cause a deficit of the company's wealth (Kalu,2014).

In this connection, manufacturing firms should recognize and emphasize the importance of adopting SCM strategies. They should know precisely what methods they should employ and implement. This study demonstrated that firms that focused on contemporary supply chain management strategies have higher profits and income. Therefore, the results of this study should encourage these firms to develop the effectiveness of these practices. The findings can help manufacturing managers and researchers understand better-influencing supply chain performance in developing countries with similar characteristics.

## **6. CONCLUSIONS AND RECOMMENDATIONS**

This study focused on adopting supply chains management strategies such as customer-supplier partnerships, customer relations, information sharing, information technology, and internal systems. According to the owners of manufacturing firms, some benefits are derived from the adoption of supply chain strategies such as increased sales, cost savings, increased response on customer needs, better quality information, and better operating efficiency.

Supply chain management practices have a healthy relationship to profitability, where the adoption of more practices leads to improved profitability. Therefore, the researchers recommend that the manufacturing firms continuously improve their supply chain management practices, benchmark the same, and ensure that the rules remain relevant and appropriate. By exploiting an efficient supply chain's benefits, the company can save on financing costs and achieve a competitive advantage over its competitors. The study also recommends the standards of the company in recruiting and retaining qualified staff. They should continuously train their staff and upgrade their knowledge of different supply chain management trends and updates. Investment in employees through education and training leads should always be the primary

management concern since an organization cannot exist without people. Capable, experienced, and competent employees and systems ensure continued staff growth leading to a high firm's viability and profitability. Finally, the researchers recommend adopting innovative technology to manage supply chains to ensure that the systems are optimized.

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