

## The Impact of Strategies in Supply Chain Management for Better Performance in Manufacturing SMEs in Aguascalientes

By Luis Aguilera ENRIQUEZ <sup>a</sup>  
Octavio Hernandez CASTORENA <sup>b †</sup>  
& Martha González ADAME <sup>c</sup>

**Abstract.** This research aims to analyze the impact of the implementation of strategies in the the Supply Chain Management (SCM), Manufacturing for SMEs in Aguascalientes may have a higher yield. The analysis was performed through the design of an assessment tool aimed at managers through an empirical study in the period from August to December 2013. The methodology has been quantitative approach, as well as correlational and descriptive the sample is random. The expected results are intended to influence the decisions taken by the managers in their organizations to the SCM is still complex, it is more efficient through the implementation of strategies for increased output in manufacturing SMEs in Aguascalientes. In this sense, the expected results intended sizing how important the integration of strategies is in the practice of the SCM, and in turn, the impact of this influence on the Performance of Manufacturing SMEs. In this study, structural equation modeling technique was applied to support software EQS 6.1.

**Keywords.** Supply Chain Management, Performance, Manufacturing SMEs.

**JEL.** L1, L11, M1, M2.

### 1. Introduction

Currently, the Small and Medium Enterprises (SMEs) in the manufacturing sector, supply is a practice that constantly requires the attention of entrepreneurs and managers, for which, it is important that the Supply Chain Management (SCM ) it is sized as an activity that operates through an integrated by suppliers, manufacturers and dealers of all kinds due to the goal of this intervention on the network is to improve the practice of supplies perceive collaboration and agreements with suppliers it is vitally important (Hernandez Aguilera & Colin, 2013; Christopher, 1998; New & Payne 1995; Simchi-Levi, Kaminsky & Simchi-Levi, 2000; Wisner, 2003).

In this sense, researchers like Hong & Jeong (2006), define the SCM as a set of useful virtues to effectively integrate suppliers, manufacturing companies,

<sup>a †</sup> Autonomous University of Aguascalientes, 940 University Avenue, Ciudad Universitaria, Zip code 20100, Aguascalientes, Ags., México. ☎. 0052 (449) 910-84-60. ✉. laquiler@correo.uaa.mx

<sup>b</sup> Autonomous University of Aguascalientes, 940 University Avenue, Ciudad Universitaria Zip code 20100, Aguascalientes, Ags., México. ☎. 0052 (449) 910-84-60. ✉. ohernandez@correo.uaa.mx

<sup>c</sup> Autonomous University of Aguascalientes, 940 University Avenue, Ciudad Universitaria, Zip code 20100, Aguascalientes, Ags., México. ☎. 0052 (449) 910-84-60. ✉. mglezadame@yahoo.es

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distributors and customers, with the express purpose of improving performance in manufacturing SMEs looking for a long term positive relationship between organizations and the SCM itself. Likewise, SCM, is perceived as an effort to manage the flow of materials from the point of origin to destination with the end user (Vaaland and Heide, 2007) approach. Importantly Management supply chain by nature and regardless of supply management is considered by researchers as a complex activity to manage (Chen & Paulraj, 2004a, 2004b; Donlon, 1996; Lambert, Dastugue, & Croxton, 2005; Li, Nathan, Nathan & Rao, 2005; Min & Mentzer, 2004; Tan, Lyman & Wisner 2002).

Given a sample of 288 manufacturing enterprises SMEs State Aguascalientes under the technical fieldwork Whereas today, for the manufacturing SME business sector, the issue of supply is vital for performance and growth, this study aims to analyze the impact of the implementation of strategies in this SCM and analyze their impact on the performance of these organizations. Therefore, with this particular interest from the authors to develop this study arise the following research questions: Is the implementation of strategies by managers and entrepreneurs relevant impact that regardless of its complexity the SCM is more effective in companies such as manufacturing SMEs? and Will once SCM is considered within the organization as effective and highly organized, can really affect the performance of a manufacturing SME?

This research study conducted in the state of Aguascalientes, shows that in the manufacturing sector, most companies have sufficient seniority which justifies the conclusion that there are solid, stable and reliable for the economy of the state of Aguascalientes companies. Whereas usually SME companies have problems staying alive in the table, no.1 on the old distribution companies shown only considering manufacturing SMEs.

**TABLE 1: Old Company**

Old Company	Percentage
0 a 5 years	19.1
6 a 10 years	20.8
From 11 years	60.1
Total	100

**Source:** *Authors.*

The study also shows that managers responsible for the direction in SME manufacturing is prevalent in the male gender to register a percentage of 83%. Table no. 2 shows the percentage of managers according to gender.

**TABLE 2: Gender director of the company**

Gender director of the company	Percentage
Male	83.0
Female	17.0
Total	100

**Source:** *Authors.*

On the other hand, the SME has manufacturing managers with undergraduate studies in 59.4% reflecting that more than half of companies analyzed in this study, have managers with this level of preparation. Table no. 3 shows that approximately 34.7% of managers have lower education at the undergraduate level and less than 4% graduate studies.

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**TABLE 3:** *Training manager*

Training manager	Percentage
Basic education	8.7
High School	9.7
Technical	16.3
bachelor's degree	59.4
Master's degree	2.8
PhD	0.7
Don't answer	3.1
Total	100

**Source:** *Authors.*

Finally, it is important to mention that the study conducted with a sample of 288 manufacturing SMEs, was obtained from an assessment tool applied under the quantitative approach mostly with small businesses in approximately 76%. No.4 table shows the percentages of companies participating in this research.

**TABLE 4:** *Company size*

Company size	Percentage
Small	76.0
Medium	24.0
Total	100

**Source:** *Authors.*

The present research is as follows: In the first part the introduction, the theoretical framework, the purpose and the research questions, in a second part, we show the methodological design and statistical analyzes, integrates Finally a third part the findings, conclusions, study limitations and future research lines are displayed. The study has been developed.

## 2. Theory and Literature

### 2.1. *Strategies and their relation to the Supply Chain Management.*

Supply Chain Management (SCM), emerged as an essential part of companies to maintain performance in organizations where some of the activities are outsourced having among other benefits ensure the delivery of products to the customer (Stevens, 1989). On the other hand, the ratio of the SCM strategy has been proposed as an evolution of manufacturing consolidated framework and implementation of strategies to improve internal operations of companies (Harland, Lamming & Cousins, 1999; Hayes & Wheelwright, 1985; Skinner, 1969). In order that the SMEs have a higher performance, the strategies implemented in basically SCM should focus on meeting the basic needs that a customer (Aitken, Childerhouse & Towill, 2003; Li & O'Brien, 2001; Demeter, Gelei & Jenei, 2006).

In addition, there are other benefits to be given to establishing strategies impact on SCM as it is to analyze the efficiency of the same supply chain, identify contingencies which could appear in the management of material resources and constantly check whether the strategies set can give quick solution to any emergency occurring during the management of supply of material resources in order to minimize any problems to productive enterprise systems such as the case of work stoppage by excessive delay in compliance just-in-time deliveries (Caniato, Caridi, & Castelli, 2008).

Currently, there are several authors addressing the issue of the SCM with special interest, where some of them have developed models to easily implement

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appropriate for the proper functioning of the supply chain strategies, other authors have focused on identifying techniques and tools to easily adapt to the efficiency of the SCM (Vitasek, Manrodt & Kelly, 2003). In this sense, the findings by the authors have focused on the importance of matching supply and demand for products because of how variable is the market demand for which among other important strategies, manufacturing relationship -Stocks has enabled managers to think about the importance of implementing strategies such as the just in time (Caniato et al., 2008).

Supply chains need to be more effective for products that must cope with market demand (Mentzer, et al., 2001). Therefore, it is important to note that problems occur when there is a mismatch between the SCM and the type of product which causes impact costs are having too much inventory to meet the needs of customers (Mentzer et al., 2001; Christopher, 2000). Supply chains for better management can be simple in operation at some point, and agile at other times (Zhang & Sharifi, 2000), therefore it is important to note that not all organizations have the same level of agility in operation of the SCM, agile supply chains have been characterized by the use of virtual machines (Bal, Wilding & Gundry, 1999) have business processes in short time (Mason-Jones and Towill, 1999); and communicate technical information (database) market in real time, through information systems (Christopher & Towill, 2001; Seifert & Langenberg, 2011).

### *2.2 Supply Chain Management and its relation to the Performance of Manufacturing SMEs*

According to Chow, & Heaver (1999) indicate that the SCM is formed by a group of manufacturers, suppliers, distributors, retailers and carriers, where information and supplier relationship management logistics service dedicated to the provision of goods consumers now allow a good performance. A SCM is comprised of various actors who are directly involved in various activities related to the management and flow of resources, so this is seen as a dynamic process life cycle associated with physical goods, information and financial flows whose objective is to meet requirements of end to offer products and services from different providers (Ayers, 2001) consumers.

Mentzer et al. (2001) that the SCM is defined as a set of entities directly involved in the flow of supply and distribution of goods and a source to a given destination previously. The focus of this definition is to categorize and describe the way how to combine efforts to meet the essential objectives of the natural practice of SCM, and it is important to note that there are several organized distribution systems to work through connections with transport and different actors involved directly through proper SCM in order that the SME Manufacturing in the particular case, may have better results and better business performance (Mbang, 2012).

The SCM for businesses is strategic and efficient coordination of conventional business functions as well as the integrated business dynamics through strategies that functions within a company's supply chain in the development goals of performance long-term company and the SCM as a whole (Wisner, 2003). For this and according to what was said Grant, Lambert, Stock and Ellram (2006), SCM refers to the integration of corporate business processes from end users through providers that provides information, goods and services that add value for customers. Wisner (2003) states that the SCM includes all activities of the SCM of all activities involved in sourcing and purchasing mainly includes coordination and collaboration with network partners, which can be suppliers, intermediaries and providers third party services.

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For businesses in general, the overall reliability is more important than the speed with which work the SCM and it is important that the rate of supply is vital especially in the following situations, when: the products are: Susceptible to rapid extinction, are required to provide short-term, and the costs are sensitive to constant change. In this regard it is important to consider that some problems occur during the distribution as is the case: the risk of theft, physical harm, high interest rates for long transport times, special care products, and the proper management of transport and another element in caring companies is the cost and that should take care of the aspects of negotiation that business performance is not affected at any time (Mbang, 2012).

Therefore, it is important to emphasize that it is essential for manufacturing SMEs, noting that the efficiency of the SCM through proper implementation of strategies, will affect and influence to have significantly higher performance in businesses like manufacturing SMEs (Wisner, 2003; Hernandez et al, 2013; Tibken & Roder, 2006; Aguilera, Hernandez & Lopez, 2012). Thus, in the present investigation and according to theoretical findings, the following hypothesis is posed:

*H1: The Influence of Strategy, will allow for greater Supply Chain Management in manufacturing SMEs.*

*H2: A Best Supply Chain Management, Senior Performance of manufacturing SMEs.*

### 3. Data Set and Method

In it presents research, Impact Strategies in Supply Chain Management for better Performance in Manufacturing SMEs in Aguascalientes and it is analyzed through an empirical study on a correlational descriptive and methodological context, we designed a assessment instrument which was sent to the managers of manufacturing SMEs. The methodological design of this study is shown in the data sheet in the Table no. 5 box (INEGI, 2014):

**TABLE 5: Methodological Design**

Study indicator	Description
Universe	small and medium enterprise business manufacturing which are between 11 and 250 employees
Geographic Scope	National
Population Size	442
Sample Size	288
Stratified sampling	method proportional to the size and sector of the company
Sampling error	+/- 8
95% confidence level	; Z = 1.96; p = q = 0.5
Period of completion of fieldwork	August to December 2013

**Source:** *Authors.*

#### 3.1. Development of Measures.

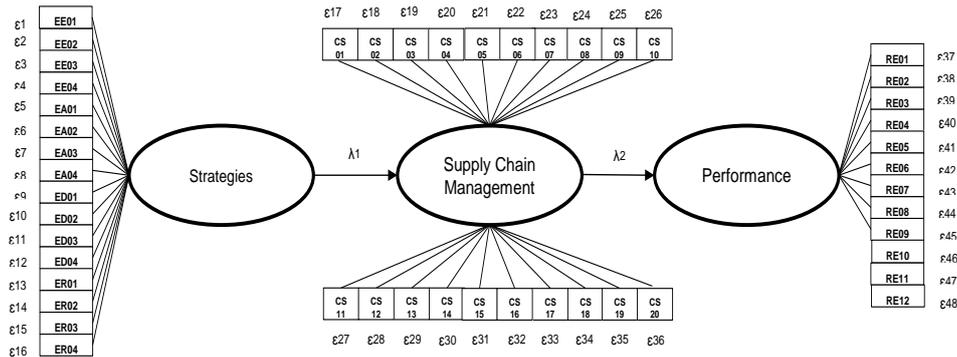
For the development of the measurement instrument which was applied to the manufacturing SMEs in Aguascalientes this content for the following groups: Strategies To Block 16 items measured using Likert scale from 1-5 operationalized little to much importance was used (Rodríguez, 2012), and identified by the following codes: EE01-EE04, EA01-EA04, ED04 and ED01-ER01-ER04; for

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Block Supply Chain Management 20 Likert scale items measured using 1-5 which are operationalized from low to high importance (Wisner, 2003), identified by the following codes are used: CS01 - CS20; block and Performance, 12-item Likert scale measured 1-5 which are operationalized from low to high importance (Quinn & Rohrbaugh, 1983), identified by the following codes were used: RE01 - RE1

Then in Figure no. 1 The theoretical model designed for this research is shown and measuring Impact Strategies in Supply Chain Managing for greater performance in Manufacturing SMEs in Aguascalientes.

**Figure 1: Theoretical Model of the Research**



**Source:** Hernández, 2014, from Wisner, 2003 and Maldonado (2008).

For statistical analysis, a confirmatory factor analysis (CFA) in order to assess the reliability and validity of the scales of each of the integrated theoretical model blocks are performed. A Model of Structural Equation (SEM), in order to check the efficiency of the structure of the model, using the statistical tool support EQS version 6.1 was used. Likewise, the reliability of the scales by reference to the value of Cronbach's alpha and composite reliability index (IFC) (Bagozzi and Yi, 1988) was analyzed. Table 6 shows that all values of the IFC exceeded the recommended level of 0.7 (Nunnally and Bernstein, 1994; Hair, Anderson, Tatham and Black, 1995) and determined that the model provides a good fit based on the following data from the confirmatory factor analysis:

$$S\text{-BX}2 = 1491.7274; df = 590; p = 0.0000; NFI = 0.981; NNFI = 0.987; CFI = 0.988; \text{ and } RMSEA = 0.073.$$

**TABLE 6: Internal consistency and convergent validity of the theoretical model.**

Variable	indicator	t robust	CF > 0.6 factor loading	alpha cronbach > a 0.7	IFC > a 0.7 Indice de Composite Reliability	IVE > a 0.5, Index of extracted variance
Strategies (F1)	EE03	1.000	0.721***	0.874	0.890	0.617
	EE04	21.335	0.752***			
	ED01	15.952	0.725***			
	ED03	22.465	0.782***			
	ED04	22.184	0.790***			
Supply chain management (F2)	CS01	1.000	0.737***	0.970	0.965	0.590
	CS02	22.445	0.790***			
	CS03	23.612	0.792***			
	CS04	21.258	0.813***			
	CS05	23.162	0.797***			

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	CS06	16.817	0.740***			
	CS07	12.791	0.713***			
	CS08	19.047	0.762***			
	CS09	22.153	0.797***			
	CS10	22.063	0.814***			
	CS11	18.157	0.725***			
	CS13	19.338	0.759***			
	CS14	20.312	0.768***			
	CS15	21.526	0.795***			
	CS16	19.932	0.734***			
	CS17	18.322	0.765***			
	CS18	22.247	0.791***			
	CS19	14.426	0.740***			
CS20	18.975	0.753***				
Performance (F3)	RE01	1.000	0.756***	0.939	0.939	0.562
	RE02	21.452	0.775***			
	RE03	19.492	0.737***			
	RE04	23.852	0.751***			
	RE05	17.102	0.695***			
	RE06	22.174	0.758***			
	RE07	17.911	0.715***			
	RE08	20.785	0.753***			
	RE09	20.892	0.770***			
	RE10	21.608	0.752***			
	RE11	14.718	0.676***			
	RE12	16.589	0.686***			
S-BX2 (df = 590) = 1491.7274; p < 0.0000; NFI = 0.981; NNFI = 0.987; CFI = 0.988; RMSEA = 0.073						

<sup>a</sup> = Parametros costreñidos a ese valor en el proceso de identificación.

**Source:** *Authors.*

Likewise, in Table no.6 shows that all items related factors are significant ( $p < 0.05$ ), the size of all the factor loadings are greater than 0.6 (Bagozzi and Yi, 1988) and the rate of variance extracted (IVE) for each pair of constructs is greater than 0.5 according to Fornell and Larcker proposal (1981). Table 7 shows the results obtained that describe the discriminant validity across two test are presented. First, with a range of 95% confidence, none of the individual elements of the factors contains the value 1.0 (Anderson and Gerbing, 1988). Second, the extracted variance between each pair of constructs of the model is superior to its corresponding IVE (Fornell and Larcker, 1981). Therefore, we can conclude that this research sample based on statistical analysis of their results sufficient evidence of reliability and validity addition convergent discriminant.

**TABLE 7:** Discriminant validity of the measurement of the theoretical model

Variables	Strategies	Supply Chain Management	Performance
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Strategies (F1)	<b>0.617</b>		(0.471)2	(0.414)2
			0.222	0.348
Supply Chain Management (F2)	0.471	0.038	<b>0.590</b>	
	<b>0.395</b>	<b>0.547</b>		(0.398)2
			0.398	0.032
Performance (F3)	0.414	0.042	<b>0.334</b>	<b>0.462</b>
	<b>0.330</b>	<b>0.498</b>		<b>0.562</b>

Source: Authors.

### 4. Findings

One SEM was performed to check the structure of the conceptual model and the hypotheses proposed, using the blocks contained in the instrument of assessment which are described as follows: First block consisting of variables measuring strategies, in the second block Supply Chain Management and third block with variables that measure business performance is measured. The nomological validity of the model was tested by performing the test of chi square, where the theoretical model was compared with the measurement model (Anderson & Gerbing, 1988; Hatcher, 1994), the overall results of the analysis are shown in table no.8:

**TABLE 8:** Results of SEM Conceptual Model Supply Chain Management, Strategies and Performance.

Hypothesis	Structural Relation	Standardized coefficient	total rate	Measure of the FIT
H <sub>1</sub> : Positively impact Strategies	Strategies ↓	0.431***	20.041	S-BX2 = 1481.6139; df = 586; p = 0.0000; NFI = 0.981; NNFI = 0.987; CFI = 0.988; RMSEA = 0.073
Management Supply Chain in manufacturing SMEs	Supply Chain management			
H <sub>1</sub> : The higher management Supply Chain Performance greater manufacturing SMEs	Supply Chain management ↓ Performance	0.295***	19.811	

Source: Authors.

The results show that hypotheses are described below: With regard to the first hypothesis H1, the results presented in Table 3 ( $\beta = 0.431$ ,  $p < 0.001$ ), indicating that strategies have a positive impact on the Supply Chain Management Manufacturing SME. And for the second hypothesis H2 results ( $\beta = 0.295$ ,  $p < 0.001$ ), indicating that the Management of the supply chain has a positive impact on the performance of the SME Manufacturing.

### 5. Conclusions

The results obtained in this study reflect the perception of the managers responsible for the SME Manufacturing regard to the implementation of strategies and operational activities Supply Chain Management (SCM). Although the SCM for its efficiency and as highlighted Wisner (2003), depends on the management to

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be made with the procurement, much of this depends on the integration of strategies to be implemented in such companies. To this end, employers need to identify if their companies are strategically scouts, analyzers, defensive or reactive as shown by Miles and Snow (1978) as the type of strategy that characterizes the SME Manufacturing, this will have a major impact on the performance of these organizations.

Thus, as to the characterization of strategies required to develop manufacturing SMEs in Aguascalientes is focused on exploratory and defensive strategies implying that entrepreneurs must focus on improving and innovating frequently both its products and the services offered to public. Furthermore, it is important that employers be aware that use steadily tool of continuous improvement, let him have better operational and administrative control of its internal systems work and that any problems that arise, may be resolved through such tools. The results also have the purpose of influencing the decision making of entrepreneurs as technological upgrades have benefits if the adoption is in line with the needs of the company, do not forget that reducing costs is an issue important to integrate business strategies.

Likewise, it is important to note that the results obtained show that today's employers consider a barrier sharing information related to the management of supply and every relationship that you have with suppliers. This may limit the SCM is affected in its function as communication with all stakeholders in the supply must be interconnected in order to avoid delay in supplies especially considering that within organizations there are productive or commercial to be affected by the late delivery of a supply, the impact will be reflected in the final by not delivering on time and commitments that have already planned customers.

One limitation of this study is mentioned that the analysis has been developed with SME companies in a single sector: manufacturing, research conducted in the state of Aguascalientes by analyzing the perception of managers on impact and integration strategies SCM turn to measure the performance of these businesses. And in this sense, as a future line of research, taking as reference the supporting literature, is to extend to more constructs related to the central theme of SCM and certainly apply to other sectors both in the state of Aguascalientes, as in other states of the Republic of Mexico, without diverting attention particularly to analyze the factors of strategy, SCM and Performance.

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