



THE REVIEW OF SUPPLY CHAIN MANAGEMENT SYSTEMS AND FIRM PERFORMANCE

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ABSTRACT

The study examines the impact of Supply Chain Management system (SCMS) on firm performance and efficiency. The study evaluates prior empirical studies on SCMS. The review covers the period between 2011 and 2015. The criteria for selecting the articles were based on linking Supply chain management systems (SCMS) with Firm performance. Forty eight variables were identified and only eight variables were insignificant, among these variables are Customer integration, firm performance, efficiency performance, supply chain risk, reverse logistics practices. Whereas the remaining 40 variables were significant among these variables are supply chain integration, total quality management practice, trust with customer and suppliers, firm financial performance. Hence, these indicated that SCMS plays a pivotal role in firm performance and efficiency.

Keywords: Supply Efficiency, Organization Efficiency, Firm Performance, and Supply Chain Systems.

1. INTRODUCTION

Supply chain management system (SCMS) is the management of linkage of interactions within an organization, interdependent companies and small business entities comprising of suppliers of raw materials, procurement, manufacturing processes, logistics, advertisement, and other associated systems, that stimulates the onward and inverse flow of materials services, investments and information from the producer to final consumer, with the aim of adding value, increase profitability through efficient processes, and achieving customer satisfaction (Stock & Boyer, 2009). SCMS simply refers to the general process of procuring raw materials from the suppliers, process raw material into finished goods and ensure the goods get to the final consumers. For example; Suppliers provide raw materials to the factory store, the factory transforms the raw material into finished goods and then marketing and sales unit ensures the goods get to the final consumers. The middlemen wholesalers and retailers also play crucial roles in ensuring the goods get to the targeted consumers.

The American Psychological Association (2001) classify research articles according to the components a study was focused. In other words, Oliver (2008) recognized the two apparatuses result and contribution to literature as the basic underpinnings for research. This review considers 100% empirical articles. APA (2001) perceived empirical research articles

as usually involving certain numbers, an examination or measurement instrument of some sort. This review has eight headings which include; Introduction, Component of SCMS, firm performance, review of prior studies SCMS, Methodology, findings, discussion and conclusion.

1.1 Component of the supply chain management systems

Supply Chain Management system (SCMS) basically has five basic components which include, Plan, Source, Make, Deliver and Return.

- a. Plan: Recently organizations must have an effective strategy on how to properly manage the scarce resources in order to accomplish customer's loyalty, retention, and preference for their goods and services. The SCMS is evolving a set of metric to supervise the supply channels to deliver good quality services to their customers.
- b. Source: For a firm to be able to manufacture products, the firm needs to be very cautious when choosing suppliers. There is a need to develop a set of pricing and distribution system in the supply chain.
- c. Make: The manufacturing process should always have schedules of activities that are required for production, packaging, testing and delivery. It is the responsibility of the factory manager to oversee the entire processes involved.
- d. Deliver: This simply refers to logistics involve in the SCM. It is required that companies organize most efficiently the receipts of orders, efficient channels of distribution, and a network of warehouses developed.
- e. Return: An efficient channel of inverse flow of product with defect must be properly designed. The process should be flexible and responsible.

1.2 Firm performance

Performance evaluation is done to checkmate the activities of the managers and his subordinates. Managers have understood that a successful firm is one that can accomplish its objective effectively and efficiently. Consequently, the profit made by firms has become the key indicator to know the progress and performance of the firm. Firms can be considered progressing if it is making a profit at an optimal level. Richard et al. (2009)

Organizational performance as categories and explain by Zhang, Majid, & Foo, (2011), is as follows:

- a. Financial: simply refers to increase in shareholders' value or wealth maximization and increase in return on investment (ROI).
- b. Customer: Higher customer satisfaction, preference by new customers and retention of customer loyalty.
- c. Improve operational effectiveness (IBP):, efficiency, and reduce operational cost,
- d. Employees Improve job satisfaction, reduce employee turnover rate, providing training,
- e. Growth: Demonstrate social responsibility, develop new product and services.

2. REVIEW OF PRIOR STUDIES ON SCMS

Table 1 (see Appendix) showed 53% of the studies were conducted in Asian Countries, for instance, Sindhuja, P.N (2014) India, Lee, Su-Yol. (2015). South Korea, Laosirihong thong, Adebajo, and Choon Tan, (2013). Thailand, Zhang and Huo (2013) China. While 33% of

the studies were conducted in Europe. For example Skipworth, Godsell, Wong, Saghiri, and Julien, (2015) UK. Gómez-Cedeño, Castán-Farrero, Guitart-Tarrés, and Matute-Vallejo (2015) Spain. Silvestro & Lustrato, (2014) Italy. While 13% of the studies were conducted in America e.g. Hwang & Min, (2013)U.S.A and Huatuco, Jairo Rafael Montoya-Torres, Nicky Shaw, Anisoara Calinescu, Luisa, Wang, Zhihong, & Sarkis, Joseph. (2013) U.S.A.

It can be observed that no study was conducted in the Middle East and Africa. This is not to say that there were no prior studies on supply chain management systems in those regions. These did not happen to fall into the chosen sample.

3. METHODOLOGY

Quantitative Research is research that generates numerical data or information that can be converted into numbers. It can be used to measure the relationship between two or more variables i.e. dependent or independent variable (Adefila, 2008). On the other hand, Qualitative Research generates non-numerical data; they are concerned with techniques employed in the identification and study of related variables (Adefila, 2008). The literature review found that 87% of the studies were quantitative and only 13% of the studies employ on qualitative research method.

Survey research is research which focuses on universe data were collected from the number of population for details investigation and analysis (Adefila, 2008). Survey is based on information generated through interviews and questionnaire. The review found that 99% of these studies used Survey as data collection method, this is because the studies focus on Industries and its takes the time to use another method.

The study shows that 99% of studies focused on the firms rather than Individuals as the unit of analysis. For example, (Danese & Romano, 2011; Zhang, et al. 2013; Vanichchinchai & Assadej, 2014; Hwang & Min, 2013; Lee, Su-Yol, 2015; Sindhuja P.N 2014; Gómez-Cedeño, et al.2015 & Skipworth, et al. 2015). This is because the studies were conducted on companies that are practicing supply chain management.

Moreover, 87% of the studies respondents were top management level. For example, Managers, Senior Managers, President, CEO Managers and Directors. For instance (Zhang, 2013; Huaccho Huatuco, et al. 2013; Vanichchinchai & Assadej, 2014; Sindhuja 2014; Gómez-Cedeño, et al. 2015). While 13% of the respondents were Manufacturers. For example, Zhang, (2013) and Skipworth, et al. (2015). This is because the respondents of these studies are top management level and indeed the review focused on the organization, not individuals.

Theory refers to a statement or proposition of invariant relationship between measurable phenomena for the purpose of explaining, examining and predicting phenomena Adefila (2008). Therefore this study review found that 47% of the study from Asia used theory. For example, Social Capital Theory (Zhang 2013; Lee, Su-Yol, 2015). While with regard to Supply Chain Integrated Theory, the review founds that it was used by (Zhao et al. 2013; Sindhuja,2014).Indeed the review also discovered that 13% of the study from Europe used different theory. For example, Agency Theory, (Selviaridis and Norrman 2014). Development Cycle Theory by Skipworth, et al. (2015).While in America only 7% used

theory for instance, Contingency Theory by Hwang & Min, (2013). Also, 33% of the study did not mention any theory. For example, (Danese, et al. 2011; Huo & Baofeeng, 2012;D. Huaccho Huatuco, et al. 2013; Silvestro, et al. 2013; Gómez-Cedeño, et al. 2015).

Table 1: Summary of the Findings.

VARIABLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
BCS									+							1
BP															+	1
CA															+	1
CFP							+									1
CI	-															1
CP				-												1
CSR				-												1
EE								-								1
EP	-									+						2
ERP								+								1
ERPI								-								1
ESCI									+							1
ESCM							+									1
FP			+													1
FSP					+											1
GSCM										+			+			2
HRM											+					1
IS														+		1
IE							+									1
IP										-						1
LR										+						1
PA												+				1
PATRSC												+				1
PRRB												+				1
PWBIR												+				1
RG												+				1
RLP										-						1
SA															+	1
SC													+			1
SCAP								+								1
SCI			+	+		+										3
SCMI											+					1
SCMO											+					1
SCMP		+			+											2
SCO														+		1
SCP		+												+		2
SCR			-													1
SI	+															1
SRSCM							+									1
TCS						+										1
TQMP					+											1
																48

Note:

Significant = (+)

Insignificant = (-)

B: BCS = Bank Contribution and Support, BP = Business Performance.

C: CA = Customer Alignment, CFP = Corporate Financial Performance, CI = Customer Integration, CP = Company Performance, SCR = Supply Chain Risk.

E: EE = External Environment, EP = Economic Performance, EP = Efficiency Performance, EP = Environmental Performance, EPR Enterprise Resource Planning, ERPI = Enterprise Resource Planning and Implementation, ESCI = Enables of Supply Chain Integration, ESCM = Environmental Supply Chain Management.

F: FP = Financial Performance, FSM = Firm's Supply Performance.

G: GCSM = Green Supply Chain Management.

H: HRM = Human Resource Management

I: IS = Information Security, EI= Internal Environment, IP = Intangible Performance.

L: LR = Legislation and Regulation.

P: PA = Performance Attributability, PATRSC = Provider Ability to Transfer Risk to Sub-Contractors, PRRB = Provider Risk and Reward Balancing, PWBIR = Provider Willingness to Bear PBC-Induced Risk.

R: RLP = Reverse Logistics Practices.

S: SA = Shareholder Alignment, SC = Social Capital, SC = Supply Chain, SCAP = Supplier Capability and Performance, SCI = Supply Chain Integration, SCI = Supply Chain Integration, SCI = Supply Chain Integration, SCMI = Supply Chain Management Implementation, SCMO = Supply Chain Management Outcomes, SCMP = Supply Chain Management Practice, SCO = Supply Chain Operation, SCP = Supply Chain Performance, SCR = Supply Chain Risk, SI = Supplier Integration, SRSCM = Social Responsibility Supply Chain Management.

T: TCS = Trust with Customer and Suppliers, TQMP = Total Quality Management Practice.

4. DISCUSSION OF THE FINDINGS

From the entire analysis of data sourced based on the frequency table 2, it clearly indicated that, there are 40 variables linked to SCM that significantly influence the organizational performance, the review was able to discover the following findings;

It discovered that 20% of the study reveals that Supply Chain Integration significantly influence company performance. For instance in the study findings of Zhang et al. (2013) Trust with Customer and Suppliers significantly influence Supply Chain Integration. Zhao et al. (2013) emphasizes that Supply Chain Integration significantly influence the company performance and also share a similar view with Huo & Baofeeng (2012) that Supply Chain Integration positively influence the company financial performance.

Different Supply Chain Integration plays different vital roles in achieving and improving different objectives of organizational performance. Suppliers and customer integration are the most vital drivers for schedule attainment, competitive performance, and customer satisfaction, respectively.

It is revealed that 13% of the total responses indicate that Green Supply Chain Management with the combinations of relational capital contributes towards the improvement of

environmental and operational performance in achieving Social Capital Accumulation. Hence relational capital plays a pivotal role in relating GSCM and operational performance Lee, Su-Yol. (2014). It also examined that Reverse Logistics Practices has no Significant impact on GSCM performance, Laosirihongthong *et al.* (2013). This is because from the analysis and responses of study respondents it is clearly stated.

It was indicated that 13% of the studies discovered that SCMP and Total Quality Management Practice influence Supply Chain Performance and Firm's Supply Performance. For instance Inda *et al.* (2012). Supply Chain Management Practice significantly influence Supply Chain Performance Vanichchinchai & Assadej (2013). This is because Supply Chain Management Practice and Total Quality Management Practice are positively associated with Firm's Supply Performance.

The analysis also shows that 13% emphasizes that Information Security improved Supply Chain Performance. For example Sindhuja, P.N (2014). Information Security significantly influence supply Chain Performance and Supply Chain Operation.

However, the studies revealed that 13% discovered that the economy, efficiency and environmental performance is enhanced by intangible performance while reverse logistics do not have as significant relationship with performance. For example Laosirihongthong *et al.* (2013). This is as a result of low level of adaptation.

Danese, *et al.* (2011) customer integration do not influence organizational performance while supplier integration positively moderate the relationship of efficiency and customer integration. Therefore, the analysis is contradicting the hypothesis, because customer integration impact positively on efficiency and reveals that, if supplier integration is at low level, it adversely led to a reduction of efficiency in customer integration.

Moreover, 28% of the study's findings examine and discussed several reasons that are more useful in assessing the impact of organizational performance and efficiency using Supply Chain Management. For instance, Skipworth *et al.* (2015) customer alignment has a direct significant impact on business performance. In view of Danence & Romano (2011) stated that there is no significant relationship between customer integration and business performance unless if the organization put in place Supplier integration. Furthermore, in view of Zhao, (2013) supply Chain risk has no significant relationship with company performance and emphasize that supply chain integration significantly influence company performance. Hwang *et al.* (2013) it was indicated that the external environment significantly influence the internal environment and also similarly found that internal environment positively influences the enterprise resource planning and implementation. This is because mediating role to internal and external environment indirectly impact on enterprise resource planning adaptation and implementation of enterprise resource planning decision. Indeed the study found that enterprise resource planning enhances adopters of supplier capability.

5. CONCLUSION

These studies explored supply chain management systems and firm performance. Fifteen articles were reviewed each article were examined and analyzed in details. Forty eight variables were identified in these studies and only 8 variables were insignificant among these

variable are Customer integration, company performance, efficiency performance, supply chain risk, reverse logistics practices. Whereas the remaining 40 variables were significant among these variables are supply chain integration, total quality management practice, trust with customer and supplies, company financial performance. Hence these indicate that supply chain management plays a significant impact on organizational performance and efficiency. Consequently, the review concluded that majority of prior studies limited the focus of their studies on manufacturing industries. Therefore, future research should extend and focuses on service industries.

REFERENCES

- [1] Adefila JJ. Research Methodology in Behavioural Sciences. Kaduna, Aprni Publication, 2008.
- [2] APA: 2001, Publication Manual of the American Psychological Association, 5th Edition (American Psychological Association, Washington, DC).
- [3] Danese P, Romano P. Supply chain integration and efficiency performance: a study on the interactions between customer and supplier integration. *Supply Chain Management: An International Journal* 2011; 16(4): 220-230.
- [4] Gómez-Cedeño M, Castán-Farrero JM, Guitart-Tarrés L, Matute-Vallejo J. Impact of human resources on supply chain management and performance. *Industrial Management & Data Systems* 2015; 115(1): 129-157.
- [5] Hwang W, Min H. Assessing the impact of ERP on supplier performance. *Industrial Management & Data Systems* 2013; 113(7): 1025-1047.
- [6] Laosirihongthong T, Adebajo D, Choon Tan K. Green supply chain management practices and performance. *Industrial Management & Data Systems* 2013; 113(8), 1088-1109.
- [7] Su-Yol L. The effects of green supply chain management on the supplier's performance through social capital accumulation. *Supply Chain Management: An International Journal* 2015; 20(1), 42-55.
- [8] Oliver L. 7 Most Popular Types of Research Papers, 2008. cited on 24th January, 2009, <http://www.personal-writer.com/blog/7-most-popular-types-ofresearch-papers> (online)
- [9] Richard *et. al.*, Measuring Organizational performance: Towards Methodological best practices. *Journal of Accounting*, 2009.
- [10] Selviaridis K, Norrman A. Performance-based contracting in service supply chains: a service provider risk perspective. *Supply Chain Management: An International Journal* 2014; 19(2), 153-172.
- [11] Selviaridis K, Norrman A. Performance-based contracting in service supply chains: a service provider risk perspective. *Supply Chain Management: An International Journal* 2014; 19(2): 153-172.

- [12] Silvestro R, Lustrato P. Integrating financial and physical supply chains: the role of banks in enabling supply chain integration. *International Journal of Operations & Production Management* 2014; 34(3): 298-324.
- [13] Sindhuja PN. Impact of information security initiatives on supply chain performance. *Information Management & Computer Security*, 2014.
- [14] Skipworth H, Godsell J, Wong CY, Saghiri S, Julien D. Supply chain alignment for improved business performance: an empirical study. *Supply Chain Management: An International Journal* 2015; 20(5): 511-533.
- [15] Stock James R, Boyer Stefanie L. Developing a consensus definition of supply chain management: a qualitative study. *International Journal of Physical Distribution & Logistics Management* 2009; 39(8): 690-711.
- [16] Vanichchinchai A. Supply chain management, supply performance and total quality management: An organizational characteristic analysis. *International Journal of Organizational Analysis* 2014; 22(2): 126-148.
- [17] Wang Z, Sarkis J. Investigating the relationship of sustainable supply chain management with corporate financial performance. *International Journal of Productivity and Performance Management* 2013; 62(8): 871-888.
- [18] Zhang M, Huo B. The impact of dependence and trust on supply chain integration. *International Journal of Physical Distribution & Logistics Management* 2013; 43(7): 544-563.
- [19] Zhao L, Huo B, Sun L, Zhao X. The impact of supply chain risk on supply chain integration and company performance: a global investigation. *Supply Chain Management: An International Journal* 2013; 18(2): 115-131.
- [20] Zhang X, Majid S, Foo S. The Contribution of Environmental Scanning to Organizational performance. *Singapore Journal of Library & Information Management* 2011; 40: 65-88.

APPENDIX: SUMMARY TABLE

S. No.	Author Name	Year	Country	Quantitative/ Qualitative	Method of Data Collection	Unit of Analysis	Key Informed	Theoretical Framework	Findings
1.	Danese& Romano	2011	Italy	Quantitative	Survey	Organization	Plant Managers& HR Managers	None	CI – EP CI ... (SI).....EP +
2.	Inda S, Abu BH, Rosman MD Y.	2012	Malaysia	Quantitative	Survey	Organization	Managers	None	SCMP + SCP
3.	Huo & Baofeng	2012	China	Quantitative	Survey	Organization	SC Managers, CEO/President, Directors	Organizational capability OC theory	SCI + FP
4.	Zhao, Li, Huo, Baofeng, Sun, Linyan, & Zhao, Xiande	2013	China	Quantitative	Survey	Organization	CEO/Senior Managers	Supply chain integration theory SCI	SCR – CP SCI + CP
5.	Vanichchin chai & Assadej	2013	Thailand	Quantitative	Survey	Organization	Managing Directors/Preside nt/CEO	Supportive Theory	SCMP + FSM TQMP + FSM
6.	Zhang, Min, & Huo, Baofeng	2013	China	Quantitative	Survey	Organization	Manufacturers	Social Capital Theory	TWCS + SCI
7.	Zhihong, &Sarkis, Joseph.	2013	USA	Quantitative	Survey	Organization	Managers	None	ESCM + CFP SRSCM + CFP ESCM & SRSCM + CFP
8.	Hwang, Woosang, & Min, Hokey	2013	USA	Quantitative	Survey	Organization	Managers and Directors	Contingency theory	EE + IE EE – ERPI IE + ERPI ERPI + SCAP
9.	Silvestre & Lustrato	2013	Italy	Qualitative	Case Study Interview	Organization	Managers	None	ESCI + BCS
10.	Laosirihong thong, Adebanjo, & Choon Tan	2013	Thailand	Quantitative	Survey	Organization	Managers	Network and Institutional Theory	GSCM + EM LR+ EP RLP - IP
11.	Gómez C.C.	2014	Spain	Quantitative	Survey	Organization	Senior Manager,	None	HRM + SCMO

	Farrero, Guitart-T. &Matute-V.						President, CEO Managers & Directors		HRM.(SCMI)..SCM O+
12.	Selviaridis, K. and A. Norrman	2014	Sweden	Qualitative	Case Study	Organization	Managers	Agency theory	PA + PWBIR PATRSC + PWBIR PRRB + PWBIR
13.	Lee, Su-Yol.	2014	South Korea	Quantitative	Survey	Organization	Supervisors, Managers and Laborers	Social Capital theory in GSCM	SC + GSCM RC + GSCM
14.	Sindhuja P.N.	2014	India	Quantitative	Survey	Organization	Managers	Integrated System theory& Resource Dependency Theory	IS + SCO IS + SCP
15.	Skipworth, Godsell, Wong, Saghiri, & Julien	2015	UK	Quantitative	Survey	Organization	FAME data base manufacturers.	Development cycle theory	CA + BP SA + BP