Impact of Supply Chain Strategy on Supply Chain Performance: A Structural Equation Modeling in the Context of Small Scale Indian Automobile Industries

Mr.Amit Chandak*, Dr. Neeraj Kumar**

* Research Scholar, Suresh Gyan Vihar University, Jaipur.
** Professor & HOD, MED, Suresh Gyan Vihar University, Jaipur.

ABSTRACT

In order to enhance Supply Chain performance of a firm it is required to adopt systematic Supply Chain practices. Every organization in present era is trying to enhance strategic gain by implementing SCM practices so they can shift firm's performance to a new level. Top management is looking to enhance overall profit of the firm. SCM act as a key tool for Supply Chain practitioner to enhance performance of firm in totality. This research examines the relationship of supply chain strategy (SCS) and supply chain performance for automobile industry in India. In order to examine aforesaid statistical methods Pearson correlation coefficient and Structural Equation Modeling (SEM) are used in this paper. Outcome indicates that there is strong association of SCS with SCP. Particularly SCS constraints such as inventive strategy (INS), customer-oriented strategy (COS) and agile supply chain strategy (ASCS) has a strong association with SCP (i.e. Cost Performance (CP), Logistic Performance (LP) and Quality Performance (QP). The SEM outcome correspondingly demonstrates that SCS constraints seem to be key rank & demonstrate prominence of SCP.The outcome demonstrate the substantial position of SCP of the automotive industry in India.

 KEYWORDS: Supply Chain Management (SCM), Supply Chain Strategy (SCS), Structural Equation Modeling (SEM), Small & Medium Enterprise (SME).

1.   **INTRODUCTION**

Due to changes in government taxes (GST) in India, companies are trying to change their SC design to gain more profit. Due to need of sustainability aspect companies are shifting their focus from traditional vehicle to E-vehicles. Therefor there is a huge demand in market in upcoming years and also lot of challenges too. By virtue of rapid advancement of technology in current market situation there is strong competition in market and this will increase more and more in upcoming years. So companies are required to looking in to advancement there SCM practices. Satisfaction of customer is key parameter in achieving SCM performance in recent market. Therefore SCS plays a vital role in achieving SC performance. SC comprises all activities from extraction of raw material to final delivery of product and after that following performance of product to continuously taking feedback from customers. Once executing entirely letdowns there are several lagoons which turn out to be zones of failure of SC. In present era due to lots of competition companies are shifting from adoption of traditional SCM practices to advance SCM practices. Companies are starting redesigning of their SC in order to gain more and more profit. By statistical results this paper overcome the gap and show influence of SCS on SCP on small

scale Indian Automobile Industries. The key purpose of this research is to identify the prominence of SCS over SCP.

2.   LITRETURE REVIEW

By implementing SCM practices and improved SCS firms can increase competitive age & for SME's there are adequately lots of these opportunities in global market. SCM in present era turn in to a power full tool for firms to enhance their overall performance and gain competitive advantages to compete in global world. But to achieve this goal and redesign SCM practice it is very challenges and difficult task for all firms. Every customer wants faster delivery and quality product at very attractive price. Therefore proper and systematic management of SC is very necessary to achieve strategic gain in present scenario. Therefore every firm is looking to adopt new technological tools in SC practices to achieve high strategic gain. Current market situation is very fluctuating and customer is highly demanding, therefore implementation of flexibility in SCM practices is very essential in present market condition and it will increase in accelerated way in upcoming years. Consequently firms are essential to implement different SCS and added flexibility in SC. Former exploration of previous literature shows there are strong connection amongst SCM dimensions with firm's enactment & supports incorporation of all stack holders of SC to realize flexibility (Frohlich et al., 2001). The contemporary exploration targets to paradigm & investigate a model which indicates managing SCS and SCF is inevitable in the current scenario to enhance the performance. In present era over all life of product is diminishing and due to customer demand there is requirement of product variety in order to satisfy customer and gain competitive advantage (Ho et al., 2002). Performance dimension is to increase the effectiveness and success of a SC (Beamon 1999).

3.   RESEARCH METHODOLOGY

Hypotheses
SCM measurements such as SCS strongly influence SCP and Performance of the firm. A SEM is used in this research to analyze the structural effect of SCM measurements on SCP results.

Main Hypothesis

H_1**:**   *INS has strong effect on SCP.*

On the basis of key hypothesis subsequent supportive hypothesis are framed

H_{1a} : INS has strong effect on CP
H_{2b} : INS has strong effect on LP
H_{3c} : INS has strong effect on QP

H_2**:**   *COS has strong effect on SCP*
H_{2a} : COS has strong effect on CP
H_{2b} : COS has strong effect on LP
H_{2c} : COS has strong effect on QP

H_3**:**   *ASCS has strong effect on SCP*

H_{3a} : ASCS has strong effect on CP
H_{3b} : ASCS has strong effect on LP
H_{3c} : ASCS has strong effect on QP

Proposed Model

The suggested model (Figure 1) is based on two main constructs-
(i) SCS; (ii) SCP .
To determine the effect of SCS on SCP the following dimensions of SCS are examined:
  ➢ Firms implement INS & attempt to cultivate innovative product.

  ➢ Firms essentially implement COS & try to get faith of end users.

  ➢ ASCS helps to overcome demand fluctuation in case of market volatility.
  ➢ Profitability and transactions key aspect of CP.

  ➢ LP helps in reducing lead time and shorten SC response time to gain more customer satisfaction.

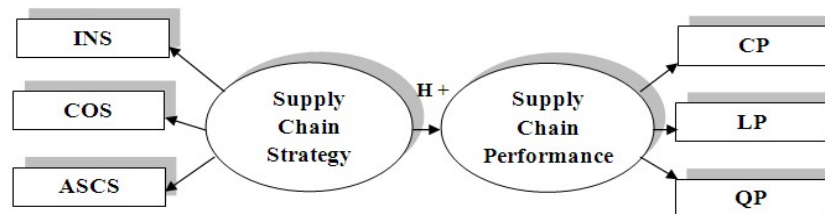 ➢ QP is related to value for money for loyal customers of the firm (Tracey, 1996).

Figure1: Proposed Model

Standard methods are adopted to collect data for research. To test proposed hypothesis statistically large data are accumulated from systematic data collection methods.

4. RESULT ANALYSIS

4.1 Reliability Analysis

To asses reliability amongst item of construct Cronbach's alpha is calculated and its value is within the threshold limit (greater then 0.7). All the construct of SCS and SCP have Cronbach's alpha greater than 0.7 indicate that all items are reliable. For INS value of alpha is 0.854 for 4 items, for COS, value of alpha is 0.878 for 4 items, for ASCS value of alpha is 0.788 for 6 items. Similarly for CP value of alpha is 0.874 for 5 items, for LP value of alpha is 0.778 for 3 items and for QP value of alpha is 0.887 for 5 items.

4.2 Correlation Analysis

Pearson's Correlations between SCS and SCP is shown in Table 1. The outcome shows that SCS dimension INS had weak correlations with SCP measurements especially with CP and INS has negative correlation with LP & QP. The COS has very weak correlation with all dimensions of SCP. Similarly, ASCS has a moderate correlation with all dimensions of SCP.

		SCS			SCP		
		INS	COS	ASCS	CP	LP	QP
SCS	INS	1					
	COS	.521**	1				
	ASCS	.033	.244*	1			
SCP	CP	.117	.162	.462**	1		
	LP	-.133	.081	.564**	.567**	1	
	QP	-.166	.218	.518**	.292*	.499**	1

*p value <0.05, **p value <0.01

Table 1: Correlation between SCS & SCP

4.3   SEM Path Modeling

An SEM model was employed to explore relationships which permit to establish a comparative power of associations amongst SCS & SCP variables. The associations amongst SCS & SCP model shown in Figure 2.
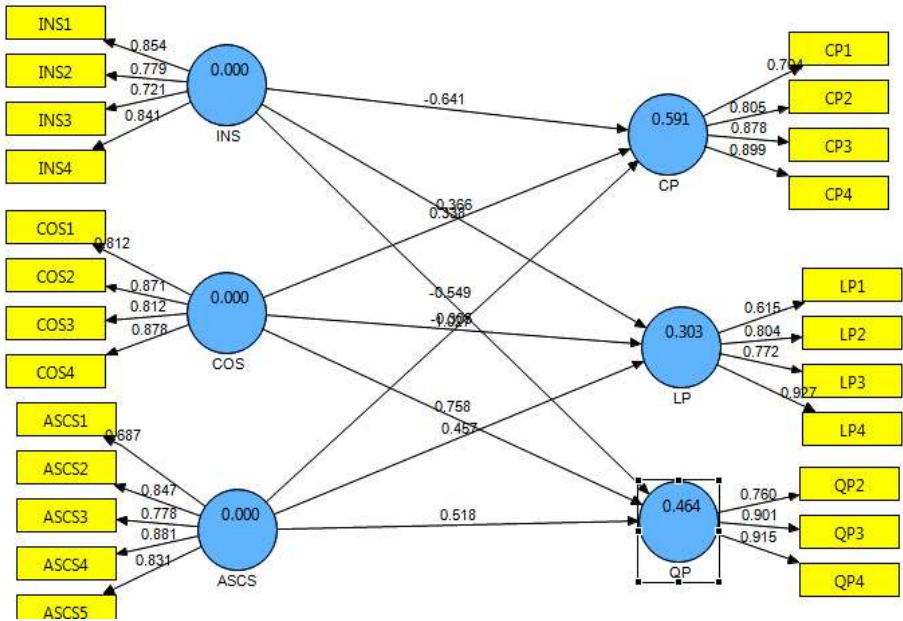

Figure 2: The SEM between SCS and SCP

The SEM is investigated through Smart-PLS. The coefficient of determination for CP is 0.51, for LP is 0.30 and for QP it is 0.46 as shown in Table 2, 3 and 4.

To assess the effect of SCS on SCP constraints of CP & the outcomes of current research shows in table 2. The INS has a negative effect on CP while COS has a weak effect on CP while ASCS has a strong effect on CP.

	Total Effect	t-value	Conclusion	R²
INS=> CP	-0.66	2.20	H_{1a} Supported	
COS=>CP	0.32	1.68	H_{1b} Not Supported	0.51
ASCS=>CP	0.75	10.01	H_{1c} Supported	

Table 2: Results of SEM

The effect of SCS on SCP is shown in table 3. The INS has a very weak negative effect on LP while the COS has a weak negative effect on LP while ASCS has a strong effect on LP.

	Total Effect	t-value	Conclusion	R²
INS=> LP	0.38	0.81	H_{2a} Not Supported	
COS=>LP	-0.30	1.08	H_{2b} Not Supported	0.30
ASCS=>LP	0.58	1.82	H_{2c} Not Supported	

Table 3: Results Structural Model

The effect of SCS on SCP is shown in Table 4. The INS put a opposite effect QP although COS & ASCS has strong effect on QP.

	Total Effect	t-value	Conclusion	R²
INS=> QP	-0.77	1.13	H_{3c} Not Supported	
COS=>QP	0.99	2.47	H_{3b} Supported	0.46
ASCS=>QP	0.87	2.33	H_{3c} Supported	

Table 4: Results Structural Model

5.   CONCLUSION

The outcome shows that assembling organizations ought to stress more noteworthy consideration regarding the COS and ASCS. Because of technological insurgency, fast development and lean generation aspects; SCM procedures have a more noteworthy level of adaptability to reinforce SCM executions. The aim of this investigation is to show there is strong effect of SCM practices on overall performance of the firm. The outcomes check a portion of the key affiliation and it bolsters perspectives and confirmations by specialists in regards to the connections among SCS and SCP which brings about enhancing the business execution. It is additionally noticed that this examination endeavors to build up the writing survey and make a commitment to SCM rehearses.

There are various confinements that impact the generalizability of this examination. In the first place, this paper restricted uniquely on small scale automobile industries. One of the restrictions of this single-division research is that the ends may not be acknowledged to different parts but rather it gives a rule to numerous businesses and area that would build the comprehension of store network execution. Second, the example choice depended on a comfort test, as opposed to an arbitrary likelihood test, which is frequently utilized for exploratory work. Third, the example spoke to a predetermined number of organizations in the single part industry.

REFERENCES

Benita M. Beamon, (1999) "Measuring supply chain performance" *International Journal of Operations & Production Management,* Vol. 19 No. 3, 1999.

Bickman, L. 2000. Summing up program theory New Directions for Evaluation, 87, 103-111

Fisher, M. L. (1997). What is the Right Supply Chain for Your Product? Harvard Business Review, 75 (2), pp.105-116.

Frohlich et al., (2001), "Arcs of Integration: An International Study of Supply Chain Strategies", Journal of Operations Management 19(2), pp.185-200.

H.L. Lee, (2002), "Aligning Supply Chain Strategies with Product Uncertainty" IEEE Engineering Management Review, 44(2):26 - 2

Ho et al., (2002), "Empirical Research on Supply Chain Management: A Critical Review and Recommendations", International Journal of Production Research 40(17):4415-4430

Nunnally, J.C. (1978) Psychometric theory. 2nd Edition, McGraw-Hill, New York.

Suchman, E.A. 1967 Evaluative Research: Principles and Practice in Services and Social Action Programs. New York: Russell Sage Foundation, 1967

Tracey, M.A. (1996).Logistics/purchasing effectiveness, manufacturing flexibility and firm performance: Instrument development and causal model analysis. Unpublished Dissertation. The University of Toledo, Toledo, OH.

Vickery et al. (1991), "A Theory of Production Competence Revisited", *Decision Sciences Journal,* https://doi.org/10.1111/j.1540-5915.1991.tb01286.x

Weiss, C.H. 1998. Evaluation (2nd Ed.). Englewood Cliffs, NJ: Prentice Hall, 1998.