Journal of Supply Chain Management Systems
8 (1) 2019, 38-44
http://publishingindia.com/jscms/

A Dynamic Capability View of Adaptability on New Product Success Launch

Amit Kumar Gupta*, Narain Gupta**

**Assistant Professor, Operations Management, Management Development Institute Gurgaon, Haryana, India. Email: amitkgupta@mdi.ac.in*

***Associate Professor, Operations Management, Management Development Institute Gurgaon, Haryana, India. Email: narain.gupta@mdi.ac.in*

Abstract

Using dynamic capability view (DCV) lens, we have examined the impact of supply chain adaptability (SCA), and supply chain capability (SCC) on new product launch success (NPLS) in Indian context. Using a convenience sampling and snowballing method, a sample of 209 was collected from middle management executives of medium to large firms We used SEM and AMOS for testing the hypotheses. We observed that the SCA was positively associated with the NPLS, while the SCC had an indirect effect on the NPLS mediated by the SCA. We concluded that the SCA was an important driver in the NPLS, which even mediated the SCC. The findings from this study have academic and practice impact for business.

Keywords: New Product Launch Success, Supply Chain Capability, Supply Chain Adaptability, Dynamic Capabilities

Introduction

With the advent of globalization and foreign direct investments, the pressure on the companies and their supply chains to be more competitive is increasing. New companies such as Amazon etc are offering stiff competition to the flipkart, and other retail organizations. Companies are entering the market with new product and services designs. These services and designs are based on the customer data and analytics. The developing economies such as China, India, and various Asian sub-continental geographies are moving towards more and more outsourcing and services. These services are leading to the evolution of 3PL. The companies operating in new competitive environment are now forced to look for newer ways of adaptability.

In the past two decades, a series of studies have investigated the impact of new product development capabilities of a firm on new product launch (Bstieler, 2012; Kuester, Homburg, & Hess, 2012). Numerous studies considered an indirect impact of supply chain metrics on the NPLS. Such studies have considered supply chain intelligence as an important tool for enhancing firm's innovation capabilities (Schoenherr & Swink, 2015; Hult et al., 2006). The relation between SCC and new product development capability has been studied (Morita & Machuca, 2018; Petersen et al., 2005). Few scholars have attempted to link supply chain agility with the firm performance as a substitute to NPLS in particular (Gligor et al., 2012; Blome et al., 2013).

Schoenher and Morgan (2015) described that the studies on the SCA and the NPLS needs more attention by the new researchers. We find the gap for our research from the literature and conduct this research to study the SCA and the NPLS relationship.

Concept and Theoretical Foundation

Dynamic capability view (Teece & Pisano, 1994) describes the innovation, new product development, sense and respond, market adaptability, customization, and delivery capability as the supply chain dynamic capabilities. The firm's receives competitive advantages building such capabilities (Beske et al., 2014).

Conceptually, and as per scale measurement point of view although the SCA is a sub-set of the SCC. We considered adaptability separately in our research statement so as to highlight the importance of adaptability in the NPLS.

Several scholars have defined supply chain and supply chain management since decades. Lummus et al. (1999) in their review of definitions of the supply chain management redefined it in a comprehensive manner. They stated that the supply chain management is "*all the activities*

involved in delivering a product from raw material through to the customer including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer, and the information systems necessary to monitor all of these activities."

Supply Chain Adaptability

A supply chain can be called as adaptive if it evolves over time along with economic progresses, political shifts, demographic trends, and technological advances that reshape markets. Schoenher and Morgan (2015) defined the SCA as an organization's capability to quickly respond to the market changing requirements and customization capability. Few good examples of adapting to the changing environment would be adapting to the new GST regime by changing the billing and accounting system of a firm quickly; adapting to the cash crunch phase during demonetization in India by switching to digital modes of transactions; adapting the costs during US–China trade wars that result in dumping of Chinese goods and commodities in India; and dealing with ban of entry of trucks in National Capital Region (NCR) of India.

Supply Chain Capability

The SCC is defined by different scholars as the SCC (Tolonen et al., 2017), supply chain operational capability (Wook et al., 2006). Capability of a supply chain essentially refers to how good a firm's supply chain scores on the basic metrics of a supply chain such as: responsiveness, delivery reliability & quality, perfect order measure, and cost.

A comprehensive definition of the SCC is *the set of decisions related to capacity and distribution planning, materials management, which includes demand, sourcing and inventory, communication and delivery.*

New Product Launch Success

The NPLS metrics can be quantified as new product launch date compared to objective, new product development & launch actual expense versus budget, actual after launch versus forecast, market share before & after the launch, PAT before & after the launch, stock price before & after the launch, return on investment, % contribution to profits, etc.

Theoretical Model

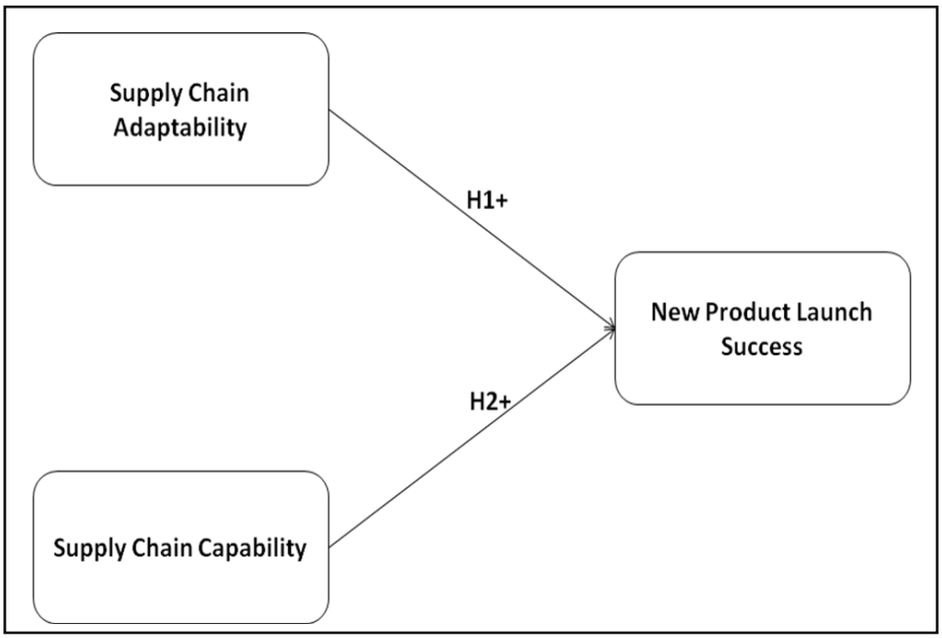

Fig. 1: Theoretical Model (Direct Effect)

Schoenher and Morgan (2015) described in their recent publication that the SCA has a positive association with the NPLS in the context of US manufacturing firms. We build our hypothesis on this established relationship in Indian context as follows:

H1: The supply chain adaptability has positive and significant effect on the new product launch success

H2: The supply chain capability has positive and significant effect on the new product launch success

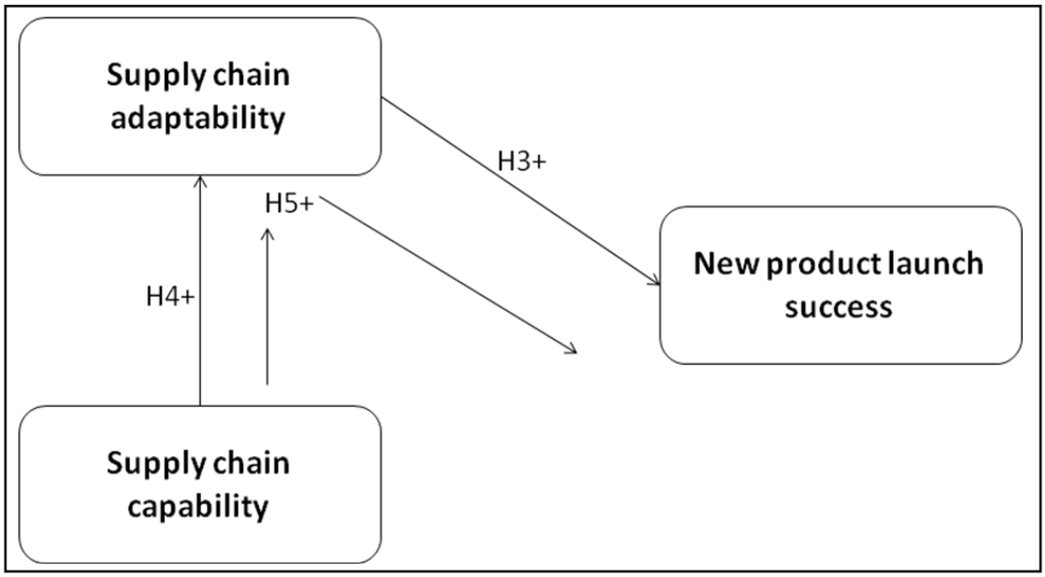

Fig. 2: Theoretical Model (Mediation Effect)

We substantiated a hypothesis basis Schoenher and Morgan (2015) study, which we established again in a mediation context as follow:

H3: The supply chain adaptability has positive and significant effect on the new product launch success.

Schoenher and Morgan (2015) established that the SCA is a mediator for studying the impact of supplier integration on the NPLS. Basis these established literature we built our hypothesis that the SCA may mediate the effect of the SCC on the NPLS. In order to test the mediation effect of the SCA, we also established a link between the SCC and the SCA as follows.

H4: The supply chain capability has positive and significant effect on the supply chain adaptability.

H5: The supply chain adaptability mediates the impact of the supply chain capability on the new product launch success.

Research Methodology

Survey Design

The survey instrument was designed to capture the respondent's perceptions toward the key constructs. The scales for the SCA, and the NPLS were adapted from Schoenherr and Swink (2015). The SCC scales were adapted from the metrics of Australian Food & Grocery Council (2017). The scales were designed as 1 to 5, where 5 was considered as the *completely agree*, and 1 was considered as *completely disagree*. The metrics of the SCC included the operations key competitive dimensions such as cost, delivery speed, flexibility, and service.

Data Collection

The convenience sampling with snowballing method was used for collection of responses. The demographic profile of the respondents is presented in Table 1. The profiles of respondents varied from middle to senior management industry executives mostly working in services industries.

We followed some required measures (Podsakoff & Organ, 1986; Podsakoff et al., 2003), during the design and administering of the survey instrument in order to address the common method variance (CMV) concerns. The item statements were clear and concise. The positioning of dependent variables and independent variables were staggered in the instrument. Also, the instrument was administered using multiple methods such as hard print, online, and emails.

The data was collected from people working in wide variety of firms in the Indian geographic context. The questionnaire was shared through social media network, as well as internet mailing communication to diverse

industries and positions. The survey was shared to more than 1000 individuals online and in person, of which 209 responded. The data was cleaned using two criteria. Firstly, we removed responses where there were more than 10% of unfilled questions. Secondly, in order to capture a good variance, we eliminated responses which were within the standard deviation of 0.5. In such a way, we removed 59 entries resulting in total of 150 usable records. The effective response rate was 15%.

Scale Validity

Content validity was confirmed by the literature-based development of the constructs (Hair et al., 1992). The convergent validity was ensured by observing no cross-loading of measurement items as well as reasonable construct reliability and chronbach alpha (Cronbach, 1951). The minimum loading among all items was 0.59. The results of the CFA using the measurement model of the SEM are presented in Appendix (Table 1).

Empirical Analysis

We developed a path model in the AMOS to test the hypotheses (Fig. 3). The effect of the SCA on the NPLS was found to be positive (β=0.86, $p < 0.01$); therefore, we accepted the hypothesis H1 (Table 2). However, the effect of the SCC on the NPLS was found not significant (β=0.08, $p > 0.05$), therefore we rejected the hypothesis H2.

Table 2: Path Model 1 Results (Direct Effect)

Hypothesis	Outcome	Regression weight	Standardize Regression weight	p-value	R-Square
H1: The SCA has positive and significant impact on the NPLS	Supported	0.74	0.86	0.005	0.9
H2: The SCC has positive and significant impact on the NPLS	not supported	0.08	0.10	0.716	

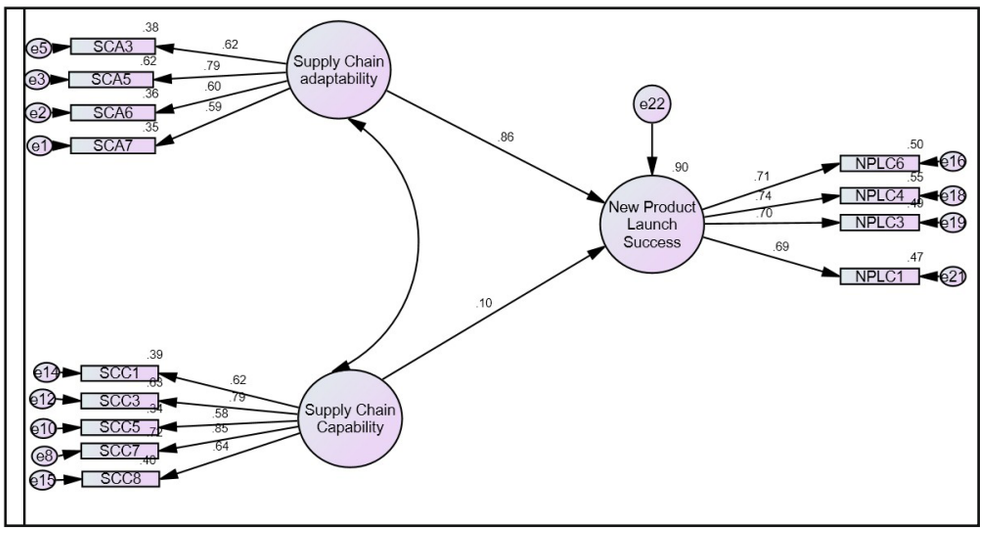

Fig. 3: Structural Equation Model to Test the Direct Effect Relationships

In order to test our mediation hypotheses H3, H4, and H5 we developed another path model (Fig. 4). We develop a unidirectional link from the SCC to the SCA. The effect of the SCA on the NPLS was found to be positive (β=0.96, $p < 0.001$), therefore we accepted the hypothesis H3 (Table 2A). Similarly the SCC had a positive effect on the SCA (β=0.89, $p < 0.001$), therefore we accepted the hypothesis H4.

Table 2A: Path Model 2 Results (Direct Effects in Mediation Model)

Hypothesis	Outcome	Regression weight	Standardize Regression weight	p-value	R-Square
H3: The SCA has positive and significant impact on the NPLS	Supported	0.84	0.96	****	0.92
H4: The SCC has positive and significant impact on the SCA	Supported	0.81	0.89	****	0.78

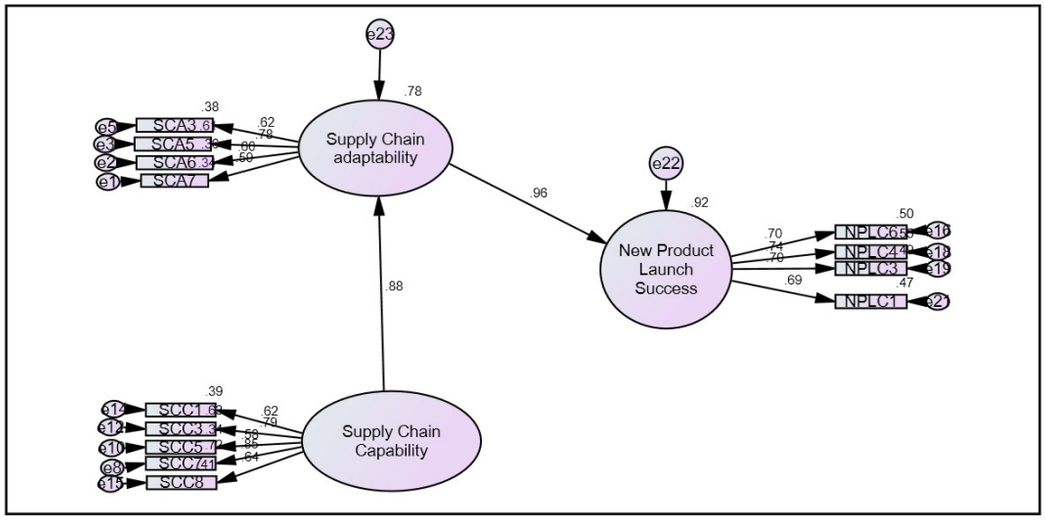

Fig. 4: Structural Equation Model to Test the Mediation Relationships

In view of the acceptance of the above two hypotheses H3 and H4, we observed the indirect effect of the SCC on the NPLS as (β=0.85, p< 0.01). Therefore we accepted the hypothesis H5 (Table 2B). The indirect effect (β=0.85) was the product of the standardized estimates on the two direct links (0.96 X 0.89 = 0.85). It was concluded that the SCA mediated the relationship of the SCC and the NPLS.

Table 2B: Path Model 2 Results (Indirect Effects)

Hypothesis	Outcome	Regression weight	Standardized Regression weight	p-value
H5: The SCC has positive and significant impact on the NPLS mediated by the SCA	Supported	0.68	0.85	0.003

Discussion

In our first path model we observed that the SCA positively related to the NPLS, while the SCC did not. Since the SCC did not show significant effect on the NPLS, while the SCA had a positive and significant effect on the NPLS, so we deleted the SCC direct link with the NPLS, and tested the mediation effect of the SCA on the relation of the SCC and the NPLS. We concluded that the SCA mediated the effect of the SCC on the NPLS. The SCA is one of the dynamic capabilities (Eisenhardt & Martin, 2000) of the firms for the success of the new product launch.

Limitations and Future Scope

The major limitation of the research was that it was based on the perceptual image of the adaptability. There are ample historical researches from where we can extract the measures of the SCC and they are being practiced in industry as well. When it comes to the SCA, most of the

opinions, studied were perception based. It should be our endeavour to quantify the SCA.

References

Australian Food & Grocery Council (2017). *Supply Chain Strategy and Capability Assessment*. A.T. Kearney.

Schoenherr, T., & Swink, M. (2015). The roles of supply chain intelligence and adaptability in new product launch success. *Decision Sciences*, *46*(5), 901–936.

Beske, P., Land, A., & Seuring, S. (2014). Sustainable supply chain management practices and dynamic capabilities in the food industry: A critical analysis of the literature. *International Journal of Production Economics*, *152*, 131–143.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, *21*(10–11), 1105–1121.

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, *12*, 531–544.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*, 879–903.

Hair Jr, J. F., Anderson, R. E., Tatham, C. L., & Black, W. C. (1992). *Multivariate data analysis*. New York, NY: Macmillan.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *31*, 93–96.

Teece, D. J., & Pisano, G. (1994). The dynamic capabilities of firms: An introduction Ind. Corp. *Change 3*(3), 537–556.

Wook Kim, S. (2006). The effect of supply chain integration on the alignment between corporate competitive capability and supply chain operational capability. *International Journal of Operations & Production Management*, *26*(10), 1084–1107.

Blome, C., Schoenherr, T., & Rexhausen, D. (2013). Antecedents and enablers of supply chain agility and its effect on performance: A dynamic capabilities perspective. *International Journal of Production Research*, *51*(4), 1295–1318.

Gligor, D. M., & Holcomb, M. C. (2012). Antecedents and consequences of supply chain agility: Establishing the link to firm performance. *Journal of Business Logistics*, *33*(4), 295–308.

Hult, G. T. M., Ketchen Jr, D. J., Cavusgil, S. T., & Calantone, R. J. (2006). Knowledge as a strategic resource in supply chains. *Journal of Operations Management*, *24*(5), 458–475.

Morita, M., & Machuca, J. A. (2018). Integration of product development capability and supply chain capability: The driver for high performance adaptation. *International Journal of Production Economics*, *200*, 68–82.

Petersen, K. J., Handfield, R. B., & Ragatz, G. L. (2005). Supplier integration into new product development: coordinating product, process and supply chain design. *Journal of operations management*, *23*(3–4), 371–388.

Lummus, R. R., Vokurka, R. J., & Alber, K. L. (1998). Strategic supply chain planning. *Production and inventory management Journal*, *39*(3), 49.

Tolonen, A., Haapasalo, H., Harkonen, J., & Verrollot, J. (2017). Supply chain capability creation – The creation of the supply chain readiness for a new product during product development process. *International Journal of Production Economics*, *194*, 237–245.

Appendix

Table 1: Confirmatory Factor Analysis (Structural Equation Modelling - Measurement Model)

Latent Variables	Variable codes	Standardize Regression weight	AVE	CR
F1: Supply chain adaptability (Alpha = 0.76)	F1.1: Easily acquire the raw materials for new products	0.62	0.43	0.75
	F1.2: Quick in digitization of supply chain management	0.79		
	F1.3: Quick to adopt green technologies	0.60		
	F1.4: Manage regulatory and policy changes without much issues	0.59		
F2: Supply chain capability (Alpha = 0.80)	F2.1: Suppliers are punctual on most deliveries	0.62	0.5	0.83
	F2.2: Order fulfillment lead times of our suppliers are very competitive	0.80		
	F2.3: Inward supplies have a very low rejection rate	0.59		
	F2.4: Inbound logistics operations are lean and cost effective	0.85		
	F2.5 : Outbound logistics operations are lean and cost effective	0.64		
F3: New product launch success (Alpha = 0.77)	F3.1: Launch date relative to objective	0.69	0.51	0.8
	F3.2: Product launch execution performance relative to objective	0.70		
	F3.3: Product launch timeline relative to objective	0.74		
	F3.4: Overall product launch performance	0.71		