

The Moderating Role of Marketing Communications in the Relationship between Supply Chain Integrations and Supply Chain Performance

Jutamat Sutduean^a, Andi Luhur Prianto^b, *Kittisak Jermsittiparsert^{c,d},
^aCollege of Innovative Business and Accountancy, Dhurakij Pundit University, Bangkok, Thailand, ^bFaculty of Social and Political Science, Muhammadiyah University of Makassar, South Sulawesi, Indonesia, ^{c,d}Department for Management of Science and Technology Development, Ton Duc Thang University, Ho Chi Minh City, Vietnam, Faculty of Social Sciences and Humanities, Ton Duc Thang University, Ho Chi Minh City, Vietnam. ^a 607191030012@dpu.ac.th, ^b luhur@unismuh.ac.id
^{c,d} Corresponding Author: kittisak.jermsittiparsert@tdtu.edu.vn

In the current study, the authors are interested in examining the relationship between supply chain integration, market communication and the supply chain performance. In addition to that the moderating role of market communication in the relationship between supply chain integration and the supply chain performance is examined. The data is collected from the operation managers, production managers of manufacturing firms listed in Indonesian Stock Exchange. The results of the study have shown a great deal of agreement with our proposed hypothesis. Researchers claims that if there is more integration in supply chain management, the performance of supply chain management will increase as well. There exists a positive relationship of integration with performance, whether the integration is with supplier or customer. Meanwhile, it is argued that the opportunity exists for marketers to participate in these relationships; planning and processes allows for the input to adopt a realistic approach rather than a theoretical approach. This study, which is among pioneering studies on the issue, will be helpful for policy makers and managers in understanding the role of marketing theory in supply chain management.



Key words: *Marketing Communication, Supply Chain Integration, Supply Chain Performance.*

Introduction

It is the utmost effort of the managers especially in the manufacturing industry to manage the supply chain in a better way. A number of techniques are being adopted, such as employee resource planning schedule, lean production, and total quality management. According to Thomas and Griffin (1996) the concept of supply chain managements shows the latest state in the development of supply chain activities, procurement and purchasing. At the level of operations, the old operations like distribution, storing, buying and seeking of the goods is brought together. At the strategic level, supply chain management is rapidly expanding because it's relatively new topic. Moreover, it is transforming the way the needs of the customers are being met by the non-manufacturing and manufacturing operations (Gunasekaran, Patel and McGaughey, 2004). The organizations are aligned with process orientation structure through development of cross functional teams which is necessary to achieve an easy flow of resources in the supply chain. Trent and Monczka (1994) suggested effectiveness of supply chain is improved by such teams.

Since the introduction of supply chain management in the early 1980s, this concept is treated as one of the most important in the area of management. A number of definitions have been presented, related to supply chains, in the past (Gilmour, 1999). Most of these definitions are related to integration; in fact most of the definitions of supply chain are based on the concept of integration (Lambert and Cooper, 2000). Integration of supply chain is important operationally as well as strategically (Narasimhan and Kim, 2002). More integration is perceived as better in the field of research (Appelqvist, Lehtonen and Kokkonen, 2004). This has been claimed on a number of occasions and been proved empirically as well (Cagliano, Caniato and Spina, 2006).

According to the researchers, there is a need for integration and a close relationship among supply chain management and manufacturers (Armistead and Mapes, 1993). However, competition in most modern markets has forced organizations to integrate tightly with their suppliers and customers in order to meet shared business goals (Lenny, Saad and Arunachalam, 2006). Thus, organizations have realized that both intra and inter organizational activities, processes and functions within their supply chains need to be integrated in order to deliver the best customer value at the lowest cost . Value-based supply chain relationships can be used to achieve business goals that hitherto have been difficult to achieve by a single organization (Johar, Hidayat & Latif 2017). Operational as well as



financial performance of each member of the channel is increased by such alliances through reduction in inventories and costs and maximizing the level of information sharing. The manufacturers are looking for ways to find means beyond the issues related to pricing only. They are looking to work closely with suppliers so that improved services, production design and technological innovation can be provided to the customers. There has been a significant impact of such development due to the expansion of the scope of supply chain management because of more integration among organizations and suppliers (Flynn, 2010).

Internal motives are not the only factors that are causing the development and growth of supply chain management. Additionally, there are a number of external factors including environmental concerns, availability of information, minimizing the trade barriers and globalization which are the driving forces for supply chain management. There is a need for supply chain integration in order to control and manage the flow in the operations (Thakkar, Kanda and Deshmukh, 2009). Such control of the flow is related to activity systems and inventory control scheduling throughout the time constraints and range of resources. Adding to this flow control, there must be an operating system where the strategic and competitive objectives related to cost, flexibility, speed and quality are met (Gunasekaran, Patel and Tirtiroglu, 2001). There is also a need for control as supply chain performance and customers are both changing with the passage of time.

The performance is regularly changing in the context of supply chains. Therefore, it's become an important issue for the retailers, manufacturers and suppliers to get and sustain competitive advantages. Companies like Gome, Lenovo, Toyota and Samsung, that are mostly based on supply chains, have used performance management tools that are different so that their supply chain strategies can be supported. Improvement and monitoring of performance of a supply chain is recognized as a complex and important task (Cai, Liu, Xiao and Liu, 2009). A number of management processes are included in complex performance management such as feedback, reporting, monitoring, communication, planning, defining targets and identifying measures. Performance measurement is very important for the organizations to improve their efficiency and effectiveness of the supply chain (Shepherd and Günter, 2010). In the perspective of performance, it is important for the managers to identify the key performance indicators (KPIs) after the development of supply chain performance so that their system can be improved.

In the late 20th century, the concept of marketing communication emerged. Since then its importance has grown rapidly (Grove, Carlson and Dorsch, 2002). Keeping in view the impact of information technology, there occurred a number of changes in the domain of marketing, in which the concept of marketing communication emerged (Kitchen, Brignell, Li



and Jones, 2004). Consistent and coordinated messages are created through out a number of communication channels through marketing communication. This concept is also valuable because great emphasize is placed by it on the importance of all the groups of stakeholders especially on the side of customer loyalty which can only be created with relationship building through different strategies (Jin, 2003).

A number of stakeholders are engaged by the organizations to achieve their organizational and marketing objectives. Forming communication is meant by the engagement and the nature of media and messages is also covered in it. The mixture of these two elements is used by the organizations invariably so that the stakeholders can hear, understand and get engaged in a relationship that is mutually beneficial. Marketing communication is basically related to the efficiency and effectiveness of the supply chain through the sharing of benefits and risks, collaboration and coordination, minimizing the time of response and speeding up the flow of information (Li and Lin, 2006). Communication and promotional abilities should be used by the marketers who desire to seek the opportunities to use supply chain management to get participation in markets (Junaid, 2018). The communication becomes extremely important for the parties that are involved in the process of supply chain so that operations of the system run smoothly (Abel, Laric, Libonate, Logsdail and Lynagh, 2010).

The main objective of this study is to investigate previous researches regarding the relationship between supply chain performance and supply chain integration. Moreover, the moderating role of marketing communication between mentioned variables of supply chains. The paper will contribute in decreasing the gap in literature regarding this topic and improve the knowledge in this area.

Literature Review

Supply chain integration

The word integration is defined by the authors in several ways (Pagell, 2004). Several authors also claim that there is no proper definition of integration in the literature available. A number of researchers have made calls for the empirical research regarding the link between performance and supply chain management (Sanchez, Stantchev, Potter, Naim and Whiteing, 2008).

Researchers claims that if more integration in supply chain management exists, the performance of supply chain management will increase. There exists a positive relationship of integration with performance, whether the integration is with supplier or customer (Bagchi, Chun, Skjoett-Larsen and Boege, 2005). Support is found by regarding the positive impacts



of customers and suppliers. Moreover, studies regarding upstream integration and downstream integration have found the evidence to support the mentioned relationship. The relationship between dimensions of integration like performance, attitudes, patterns and practice has also been found in the literature. Initially, there is confirmation regarding the impact of supply chain practices (Vickery, Jayaram, Droge and Calantone, 2003). Second, in terms of patterns, generally it's believed that performance is improved with the frequent communication within the supply chain (Paulraj, Lado and Chen, 2008). On the other hand, there are a number of studies that suggest these variables play a critical role in the performance and frequency (Prahinski and Benton, 2004). In the end, there exists the evidence that a strong relationship exists between performance and supply chain attitude (Johnston, McCutcheon, Stuart and Kerwood, 2004).

In the available literature, most of the studies have revealed a positive impact on performance. There exist three categories in which performance can be grouped: cost related measures like transportation costs; service-related measures like delivery speed and overall performance measures like performance. On the basis of literature review, if the relationship of supplier- buyer is the unit of analysis, service and cost measures are mostly used (Van der Vaart and van Donk, 2008).

An approach regarding the modelling system of a product life cycle; later on, this approach was examined by (Gilmour (1999) who evaluated the impact of supply chain integration between the relationship of performance and diversification of the firm. Research also revealed that marketing and cross functional integration is required in supply chain management system (Lambert and Cooper, 2000). It's been also stated that reasonable progress has been made in performance measurement of individual elements regarding the supply chain of the corporation (Narasimhan and Kim, 2002).

It's been revealed that performance at the operational level is affected by the integration of the supply chain. Moreover, the level of integration also has an impact on the efficiency of the cost, whereas the performance of the organization is believed to improve due to collaboration between customers and suppliers; customer relationship management (CRM), inventory design and supply chain design (Bagchi, Chun, Skjoett-Larsen and Boege, 2005). Whereas, implementation of the supply chain integration process has also remained the focus of research (Appelqvist, Lehtonen and Kokkonen, 2004).

The positive relationship between performance and integration is reported by a number of empirical studies (Van der Vaart and van Donk, 2008). Researchers also found that plants are performed better due to higher levels of logistic interactions (De Toni, 1999). It's also been



found that there exist a strongest association between improvement of performance and integration (Frohlich and Westbrook, 2001). There exists high levels of efficiency in the system of supply chains due to collaboration. Additionally, Li, Yang, Sun and Sohal (2009) revealed that integration of the supply chain is significantly related to supply chain performance.

Researchers have also confirmed that integration has a positive impact. Whereas, performance is decreased due to integration after a certain level (Das, Narasimhan and Talluri, 2006). So there exists an inconsistent relationship between performance and supply chain integration. On the other hand (Liu, Ke, Kee Wei and Hua, 2013) studied the relationship of marketing communication and supply chain integration. There exists a significant relationship between performance and supply chain integration (Koçoğlu, İmamoğlu, İnce and Keskin, 2011).

Marketing communications

In the beginning of promotion management function, the main objective was to send the message to sell the product. In the current era, sales are important but the main emphasize is on the long-term relationship between the consumer and the seller. A few years back, the main method of communication with clients was advertising which created the sales. In order to create a long term relationship with the clients, companies are using myriad methods. Despite the fact that advertisement is still very important, but different methods are being used with the combination of sales and advertisement, like online promotions. In today's technological based environment, these synergies are very important (Abel, Laric, Libonate, Logsdail and Lynagh, 2010).

According to Schultz (2009) before modernization, organization focused on functional organizational structure or supply chain approach, in which, functional groups, such as finance, marketing, information technology (IT), human resources, and operations reports were primary while customers were secondary. In some ways, the mentioned approach of the supply chain is not relevant to today's world. This is because the choices of customers are growing at a very fast speed due to the internet and IT. According to the present approach of the supply chain, value can be created by the organization among different functions which can help to find the ways to deliver the values without knowing and understanding about the goals and needs of the customers (Institusi, Awam and Abdullah, 2016).

In this era, the customers are very sophisticated because they have a lot of information from different sources regarding the products. These sources include the agencies of the



government regarding quality control. In other words, the information and communication technology (ICT) provides power to the customers and enables them to demand for more personalized products and services. Thus, marketing communications helps to make the relationship easier because it is supportive to develop an overall helping environment in the firms (Hulbert, Capon and Piercy, 2003).

The demand of the supply chain is outstripping with the passage of time because the competition is increasing rapidly. Moreover, there also exist a shift of power between the intermediaries and the retailers. Due to this reason, it is important for any business to build the long-term relationship with the customers to stay in the market for the long-term basis. Indeed, there exists a powerful relationship between manufacturer, intermediary and retailer. The relationship among the manufacturers, intermediary and retailer is interdependent in an ideal world. Even if the relationship isn't integrated, communication messages for the customers can still be created by the organizations, because the manufacturer may develop the product for the customer (Vickery, Jayaram, Droge and Calantone, 2003).

Due to marketing communications, marketers are enabled to combine all the communication methods so that a coherent and synergetic approach can be planned and created. The most important usefulness of marketing communication is that the marketing strategy is appreciated by it. Moreover, it incorporates communication methods that are new like sales promotion, internet banking and direct marketing (McGrath, 2005).

It's most likely that distribution and channel in the supply chain management for the customers will most likely be the subject of measurement, goal setting and joint planning. Significant practices of the channel are required for the purpose of the supply chain management as the single entity. At this stage, entry of the order, its fulfilment, its transportation, its inspection, storage of it, way to handle it, its delivery and the process of receiving the order is analysed. The processes of the channel and participants may be added, changed or eliminated through the process of planning so the goals of management can be achieved as a single entity, reduced investment in the inventory, reducing the cycle time and reducing the costs as well. The opportunity related to the marketers, so they can participate in these relationships planning and processes, allows for the input to adopt a realistic approach rather than a theoretical approach. Therefore, there is a need ofr the managers of the organizations to coordinate with all the stakeholders to implement the product mix so that the goals of the organizations can be achieved (Abel, Laric, Libonate, Logsdail and Lynagh, 2010).



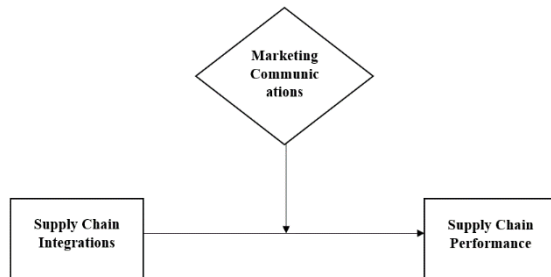
Moderating role of marketing communication

In contrast to the mentioned optimistic view, the relationship of performance and supply chain integration is proven. It's been concluded from the past literature that there exists contradiction in the benefits of supply chain integration. Moreover, the implementation is very limited in terms of the said relationship (Hair, Ringle and Sarstedt, 2011). Therefore, it's for the relevant managerial staff to develop and test the mediating and moderating variables of the mentioned constructs. This can contribute towards the theory building of supply chain management, operations and business logistics.

The available past literature on supply chain integration is based on dimensions and definitions. Some of the research has focused on single dimensions of supply chain integration. Particularly, supplier integration with customers. A few of the researchers have used a number of omnibus definitions to examine supply chain integration as a single construct. Additionally, a number of researchers have conceptualized supply chain integration by leaving weak link between internal integration and supply chain integration. Due to these evolving and incomplete links there exists inconsistencies in the performance of supply chain integration (Flynn, 2010). There is a need to examine the way individual supply chain integration factors and their relationship with performance to understand supply chain integration fully.

This suggests examining a new moderator that plays an important role either to enhance or to reduce this already built relationship. In approach of marketing communication, different information will be easily understood by the customers and they will not get confused by the large amount of information. However, if companies disregard marketing communication at any stage of the integrated supply chain, it will impact the product quality or delivery, it may lead to an incoherent brand image, which can negatively influence consumer purchasing and then might influence overall supply chain performance (Stammer, Wood, Chang and Thorson, 2005). So, marketing communication can be studied as a significant moderator in SCI and SC performance relationship.

Figure 1. Conceptual framework



H1: Supply Chain integration has significant impact on the supply chain performance.

H2: Marketing communication has significant impact on the supply chain performance.

H3: The marketing communication moderates the relationship between Supply Chain integration and the supply chain performance

Methodology

The current study has employed the quantitative approach. The quantitative approach used the surveys-based methodology. The reason why the quantitative research design has been framed for this study is that it helps the researcher in thoroughly examining the large sample of respondents and then generalizing their responses. Meanwhile, it also helps a researcher in obtaining the summarized behaviour of respondents participating in the study. This study which has employed the quantitative method has adapted a questionnaire to quantify the responses and opinions regarding issues raised in this study. The use of a questionnaire also helps a researcher in understanding the relationship between a set of dependent, independent and intervening variables. The questionnaire was designed according to the objectives, problem and hypotheses of the study to determine the relative importance of factors that may control the employees' performance in the manufacturing organizations of Indonesia. The data collected through the surveys was loaded into Microsoft Excel, the IBM SPSS, and Smart-PLS. The five-point Likert scale is used to operationalize the variables and their sub constructs. The questionnaire is adapted from the previous studies.

Research Analysis and Discussion

To achieve the objective of the current study we have employed the PLS-SEM. The PLS-SEM, according to several studies the PLS-SEM is a second generation structural equation



modelling technique, which is not only new but also robust, as it integrates all the models into a structure of the equation and produces results with a simultaneous operation by producing a relationship with all direct and intervening phenomena. The SEM-PLS, which in modern times is one of the more robust techniques to analyse the data on social issues, is used as the statistical tool in the current study. Recently many researchers such (Hair, Hult, Ringle and Sarstedt, 2016) have employed and argued that whenever we are dealing with some novelty in conceptual models or need an advance assessment of any existing phenomena, we prefer SEM-PLS over other techniques such as multiple regression analysis. Hair, Ringle and Sarstedt (2011) argued that the PLS-SEM is a two-step equation, which is an advanced form of multiple regressions and accounts for two assessments namely the inner model assessment and the outer model assessment. The first step is an estimation of the reliability and validity of the model. In Smart-PLS, after obtaining the results of reliability and validity for each construct, examining the structural model results is necessary in order to test the hypothesis.

There are five steps or procedures in examining the structural model results; (1) examine the structural model for collinearity issues; (2) the significance of path coefficients; (3) followed by examining the level of R² values; (4) assessment of f² effect size; and last but not least, (5) examining the predictive relevance (Q² and the q² effect size). The reason why the SEM-PLS is preferred, over the multiple regression, is that the former handles the multiple equations simultaneously and can produce results with a simultaneous operation by producing a relationship with all direct and intervening phenomena (Hair, Ringle and Sarstedt, 2011).

Several authors have observed and realized the problem of non-response bias in research studies, which can occur for multiple reasons. For instance, respondents may have limited or no time for filling in the survey, sensitivity of certain questions involved in the questionnaire, fear of top management, lack of interest or cooperation by the respondents, unable to provide desirable information, or failure to reach or target desirable respondents. In order to deal with non-response bias, researchers need to ensure the appropriate selection of desirable and interested respondents.

Validity and reliability of data was inspected in the initial step of analysis of the data. Measures of composite reliability and Cronbach's alpha were examined. The value of 0.70 is considered as an acceptable value for the measure of Cronbach alpha. Furthermore, the threshold level of 0.70 as mentioned for composite reliability was also observed. Moreover, average variance extracted, and factor loadings were analyzed for observing convergent validity and internal consistency. According to Hair, Ringle and Sarstedt (2011), factor loadings and AVE must be above 0.5. In the present study, the values of AVE and factor

loadings are above 0.5. In addition, external consistency was also examined using discriminant validity.

Table 1. Convergent and Discriminant Validity

	1	2	3
SCI	0.948		
MC	0.731	0.798	
SCP	0.518	0.55	0.801

Table 2: Discriminant Validity

	Indicators	Loadings	CR	AVE
SCI	SCI1	0.843	0.895	0.772
	SCI2	0.855		
	SCI4	0.802		
	SCI5	0.925		
MC	MC1	0.822	0.932	0.617
	MC2	0.855		
	MC3	0.722		
	MC4	0.825		
	MC5	0.841		
SCP	SCP1	0.8	0.972	0.783
	SCP2	0.88		
	SCP3	0.881		
	SCP5	0.826		
	SCP6	0.821		
	SCP7	0.882		
	SCP9	0.928		
	SCP10	0.84		
	SCP11	0.921		
	SCP12	0.882		

The discriminate validity is one of the measures to examine the interrelationship of the reflective variables with their own indicators. Basically, it shows or measures that the operationalization of the variables, which genuinely are not linked, are linked in the case of this study. Fornell-Larcker has introduced one of the robust and widely used measures of

discriminate validity. Therefore, the current study is using this value as a base to evaluate the discriminate validity (Hair, Sarstedt, Ringle and Mena, 2012).

According to Chienwattanasook and Jermstittiparsert (2018), the index of the reliability of a variable must be greater than 0.70. However, the values in cross loadings were the same with outer loadings value, the difference is in the cross loadings as it compares with correlation among constructs. Concisely, the result of evaluating the discriminant validity of this study, through Fornell-Larcker Criterion and Cross Loadings, is shown in the table 2.

In the next step of data analysis, in order to test the proposed hypotheses that were developed on the literature, a PLS bootstrapping was employed. A threshold level of 1.96 t-value was set for the rejection or acceptance of hypotheses. Firstly, all the observed relationships have exhibited t-value of more than 1.96, thus showing acceptance of all the set of direct hypotheses including H1, and H2

Table 3: Direct Effect

	(β)	SD	T-value	P-Values
H1	0.111	0.035	3.161	0.002
H2	0.467	0.132	3.978	0.007

For the purpose of investigating the indirect impact of a variable or moderator, moderation level is estimated. In addition, to specify the significance of the relationship, bootstrap analysis is employed on samples of 1000 observations. The significance level for the p-value is less than 0.05. Other than H₃, p-values for all other hypotheses are less than 0.05, indicating the acceptance of hypotheses. Table 4 shows the existence of the moderating impact of market communication on the relation of supply chain integration and SC performance. Moderation results indicate significant t and p values for both hypotheses. The values for t-test are above 1.96, while p values also came out to be less than 0.05, resulting in the acceptance of H₃ hypotheses.

Table 4: In-Direct Effect through moderation

	(β)	SD	T-value	P-Values
H3	0.112	0.021	6.331	0.000



The variance explained in supply chain performance by the supply chain integration and market communication is 78 percent as shown in table 5

Table 5: Expected Variance

	R²
SCM	78.0%

Conclusion

In order to fully understand SCI and its relationship to performance, there is a need to examine how individual SCI are related to performance. This suggests taking a new moderator that plays an important role either to enhance or to reduce this already built relationship. In the current study, the authors are interested in examining the relationship between supply chain integration, market communication and the supply chain performance. In addition to that the moderating role of market communication in the relationship between supply chain integration and the supply chain performance is examined.

The data was collected from the operation managers, production managers of manufacturing firms listed on the Indonesian Stock Exchange. The results of the study have shown a great deal of agreement with our proposed hypothesis. The researchers claimed that if there exists more integration in supply chain management, the performance of supply chain management will increase. There exists a positive relationship of integration with performance whether the integration is with supplier or customer. Meanwhile, it is argued that there is an opportunity for marketers to participate in these relationships; planning and processes allows for the adoption of a realistic approach rather than a theoretical approach. This study, which is among pioneering studies on the issue, will be helpful for policy makers and managers in understanding the role of team theory in supply chain management. This study which has employed the quantitative method has adapted a questionnaire to quantify the responses and opinions regarding issues raised in this study. The use of a questionnaire also helped the researchers in understanding the relationship between the set of dependent, independent and intervening variables. The questionnaire was designed according to the objectives, problem and hypotheses of the study to determine the relative importance of factors that may control the employees' performance in manufacturing organizations in Indonesia



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