

# International Journal of Supply Chain Management SSN: 2050-7399 (Online), 2051-3771 (Print)

**SCOPUS INDEXED (Q3)** 

Paper ID: IJSCM-200249

Date: August 21, 2020

# The Relationship among the Supply Chain Agility, Learning, Supply Chain Integration andTitle:Organization Performance of Indonesian SMEs

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# The Relationship among the Supply Chain Agility, Learning, Supply Chain Integration and Organization Performance of Indonesian SMEs

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# Abstract

The survival of the organization could be considered a major factor to gain a competitive advantage. To report this matter, there are different factors that could create impact on the performance of the organization. Within those factors, learning, and supply chain integration (SCI) could provide help to improve the performance of the organization. Therefore, based on these factors, the study objective is to investigate the association among the supply chain agility (SCA), SCI, learning and organization performance (OP) of Indonesia small and medium enterprises (SMEs). To gain this objective, the data had been collected from the middle managers. The SEM analysis results exposed that internal and external learning are directly significantly and positively associated with the OP. While, the indirect effect had been showing that supply chain agility (SCA) did not have any moderating effect among all of three exogenous and endogenous variables. The current could contribute to take a guideline to policy makers or owners to know about the importance of these factors to increase their performance.

Keywords: supply chain agility, learnings, organization performance, Indonesia.

# Introduction

At the end of current global recession demand and expectations of the customers have been swiftly growing. Therefore, today businesses remain revising their organizational priorities as well as its strategic visions (Sharifi, Ismail, & Reid, 2009). In this way companies currently realize that the agility is very essential survival elements nowadays in the organizational environment. Demand of the customer's also enhanced risk of the supply chain (SC) disruptions because of diversified nature in the operation of SC. These SC disruptions are very harmful for the producers, at a time when they could lead towards short time that shut-down the production. While there are different approaches which make sure the constant flow of the products for example enhancing safety of the stocks and utilizing for back-up obtaining, improvement of the SC agility are more successfully minimize the influences of disruptions of the SC (Um, 2017).

In the global market, at this stage firms face various difficulties in meeting particular dates of delivery such as, consequently demanding extra agile SC for constantly providing successful performance. Quality, speed, and flexibility are considered as an agility classification (Hilletofth, 2011; Wu, Tseng, Chiu, & Lim, 2017) as well as firms should adapt it if they want to survive inside of global market. Firms and its SCs must have agile for delivered the uninterrupted materials flow towards their international customers. Therefore, agility now become a very essential element of any circumstances where there exist a volatility in the demand. Furthermore, as demand enhances cause more uncertainties, the agile SC could be extremely effective in these

# environments.

Learning as well as cooperation among SC members also very helpful towards establishing SCs additional agile. In the line with this learning- oriented firms remain more adaptable as well as hence significantly execute (Rhee, Park, & Lee, 2010). Organizations which are more varied regarding their learning remain more agile plus about the uncertainties more responsive (Um, 2017). Firms are study together internally inside of firm to out wardly of the suppliers, consumers as well as competitors.

On the other hand, various studies which are conducted on influences of the SC integration, external learning and agility of the organizational performance (OP) (Um, 2017; Yunus & Tadisina, 2016), there are not yet any study found which analyzed the influences of learning on the internal basis on OP. In addition, as firms pay more attention on the monitoring and enhancing performance of their SCs, they also discover that SC agility could not accomplished without of the adequate integration. SC integration is a key pillar of agility, and responsiveness, thus developments can be discovered by bench marketing of an external as well as internal best practices. Further, according to the (Eckstein, Goellner, Blome, & Henke, 2015), external plus internal communication improves the decision making; on the other hand to date, there are no study which indicated influences of the internal learning at performance. Moreover, the previous studies had a major attention on direct effect while had a little attention on indirect effect. Therefore, supply chain agility (SCA) had been added a moderating variable in the previous existing literature. Also, previous studies had more literature on developed countries while had limited literature on developing nations like Indonesia small and medium enterprises (SMEs). As, Indonesian SMEs had a greater importance in the social and economic development. In this regards, these industries contributions could not be ignored. However, based on previous gaps, the current study aim is to check the relationship among the supply chain agility, supply chain integration, learning and organizational performance of Indonesia SMEs. The study utilizing survey data as well as a basic structural equation model for investigating influences of external plus internal learning, SCI, in addition SCA on the OP.

# Literature review and hypothesis development

This section has discussed about the review of the literature related to variables and hypothesis development.

# **Supply Chain Integration and organizational performance**

SCI is a border in which organization incorporates with their other SC members for accomplishing successful as well as efficient flows of goods, decisions, information, capital as well as information in great worth, low cost, and extraordinary swiftness (Wong, Boon-Itt, & Wong, 2011). Organization remain working on incorporating its SCs currently for attaining speed as well as flexibility (Wong et al., 2011). In addition, integration with SC members also improves organizational services quality (Marco-Ferreira & Jabbour, 2019). SCI has been indicate to be significantly connected with OP (Danese & Bortolotti, 2014). Moreover, in to the further study indicated that SCI cannot directly influence of the OP; at this place, performance indirectly influenced by SCA (Somjai, Girdwichai, & Jermsittiparsert, 2019). In addition, (Somjai et al., 2019)revealed the close as well as significant association among SCI plus SCA.

Basic purpose of SCI is to deliver maximum value towards customers by utilizing low cost as well as high speed with respect on the flow of materials plus information (Cadden, Marshall, & Cao, 2013).

(Somjai et al., 2019) examined influences of SCI on OP. On the other hand, the direct influences remain insignificant, at this stage significant and positive influences was described by mediating variable of SCA. Many researchers also reviewed in the previous studies as well as described that SCI could be determined by the constructs of second-order for example supplier integration, internal integration, and integration towards customers (Cadden et al., 2013). In this way the internal integration identified as a consistency in the firm (Olson & Swenseth, 2014). Furthermore, specified that the internal integration also minimize functional barriers that remain expected to enhance agility and OP.

The theory of structural contingency shows that suppliers and consumers integration indicate the consistency on the external basis in the firm and also have key parallels through internal integration, that all ultimately influence SCI (Cadden et al., 2013). In addition, many researchers has indicated that the internal integration is very important necessity of the external integration that consists on the integration between supplier and consumers (Palma-Mendoza & Neailey, 2015b). Therefore, integration on the external as well as internal basis remain very essential for the companies towards understand environmental changes plus uncertainties which ultimately influence the agility as well as flexibility (Cadden et al., 2013). Remarkably, there are single study indicated the integration on internal basis positively and significantly influence the OP on the other hand integration of the supplier and consumers do not. Therefore, take together, integration on internal as well as external basis cannot impact OP (Cadden et al., 2013), that also discovery of the (Somjai et al., 2019). As a final point, effective SCI permits the organizations to learn better from the previous mistakes as a result, on the learning they have a tendency to pay further attention (Paulraj, Chen, & Flynn, 2006).

**H1:** Supply chain integration has a significant relation with the organizational performance of small and medium enterprises of Indonesia.

# **External Learning and organizational performance**

External learning explained in place of an achievement as well as establishment of the knowledge which is gained by solving mutual problems with consumers and suppliers (Zhang, Zhao, Lyles, & Guo, 2013). Essentially, the firms which are constantly learning as well as after that processing the information about their outer environment come to be more agile on the behalf of other organizations (Balasubramanian, 2014). In addition, (Somjai et al., 2019) described knowledge at the external basis are directly impacts OP by a mediating variable of SCA. Organizations must learn outer of their firms for the purpose of further information for improving responsiveness, that ultimately able the organization to gain competitive benefits (Ahmed, Kristal, Pagell, & Gattiker, 2017; Widyanti R, et al, 2020). Furthermore, (Palma-Mendoza & Neailey, 2015a) defined interactive association among SC members can increase learning of the organization as well as therefore it enhance the financial status of the firm.

**H2:** External learning has a significant relation with the organizational performance of small and medium enterprises of Indonesia.

# InternalLearning and organizational performance

There are the internal learning also refers to the training of employees and employee incorporation which recommended that arise product development and primarily time process (Husain, 2014; Ketokivi & Schroeder, 2004). In addition, (Lee & Tsai, 2005)described learning on the internal basis leads towards enhances in the marketplace share. The internal learning similarly disputed remain very essential in SCA framework (Blome, Schoenherr, & Rexhausen, 2013). According to the above discussion (Zhong, Ma, Tu, & Li, 2016), interactive associations between SC partners increase learning of the organization that also enhance financial performance of the firm; therefore SC partnerships remain often a collaboration results among consumers and suppliers and firm. Up to the present time, there are no studies about the influences of the internal learning at the OP or SCA. Therefore, that is theorized that the internal learning very helpful for organization to increase their responsiveness as well as ultimately enhance the performance of the organization on financial basis.

**H3:** Internal learning has a significant relation with the organizational performance of small and medium enterprises of Indonesia.

# The moderating role of supply chainagility

There are significant definition as well as debts about SCA could be described by the (Eckstein et al., 2015). So, they described SCA as a capability of firms and their SCs for adjust swiftly to varying and unstable environmental circumstances. Organizations remain thus necessary to fast as well as flexible into their own plus their partners of SC activities to minimize these disturbance and also make sure that a significant flow of services or goods towards final customers (Blome et al., 2013). In the beginning the way which is selected for attaining flexibility as well as speed was supposed to be achieved by automation. After that when speed or flexibility remained extended to the larger business prospective at this stage concept of the agility appeared in firms (Esper, Ellinger, Stank, Flint, & Moon, 2010).

SCA has been described to be directly and significantly influenced through flexibility of SC(Blome et al., 2013). Earlier, researchers evaluated SCA as the second order element and also measure it by demand response, customer response as well as mutual planning (Um, 2017). Firms as well as its SC members seek towards reduce supply duration and also reply swiftly at a time of demand variation (Ferbar, Čreslovnik, Mojškerc, & Rajgelj, 2009). In addition, further studies indicated that the agile firms usually launch differentgoods strategic partners' alliance (Blome et al., 2013; Dubey et al., 2018; Ferbar et al., 2009). When things rapidly run from the individual SC partners towards another, at this stage collaborative planning very essential for agility maintenance (Kazemian & Aref, 2016). In brief, (Singh, Sharma, Barcellos, & Borella, 2015) enhanced that by eliminating lead time results will be enhanced the productivity. Therefore, into 21<sup>st</sup> century environmental circumstances perform to be varying even extra dramatically, organizations must struggle always more agile for the purpose of surviving. Speed as well as flexibility between SC partners is consequently very essential for OP (Chan, Chin, & Lam, 2007).

There are numerous studies which indicated direct association among SC procedure integration as well as OP (Wamba & Akter, 2015; Yunus & Tadisina, 2016). At the current stage, external

leering and SC integration have been indicated towards be indirectly associated with OP and agility play to mediating role (Jermsittiparsert & Wajeetongratana, 2019). Achieving flexibility integration of the resources and information is very helpful for organizations (Wamba & Akter, 2015). Furthermore, (Wu et al., 2017)revealed that the flexibility, information technology as well as agility remain connected and establish close association among integration as well as OP through the mediating role of SCA. The current finding of the (Jermsittiparsert & Wajeetongratana, 2019)disputes SC integration could not affect OP without enhancing SCA.

This study also lead the direct association between OP and learning (Gürkan & Tükeltürk, 2017; Kasemsap, 2016). In this way firms learning remained described to exist very essential towards the capacity of firm's innovation as well as OP (Yazhou & Jian, 2013). In addition, organization pay more attention on learning for increasing its innovative abilities that ultimately enhance the OP. therefore, direct or indirect association between OP and learning are improved by agility as well as innovation (Kadir & Muis, 2019; Maheshwari, 2000). Because knowledge could be expended into administration either internally or external basis (Matsuno, Mentzer, & Özsomer, 2002).

**H4:** The supply chain agility had a significant moderating relation with the organizational performance.

**H5:** The supply chain agility had a significant moderating relation with the organizational performance.

The above discussions have become the study framework development foundation. The current framework of the study has five variables. Three independent variables namely, supply chain integration (SCI), external learning (EXTL), and internal learning(INTL). supply chain agility (SCA) is the moderating variable and organizational performance (OP) is the dependent variable of the study.



# **Research Methodology**

The intent of this research is to check the relationship among the supply chain agility (SCA) on the relationship of supply chain integration (SCI), learning and organizational performance (OP) of SMEs of

Indonesia. Based on the nature of theinvestigation, research questions, and objectives, this research is descriptive in nature as it explains the phenomena in a greater length. Moreover, quantitative research approach is followed in this research, Matveev (2002)had suggested that the quantitative research approach is considered to be an important approach that had a better validity, consistency and reliability and also has more cost effective other than qualitative research. The research is correlation and cross sectional research design. For the current study, form the 350 middle manager's data had collected through convenient sampling and had applied self-administered.

The research instrument of the study has adopted from the previous literature where this instrument was already used. Therefore, this instrument validation and reliability is more as compare to self-prepared instrument. The SCA is measured by following three dimensions, joint planning (JOP), demand response (DER), consumer response (COR). Every dimension was measured by three items. Moreover, the external integration (EXTL) was also measured by three items, internal integration (INTL) by six items, supply chain integration (SCI) by three items and lastly organization performance by 10 which were adopted from the study of (Ahmad, Bin Mohammad, & Nordin, 2019; Sharabati, Naji, & Bontis, 2010).

# **Data Analysis and Results Interpretation**

In order to meet research objective and hypothesis testing, data is analyzed using Smart-PLS software as it is most suitable and convenient to use for moderation.Numerous statistical tests such as simple or multiple regression, analysis of variance, logistic regression, factor analysis, Cluster analysis, and multidimensional scaling could be used to test the hypothesis. All the analyses mentioned earlier would work if it is an exploratory research, testing already established theories, or confirmatory analysis (Hair, Hult, Ringle, & Sarstedt, 2014). However, the results might hold true if some sort of modification is present in the existing relationships such as mediation or moderation. As a result, partial least squares structural equation modelling (PLS-SEM), a second generation statistical modelling technique, is developed to tackle all such issues (Hair, Matthews, Matthews, & Sarstedt, 2017; Wahab, 2016). Hair et al. (2014) claimed that PLS-SEM technique is superior to other statistical methods in many ways such as no sample size restriction, effective for statistical model building along with forecasting, precise and accuracy in estimation, soft modelling assumptions, doesn't require normality of data, and suitable especially in case of mediation (Iacobucci, Saldanha, & Deng, 2007; Mattanah, Hancock, & Brand, 2004; Osborne, 2011; Ramli & Nartea, 2016; Wahab, 2016). Confirmatory factor analysis was carried out to check the validity of constructs (Convergent validity and discriminant validity) and reliability. Confirmatory factor analysis was used to test the conformity of data to the assumed model (Tanakinjal, Deans, & Gray, 2010). Convergent validity was assessed through the average variance extract (AVE), composite reliability (CR) and factor loadings. The discriminant validity was tested by using FornellLarcker criterion and heterotrait-monotrait ratio (HTMT).

Structural equation modeling (SEM) is a significant statistical technique that has the ability to test multiple relationships simultaneously (Hair, Black, Babin, Anderson &Tatham, 2010). The SEM technique was used through PLS-SEM to test the hypotheses and to conduct the simultaneous regression analysis. Furthermore, moderating effects were also analyzed through the bootstrapping technique. Path coefficients, coefficient of determinants ( $\mathbb{R}^2$ ), effect size ( $f^2$ ) and predictive relevance ( $\mathbb{Q}^2$ ) were also assessed in the structural model assessment.

In the assessment model, minimum value for factor loading is 0.5, for Cronbach alpha is 0.7, for composite reliability is 0.7, for AVE is 0.5 (Hair, Hult, Ringle, & Sarstedt, 2014a). The Table 1 has shown that all of the values are greater than from the recommended values. On the other hand, in the discriminant validity, for the the squared root of average variance extract should be greater than each of correlation of construct (J. F. Hair, Sarstedt, Hopkins, & G. Kuppelwieser, 2014c). The Table 2 has shown that all the Fornell&Lacker criterion are fulfilled which shows that construct has the discriminant validity. For the HTMT, the correlations among the construct should be less than 0.85 or 0.90 (Henseler,

Ringle, & Sarstedt, 2015). The Table 3 has shown that all the values are less than 0.85 which shows that construct has the discriminant validity. Moreover, the construct  $R^2$ values is 0.45. Previously researchers have provided different criterion for  $R^2$  such that Cohen (2013) regarded  $R^2$  values of 0.26, 0.13, or 0.02 to denote substantial, moderate and weak predictive accuracy respectively. Based on this recommendations, the 0.45  $R^2$  is considered to be substantial. Moreover, the value of  $Q^2$  is 0.23. The recommended  $Q^2$ value should be greater be a greater than 0 which shows that construct has a predictive relevance (Hair et al., 2014a; J. Hair, Sarstedt, Hopkins, & G. Kuppelwieser, 2014b).

#### Structural model

The structural model of the study is consisting of two effect one is direct and other one is indirect effect. The structural model of the study was run by using a bootstrap 500 sampling technique through using the Smart PLS 3.00 version. The Structural Equation Modeling (SEM) technique of the study has shown that supply chain integration (SCI) has a positive and significant relationship along with the organizational performance (OP). These results denote that when the SCI has to be increase then the OP of the SMEs in the Indonesia is also increased. Therefore, it could be explained that SCI is considered to be an important predictor to enhance the OP. On the other hand, Internal learning (INTL) and external learning (EXTL) also have a positive and significant relationship with the OP which shows that shows when EXTL and INRL is increased then the OP of the SMES also increase the OP of SMEs in the Indonesia. In other context, the indirect effect of the study has shown that supply chain agility (SCA) insignificantly moderates on the association of supply chain agility, external learning and internal learning and OP. Based on these findings, it could be explained that SCA is not considered to be an important moderating variable. All of the above discussed results predicted in the Table 4.

	Beta	SD	T Statistics	P Values	Results
EXTL -> BP	0.12	0.06	1.986	0.048	supported
INTL -> BP	0.191	0.047	4.095	0.000	supported
SCI -> BP	0.644	0.044	14.622	0.000	Supported
SCA*EXTL -> BP	0.012	0.046	0.25	0.802	Not supported
SCA*INTL -> BP	-0.092	0.049	1.876	0.061	Not supported
SCA*SCI -> BP	0.058	0.056	1.037	0.300	Not supported

**Table 4.** Direct and indirect effect results

**Note:** JOP-Joint Planning, DER-demand response, COR-Consumer Response, EXTL-external integration, SCI-supply chain integration, OP-organization performance, INTL-internal integration.



Figure.2: Direct effect model



Figure 3: Indirect effect Model

#### Conclusion

The survival of the organization could be considered a major factor to gain a competitive advantage. To report this matter, there are different factors that could create impact on the performance of the organization. Within those factors, learning, and supply chain integration (SCI) could provide help to improve the performance of the organization. Therefore, based on these factors, the study objective is to investigate the association among the supply chain agility (SCA), SCI, learning and organization performance (OP) of Indonesia small and medium enterprises (SMEs). To gain this objective, the data had been collected from the middle managers. The SEM analysis results exposed that internal and external learning are directly significantly and positively associated with the OP. While, the indirect effect had been showing that supply chain agility (SCA) did not have any moderating effect among all of three exogenous and endogenous variables. Based on the following findings, the current study had some limitations that could helped in the future research. Firstly, the study was limited on SMEs, as the structures of big industries are entirely changed from the small industries, therefore a future study could be done on pharmaceutical, textile other manufacturing industries where the organizations had a supply chain management process. Secondly, the study was limited on limited factors that could impact of firm performance, in this regards, a study in future could be explored along with other variables to know about the importance of various others factors. Thirdly, the study had used the quantitative and cross sectional research, a future study could be reconnoitered on qualitative or longitudinal research design.

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