

INFLUENCE OF SUPPLY CHAIN UNCERTAINTY ON THE AGILITY PERFORMANCE OF MALAYSIAN COMPANIES: A MEDIATING EFFECT OF SUPPLY CHAIN INTEGRATION

Quyen Ha Tran

University of Economics Ho Chi Minh City

ABSTRACT

Purpose: The purpose of the research was to evaluate the influence of supply chain uncertainty on the Malaysian companies' agility performance. In addition, the mediation of supply chain integration was also tested.

Method: The method employed in this research was quantitative where a survey was employed to collect primary data from the employees. The sample size in this study was 310 participants that were evaluated using SEM modelling in SmartPLS.

Findings: It was found from the analysis that the company and environment uncertainty affected the agility performance of Malaysian companies significantly. In the context of mediation, supply chain integration was found to be mediating the relationship between supply chain uncertainty and agility performance partially and significantly.

Limitations: This research was limited to the Malaysian companies only whereas only limited dimensions of uncertainties and integration in the context of the supply chain were considered.

Keywords: Supply chain uncertainty, supply chain integration, agility performance, Malaysian companies.

Correspondence:

Quyen Ha Tran

University of Economics Ho Chi Minh City

quyentran@ueh.edu.vn

INTRODUCTION

Supply chain management (SCM) is considered as a strategic source which provides a competitive advantage to the companies operating in different sectors, specifically manufacturing. It has become critical for organisations to survive as well as grow in the presence of SCM due to the ever-changing dynamism. The complete process of the supply chain (SC) needs to be designed, coordinated and managed as well for the sustainability of the business (Rasi, Abbasi & Hatami, 2019). A supply chain integration is known as the close alignment and coordination in the field of SC as supply chain refers to all the things that are required in order to produce product from the raw material. It includes manufacturing as well as support services. There are different instruments that are used for the SC integration as it encompasses three main constructs in which integration of the company with the suppliers of the company, internal integration all over the SC, and the integration of the company with the customers. In present world, the manufacturers do not focus on bringing their own organisation up but they are more directed in management the network of the organisation upstream and downstream. It is important for the organisations to know that how to integrate externally as well as internally with the suppliers as well as customers (Dehgani & Navimipour, 2019). These efforts of the integration are considered to be effective in order to lean the initiatives in which the most important things are coordination as well as collaboration with the suppliers and the customers which are known to be necessary and equally important.

The size of the organisation is also considered in several studies that are conducted on SCM. It is investigated that the ability of the organisation in order to anticipate as well as manage the behaviours of the partners of the SC. The lack of the organisational ability to anticipate the behaviour of different entities in the SC of the organisation results in several uncertainties in the process. For the previous few decades, it is observed that there is a number of companies that are suffering from the uncertainty in Malaysia as their environment results in the damages of the performance (Tarafdar & Qrunfleh, 2017). The big companies of Malaysia have faced this problem therefore in order to avoid the losses like this, it is vital to take considerable actions for which there should be a proper attention provided to the uncertainties of the SC from the end of the practitioners as well as researchers (Chan, Ngai & Moon, 2017). There are limited studies that are conducted on analysing the uncertainty of SC on the agility performance in Malaysia, in which the SC integration is provided importance as it impacts the process of the SC and risks that are associated with this (Wang & Jie, 2019; Şahin, et al. 2017; Basheer, et al. 2019). It is analysed that the previous researches that are conducted on the uncertainties of SC are broken down in the two main issues that include the sources as well as antecedents of the SC risk as well as consequences and management of the risk in the SC. The knowledge of SC mainly relies on the practices that are used in the European countries and the US and the case studies of these countries. However, it is investigated that it is not very easy to implement the best practices of SC in the environment of business in Malaysia (Dubey,

Gunasekaran & Childe, 2019; Feizabadi, Maloni & Gligor, 2019). There are several practices of the SC management that are ready but cannot be implemented in the environment of the business in Malaysia like cross-docking, JIT and merge-in-transit as these practices are considered to be very crucial for the levels of automation, timeliness and automation. As per the Bank Negara Malaysia (2014), it is analysed that the sector of service have contributed about 55.3% of total gross domestic product (GDP). Intermediate sub sectors of the service are included in it along with the final service. The storage as well as transportation which are also considered as the main operations of supply chain contributes most in the activities of the trade. In 2013, the supply chain sector have contributed about 3.6% to the GDP of Malaysia. Therefore, the companies of Malaysia have developed their own local adaption for the implementation of the best practices of SC (Fayez, Zutshi & O'Loughlin, 2017).

Furthermore, from the previous studies, it is investigated that the logistics development has been evolved in the previous two decades. The SC process is considered as the supportive process for other functional areas which is therefore regarded as a strategic process. In this process, the logistic is considered as a prominent factor which is acknowledged to provide competitive advantage in other countries that are developed like United Kingdom and United States. As the companies have adopted the globalisation strategy in their business operations, the importance of the logistics industry has been increased and have resulted in several expansions of international trade (Naway & Rahmat, 2019). The potential growth is regarded to be precise and promising in the Asian Pacific region and the countries like Thailand, Indonesia, Singapore and Malaysia have been through dramatic expansion, due to which the effective, as well as efficient logistics services, have emerged. In spite of this progress in the sector of logistics, there are various uncertainties that the organisations are facing which are specifically linked with the process of demand, supply, quality and price. Further, there are very few published researches which also considered in the domain of logistics as well as SC as SC is required in all the industries (Tse, et al. 2016; Gligor, et al. 2019). However, this research mainly highlights the influence of SC uncertainty over the performance of the agility in which SC integration contributes vitally. Therefore, it has aimed to evaluate the influence of SC uncertainty on the Malaysian manufacturing companies' agility performance along with the mediating effect of SC integration.

2. Literature Review

There are several studies that discuss the supply chain uncertainty as it is referred as the process of decision making in the supply chain in which decision maker is not exactly aware of decision which should be taken due to lack of the transparency of the supply chain as well as its impact over possible actions. Another study describes SC uncertainty as the change of the balance as well as profitability in the operations of the supply chain which can caused by the unpredictable and potential events in which response is required for re-establishing a balance. This unexpected event in the field of supply chain might be unexpected order, late in delivery from the end of the

suppliers or breakdown in critical production equipment. The supply chain integration (SCI) is known as the extent to which the firm integrates with the other partners of SC in order to achieve the effective and efficient flow of information, decisions, products, information and money in terms of frequency, value and low cost (Tse, et al. 2016). Integrating with the partners of SC enhances the quality of the service of the organisation. SCI is considered to be displayed as it has a positive link with the performance of the firm whereas there are several types of research that show that there is no influence of the SCI over the performance of the organisation whereas it is investigated that the SC agility has also several impacts over the performance of the organisation (Gligor, et al. 2019). It is also considered as there is a positive as well as the direct relationship among the SCI and SC agility. However, the SC agility shows how fast the SC provide responses for the changes that are established in the environment, preferences of the customers, competitive forces etc. This process does not consider the random variations which take place in the execution of day-to-day chain operations. It may specify the way by which the SC process of the company provides responses to the changes, once there are external that affects the business which may be positive or negative in order to achieve the objectives (Basheer, et al. 2019). It is known as the measure of the way by which the companies can adapt the SC process for the changes and how fast it can achieve it.

It is investigated that the uncertainty in the SC is originated from a number of sources like the lack of supply of the organisation and the customer base along with the forecasting capability, regulatory regime, by means of transportation, size of the firm and the labour issues. These are the factors that enhance the complexity of the network in the organisation that combined the objectives efficiency in order to enhance the SC uncertainties in the organisation (Irfan, Wang & Akhtar, 2019). In order to extend the discussion over the SC risk, there are several kinds of research that proposed and examined the frameworks in order to manage the consequences of the SC risks. In these frameworks, several organisational strategies are presented along with the programs that help in minimising the risk as it affects the organisational performance.

The agility is conceptualised at different levels which range from a strategy to paradigm and from the capability to the dimension of performance. The uncertainty of the company as well as agility performance has a deep relation as uncertainty means lack of the sureness or lack of uncertainty in any operation. For the company it is very difficult to take any type of decisions at the time of uncertainty which affects the agility performance of the company. The development of agile performance is known as the system which involves the philosophical elements, value and culture in which the main element is market knowledge which exploits the opportunities which provides profits to the volatile market. At some point, the agile strategy deals with the direction of the organisation and commitment towards the changing needs of the customer, so it is investigated that there is a significant impact of company uncertainty over performance of agility (Khan & Wisner, 2019). In the

context of these arguments, the first hypothesis for the study is given as:

H1: Company uncertainty has significant impact over agility performance

The uncertainty that is mainly due to the customers is known as customer uncertainty. The major customer uncertainty is due to the cost which also affects the agility performance in the SC, this plays a major role in turning down the profitability. There are several companies that have decided how much agile the business should look like and from where the value chain should be present in the business. Customer uncertainty is considering more amount of information and less experience or in other words, it meant that there is no enough evidence for assuring that it would produce desired results (Jajja, Chatha & Farooq, 2018; Naway & Rahmat, 2019). Customer uncertainty affects agility performance as it contributes to indecision over the purchase of the products. The hypothesis is given as:

H2: Customer uncertainty has significant impact over agility performance

Most of the companies are aspiring to be agile have adopted to be a flexible organisation which designs the flexible processes. The environment of the organisation should encourage co-ordination in the different departments of the same organisation as well as their partners. Setting the target for the lead time as well as working for reducing the lead times in the fulfilment of the order greatly helps the organisation in achieving the speed which is the main requirement of the competitive environment in the agile environment which is being changing as per the environment of the business (Basheer, et al. 2019). The uncertainty in the environment of the business mostly slows the performance of the organisation. Hence, the companies should use their strategic ability in order to regain their agility performance. Strategic ability is regarded as the ability that continuously as well as adequately adapt and adjust the strategic direction of the business in the particular time in order to change the conditions (Şahin, et al. 2017; Chan, Ngai & Moon, 2017). There is a major impact of environment uncertainty over the agility performance which is given as the following hypothesis and has been tested in this paper.

H3: Environment uncertainty has significant impact over agility performance

Agility performance is focused in order to view the uncertainties and risks in the SC by which the outcomes of the agility are affected. There are countless ways for the development of the agility as well as subtle differences in the agility of the organisation which cannot be observed empirically, as the agility should be judged by the metrics of the performance (Swanson, et al. 2017). There is an emphasis on the performance of the agility that it is well placed as the organisational need to perform over the metrics of the agility. SC integration plays a major role in mediating the relationship among the uncertainty of the company, customer and environment over the performance of the agility (Flynn, Koufteros & Lu, 2016). The hypotheses are given as follows:

H4: SC Integration mediates the relationship between Company uncertainty and agility performance significantly

H5: SC Integration mediates the relationship between Customer uncertainty and agility performance significantly

H6: SC Integration mediates the relationship between Environment uncertainty and agility performance significantly

3. Theoretical Framework

The main aim of this research is to analyse the influence of the uncertainty in SC on the agility performance in which the SC integration is playing a mediating role. There are several theories that can be implemented on the SC process however, the most relevant are social network theory and the principal-agent theory. For this study, social network theory is used as it looks over the social as well as the behavioural aspect of different types of the relationship in which the relation among firm to firm, individual to firm and individual to individual. In order to minimise SC uncertainties, it is crucial to create a proper relationship among the suppliers and companies. This theory helps in analysing the relationship from several perspectives like financial, social element and the technical aspect (Matthews, et al. 2016). Another theory that can be applied to the study is resource-based theory in which the most common belief is that the resources, as well as capabilities of the firm, are considered as most important assets for the company so the primary concern of RBS is related to obtaining the access for the core competencies of the organisation which helps in gaining the competitive advantage. In SC management, this theory is mostly adopted (Swanson, et al. 2017; Hugos, 2018). Another theory that is applied to the study is the principal-agent theory that deals in governing the method and structure of the organisation by which the opportunities, interests of the conflicts as well as information asymmetry among the principle and the agent can be mitigated (Christopher, 2016). In this theory, contracts are used for the governance and control mechanism while there is the provision of incentives for meeting the minimum expected standards.

Conceptual Framework

The conceptual model of the research has been presented in this section which is underpinned by various researches as explained earlier in the literature review section. The independent construct of the research is SC uncertainty which is further fragmented into company uncertainty, customer uncertainty and environmental uncertainty. Moreover, the mediator in this study is SC integration where the dimensions like supplier integration, internal integration and customer integration have been considered. In addition, the dependent construct of the study is taken to be the Malaysian companies' agility performance.

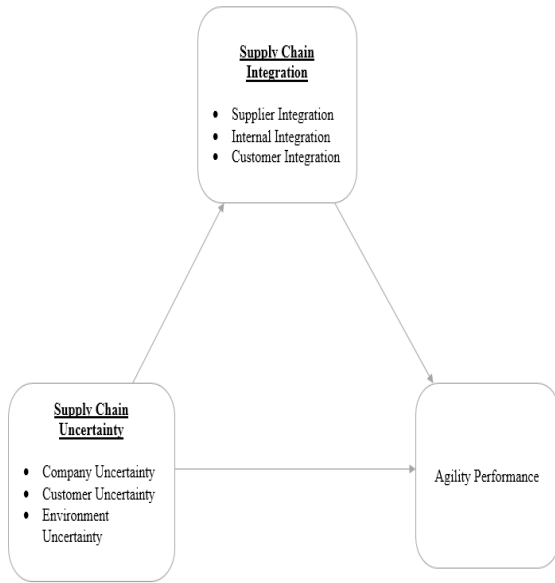


Figure 1: Conceptual Framework of the Study

5. Research Methodology

5.1 Data Collection and Sampling Technique

Particularly, this research underpins quantitative assessment, therefore, the numeric data has been gathered using a survey questionnaire. Considering the subject of the research, the method of data collection is primary. The data collection has been done from the employees working in manufacturing companies of Malaysian and associated with SC in some manner. The study conducted by Ryan (2013) asserted that the targeted population and sample of the study should be relevant to obtain relevant results. In this aspect, the sampling technique is undertaken to be purposive. Purposive sampling is deemed as a specific type of non-probability sampling where the population is not given equal chances (Etikan, Musa & Alkassim, 2016). With respect to this study, the purpose is to evaluate the SC uncertainty and the agility performance of Malaysian manufacturing companies, therefore, the people associated with other departments have not been considered in this research. In addition, considering the population is uncountable, therefore, the researcher has used the following formula proposed by Blair and Blair (2014) to draw relevant sample:

$$n = \frac{z^2 \times p \times (1 - p)}{e^2}$$

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.05)^2} = 384$$

The ‘z’ score is the standard statistics which is computed to be 1.96 specifically when the confidence level is considered to be 95%. Moreover, ‘p’ is the proportion of the considered population which is generally assumed to be 0.5 and on the contrary, ‘q’ is the population which has not been considered. This implies that the value of ‘q’ would also be 0.5. Lastly, ‘e’ is the error which is assumed to be 5% in this study. Considering all the metrics, the sample size is computed to be 384 participants. In the context of this

research, the researcher distributed the questionnaire via online channels to 386 participants, however, some of them were approached physically. Every potential participant was briefed appropriately regarding the survey questionnaire. In addition, the researcher provided sufficient description while sharing the questionnaire online while for native speakers who were unable to understand the English language, a translated version was also shared. The researcher received 312 questionnaires afterwards, however, only 310 of them were useful. Hence, the computed response rate of this research is 80.31%.

5.2 Research Instrument

The researcher of the study utilised a close-ended survey questionnaire as a research instrument. The instrument comprised of 7 variables where three of them were independent representing SC uncertainties, three were mediators and one was the dependent construct of the research. Basically, the questionnaire has been adapted from Wang (2018) and Jajja et al., (2018). The finalisation of the questionnaire was dependent on the pilot testing, therefore, following the adaptation of the questionnaire, the irrelevant factors were omitted from the final questionnaire for the data collection. The questionnaire reliability and validity has also been determined later in the analysis section.

5.3 Data Analysis Technique

The analysis in this research has been conducted with the help of Structural Equation Modelling (SEM). The study carried out by Hair et al., (2016) asserted that PLS-SEM produces robust analysis specifically because it does not assume any underlying distribution. Considering this aspect, the researcher utilised Confirmatory Factor Analysis (CFA) to evaluate the factor structure using reliability, and validity of the study and path analysis to examine the proposed hypotheses. In addition, the quality of the model has been evaluated using R-squared and adjusted R-squared. The software package that has been employed is SmartPLS.

RESULTS

6.1 Confirmatory Factor Analysis (CFA)

The CFA analysis firstly examines the factor loadings of the research. For this, the research of Charles and Kumar (2014) stated that the minimum value to be deemed acceptable is 0.6. The results in Table 1 are implying that all the factor loadings are meeting the criterion except for the one which is II2 having factor loading= 0.532. In this concern, it has been dropped from the final model. In terms of reliability, composite reliability and Cronbach’s Alpha has been used and the threshold for both metrics is 0.6 (Leung, Nkhoma & John, 2013). Considering this aspect, all the latent constructs of this research possess higher values than 0.6 which this indicates that they are reliable. Furthermore, the convergent validity is tested with AVE having a threshold of 0.5 as stated by the research of (Sobh, 2010). The results in the table are showing that the convergence of all the constructs of the study is valid because the minimum value is computed to be 0.517. Therefore, the results are illustrating reliability and validity.

Table 1: Determining Convergent Validity and Reliability of the Constructs

Latent Constructs	Factors	Factor Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Agility Performance	AP1	0.917	0.898	0.936	0.830
	AP2	0.927			
	AP3	0.889			
Customer Integration	CI1	0.907	0.881	0.926	0.806
	CI2	0.901			
	CI3	0.885			
Company Uncertainty	COM1	0.803	0.780	0.873	0.697
	COM2	0.929			
	COM3	0.763			
Customer Uncertainty	CUSTOM1	0.754	0.694	0.829	0.619
	CUSTOM2	0.719			
	CUSTOM3	0.879			
Environment Uncertainty	ENV1	0.903	0.866	0.918	0.789
	ENV2	0.929			
	ENV3	0.830			
Internal Integration	II1	0.920	0.663 Dropped	0.753	0.517
	II2	0.532			
	II3	0.649			
Supplier Integration	SI1	0.718	0.653	0.813	0.594
	SI2	0.851			
	SI3	0.736			

Furthermore, the discriminant validity of the latent constructs is determined by HTMT ratio. The maximum value in terms of distinctiveness is 0.9, therefore, the constructs with high similarity should

be managed by discarding any one of them (Zheng et al., 2019). The results in Table 2 are illustrating that all the constructs are distinct, hence, further analysis can be conducted.

Table 2: Determining Discriminant Validity using HTMT Ratio

	Agility Performance	Company Uncertainty	Customer Integration	Customer Uncertainty	Environment Uncertainty	Internal Integration
Company Uncertainty	0.446					
Customer Integration	0.611	0.270				
Customer Uncertainty	0.524	0.879	0.361			
Environment Uncertainty	0.632	0.694	0.556	0.848		
Internal Integration	0.359	0.525	0.290	0.604	0.463	
Supplier Integration	0.460	0.845	0.513	0.800	0.754	0.529

6.2 Path Model

The path assessment has been conducted in three aspects where the direct effect has been evaluated first which is followed by specific indirect and total indirect effect. This is to evaluate the mediation. Table 3 illustrates the direct path where company uncertainty is found to be affecting the agility performance positive

and significantly (B= 0.122; p-value= 0.08). In addition, environment uncertainty is also found to be affecting the Malaysian companies' agility performance significantly (B= 0.321; p-value= 0.00). However, the direct effect of customer uncertainty is computed to be insignificant on the Malaysian manufacturing companies' agility.

Table 3: Direct Path Assessment

Direct Path	Path Coefficient	T Statistics	P Values
Company Uncertainty -> Agility Performance	0.122*	1.721	0.086
Company Uncertainty -> Customer Integration	-0.069	1.114	0.266
Company Uncertainty -> Internal Integration	0.065	0.895	0.371
Company Uncertainty -> Supplier Integration	0.389***	6.151	0.000
Customer Integration -> Agility Performance	0.357***	7.112	0.000
Customer Uncertainty -> Agility Performance	0.034	0.387	0.699
Customer Uncertainty -> Customer Integration	0.023	0.328	0.743
Customer Uncertainty -> Internal Integration	-0.339***	4.463	0.000
Customer Uncertainty -> Supplier Integration	-0.054	0.775	0.439
Environment Uncertainty -> Agility Performance	0.321***	4.154	0.000
Environment Uncertainty -> Customer Integration	0.550***	7.915	0.000
Environment Uncertainty -> Internal Integration	0.209***	3.103	0.002
Environment Uncertainty -> Supplier Integration	0.305***	4.066	0.000
Internal Integration -> Agility Performance	0.165***	2.655	0.008
Supplier Integration -> Agility Performance	-0.099*	1.693	0.091

***: significant at 1%; **: significant at 5%; *: significant at 10%

In terms of indirect effect, customer integration is found to be mediating the association between environmental uncertainty and agility performance significantly (B= 0.196; p-value= 0.00). In addition, internal integration mediates the association of customer uncertainty with agility performance significantly but negatively (B= -0.056; p-value= 0.029) whereas, it mediates the association between

environment uncertainty and agility performance positively and significantly (B= 0.034; p-value= 0.053). Lastly, supplier integration significantly mediates the association of company uncertainty with agility performance significantly and negatively (B= -0.039; p-value= 0.089). The results have been presented in Table 4.

Table 4: Testing Specific Indirect Effect

Specific Indirect Effect	Path Coefficient	T Statistics	P Values
Company Uncertainty -> Customer Integration -> Agility Performance	-0.025	1.112	0.267
Customer Uncertainty -> Customer Integration -> Agility Performance	0.008	0.325	0.745
Environment Uncertainty -> Customer Integration -> Agility Performance	0.196***	5.681	0.000
Company Uncertainty -> Internal Integration -> Agility Performance	0.011	0.826	0.409
Customer Uncertainty -> Internal Integration -> Agility Performance	-0.056**	2.184	0.029

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Environment Uncertainty -> Internal Integration -> Agility Performance	0.034*	1.936	0.053
Company Uncertainty -> Supplier Integration -> Agility Performance	-0.039*	1.706	0.089
Customer Uncertainty -> Supplier Integration -> Agility Performance	0.005	0.587	0.557
Environment Uncertainty -> Supplier Integration -> Agility Performance	-0.030	1.466	0.143

***: significant at 1%; **: significant at 5%; *: significant at 10%

With respect to total indirect effect as computed in Table 5, SC integration is found to be significantly mediating between environment uncertainty and

agility performance of Malaysian manufacturing companies only (B= 0.200; p-value= 0.000). This depicts that mediation is partial.

Table 5: Testing Total Indirect Effect

Total Effects	Path Coefficient	T Statistics	P Values
Company Uncertainty -> Agility Performance	-0.053	1.455	0.146
Customer Uncertainty -> Agility Performance	-0.042	1.119	0.264
Environment Uncertainty -> Agility Performance	0.200***	5.321	0.000

***: significant at 1%; **: significant at 5%; *: significant at 10%

6.3 Quality Criterion of the Model

The outer model of the study comprised of agility performance as the dependent variable whereas, all other variables are in the internal model which are mediators as well. With respect to the outer model, the

variance in all the independent constructs in explaining 44.55% variance in Malaysian companies' agility performance, however, following the adjustments, it is reduced to 43.45%. The results have been presented in Table 6.

Table 6: Evaluation of R-squared and Adjusted R-squared

	R Square	R Square Adjusted
Agility Performance	44.55%	43.45%
Customer Integration	24.71%	23.97%
Internal Integration	29.15%	28.46%
Supplier Integration	44.00%	43.45%

7. Summary of Hypotheses

The summary of the hypotheses has been presented in Table 7 which implies that overall, SC

integration partially mediates the relationship between SC uncertainty and agility performance significantly.

Table 7: Tabular Summary of the Proposed Hypotheses

S. No.	Propositions	Results/ Decision
H1	The effect of company uncertainty is significant on the agility performance	Accepted
H2	The effect of customer uncertainty is significant on the agility performance	Rejected
H3	The effect of environmental uncertainty is significant on the agility performance	Accepted
H4	Supply Chain Integration mediates the relationship between Company uncertainty and agility performance significantly	Partially Accepted (Partial Mediation with supplier integration as mediator)

H5	Supply Chain Integration mediates the relationship between Customer uncertainty and agility performance significantly	Partially Accepted (Full Mediation with internal integration as mediator)
H6	Supply Chain Integration mediates the relationship between environmental uncertainty and agility performance significantly	Partially Accepted (Partial Mediation with customer and supplier integration as mediator)

RECOMMENDATIONS

The above discussion on the issues confronted in the context of Malaysian organisations with regard to SCM has also rendered some pragmatic recommendations, which are a blueprint for the organisations to improve their supply chain practices, both for the augmentation of market performance as well as for decreasing customer uncertainty. These recommendations are as under:

- First and foremost, it is important for the Malaysian corporate sector to take considerable steps for maintaining attention towards neutralizing uncertainties within the SC, both from the researcher as well as from the practitioner end (Rasi et al., 2019).

- Secondly, transparency of supply chain practices coupled with the accountability of SC employees should be the priority of organisations with a view to preventing mismanagement and increasing performance.

- Thirdly, organisations need to consider the significance of agility for progressive business. Agility has become a lynchpin for companies to seek creative approaches or ideas through which they can increase their market performance and customer retention (Hugos, 2018).

- Fourthly, companies' environment must be such that could motivate employees and cooperation between different departments, which is necessary for inter-connectedness and inter-dependence of departments over one another for unanimous decision making within the supply chain process (Basheer et al., 2019). Lastly, the adoption of strategic ability must be the priority for the attainment of agile performance from the organisation's side.

9. Limitations and Future Research Direction

There are several limitations that are faced by the study, the main limitation is regarding the geographic bounds as this study is mainly conducted in Malaysia, the future researches can be conducted in other regions like Indonesia, Thailand or other developed countries. Furthermore, this research only covers the SC integration as the mediating factors, there are several other factors that affect the uncertainty in the SC which also needs to be discussed. For future studies, other factors should be considered as well, for instance, supply, demand, planning as well as the process. The research also underpins the quantitative aspect for the assessment, so the analysis is performed by relying on the empirical evidence. In order to improve the research in future, it is crucial to incorporate quantitative assessment and qualitative aspect or qualitative method only.

CONCLUSION

Keeping in view the above comprehensive discussion, it can be concluded that supply chain management and the integrated practices are the keys to nudge technical

and business operations of the organisation in a positive manner, so as it to retain the market advantage in opposition to other competitors. When it comes to the region of Malaysia, it has been established that though organisations are signifying the inevitable importance and consistent overhauling of supply chain management, much needs to be still done by keeping Malaysian businesses in line with global organisational activities. Other countries like Singapore and Indonesia, which are located within the same geographical belt, must initiate pragmatic approaches to ensure and enhance the smooth running of supply chain practices. Customer uncertainty has been regarded as the biggest stumbling block in the way of aligning production from the organisation's side to meeting demands of the customers. It has also been established that customer uncertainty has a direct effect on the agile performance of the organisation for which the stakeholders involved in business operations must take a feasible approach to decrease customer's ambiguities. Other than agility, other essentials such as internal integration and others also have a significant influence on the overall supply chain practices.

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