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How supplier relationship management and manufacturing flow management practices affect the firm financial performance: The mediating role of competitive advantage

Wannee Sutthachaidee<sup>a\*</sup>, Nipawan Poojom<sup>a</sup>, Swe Swe Zin<sup>b</sup>, Peeraya Techakhu<sup>c</sup> and Kittisak Jermsittiparsert<sup>d</sup>

<sup>a</sup>College of Logistics and Supply Chain, Suan Sunandha Rajabhat University, Thailand <sup>b</sup>Myanmar Maritime University, Myanmar <sup>c</sup>Siam Yamaha Co., Ltd., Thailand <sup>d</sup>Faculty of Education, University of City Island, Cyprus

## ABSTRACT

Article history: Received December 2, 2021 Received in revised format December 26, 2021 Accepted May 17 2022 Available online May 17 2022 Keywords: Supply Chain Partnership Competitive Advantage Financial Performance The main objective of the current study is to investigate the impact of supplier relationship management and manufacturing flow management practices on the financial performance. Additionally, the study examines the mediating role of competitive advantage in the relationship between supplier relationship management and manufacturing flow management practices and financial performance. The firm's growth is considered to have a significant influence by managing the supply base only rather than the complete performance. The important role of supply chain management has pointed out the requirement of the firm to efficiently develop the supply chain to get the maximum result in terms of its performance and business outcome. The production procedures include many functions inside the company and the further period of the producer in the supply chain. However, it depends upon the whole supply chain to develop a procedure of easy and all possible product movement, the same case occurred to gain the desirable flexibility.

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### 1. Introduction

The main objective of SC Management (SCM) is to incorporate both material and informational flows without any glitch through the whole SC such as an operational competitive and powerful tool (Schlüter, Hetterscheid, & Henke, 2019). Actually the name is slightly confusing such as SC which is actually not an official chain of businesses, rather it is a system among links and businesses. The historical research on the subject or the early research work explained that the single definition of SCM is not present. The international SC forum comprises high authorities of prominent companies belonging to various types of businesses, for example consumer packaged goods, communications and technology commodity merchandising, fashion apparel, automotive manufacturing, oil and petrochemicals, consumer electronics, household plumbing and accessories and athletic equipment. The executives of these businesses present very promising positions through a SC such as manufacturers of industrial products (business to business), retailers, original suppliers, distributors and manufacturers of consumer products. However, the Global SC recognized the opinion about mutual experience and knowledge from prominent companies in the interrelated business (Waiganjo, Nganga, & Binepal, 2016).

The representatives of the Global SC Forum (2009) have established the given description which precisely described the features of SCM: SC Management is the combination among important companies' procedures from outputs to original suppliers that offers information, products and services which adds value for other stakeholders and buyers (Ashok, Day, & Narula, 2018).

<sup>\*</sup> Corresponding author E-mail address <u>wannee.su@ssru.ac.th</u> (W. Sutthachaidee)

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Every procedure related to SCM has both operational and strategic sub-procedures. The operational sub-procedures offer the complete phases for operations while the strategic sub-procedures offer the model of how these procedures will be operated. The strategic procedures are essential phases for company participation with other participants of the SC, and it is at the stage of implementation where the routine actions occur (Azmi, Hamid, & Hussin, 2017). The tools used in this research work have targets to reduce the flaws in the history of research due to the influence of SC procedures through empirical testing, the influence of eight procedures on the company's competitive benefits and the outcomes. Therefore, in this research because of time constraints and size restrictions the only three procedures are 4 product development and commercialization, supplier relationship management, manufacturing flow management.

### 2. Literature Review

SCM was considered as one of the disciplines of evolution in its initial phase (Kim, 2017). SCM provided a hypothetical system to "Business Ecosystem Idea" and offers a model of processes for businesses to participate in at the same time despite any rivalry. The scholars presented the theory and its structure while the consultants presented the term for the implementation of SCM. The word "SC Management" was for the first time used in (Barratt, 2016).For explaining the changes among its name (such as logistics), from further traditional approaches, the relationship with the data flow, for managing the material flows so at the time around in 1990 the educational institutions initially explained SCM as a theoretical approach (Huang, Potter, & Eyers, 2020).The concept of SC management has been famous from as early as more than two decades, in these decades more research have been conducted on this concept (A. Singh & Trivedi, 2016).The topic SCM has gathered more attention from business managers alike, academicians and consultants (Khaliunaa & Ramzani, 2019; Klimkiewicz, 2017).Several companies have started their businesses with the concept of SCM that it is a major factor to create support in providing the competitive benefits among their services and goods in a progressive and busy market. The term SCM has been revealed in various models of research with different point of views for instance marketing, operations management, management information system, purchasing and supply management, organizational theory, logistics and transportation (Ansari & Kant, 2017).

Hatamifar, Darban, and Rezvani (2018) investigated the relationship among firm's performance with the SC management activities. And especially, they observed the influence of supply base management, customer relations and quality management activities on a company's financial performance. They reported the features of quality management utilization of 8 performance statistics in quality management, social responsibility of management, involvement of quality department and management commitment to quality, hence, all these factors were positively connected with the performance of the company (Basheer, Khan, Hassan, & Shah, 2018; Tizroo, Esmaeili, & Khaksar, 2017). As Scholten and Fynes (2017) described that, the presence of SC is a must either for the business to efficiently develop with it or other way around. Lee and Kang (2018) claimed that the respondents who were almost more than half in numbers have revealed that they thought that their company had not been effective in the implementation of SC partnering which had not been achieved; Cha and Kim (2018), acknowledged that the association's 60 percent of SC had been unsuccessful. A Deloitte Consulting survey claimed that 91 percent of North American manufacturers ranked SCM as vital to their company's achievements while 2 percent ranked their SCs as one of the best in the whole world. The results indicated that SCM played a vital role for companies while the SC was not that efficient.

In the literature the supplier relationship management is usually described as strategic supplier partnership (Sriyakul, Umam, & Jermsittiparsert, 2019; Piriyawatthana, Phumdara, & Jermsittiparsert, 2020). Tarasewicz (2016) claimed that a strategic partnership stressed upon the long-term associations and is described as; "it promotes mutual planning and problem solving efforts" and building relationships among the trading partners. The strategic partnerships among companies encouraged the ongoing alliance in major strategic sectors such as technology, markets and goods and motivated the shared profits. The purpose of developing strategic partnerships with suppliers is meant to support them to enable working closely with them, however the company worked with the specific suppliers rather than several number of suppliers, and these selected suppliers had been shortlisted solely on the basis of cost, (A. Singh & Trivedi, 2016). Few benefits for containing suppliers initially in the process of the product design are following: aid in design assessment, assist in selecting better technology and components and 16 suppliers which could present a cost friendly design and give alternatives. The pressure on the companies by the global sourcing to develop their supplier link more efficiently. Scholten and Fynes (2017) claimed that the main role of the efficient administration in the international market is to have closer connections with the suppliers while cost based link with several suppliers. Initially companies used the supplier linkage method as a procedure to increase their competitive benefit (Yeoman & Santos, 2019).

Suppliers associations with management containing emerging partnership and links with important suppliers for the purpose of cost reduction, transformation in new production of goods and to develop value for both parties which would depend upon their joint commitment towards mutual achievement and long term alliance. The relationships among large businesses such as Cargill and Coca-Cola are very complex because it requires management among numerous widespread geographical areas and numerous divisions. Cargill is one of the major nutritional and ingredient firms across the globe. It is one of the important

suppliers of Coca-Cola. Anyone could visualize the firms' associations that were very complex and very comprehensive. However, the experts from all the companies came across on a regular basis the recognition of goods which would develop a mutual value in sectors such as sustainability, productivity, new market and new products. The significant relationship was considered to include the high authorities of both firms such as their CEOs (Azmi et al., 2017).

Zhang, Pawar, and Bhardwaj (2017) executed a research survey for comparison among supplier relationships with service firms and management practices of manufacturing. The researchers compared the two parties depending upon the level of satisfaction which was gained from their management efforts that was associated with the suppliers by utilizing the outputs and targets which consists of gain in their financial benefits, increased management skills, improved technical abilities, 20 supply base reduction, service, performance goals which consist of quality and cost delivery performance. The two parties had significance at moderate levels for the purpose of strategic targets but ranked achievements of outputs more than the strategic targets. The production companies focused on quality rather than the service firms on the other hand service firms focused on the cost, service and delivery performance rather than the production companies. The financial strength was considered as the unique strategic target which distinguished the two parties, on the basis where the service firms got more importance for enhancing the financial strength of suppliers as compared to production companies. Hence the outcomes from this research represented the two hypotheses as follow:

## **H**<sub>1</sub>: *The competitive benefits inside the company will be positively linked with the supplier relationship management.* **H**<sub>2</sub>: *The performance of the company will be positively linked with the supplier relationship management.*

The manufacturing flow management firms that implemented the production actions in a SC which appeared with various tasks such as quantities which are corresponding with the market and the production of goods in varieties. However, the manufacturing functions were also called the traditional ways to gain targets through actions. It seemed to transform the required focus into new management practices such as continuous improvement, total quality management and just-in-time operations (Bezuidenhout, 2016). The relationship of production with the overall demand referred towards the chance of cost reduction which saved money for 21 production firms and their SCs. For instance, the Efficient Consumer Response could cause possible savings, which had been estimated at \$30 billion through a struggle of creating relationships among market and production management in the industry of food. The companies which corporate in activities such as manufacturing, logistics and procurement that may have achieved the decreased level of cost among seven and three percent of profit gain (Chaghooshi, Arbatani, & Samadi, 2015).

One of the SC management procedure is the manufacturing flow management that consists of all actions which are required to implement, obtain, move goods by the manufacturing set-up and achieve the production flexibility in the SC (Bezuidenhout, 2016). The following procedures deals with goods productions and creating the production flexibility which required to support the focused markets. The response in time of varying demand and cost of production reduced with the manufacturing flexibility which showed the capability to produce different types of goods according to the time. For the gain in high rates of production flexibility, planning and its implementation that was required to enhance the single firm further to the more representatives of the SC. Manufacturing flow management must be applied among the members of the SC that contributed in the movement of the goods in the same way affected by, and those that had an effect on generally the amount of manufacturing flexibility gained by the SC (Bezuidenhout, 2016).

The team of manufacturing flow management process organized the whole required activities which were essential to gain, manage manufacturing flexibility in the SC, implement and flow of goods by the production set-up (Azmi et al., 2017). This method just combined with solely manufacturing. For instance, the movement of efficient goods by a production system on the basis of the consistency of suppliers' capability to supply the whole order timely as well as their inside activities. However the procurement and inbound functions should perform strictly with the manufacturing process to guarantee the competent movement of goods during the production system. To evade any type of miscommunications and possible reduction in cost guarantee need the inclusion of supplier in discussions .The manufacturing flow management process consists of two types of components such as operational and strategic, as presented in the figure 6.The strategic portion of elements offered the model of process which was managed inside the company and among the vital members of the SC. The operational portion provided the process which presented the actual realization of manufacturing flow management. The combination of the firm with other members of the SC required the production of the strategic process as an initial step on the other hand the everyday activities were implemented at the operational level (Bezuidenhout, 2016).

The ability to defend the position of the firm among its competitors is known as competitive advantage. Thatte and Agrawal (2017) claimed that the competitive advantage consists of different capabilities which are enhanced by the firm other than the competition purpose which provides them an advantage in the market. Additionally, it's a result of serious management decisions. Competition is referred to as a "war of movement" based on their quick response to fluctuating requirements in the market and on their forecasting. Competitive advantage is derived from the development of great abilities which leads to enhance the buyer's value and differentiate benefits and gain cost, 46 concluded it as a gain in revenue and in market share (Wu, Liu, & Zhang, 2017). The constant competitive advantage would require artificial hurdles by the firms and more investment for enhancing the benefits for the long-term cycle (Wu et al., 2017). Porter's approach to the competitive market

focused on the skills of the company with low level cost of production in its business market that distinguished it in the business sector and led to it being valued by the buyers due to some features.

Multiple researchers (Glabiszewski & Zastempowski, 2018; Mapalala, West, & Winston, 2018) have supported the different parameters of both effectiveness and efficiency for calculating the performance of an organization. According to Mapalala et al. (2018) stressed on the viewpoint that an organization can gain a higher return when theories of efficiency and effectiveness are focused. Additionally according to Williams, Pieper, and Kellermanns (2019) a typology has been proposed for the performance that comprises organizational effectiveness and efficiency. This theory provides signs of both parameters. The methods used to gauge organizational efficiency includes return on total assets and return after-tax on total 49 sales. However, for organizational efficiency, the organizational sales growth in total along with the growth for total employment are included for measurement.

Because of the manufacturing flexibility the huge changes in buyers liking are permitted as well as the demand in quantities (Krægpøth, Stentoft, & Jensen, 2017). To measure the correct amount of flexibility that plays a vital role in the virtual supply of any firm, at the center of the manufacturing flow management process, distribution and sales of products and production (Bezuidenhout, 2016). However the production procedure might be contracted out, so that the contracting company is responsible for the quality of the good which they promised. Manufacturing flow management must be applied among the members of the SC that contributed in the movement of the goods in the same way affected by, and those that had an effect on generally the amount of manufacturing flexibility gained by the SC. However, by the manufacturing flow management process the administration organized all those activities which supported the movement of the product by the plants, and to manage, obtain and implement the manufacturing flexibility in the SC (Bezuidenhout, 2016). Although it is the duty of each member of the SC to develop an efficient system for potential products movement, on the other hand permit the desirable degree of manufacturing flexibility. Further research work was done by a few researchers on manufacturing flexibility and presented some literature regarding this topic Kaur, Kumar, and Kumar (2017) and Silva and FERREIRA (2017). These researchers agreed on one point which is that the success of manufacturing flexibility is a serious issue regarding the competitive benefits for the production companies. Shop floor operators, managers and 34 CEOs acknowledge it (Kulkarni & Francas, 2018). The findings depend on the above discussed studies and presented the two hypotheses:

H3: The competitive benefits inside the company will be positively linked with the manufacturing flow management practices.
H4: The performance of the company will be positively linked with the manufacturing flow management practices.
H5: Competitive advantage mediates the relationship between the manufacturing flow management practices and firm performance.

**H6:** Competitive advantage mediates the relationship between the supplier relationship management.

### 3. Methodology

The study has used the survey based methodology and questionnaire adapted from the previous studies is used for the data collection. The study has used the SEM-PLS for the data analysis. Generally there are two types of Structural Equation Modeling (SEM), the covariance-based SEM or CB-SEM and the variance based SEM or PLS-SEM. Unlike the CB-SEM, the PLS-SEM approach is a fundamental approach as it explains the amount of change in dependent latent construct described by the model (Hair, Hult, & Ringle, 2016; Henseler, Hubona, & Ray, 2016). PLS-SEM does not just aim to determine the nature of relationship among items; rather it particularly focuses on variance maximization in dependent variables that is described by the set of independent variables, and thus tends to improve the predictive ability of the model. From theoretical perspective, both the multiple regression and the Partial Least Square Structural Equation Modeling are quite similar because they emphasize less on the measurement model and more on determining the expected relationship between the constructs (Hair et al., 2016; Henseler et al., 2016). The PLS model is estimated in two steps, namely, 1) the measurement model, and the 2) structural model (Hair, Matthews, Matthews, & Sarstedt, 2017). The response rate of the study is 53.7 percent.

#### 4. Results

Checking the reliability and validity of items is the first step of evaluating the measurement modeling PLS analysis. During measurement model estimation, the key standards which must be inspected are: the convergent and discriminant validities (Hair et al., 2016; Henseler et al., 2016). Convergent validity (CV) refers to the extent that different scales are in correlation with each other and examine similar loadings of their respective constructs (Ramayah, Cheah, & Memon, 2018). Thus, for convergent validity, the average variance extracted (AVE), indicator reliability and composite reliability (CR) are the commonly used measures.

The indicator reliability is examined to obtain the factor loadings. Each indicator loading is expected to be greater or equal to 0.70, as per the recommendation of Hair et al. (2016). In the next section, composite reliability (CR) is estimated for determining the internal consistency reliability. The composite reliability (CR) is 'the extent that the observed variables explain the model's latent variable'. The internal consistency reliability can also be measured using the Cronbach alpha

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coefficient (Hair et al., 2016; Henseler et al., 2016). According to the literature, 0.70 - 0.90 is the satisfactory range for the CR value, however, this range can be relaxed to 0.60-0.70 for exploratory type of research (Ong & Puteh, 2017).

#### Table 1

	COMPA	MFMP	PER	SUPR	
COMPA1	0.917	0.861	0.495	0.830	
COMPA2	0.874	0.776	0.478	0.782	
COMPA3	0.930	0.837	0.536	0.822	
COMPA4	0.906	0.838	0.486	0.815	
COMPA5	0.926	0.855	0.559	0.813	
MFMP1	0.796	0.876	0.460	0.777	
MFMP2	0.765	0.838	0.452	0.786	
MFMP3	0.797	0.903	0.531	0.808	
MFMP4	0.815	0.908	0.506	0.831	
MFMP5	0.851	0.869	0.488	0.800	
PER1	0.531	0.506	0.900	0.469	
PER2	0.554	0.563	0.879	0.500	
PER3	0.477	0.462	0.892	0.458	
PER4	0.053	0.084	0.341	0.079	
PER5	0.494	0.499	0.902	0.472	
PER6	0.439	0.413	0.821	0.383	
PER8	0.467	0.469	0.889	0.418	
PER9	0.499	0.502	0.876	0.451	
SUPR2	0.763	0.794	0.422	0.893	
SUPR3	0.799	0.817	0.459	0.901	
SUPR4	0.752	0.799	0.448	0.883	
SUPR5	0.833	0.859	0.494	0.914	
SUPR6	0.810	0.800	0.444	0.884	
SUPR1	0.825	0.813	0.475	0.888	

Furthermore, Hair et al. (2017) define average variance extracted (AVE) as 'the extent that a similar construct is assessed by different items'. Basically, it gives a common value of the square loadings of indicators associated to their respective constructs. AVE greater or equal to 0.50 is considered as the threshold level for AVE, however, greater than 0.50 value of AVE shows that an acceptable level of convergent validity is established. In addition, greater than 0.50 value for AVE shows that latent variable explains more than half of the variance in its indicator (Hair et al., 2016; Henseler et al., 2016). It has also been suggested that if AVE square root equals 0.50 then factor loadings are also expected to exhibit above 0.70 value (Hair et al., 2017).

### Table 2

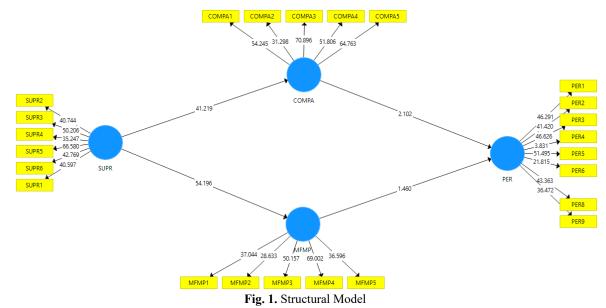
Reliability

	Cronbach's Alpha	rho_A	CR	(AVE)	
COMPA	0.948	0.949	0.960	0.829	
MFMP	0.926	0.927	0.944	0.773	
PER	0.930	0.956	0.945	0.692	
SUPR	0.950	0.950	0.960	0.799	

After assessing the reliability and convergent validity, discriminant validity is another criterion in PLS. The discriminant validity is estimated to observe if there is any difference between the two concepts or if the two concepts are distinct from one another (Naala, Nordin, & Omar, 2017). The two measures that are commonly used for measuring the discriminant validity are the cross-loadings criterion and the Fornell-Larcker criterion (Hair et al., 2016; Henseler et al., 2016). According to Henseler (2018), the AVE square roots and correlations among the constructs are compared under the Fornell-Larcker criterion, therefore, in comparison to the off-diagonal constructs the latent construct must be higher in value to achieve discriminant value. Another discriminant validity criterion is the cross loading criterion (Hair et al., 2016; Ramayah et al., 2018).

### Table 3

Validity					
	COMPA	MFMP	PER	SUPR	
COMPA	0.901				
MFMP	0.899	0.879			
PER	0.861	0.755	0.832		
SUPR	0.792	0.711	0.712	0.894	



Just like the measurement model evaluation, there are different criteria which must be considered to determine the structural model. A few key criteria for structural models include significance of path-coefficients, t and p values, R-square value and the standard error (Hair et al., 2016; Henseler et al., 2016).

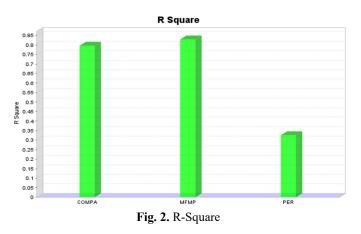
Direct Relationship

	(0)	(M)	(STDEV)	( O/STDEV )	P Values
$\mathbf{COMPA} \rightarrow \mathbf{PER}$	0.329	0.341	0.156	2.102	0.018
$\mathbf{MFMP} \rightarrow \mathbf{PER}$	0.254	0.245	0.174	1.460	0.072
$SUPR \rightarrow COMPA$	0.892	0.892	0.022	41.219	0.000
$SUPR \rightarrow MFMP$	0.911	0.911	0.017	54.196	0.000
$SUPR \rightarrow PER$	0.525	0.528	0.063	8.287	0.000

#### Table 5 Mediation

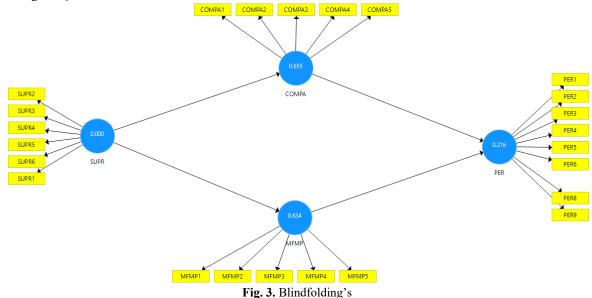
	(0)	(M)	(STDEV)	( O/STDEV )	P Values
$SUPR \rightarrow COMPA \rightarrow PER$	0.293	0.305	0.143	2.051	0.020
$SUPR \rightarrow MFMP \rightarrow PER$	0.231	0.223	0.158	1.465	0.071

An alternative approach for assessing SEM is the R-square or coefficient of determination. This criterion is similar to the good of fit (GoF) criterion in the CB-SEM (Shuhaiber, 2018; Singh & Prasad, 2018). In this regard, different ranges were suggested by different scholars for satisfactory R-square level. For instance, Akter, Fosso Wamba, and Dewan (2017) suggest that the acceptable range for  $R^2$  is 0.15. On the other hand,  $R^2$  ranging from 0.02-0.12 is suggested as weak, if it ranges between 0.13-0.15 then it is suggested as moderate and is suggested as significant if it lies above 0.26.



The determination of effect size is important while performing the PLS analysis. If the p values are statistically significant then it does not explain the effect size rather it indicates that there is an existing effect on the dependent variable (Mikalef & Pateli, 2017). Thus, a formula has been presented by Hair et al. (2016) for determining the effect size and its significance. According to Cohen, if f = 0.35 then the effect size is said to be large, and if f = 0.15 and 0.02 then the effect size is said to be medium and small, respectively.

Stone-Geisser's predictive relevance test is another important test in structural model analysis. However, Ong and Puteh (2017) refer to it as an 'extra model assessment criterion'. The Q-square value presents how well the observed values as well as their parameters are re-build by the model (Hair et al., 2016). In this study, a blindfolding procedure is adopted for evaluating the  $Q^2$  value.



The predictive relevance is said to be scarce if the value for  $Q^2 = 0$  (Hair et al., 2016; Hair et al., 2017; Ong & Puteh, 2017). In another study, it is suggested that exogenous constructs are said to have small, medium and large predictive relevance if  $Q^2$  value is equal to 0.02, 0.15 and 0.35, respectively (Hair et al., 2016).

Table	6
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Q=Square

	SSO	SSE	Q <sup>2</sup> (=1-SSE/SSO)
COMPA	1085.000	374.519	0.655
MFMP	1085.000	396.996	0.634
PER	1736.000	1361.880	0.216
SUPR	1302.000	1302.000	

#### 5. Conclusion

Financial performance is gauged through certain indicator that a typically used which includes the measurement of growth in sales, profitability measured by certain ratios for example return on equity, return on sales, and return on investment, Earnings per share (EPS) (Hatamifar et al., 2018). According to the information as stated earlier business performance is considered as a relationship between wide range of concepts related to organizational performance since is includes both operational performance which is the non-financial performance as well as the financial performance. Organizational productivity is gauged through indicators such as organizational efficiency that is measured through sales growth included in the field of financial performance, return on total assets and measured through after-tax return on total sales (Hatamifar et al., 2018). Though due the limitation in the extent to which survey was conducted for the research the performances of the organization will be restricted to commonly practiced financial measures that includes profit margin, market share, and return on investment. An additional view point on gauging the organizational performance is through its comparison of nonfinancial performance with financial performance (Basheer, Siam, Awn, & Hassan, 2019; Zahra, Hameed, Fiaz, & Basheer, 2019). The perspective related to this framework that was presented by Hatamifar et al. (2018) highlights the different parameters of performance in a company. Hatamifar et al. (2018) discussed the performance of business that comprised its business as well as financial performance that consists of both financial and non-financial performance. Thus, it is the broader perspective of organizational efficiency for its financial performance and business performance. However, in terms of its concept the organizational performance is indicated by financial performance as compared to the business performance which is a narrower concept. Financial performance explains how the financial indicators related to an organizational output are used and how it considers the organization's eventual objective is to attain financial benefits. SC Management has been explained by various researchers. Abdi, Abdi, and Fathollahi (2019) described the SC management as "the incorporation of important business functions that mutually support interdependent suppliers, retailers and distribution centers which are used to enhance the provision of services, movement of products and data sharing to final buyers from the original suppliers, for maintaining the desirable service levels the main focus is towards decreasing the overall system costs". The researchers (CSCMP) from the Council of SC Management described it as "SCM consists of management and planning of all the activities which are included in procurement, sourcing, all logistics management activities, conversion, intermediaries, that consists of coordination and collaboration with suppliers, customers and third-party service providers". Huang et al. (2020) claimed SCM as the integration and the management of the whole company's processes that offers services, goods and data which adds value for the buyers. However these definitions are varying due to a little change in words, all these are interconnected by the vital role of integration, coordination and communication among structures and businesses which would add value to their buyers (Tizroo et al., 2017).

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