

# Innovativeness as Antecedents to Firm Performance: The Mediating Role of Competitive Advantage and Supply Chain Flexibility of Manufacturing Firms

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**Abstract-** The study has examined the impact of the innovative capability on the firm performance of Indonesian manufacturing firms. The current study aimed to examine the role of competitive advantage and SCH flexibility as a mediator on the financial performance and intellectual CAP nexus, in the Indonesia's manufacturing industry. The response rate for this survey is 59.6%. The results in this study suggest a number of issues which must be addressed by the researchers and managers. Therefore, assessing the third variable is vital to have a meaningful interpretation of the association among study variables. In a study, if a relationship does not take into account the mediating mechanism, then it fails to get complete understanding of the relationship. In addition, failing to consider the effect of a mediator may not have clear explanation of the relationship outcome. Contrarily, a model which considers the mediating mechanism is likely to estimate accurate relationship among variables under study. Therefore, in order to reach to the legitimate conclusions and decisions, the practitioners and scholars must consider the significance of competitive advantage on performance and intellectual capital (CAP) nexus. Hence, results might facilitate the management for taking initiatives to develop acceptance and greater understanding of the intellectual CAP, thereby boosting organizations' performance as well as their competitive position.

**Keywords;** Innovative, Supply Chain, Indonesia

## 1. Background

Increased commercialization and liberalization in the manufacturing industry has resulted in strong competition, particularly in Indonesia and is one of the

reasons for the poor financial performance of the manufacturing institutions [1]. Such inclination has resulted in changing the manufacturing strategy and causing majority of the new manufacturing institutions to adopt manufacturing activity as a social mission, in order to offer their products commercially [2]. Consequently, the manufacturing industry in Indonesia adopted enterprise development and market-oriented approach to achieve better competitive position in the financial market in Indonesia [3]. In addition, it has been identified that in order to deal with above challenges, strong and efficient financial institutions must be established, which may cultivate firm-specific strategic assets. Meanwhile, the asset management of rare, hard-to-imitate and valuable assets and increased investment have been considered as a key to achieve competitive advantage. [4] suggested them as the assets that promote superior performance and competitive advantage. [5] also identified that employing specific and unique resources is a key requirement to achieve success under competitive environment. Furthermore, sustainable competitive advantage does not merely establish on financial CAP and physical assets, rather on the effective transmission of intellectual assets that are unique and rare. As a result, intellectual CAP assets would turn out to be more than just tangible resources to develop competitive advantage, which would ultimately result in superior performance [6].

In the modern business era of highly competitive business market, the manufacturing climate is distinguished with sophisticated consumers who demand short lead times and customized products [7, 34]. Several firms who previously earned customers through low cost standardized production strategy were also required to operate flexibly to compete in this highly competitive

market. A number of scholars have realized that flexibility is important to improve responsiveness and to meet the demands of customers. The resource composition of the competitors' product can be accessible in many areas around the globe, to give special attention to the SCH flexibility (SCF) by manufacturing firms in the fishery industry, particularly for improving firm performance and competitiveness [8]. Furthermore, a priority must be set to support fishery sector as an excellent commodity to improve added-value and competitiveness which may also influence others through improvement in value chain and SCH management. Up till now, there is non-optimal distribution of fish from its production center to different regions, however, it is necessary to achieve stable fish supply both for the processing and consumption industry. Thus, a national fish logistics system has been planned by the central government to improve fish SCH and to facilitate fish distribution in different regions of the world [9].

According to [10] manufacturing industry is highly innovative and complex, and is capable of sustainably expanding financial frontier to the poor, and is greatly dependent on the intellectual CAP. In this industry, majority of the firms have tried to maintain their economically active poor groups and adopted business-oriented outlook to attain financial and operational sustainability [11]. The manufacturing firms in Indonesian have particularly taken a measure, for enhancing intellectual assets management and investments, particularly, to achieve competitive advantage and in turn performance. Although, the ground facts are contrary to the manufacturing firm's expectations [12]. Regardless of the efforts to boost competitive advantage of a firm through investing in intellectual CAP asset, the Indonesian manufacturing firms have been still facing deteriorating financial performance [13]. Therefore, it is unclear whether competitive advantage will be boosted through intellectual CAP and will affect the Indonesian manufacturing institutions' financial performance. Though, [14] suggest that theoretical assertions validate the mediating effect of competitive advantage on the relationship among firm performance and intellectual CAP, while [15] suggested that there is scarce empirical evidence available in the extant literature. This study is motivated from the desire to develop understanding of competitive advantage's role in the firm performance and intellectual CAP relationship. The present research will allow practitioners and scholars to develop direct and definite understanding of competitive advantage implications on the relationship of firm performance and intellectual CAP. Moreover, it will also present more explanation that in what way competitive advantage affect firm performance through intellectual CAP.

## 2. Literature review

Earlier scholars had not supported and agreed upon the shape and precise definitions of intellectual CAP, while a general consensus exists, which suggest that intellectual CAP includes relational CAP, structural CAP and human CAP [1, 2, 33]. It thus allows researchers to refer intellectual CAP as an asset of professional skill and knowledge, knowledge and experience, technological capacities, and goal relationships, which may facilitate in achieving competitive advantage by an organization. In another study [16] intellectual CAP is described as a collection of the employees' all competences and knowledge which may help firms to achieve competitive advantage. Afterwards, this definition has been broadened by [17] who described it as the possession of organizational technology, professional skills, customer relations, knowledge and applied experience, which will likely to provide competitive edge to a company in the market. One of the central components of intellectual CAP is the human CAP, indicating single employee's contribution into the value adding processes, which also covers employee motivation, leadership ability, professional competence, and social competence [18]. In a similar vein, a researcher [4] attempted to observe in a study that whether human CAP represents the organization's human factor; whether employees take the combined skills, expertise, and intelligence while leaving the organization; and whether it presents distinctive character to the firm. According to the macroeconomic perspective, human CAP serves as one of the significant drivers for competitiveness, prosperity and national economic activity and an important source for strategic renewal and innovation [18]. On the other hand, [19] defined structural CAP as "what happens among the people, how the people are connected within the company, and what stays when the employee leaves the company". He further observed structural CAP as a collection of knowledge which a firm owns, including information technology, product innovation, corporate culture, explicit knowledge, innovation, and process optimization. Finally, relational CAP is defined by [20] as an intangible asset, based on creating, sustaining and nourishing quality relationships among group, individuals or organization, which may affect their business. Furthermore, the above three elements of intellectual CAP are found to be interrelated and also work effectively under collaborative or interactive manner, in order to develop strong foundation for intellectual CAP, which will likely to affect competitive position of an organization [21].

The aforementioned definitions explain the role of intellectual CAP in promoting and fostering competitive advantage. Competitive advantage is defined as an ability of consistently earning returns on investment above average for the industry. [22] also emphasized that a firm can achieve competitive advantage if it adopts such value-

creating strategy which is not implemented by any potential or current competitors, at the same time. In another definition, sustained competitive advantage arises as a result of strategic assets, whereas, it is regarded as an internally controlled asset, allowing firms to create and adopt those strategies which may enhance their effectiveness and efficiency [23]. Thus, it is traditionally assumed that competitive advantage depends on technology, economies of scale and natural resources, because they are not hard to imitate. However, according to the resource-based view (RBV), competitive advantage depends on rare, hard-to-imitate and valuable resources in the organization. [5] termed them as the invisible assets that are in fact intellectual CAP in real sense. Therefore, the intellectual CAP covers those capabilities and resources which are uncommon, valuable, non-substitutable and poorly imitable, providing superior performance and lasting competitive advantage to the firm. In line with firm's resource-based theory, it has been argued that competitive advantage does not merely achieved by using intangible, firm-specific and scarce assets [24]. In this regard, intellectual CAP has been recognized as a basic determinant to achieve current and future firm value growth and competitiveness. Further, it has also been asserted by [25] that intellectual CAP is the basic determining factor for small and medium firms' competitive performance and serves as an internal resource base of a firm. Based on the above findings, it can be concluded that only those firms achieve competitive advantage who successfully mobilize their set of intellectual assets into technological skills, strategic and experienced capabilities and knowledge. The existing literature also suggest that intellectual CAP is likely to influence the firm performance and competitive advantage [26]. Although, not enough empirical evidence is available concerning the role of competitive advantage on the performance and intellectual CAP nexus. The literature includes only limited evidence of the role of competitive advantage and to what extent it creates a linkage among financial performance and intellectual CAP. Most prior researches such as (Khan et al.,2019; [14] ignored the role of competitive advantage and its significance on the relationship among organizational performance and intellectual CAP. Hence, in a manufacturing industry, the role of competitive advantage as a mediator between financial performance and intellectual CAP is still an under researched area which calls for more studies in this area.

SCHflexibility serves as a theoretical foundation to test and measure the association between the variables in this study. It generally begins with manufacturing flexibility. A number of researchers have studied manufacturing flexibility from various dimensions. [27] defined flexibility as the companies' ability of adapting to the production process, in order to fulfill the customers

demand. Nowadays, industries are required to incorporate SCHflexibility (SCF) since competition among companies has been creating uncertainty in the market and company environment. Therefore, it is suggested that more empirical studies must be conducted based on SCF. [13] have critically analyzed the SCF concept and argued that majority of the researchers in extant literature particularly emphasized on the impact of environmental uncertainty on SCF, however, other factors also contribute in SCF, such as, performance of an organization, inter-organizational relationship and competitiveness. Therefore, this research aims to analyze SCHflexibility (SCF) with context to firm performance and competitiveness. The SCF concept itself was initially presented as an up gradation of manufacturing flexibility that mainly emphasizes upon internal aspects of an organization. Thus, SCF must be customer oriented and should be adopted in an integrated manner. A few researchers also argued that only limited studies are available on flexibility, and requires further studies and discussion concerning the nature of SCF in cross-business and cross-functional contexts [14].

On the contrary to the concept of manufacturing flexibility, SCF does not involves only one element, rather it includes overall enterprise network flexibility. Thus, all SCHchannels are required to develop closely cooperative relationship with both external and internal firms, like, distributors, customers and suppliers [28]. The SCF concept helps in assessing the overall capacity of a system to adapt with the fluctuations of factories, customers, and suppliers. The manufacturing firm can integrate this framework internally, without direct customers and supplier's involvement during the assessment process. However, if the assessment process is done among SCHmembers, then it will be of more significance. On the basis of above discussion, the present study aims to develop a relationship model for integrated SCF, which will explain the SCHpartners' ability to act in response to the changes and to maintain and achieve firm performance and market competitiveness.

For achieving SCHflexibility (SCF), integration must be started from supplier to the customers, which also require firms to remain flexible against all changes in customer demand that has becoming critical over time. Flexibility component is one of the important dimensions of SCF, requiring that all SC partners must be able to meet customer demand. Another framework was proposed by [29] for SCF concept, which presents a composition of manufacturing flexibility and integrative SCHmanagement (SCM). This SCF framework will explain the SCF concept from the upstream to the downstream. In addition, SCF is also suggested to be taken as a basic determinant to achieve firm performance and company competitiveness. The SCF theory forms the basis for testing and measuring the relationship between firm performance, competitiveness and SCF [25].

According to the literature SCF improves competitiveness, and significantly influence performance of an organization. It is in contrast to [27] findings, who reported insignificant impact on the performance of an organization. Hence, SCF is described as a consequence or reaction to uncertainty. The concept of SCF appeared from the literature of manufacturing flexibility. However, from enough SCF literature, majority studies were found to emphasize only on the aspect of flexibility within organization and only few attempted to examine inter-firm components from the SCF context. Thus, a conceptual SCF framework has been developed in this study by assessing the inter-firm components, for supporting firm performance and competitiveness. Improvement in performance and organizational competitiveness require SCHcoordination by enhancing communication efforts and integrating flow of information [21]. Another model was presented by [18] which may assist firms in the selection of SCHduring the market entry. According to [20] competitiveness or competitive advantage refers to a theory which states that ‘performance of an organization is dependent on those capability and resources which are unique for the company and are inimitable’. In a competitive market, competitiveness is a key to achieve company performance and competition is fundamental for the success or failure of a company. Furthermore, the appropriateness of organizational activities is determined by firm’s level of competitiveness that may also provide support to its performance, if performed well. [30] states that ‘competitive strategy is to strive for attaining a competitive position that may be useful for the organization’. Meanwhile, the aim of competitive strategy is to achieve that position, which is defended by the industry’s competitive factors. Thus, there are various ways for achieving competitiveness, and one such way is through developing SCHflexibility (SCF). Several studies [16] have investigated that in what way competitiveness influences the firm performance, using theories suggesting that SCM implementation offers strategic opportunity to firms to achieve competitiveness, which would ultimately result in firm performance. [31] defined firm performance as ‘the aggregation of all the work by company or its organizational units’. The studies by [8] also supported this idea, and stated that firm performance can be improved with higher level of competitiveness. On the contrary, no significant association among firm performance and competitiveness priority was also found. Based on the available researches on the impact of competitiveness on organizational performance, a contradiction still exists resulting from variability in the competitiveness and performance measurement. The measurement indicators for competitiveness are still vague, which motivate researchers toward developing ‘post services to suppliers’ as an indicator for measuring competitiveness. Thus, on the basis of aforementioned

empirical and theoretical literature, we propose the following hypothesis:

H1: INC has significant impact on the FRP.

H2: SCFL has significant impact on the FRP.

H3: COMPAD has significant impact on the FRP

H4: INC has significant impact on the SCFL.

H5: INC has significant impact on the COMPAD.

H6: SCFL mediates the relationship between the INC and FRP.

H7: COMPAD mediates the relationship between the INC and FRP.

### 3. Methodology

In present study we have used structured questionnaire for collecting the data and we have used the quantitative approach. Our targeted population for this study is the manufacturing firms of Indonesia. We have selected the sample by using the convenient sampling technique, because we cannot generalize the results of this study by taking other samples. Because of context of this study convenient sampling is more appropriate technique. In this study the important informers are executives or managers, business owners and their business partners associated with manufacturing firms in Indonesia. We have also conducted a door to door survey for collecting the useful and effective information [30].

For collecting the data of present study, we had distributed total 550 questionnaires and we have received back total 360 questionnaires. By following the suggestion of [28] we have excluded 32 questionnaires from 360 because they were not completed by respondents. So, the response rate for this survey is 59.6%.

### 4. Results

We have checked the first order of model for reliability and validity. The first checked criterion was the of internal reliability consistency.

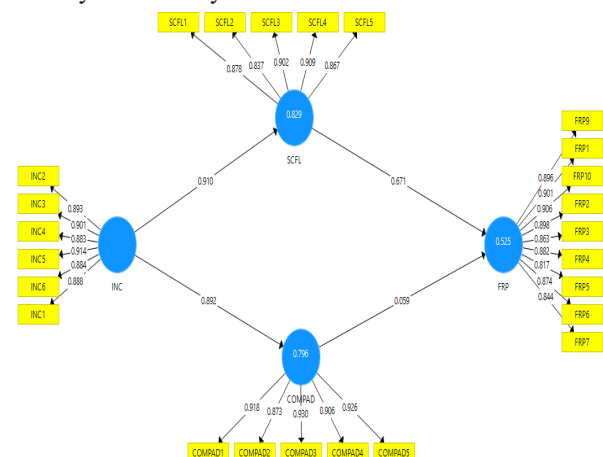


Figure 1. Measurement Model

The Cronbach’s alfa is the traditional and common method for the measurement of internal reliability

consistency. The reliability estimates are provided by the Cronbach value which based on indicators internal correlations. In PLS path model have used the composite reliability [34]. In composite reliability (CR) we have taken the different loading of indicators under consideration. The interpretation method for value of Cronbach alfa and CR is same.

**Table 1.** Outer Loadings

	COMPAD	FRP	INC	SCFL
COMPAD1	<b>0.918</b>			
COMPAD2	<b>0.873</b>			
COMPAD3	<b>0.930</b>			
COMPAD4	<b>0.906</b>			
COMPAD5	<b>0.926</b>			
FRP1		<b>0.901</b>		
FRP10		<b>0.906</b>		
FRP2		<b>0.898</b>		
FRP3		<b>0.863</b>		
FRP4		<b>0.882</b>		
FRP5		<b>0.817</b>		
FRP6		<b>0.874</b>		
FRP7		<b>0.844</b>		
FRP9		<b>0.896</b>		
INC2			<b>0.893</b>	
INC3			<b>0.901</b>	
INC4			<b>0.883</b>	
INC5			<b>0.914</b>	
INC6			<b>0.884</b>	
SCFL1				<b>0.878</b>
SCFL2				<b>0.837</b>
SCFL3				<b>0.902</b>
SCFL4				<b>0.909</b>
SCFL5				<b>0.867</b>
INC1			<b>0.888</b>	

Regardless of using the reliability coefficient at initial stages of research internal consistency value must be greater than 0.7. but in advance research its value must be between 0.8 to 0.9 which are according to sufficient. For analyzing the reliability of construct Cronbach's and CR values have been shown in table 2. According to [17] the minimum value of Cronbach's a and CR should be greater or equal to 0.70. which is proved by measurement that internally first order measurement model is consistent and reliable.

**Table 2.** Reliability

	Cronbach's Alpha	rho_A	CR	(AVE)
COMPAD	<b>0.948</b>	<b>0.950</b>	<b>0.960</b>	<b>0.829</b>
FRP	<b>0.962</b>	<b>0.964</b>	<b>0.967</b>	<b>0.768</b>
INC	<b>0.950</b>	<b>0.950</b>	<b>0.960</b>	<b>0.799</b>
SCFL	<b>0.926</b>	<b>0.928</b>	<b>0.944</b>	<b>0.773</b>

We have also measured the discriminant and convergent validity for determining the validity of model. The convergent validity can be referred as the number of items which covers the unidimensionality of each other and shows the same construct. [18] has suggested that the value of AVE that is average variance extracted should be greater or equal to 0.5. when this standard is fulfilled by the value it shows enough convergent validity. Which basically indicates that half of the change in items is described by the latent variable. AVE measurements are presented in Tale 3. Which shows that all values are greater than 0.5, which indicates the convergent validity of model. For the determination of discriminant validity of models construct for each variable we have taken the square root of AVE. the values of correction among variables must be less than the AVE square root values. We have shown the values of variable correlations in tale 2 diagonally along with square root of AVE. We have achieved the discriminant validity because it can be seen in table 2 that diagonal values are greater than the values of variable correlation.

	COMPAD	FRP	INC	SCFL
COMPAD	<b>0.901</b>			
FRP	0.872	<b>0.876</b>		
INC	0.792	0.796	<b>0.894</b>	
SCFL	0.715	0.724	0.710	<b>0.879</b>

In PLS path models the standardized beta coefficients of OLS regressions are known as individual path coefficients. For estimation of significance of path coefficients. [32] has suggested the bootstrapping method. The results of structural model (SM) analysis are shown in Figure 3.

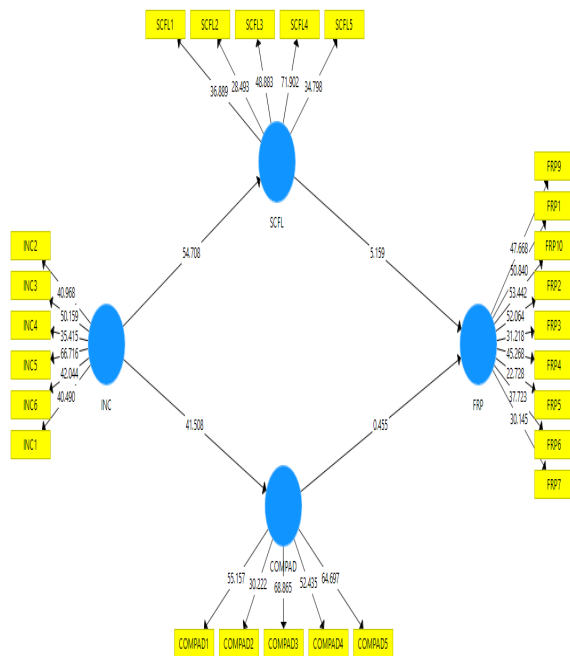


Figure 2. Structural Model

After achieving the Measurement model (MM), by testing the hypothesis this study has assessed the SM, by following the suggestions of [15] this study has done the bootstrapping procedure by taking 5000 bootstrap sample. Path coefficients of each construct are shown in table 5. So, all hypothesis has significant relation between the endogenous constructs. While table 4 below shows the direct findings of mode.

Table 4. Direct Results

	(O)	(M)	(STDEV)	((O/STDEV))	P Values
COMPAD -> FRP	0.059	0.071	0.129	0.455	<b>0.324</b>
INC -> COMPAD	0.892	0.892	0.021	41.508	<b>0.000</b>
INC -> FRP	0.663	0.664	0.063	10.560	<b>0.000</b>
INC -> SCFL	0.910	0.911	0.017	54.708	<b>0.000</b>
SCFL -> FRP	0.671	0.658	0.130	5.159	<b>0.000</b>

Table 5. Mediation

	(O)	(M)	(STDEV)	((O/STDEV))	P Values
INC -> COMPAD -> FRP	0.052	0.064	0.116	0.451	<b>0.326</b>
INC -> SCFL -> FRP	0.610	0.600	0.119	5.121	<b>0.000</b>

We have calculated the value of R<sup>2</sup> after the confirmation of path coefficient significance which is also known as coefficient of determination. It indicates that how much variation in dependent variable of model is because of predicting variable [14]. According to the study of [18] that the acceptability of R square always depends on the research framework. The values of r square 0.75,0.35 and 0.2 indicates the substantial, moderate and weak predictive accuracy of following model.

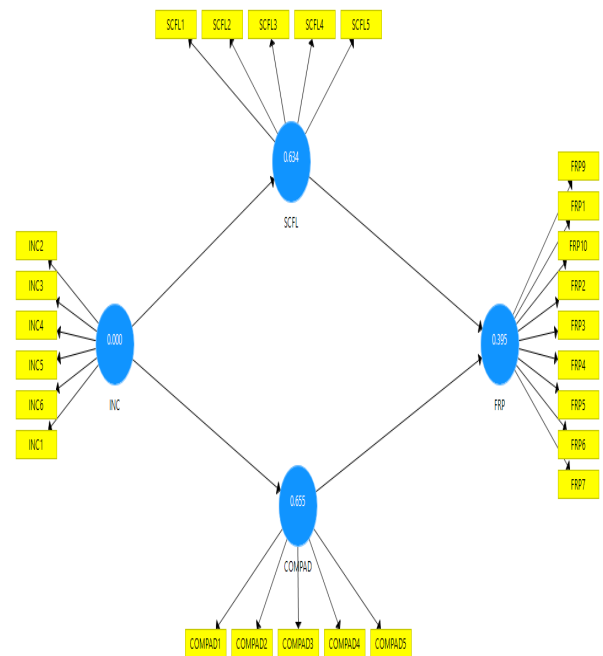


Figure 3. Blindfolding's

For the assessment of predictive relevance in PLS PATH modeling we have also carried out the blindfolding procedure. We basically use this to assess that model is good fit or not. By using the blindfolding method and cross-redundancy approach we have estimated the values of Q<sup>2</sup> which are shown in figure 3. So, for this model value of Q<sup>2</sup> is non-zero which shows there is some predictive relevance in model.

Table 6. R and Q square

	SSO	SSE	Q <sup>2</sup>	R-square
COMPAD	1085.000	374.507	0.655	0.796
FRP	1953.000	1181.457	0.395	0.525
SCFL	1085.000	397.083	0.634	0.829

5. Conclusion

The current study aimed to examine the role of competitive advantage as a mediator on the financial performance and intellectual CAP nexus, in the Indonesia's manufacturing industry. Research findings indicate that competitive advantage serves as a mediator

on firm performance and intellectual CAP relationship, which is in line with [26] study suggested Med Graph guidelines. It is accurate because an organization's intellectual assets may improve the competitive position of that organization. It is related to the firm's resource-based view (RBV) which states that 'having those assets which are non-imitable also linked with competitive position of the organizations. [27] also supported these findings and state the intellectual CAP as a set of invisible assets, assigned to a firm and have a strong influence on the competitive performance of an organization. The above findings and discussion confirm the significant contribution of competitive advantage as a channel among financial performance and intellectual CAP in manufacturing institutions.

SCH flexibility refers to 'the SCH partners' ability to act in response to changes, to maintain and achieve market competitiveness'. SCH partners' responsiveness must be incorporated in the form of product development, flexibility in supply, delivery and production. Southeast Sulawesi's Fishery SCF was found to successfully contribute towards competitiveness. In addition, SCF was found to have a significant positive impact on competitiveness. According to the empirical findings, effective SCF implementation has significantly improved organizational competitiveness. Furthermore, the measurement model for SCF is powerful revealing supply flexibility as a significant indicator. These findings validate the suppliers' (fish collector) ability of providing fresh fish supply at the required time, with the desirable firm quality and quantity, in order to assess the improvement in delivery-dependability through competitiveness. In addition, fish supply requires fast delivery process, as it determines the quality of fishery firms.

The results obtained in this research support the SCF theory. It is also in line with [26] proposed theory of SCH flexibility (SCF), according to which the SCF concept must be taken as a basic competitiveness determinant. Moreover, SCF refers to 'the SCH partners' ability to respond against the continuous market changes for maintaining competitiveness'.

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