Supply Chain Social Capital and Supply Chain Performance: The Mediating Role of Supply Chain Integration and Sustainability

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***Abstract*-The study has aimed to examine the impact of the supply chain social capital (SCCC) on the supply chain performance (SCHPER) of the Indonesian manufacturing firms. In addition to that the study has examined the mediating role of supply chain integration(SCHINT) and supply chain sustainability in the relationship between the supply chain social capital(SCCC) on the supply chain performance of the Indonesian manufacturing firms. The study provides empirical evidence for the role of SCI as a mediator on the relationship between social capital in supply chain and firm's performance. It has been revealed by the results that SCHINT partially or fully mediates three relations. This research was aimed at analyzing different dimensions and measures of supplier social responsibility in developing countries. There was gap in existing research studies pertaining to the empirical analysis. Social issues differ in developing countries. The complexities and capabilities specific to demand are increased with the diversity of social issues. Social issues and related dimensions are explored based on these motivations for the developing country, i.e. Indonesia. The study has used SEM-PLS for the data analysis and response rate was 80 percent. The study also explored the way in which supplier performance and supply chain performance of buyer is improved through the adoption of social sustainability practices by buyer. In a similar way, the extent to which collaboration and commitments of buyers for the social sustainability influence performance of the focal firm have been explored.**

Keywords; *Supply chain, sustainability, social capital , Indonesia*

1. Background

Originally, social capital was used to define the relational resources, which are beneficial for the individuals' development in the social organization's community. Inclusive empirical studies have been conducted on direct influence created on firm's performance (SCPER) by SCCC. At the end of 2000s, researchers started giving attention to the importance of SCCC in SC. It was defined by [1] that SCCC in the perspective of social network is the relational and structural concept of SC capital. SCCC of SC was defined by [2] as a combination of resources involved in the associations within a SC network. These include the relationships as well as the interaction between various actions and processes obtained from the SC relationships [37-39].

It has been argued that the adoption of social sustainability (SUS) by suppliers improves the social performances and helps in achievement of competitive advantage of SC. As a result, the market share increase and costs are reduced [3]. Moreover, by improving the conditions of working in supplier companies, the operational performance of buyers is improved in terms of fewer disruptions, reduction in accidents, and increase in the delivery time of products[4]. The product quality is improved because of better working conditions for the employees. This increases the motivation level of employees. The adoption of social SUS in SC is highly crucial for production economies. Resultantly, the cost for health and safety is reduced, labor cost is reduced, the quality of product is improved, and lead times become shorted with better reputation [5].

A conceptual framework of relationship was provided by the researchers between SC management, SCCC in SC and performance of chain. However, the model was not tested empirically. The aim of this study is to analyze the association between SCCC in SC and its direct influence on SC performance and SC integration (SCI) [6]. Moreover, the influence of SCI as a mediator on the association of SCCC performance in SC and performance has been analyzed. Particularly, a conceptual model was developed between SCCC SC and SCI performance. The relation between SCI, SCCC in SC and SC performance was explored. Moreover, the way in which the relation between SC performance and SCCC in the SC is mediated by SCI was empirically tested. Further, using the results of

the research, future research implications have been provided for the policy makers and managers. In order to achieve the set research objectives, hypotheses have been developed and empirically tested by using the data of Korean firms [7]. The research has employed hierarchical and reflective partial least squares (PLS) and approach of Baron and Kenny's [8].

2. Hypothesis Development

SCCC was defined as the total existing actual and potential resources that have been used derived from the relationship network of a social unit or an individual The relationships, which make the working of an organization effective, have been emphasized by[9]. [10] emphasized on the structure of associations between different actors. According to [11] SCCC relationships include the political, economic, cultural, and technological resources. Three dimensions have been demonstrated for SCCC. These dimensions include cognitive, relational, and structural. The network properties such as personal relations and dimension of relations are included in structural dimension. The relationship established with someone and the way it is established is included in this dimension [12]. The ongoing personal relationship, which are based on the previous associations, friendship, emotional linkages, and personal relations are referred as relational. Norms and trust strengthen this dimension including expectations and obligations. The shared value, shared codes, shared language, and interpretations are included in the cognitive dimension of SCCC. There is interrelation between these three dimensions of SCCC.

Using the SCCC theory, SC was defined by [13] as the value of a SC network of a firm, which is derived from the direct and indirect associations in SC and structural configuration. It was suggested by the researchers that there is an influence of relation and structural dimension in the SC network on the performance of SC. This study has used the concept of SCCC in SC and its three dimensions suggested in literature, i.e. cognitive, relational, and structural dimension. The social interaction and network position of an actor are included the structural dimension of SC. The business opportunities could be identified by the actors, who are well positioned for acquisition of knowledge and market information, resources through development of relationships [14]. The relational assets involved in the relations of SC such as commitment and trust are included in the relational dimension of SC. They work as supporting mechanisms, which generate and maintain the acquired assets in the SC. The characteristics included shared values and norms of an organization supporting an understanding of proper behaviors and shared goals in the SC are included in the cognitive dimension of SC [15]. According to a number of researchers, SCCC's three dimensions are highly interactive with each other. It was claimed by [16] that the cognitive capital included relational capital. It was demonstrated by [17] that there is a positive and significant influence of structural capital on relational capital. However, it has an insignificant influence on cognitive capital in every unit of business within a large multinational organization. The focus of these observations is on SCCC of intra firm rather than SC.

A precise conceptualization of SCI based on three dimensions has been adopted in this study. This model includes sharing of information, collaboration, and exchange of resources. Most of the measurement approaches of SCI have been synthesized in this concept. The sharing of information between the partners of SC may included the requirements of customer and manufacturing, information of production, data of supplier cost, schedules of production and forecasts[18].

The process of collective activities, which are performance by the partners of the SC to achieve mutual benefits, is referred as collaboration. The exchange of resources is regarded as exchange of tangible as well as intangible resources between the partners of SC. It is the result of collaboration. A positive relation has been demonstrated by [19] between structural and relational dimension of SCCC and exchange of resources. Moreover, resource exchange is not significantly influenced by in every unit of large organization. The positive relation between structural, cognitive, and relational dimension and the sharing of information was analyzed by[20]. The researcher worked on manufacturing firms, which were based in Hong Kong and owned by families. The conceptual relation between SCCC in SC and SCI was proposed by [21]. However, the relations were not tested empirically.

H1: SCCC has significant impact on the SCPER

A comprehensive concept of SCI has been used in this study based on three dimensions including sharing of information, collaboration, and exchange of resources. Most of the measurement approaches of SCI have been synthesized in this concept. The sharing of information between the partners of SC may include the requirements of customer and manufacturing, information of production, data of supplier cost, schedules of production and forecasts. A positive relation was found by [22] between structural and relational dimension of SCCC and exchange of resources. It was found that resource exchange is not significantly influenced by in every unit of large organization. The positive relation between structural, cognitive, and relational dimension and sharing of information was analyzed by [23]. The researcher worked on manufacturing firms, which were based in Hong Kong and owned by families. The conceptual relation between SCCC in SC and SCI was proposed by[24]. However, the relations were not tested empirically.

The literature studies support the direct influence created on SCPER by SCCC. Moreover, the direct influence on a firm's performance by SCI is well established. However, the influence of SCCC on SC integration has not been analyzed much in the literature studies. A relation was established between information sharing and SCCC by[25]. It was found that competitive improvement and information sharing could be resulted by SCCC. The Chinese family owned manufacturing firms in Hong Kong have experienced competitive improvement through sharing of information. The role of information sharing as a mediator was analyzed by [25] in the relation between SCCC dimensions and competitiveness of a firm. It was demonstrated by [26] that there is a direct influence of SCCC on exchange of resources, which creates a significant influence on innovation of product. However, the role of resource exchange as a mediator has not been analyzed. The relation between SCCC dimensions, SCI, information technology, and firm's performance was demonstrated by [12]. It was found that there is a significant influence of SCCC information technology on SCI. Moreover, a significant influence is created on the performance of the firm. Moreover, the relation between dimensions of SCCC information technology and performance of the firm is mediated through SCI. It has been proposed that the performance of a firm can be improved by SC SCCC through incorporation of SCI as a mediator.

It has been suggested by RBV that the interrelations of ICT determine its influence. In order to analyze the ICT's competitive implications, there is a need for incorporating the resources that are improved through resources of ICT. An additional resource, which is advanced by ICT, is SC integration [27]. Recent studies have confirmed SC integration as an additional resource influenced by ICT. The level of engagement between suppliers and customers is referred as SC integration by[28]. Cooperative relationship and information sharing have been taken into consideration as two aspects of SCI. These are also referred as SC practices and important elements of SCI. The relational aspect of SCI is reflected by cooperative relationship, which is the level of buyer's perception about the cooperative relationship. A partnership based on the flexibility in arrangements and capability of problem solving is referred as a cooperative relationship. The willingness for making the availability of tactical and strategic data for other SC members is referred as information sharing based on the definition of[29]. This helps in managing levels of inventory, plans for future, and forecasts. The companies are supported by information sharing to improve the responding capability with respect to the changing requirements of the market. Moreover, the changing needs are communicated among the partners in trade across the borders of the company [30].

H2: SCCC has significant impact on the SCIN.

H3: SCIN has significant impact on the SCPER.

H4: SCIN mediates the relationship between the SCCC and SCPER.

The only extension of corporate social responsibility is the social SUS, which has been used in the literature on SC. This extension has been used to show the way in which socially responsible behavior is displayed by the companies in making purchasing decisions. Social issues and their link with the SC performance are identified through PSR (purchasing social responsibility) and LSR (logistical, social responsibility) [31]. For defining corporate SUS, both social responsibility and CSR are used interchangeably. The factors, which compose social SUS within the SC, have been argued in literature studies [2]. For a better understanding, there is a need to find answers for three questions. These questions include about the target, issues being addressed, and the way in which they are addressed. Therefore, the direct or indirect responsibility, which has to be dealt with by decision makers for resolving particular issues related to business and society in the SC leads to social SUS. Some researchers have defined SUS as the ethical code of conduct for survival and growth of human, which must be achieved in an inclusive way [4]. Some scholars have regarded social SUS as social resource management, which involves the abilities, skills, social values, and relationships of people. Particularly in operations, the practices of social SUS are referred as the aspects of process and products, which determine the welfare, safety, and wellness of human [6]. Moreover, the phenomenon of social SUS was refined by [7] as SCSS (SC social SUS) involving six different dimensions. These dimensions include forced and child labor, safety and health, equity, human rights, philanthropy, and product responsibility. Moreover, the researchers argued that SC social responsibility deal with the issues of product and progress, which result in long term influence on people and stakeholders involved in the up and downside of SCs in the developing countries [32]. In SC, social issues deal with issues of suppliers at inters firm level, manufacturing issues at intra-firm level, and issues of customers. The focal firm can manage the issues at intra firm level, but the issues related to suppliers could be risky for the company. The focus of most of the researches in SC management is on the internal and external failures, and disruptions caused by negative events, which result in risk for the company [33]. In quantitative terms, the probability of occurrence of an event multiplied with the loss in financial term is referred as risk. There are multiple dimensions of risk in SC management and operation particularly the risks linked with the product development, fulfillment of demand, safety of customer, and process technology. It is inevitable to deal with social issues, which are important aspects in the process and product

environment. When social issues are ignored by a firm in SC, there is high change for accountability based on the marketplace and size of the firm [34]. Resultantly, severe backlash is faced by firms as loss of customers, market share, and fine imposition.

H5: SCCC has significant impact on the SUPP.

H6: SUPP has significant impact on the SCCC.

H7: SUPP mediates the relationship between the SCCC and SCPER.

3. Methodology

By using a structured questionnaire, we have used quantitative approach for collecting the data in current study. Our targeted population for data collection is SMEs in the Indonesia. As we cannot generalize the findings of this study by using any other sample, so we have used the convenient sampling technique for selecting the data sample. And because of context of this research convenient sampling is most suitable technique. We will send the questionnaires to the executives, owners, associated business partners and managers of targeted firms. By following the recommendation of [35] we have also conducted door to door survey to make sure the effective and useful information.

We had distributed total 410 questionnaires for collecting the data, and we received 365 questionnaires back out of 365 we have dropped 35 questionnaires as some important information was missing so the total useable questionnaires were 330 and response rate was 80 % which according to [7] is appropriate.

4. Results

The first order model was checked for validity and reliability. The assessment of internal reliability consistency was the first criterion, which was checked.

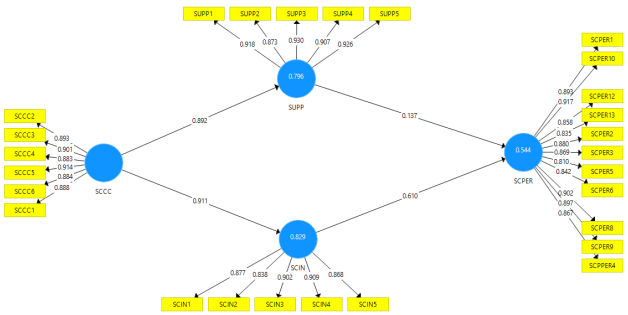

Figure 1. Measurement Model

The most common and traditional method for measuring internal reliability consistency is Cronbach's a [7]. The value for Cronbach's a gives reliability estimates that is based on the inter-correlation's indicator. Composite reliability is used in PLS path model. The indicators with different loadings are taken into consideration in composite reliability (CR). The method of interpretation for CR is similar to the Cronbach's a. Irrespective of the use of reliability coefficient; the value of internal reliability consistency should be greater than 0.7 at initial research stages. In advanced stages, its value should be equal to 0.8 and 0.9. These values are considered sufficient[36]. The values of CR and Cronbach's have been shown in Appendix 1 for analyzing the constructs' reliability. The minimum acceptable value of CR and Cronbach's a must be equal or greater than 0.70 [7]. It has been demonstrated by the measurement that the measurement model of first order is internally reliable and consistent.

Table 1. Outer Loadings

Construct	Items	Loadings	Cronbach's Alpha	CR	(AVE)
SCCC	SCCC1	0.888	0.950	0.960	0.799
	SCCC2	0.893			
	SCCC3	0.901			
	SCCC4	0.883			
	SCCC5	0.914			
	SCCC6	0.884			
SCIN	SCIN1	0.877	0.926	0.944	0.773
	SCIN2	0.838			
	SCIN3	0.902			
	SCIN4	0.909			
	SCIN5	0.868			
SCPER	SCPER1	0.893	0.968	0.972	0.758
	SCPER10	0.917			
	SCPER12	0.858			
	SCPER13	0.835			
	SCPER2	0.880			
	SCPER3	0.869			
	SCPER5	0.810			
	SCPER6	0.842			
	SCPER	0.902			

	R8				
	SCPER9	**0.897**			
	SCPER4	**0.867**			
SUPP	**SUPP 1**	**0.918**	**0.948**	**0.960**	**0.829**
	SUPP 2	**0.873**			
	SUPP 3	**0.930**			
	SUPP 4	**0.907**			
	SUPP 5	**0.926**			

For determining the model's validity, convergent and discriminant validity are assessed. A set of items, which reflect the same construct and converge to each other unidimensionality is refereed as convergent validity. It was suggested by [7] that the value of AVE (average variance extracted) must be equal or greater than 0.5. When the value fulfils this standard, it indicates sufficient convergent validity. This reflects that more than half of the variance is explained by latent variable for its items. The measurements of AVE are presented in Table II reflecting all the values greater than 0.5. It ensures the convergent validity of the model. In order to determine discriminant validity of constructs, the square root is taken for AVE of every variable. The value of AVE square root should be greater than the value of correlation between the variables. The correlations between the variables are listed in Table II, along with AVE square root values on the diagonal. It is evident that the values at diagonal are greater than the correlation between the variables. Therefore, discriminant validity is achieved.

Table 2. Validity

	SCCC	**SCIN**	**SCPER**	**SUPP**
SCCC	**0.894**			
SCIN	0.811	**0.879**		
SCPER	0.704	0.736	**0.871**	
SUPP	0.702	0.716	0.696	**0.901**

The standardized beta coefficients of OLS regressions are referred as the individual path coefficients in PLS model. The method of bootstrapping suggested by [35] is used for estimating the path coefficient significance. Figure 2 shows the findings of structural model analysis. The relation between SC SCCC's three dimensions was also tested.

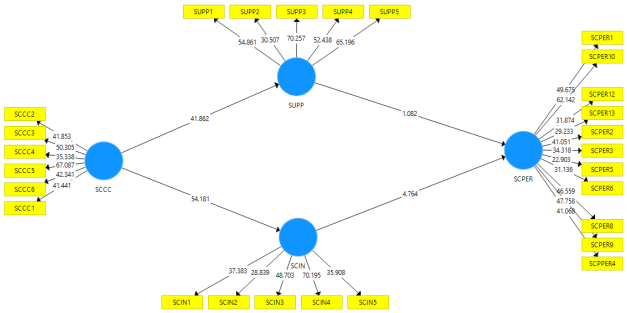

Figure 2. Structural Model

After getting measurement model (MM) we have also assessed the structural model by testing the hypothesis by using the procedure of bootstrapping and taking a bootstrapping sample of 5000 by following the suggestion of [7]. Path coefficients of each construct are presented in table 3 and 4. So, there is a significant relation in all hypothesis and between their endogenous constructs. The direct findings of model are shown below in table 3.

Table 3. Direct Relationships

	(O)	**(M)**	**(STDEV)**	**(|O/STDEV|)**	**P Values**
SCCC -> SCIN	0.911	0.911	0.017	54.181	**0.000**
SCCC -> SCPER	0.678	0.680	0.062	10.990	**0.000**
SCCC -> SUPP	0.892	0.892	0.021	41.862	**0.000**
SCIN -> SCPER	0.610	0.599	0.128	4.764	**0.000**
SUPP -> SCPER	0.137	0.149	0.127	1.082	**0.140**

Table 4. Mediation

	(O)	**(M)**	**(STDEV)**	**(|O/STDEV|)**	**P Values**
SCCC -> SCIN -> SCPER	0.556	0.546	0.117	4.740	**0.000**
SCCC -> SUPP -> SCPER	0.122	0.134	0.115	1.067	**0.143**

After the confirmation of path coefficients significance, we have calculated the value of coefficient of determination that is R^2. It indicates the proportionate change in dependent variable of model because of predicted variable [7]. According to the [7] the acceptable value of R^2 depends on research context. If the value of r square is 0.25 it shows, there is a weak predictive relevance and if it is 0.35 and 0.5 it shown moderate and substantial predictive accuracy level.

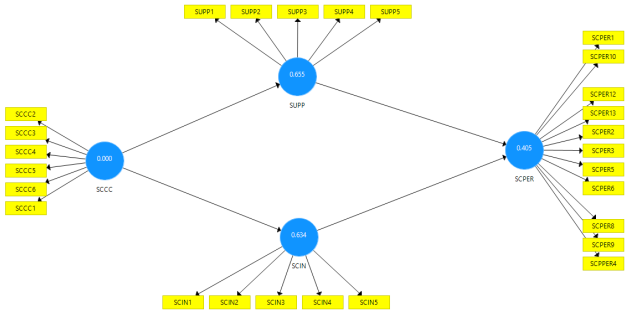

Figure 3. Blindfolding

We have also carried out the blind folding procedure by using smart PLS for assessing the model's predictive relevance. It is a degree to assess the model's goodness of fit. By using the blindfolding technique and cross redundancy approach we have estimated the values of Q^2 which is shown in Figure 3. So, value of Q^2 of this model is nonzero which indicates the predictive relevance of model.

Table 5. Q-square

	SSO	SSE	Q^2	R-square
SCIN	1085.000	397.049	0.634	0.829
SCPER	2387.000	1421.040	0.405	0.544
SUPP	1085.000	374.504	0.655	0.796

5. Conclusion

This study aimed at analyzing the influence of SCCC SC on the performance of firm. The role of SCI has been incorporated as a mediator on the relation between SCPER and SCCC. Empirical tests were conducted for four causal relations using PLS method and conditions of[32]. The direct association between SCCC's three dimensions, SCPER, and SCI were demonstrated in the full model. The role of SCI as a mediator was proposed in the first model between structural capital SC and SCPER. The role of SCI as a mediator between the relation of relational capital SC and SCPER was incorporated in the second model. The third model incorporated role of SCI as mediator on the relation of cognitive capital SC and SCPER.

The relation between SCCC's three dimensions was analyzed in this study. Moreover, the way in which these dimensions contributed in the performance of firm and SCI was analyzed as well. The SCCC dimension and cognitive dimension was reflected through the shared value and common fate between the partners of SC. These dimensions were linked with the other two dimensions in a significant way. There is an influence of structural capital SC on relational capital. It has been suggested by the results that the partners in SC may work on achieving the same values, goals, in the presence of specific interpersonal relation between the CEOs in the SC. Moreover, the partners in SC may develop trustworthy and informal relations with each other. The three dimensions of SCCC SC i.e. cognitive, relational, and structural. It was found that these three dimensions had a significant influence (direct and indirect) on SC integration and firm's performance. It has been suggested by the research analysis that SCI can be improved by making investment in the SCCC creation and accumulation between partners in SC, which ultimately enhances the performance of a firm. The CEOs working in the SC should focus on the development of interpersonal relations and maintaining them along with common fate, shared values. Moreover, trustworthy relations must be established between the partners in the SC for improving SCPER and SCI.

The study provides empirical evidence for the role of SCI as a mediator on the relationship between SCCC in SC and firm's performance. It has been revealed by the results that SCHIN partially or fully mediates three relations. Firstly, it mediates the relation between structural capital SC and firm's performance. Secondly, it mediates the relation between relational capital SC and SCPER. Lastly, the relation between cognitive dimension of SC and SCPER is mediated by SCI. The relation between structural capital dimension and firm's person was fully mediated in complete model but it was partially mediated in Model 1. It is indicated by the finding that the relation between structural capital and SCPER is explained by incorporating SCI. There is no direct influence revealed by structural dimension on SCPER by controlling SCI in complete model. It reflects that the relation with SCI is influenced by the interpersonal relations between CEOs. This results in higher performance of the firm[24].

This research was aimed at analyzing different dimensions and measures of supplier social responsibility in developing countries. There was gap in existing research studies pertaining to the empirical analysis [24]. Social issues differ in developing countries. The complexities and capabilities specific to demand are increased with the diversity of social issues. Social issues and related dimensions are explored based on these motivations for the developing country, i.e. Indonesia. The study also explored the way in which supplier performance and SC performance of buyer is improved through the adoption of social SUS practices by buyer. In a similar way, the extent to which collaboration and commitments of buyers for the social SUS influence performance of the focal firm have been explored.

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