

The Role of Corporate Governance in Creating a Capable Supply Chain: A Case of Indonesian Tin Industry

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Abstract— The prime objective of the current study to examine the role of corporate governance in determine the supply chain capability. The study is interested in knowing the direct impact of supply chain information technology capability, supply chain relational capability and corporate governance on the supply chain operational performance of Indonesian manufacturing firms operating in Tin industry. In addition to that we have also examined the moderating role of corporate governance in the relationship between supply chain capabilities and supply chain operational performance. To achieve the unique objectives of the current study, the authors have employed the SEM-PLS technique. The findings of the current study have provided support to with the proposed. The results have shown that the along with customer focus approach the firms are also following the production focus approach. The findings of the study will be helpful for policy makers in understanding the issues related to corporate governance supply chain management. In author knower this is among few pioneering studies on these issues.

Keywords--- Supply Chain operational performance, corporate governance, Indonesia

1. Introduction

The term supply chain management (SCM) has appeared as one of the important strategies necessary for operational success of a SC. It also appeared as a worldwide strategy that connects all stakeholders, i.e. buyers, consumers and sellers into a chain type arrangement, through shared planning, partnership, and information sharing. However, effectiveness of SCM is based entirely on its ability to minimize cost [3], presenting innovation [4],

improving production flexibility [5], satisfying buyer; [6],and strengthening of relationships [7]. Various researchers; [8], [9],[10], [11], have defined Supply Chain Management as a network of organizations that connects every section of an organization, and at each step adds value to its strategic operations. SCM refers as an organized set of activities which starts from procurement, production and then ends to the customers [7]. They claimed that a successful supply chain, assist firms in taking knowledgeable decisions at each connection of this network. Many preliminary authors [7], and [11], have discussed SC as an operation of information flow within the organization, they also argued that systematic flow of information thus optimize material flows and in turn minimizes cost that usually arises due to poor flow of information or information delay. A joint role is played by the increased involvement of information technology, in developing and advancing the processes of supply chain by regulating the flow of information. Whereas, the extended network of supply chain proceeds beyond individual operating firm towards inter-organization operations, including, customers, suppliers, service providers, trading partners, manufacturers, transporters, and retailers.

The operational performance of SC can be defined as the result of efficient and effective flow of information and materials to and from different organizations, as services and processed products [12]. The SCM also significantly affect the international trade. Although, SC is a concept, but it would be appropriate to consider it as a phenomenon, based on several sub factors and

phenomena, such as agility, logistic, operation, lean, etc. During modern decades, supply chain management has appeared as an indispensable tool for attaining viable competitive advantages. Contribution of supply chain have been found in theory as well as in practice that has attracted practitioners and scholars to further observe it in detail.

The tin industry of Indonesia is considered as a major contributor to Gross Domestic Product (GDP). Tin manufacturing Indonesian firms are delivering their products to Malaysia, China, Singapore, UK, and some other industrialized economies. The SC of tin industry has gain greatest interest among other areas. The functions of tin manufacturing industry and SC operations are somehow complicated. Christopher [13], defined SC operational performance as an outcome of efficient, strategic, and systematic integration of standard business operations across and within the organization, that includes actions and functions related to transforming inputs into outputs. Within this research context, four constituents involving responsiveness of supply chain, reliability of SC, costs, and supply chain agility are combined to measure operational performance of supply chain, for the purpose of giving absolute performance measurement all through the research. From the variable of SC operational performance, asset management has excluded, as no emphasize is given over financial performance. As in defining the SCOR model, asset management is considered more as a return to investment. This study defines supply chain reliability as the supply chains' quality in maintaining and performing absolute order fulfilment, that deliver needed requirements and products. In addition, responsiveness of SC referred as speed of supply chain in providing information, products and services to the supply chain members[14], Moreover, supply chain agility is the ability of supply chain to readily adjust the operations and strategies in accordance with the changing market conditions. Furthermore, supply chain costs are the costs which is related to the operations of the supply chain

2. Literature Review

2.1 Supply Chain operational Performance

Performance of supply chain is generally determined by the supply chain responsiveness, reliability, asset management, cost, and flexibility

[15].As the current study revolves around supply chain's operational performance, the aspects of flexibility, responsiveness, cost and reliability will be used as dimensions for measuring its performance. Although, in defining SCOR model, asset management is more about focusing on return on investment while operational performance is the concerned area in measuring non-financial performance. Consequently, asset management is then excluded from the variables of supply chain operational performance that are to be measured. Basically, the goal of a SC is to provide higher quality goods and services efficiently to customers with minimum cost, and at minimum time. Firms will face failure if they have less knowledge about the factors which ensure success in supply chain, these are of high quality i.e. reliability of SC; lower cost i.e. total costs of supply chain; quick response i.e. SC responsiveness; and flexibility i.e. agile nature of SC[16]. Thus, the aim of SCM can also be reviewed in order to enhance operational and financial performance of all partners and for the global SC [17,54-58],,.According to [17], performance measurement is highly essential for supply chains and firms for enhancing their performance. While, measurement using performance measurement systems (PMSs) are the tools for the purpose of performance assessment that are employed at the monitoring stage of SC performance [18]. The term performance measurement can generally be defined as "a process of quantifying the efficiency and effectiveness of actions". Lohman [18], defined performance measurement system as a set of metrics that are used for quantifying efficiency as well as effectiveness of the actions. This system also provides solution for detecting any potential gaps and problems necessary for the improvement in supply chain. It also allows users to know the performance status of the supply chain involving its weaknesses, strengths, and level or status of current performance with the purpose of enabling companies to make fully informed decisions against possible threats and opportunities. Organizations can take informed decision and appropriate actions accordingly at the best possible time, for effective enhancement of their performance [16],[19], and [20].

Measures of effectiveness and efficiency are used for explaining performance standards. Measure of effectiveness is employed to describe the standards of external performance, while measure of efficiency is employed for describing internal standard of performance. In modern supply chain management, the standards of efficiency and

effectiveness are high priority concerns among firms. Efficiency and effectiveness can also be measured using six important components including employee fulfillment, product reliability, efficiency of work, on-time delivery, customer fulfillment, and profitability [21,54,57]. For instance, efficiency can be achieved with timely production, and effectiveness can be accomplished through innovation and supplier or customer orientation. However, performance measurement tools and systems are substantially changing across firms along the SC [22]. Traditionally, performance measurement of firms was solely concentrated on profits and costs of the firms. However, nowadays, due to weakening condition of global demand for goods and services, firms are majorly depending on their supply chain management skills in order to improve their quality and revenues and push its cost out of supply chains [23].

2.2 Supply Chain Capabilities and Supply Chain Operational Performance

According to RBV researchers, each firm is capable of diverse capabilities and resources which are found costly and somehow difficult to implement and imitate by the competitors [24]. According [25], in present global platform of market, firms need to have a competitive advantage as compared to its competitors, and for this purpose organizations must possess the ability to be highly responsive towards competition through focusing on four competitive features i.e. flexibility, quality, cost, and speed. Moreover, relational capability of supply chain is another critical factor in measuring operational performance of SC [26]. In the meantime, factors like organizational cultural capability and IT capability are having equal importance [26], and [27]. In the literature of SCM, it is found that several researchers proposed that improvement in customer relationship, supplier partnership, information sharing, and its quality have considerably improved the SC operational performance [26], [27], and [28].

Optimized level of supply chain costs can be attained with higher and improved level of customer relationship, information sharing and supplier partnership, reliability of SC, flexibility and responsiveness in managing demand and supply uncertainties [29]. In case of Tin companies, supplier partnership plays a critical role as it can provide quick responses in accordance with the changing market demand and conditions [28]. This evidence is further supported by Fynes [30], and

Srinivasan [31]. The basic advantage of supplier partnership is the fact that buyers can consistently assure quality products as well as timely distribution from the suppliers [32]. Such as the cases of Wal-Mart and Procter & Gamble, Wal-Mart is a capital and information rich retailer, while P&G is a capital and information rich manufacturer, both the companies have a win-win cooperation in terms of information sharing, getting mutual benefits and improved supply chain performance across their supply chains. Precisely, a healthy partnership towards suppliers has a positive impact on the operational performance of a supply chain [33]. Contrarily, worst process and result is witnessed in case of less reliance on supplier partnership.

2.3 IT Capability and Supply Chain Operational Performance

IT capabilities are thought to be a major dimension in supply chain management and is considered as a critical factor in improving the performance of supply chain. IT capability shares a significant positive relationship with SC performance [34]. Several studies have particularly observed the role of IT infrastructure and suggested it as the most considerable factor in cost minimization and triggering agility in operational performance [35]. Additionally, IT infrastructure does not merely contribute positively with transparency, but brings corruption down at the same time [36]. With reference to organizational perspective, for smooth flowing of business operations, IT personnel plays a role of key enabler of main IT services and products. For solving problems in IT applications, an efficient solution is suggested by IT personnel. Fundamentally, the flexibility in IT infrastructure has been employed by IT personnel, in order to suggest measures to the supply chain management [37]. On that account, IT personnel showed a positive and direct impact on the agility performance of an organization [38].

For many years, organizational culture has proved to be one of the critical elements of organizational performance [39]. Culture has a considerable direct impact on the success or failure of an organization. Numerous researchers [40], and [41], demonstrated that there must be an alignment among the organizational goals and its organizational culture, because organizational culture positively and significantly affects the performance of SC [28], particularly on enhanced responsiveness and flexibility in global management of supply chain. Christopher [42], in his study found a significant effect of organizational culture on the SCM of Small and Medium enterprises in Malaysia.

Moreover, a research study conducted by [41], in which 218 responses were included from the professionals of SC that are listed in Institute of Supply Management, New York. The study concluded that culture of an organization is positively associated with performance of Supply Chain.

2.4 Corporate Governance in Supply Chain Performance

According to [43], a good corporate governance as a powerful corporate governance system, is a prerequisite to enhance investment from the potential investors mostly from the institutions. A level of firm to which it follows the corporate code of governance exhibits quality of its governance [44]. There exists a difference between risk taking and risk bearing operations, due to which a conflict of interest arises among both the parties i.e. managers and owners [45], [43], named this conflict as agency conflict. The disseminated possession of corporation extends more benefits to the managers in acquiring wealth from the minority shareholders, making management more powerful and independent. The literature on corporate governance has suggested solution for this problem, i.e. applying a mechanism to practice external control like board of directors.[44], discussed that independence, board size, and competencies are the basic determining factors of agency conflict. Thus, from the literature it is evident, that a conflict of interest exists among managers and owners, however effective control mechanism is used by the board of directors for narrowing the existing gap[43],[44],and[45].

A stakeholder theory exists, other than the agency theory, which takes organization as an interconnected system that are generally known as their stakeholders[45].Stakeholder theory states that, each involved stakeholder contributes in the success of an organization. Stakeholder theory takes organization as a multiple set of relations which goes beyond the agency theory of principal-agent relationship [46].The stakeholders of an organization include buyers, suppliers, employees, creditors, government and the community [47].According to stakeholder theory, success or failure of an organization is critical to the contribution of all the stakeholders, contrary to the agency theory which just confines to the subject of owners and managers [46].In Japan and Germany, a two-tier board is applicable, where composition of board is done following the aspects of stakeholder theory. in [48],Senbet introduced the stakeholders' view of corporate governance. In his

study he further claimed that owners alone are not responsible for bearing cost or enjoying profits from the supply chain, instead stakeholders also get influenced as well influences the managerial decisions of a supply chain. It is because they are sometimes either associated with the product or company, both emotionally and financially.

As agency theory assures the boards' monitoring role, on the other hand, it does not account for the boards' roles of advisory and resource provision and boards' ability of effective monitoring. Integration of resource dependence theory and agency theory was suggested by Hillman and Dalziel [47], that increase effectiveness of the board. During the examination of resource dependency and agency theory's complementary role, [46], suggested these two theories as pillars responsible for decisions regarding MNCs subsidiaries can be taken by the managers and can be clearly understood.

Board of directors in their role of resource dependence, serve in order to connect organization with the external factors that develop external dependencies and uncertainty [46].The boards' ability to fulfil this dual role highly depends on diversity, based on resource dependence theory [47].Board acts as a cohesive agent that combines the interest of stakeholders, shareholders and conveys it to the executive management. These are termed as boundary-spanners as mentioned by [48], these boundary-spanners helps in providing information to executives at required time. Board creates a linkage among firm and its external environment that further aids firm in minimizing uncertainty from the external environment.

In 2003, [49], argued that the roles of advisory and monitoring by the board are basically operations of board capital in the form of reputation, network ties, experience, and expertise, since directors from outside the firm are generally different from each other. In 2003, [49], have investigated different effects of outside and inside directors, following the integration of resource independence and agency theory perspective. For this purpose, the variable of human capital over Research and Development was studied by collecting 221 samples from the US companies. The findings suggested that independence of director directly influences the extent to which directors utilize their capital i.e. human capital to affect spending on the R & D. directors of the board must possess certain skills and characteristics to be a part of the board, so they could add value to the organization. These value adding services are attracting resources

towards firm using network relations from outside the firm, launching new suppliers and customers, developing political linkages, and delivering advisory services to the board executives using their skills of sound knowledge and experience, for improving value of the firm [50],and [51].

At the centre of a sound supply chain governance approach, there exists a steering group, which generally mean a senior board team, whose task is to ensure existent success of a certain project or attainment of strategic goals and objectives. The role of this steering group is to help in decision making about the whole supply chains' strategic business units, Lines of Business (LOBs), or about geographic boundaries. However, it does not account for the individual logistic operations of company's portfolio involving: inbound transportation, procurement, warehousing, inventory control, distribution, and outbound freight, in order to bring required outcomes.

H1: Supply chain information technology capability has significant impact on supply chain operational performance.

H2: Supply chain relational capability has significant impact on supply chain operational performance.

H3: Corporate governance has significant impact on supply chain operational performance

H4: Corporate governance moderates the relationship between supply Chain information technology capability and supply chain operational performance.

H5: Corporate governance moderates the relationship between supply chain relational capability and supply chain operational performance

Figure 1 depicts the theoretical framework of this study. The resource-based theory and agency theory are used to conceptualize the framework shown in figure 1

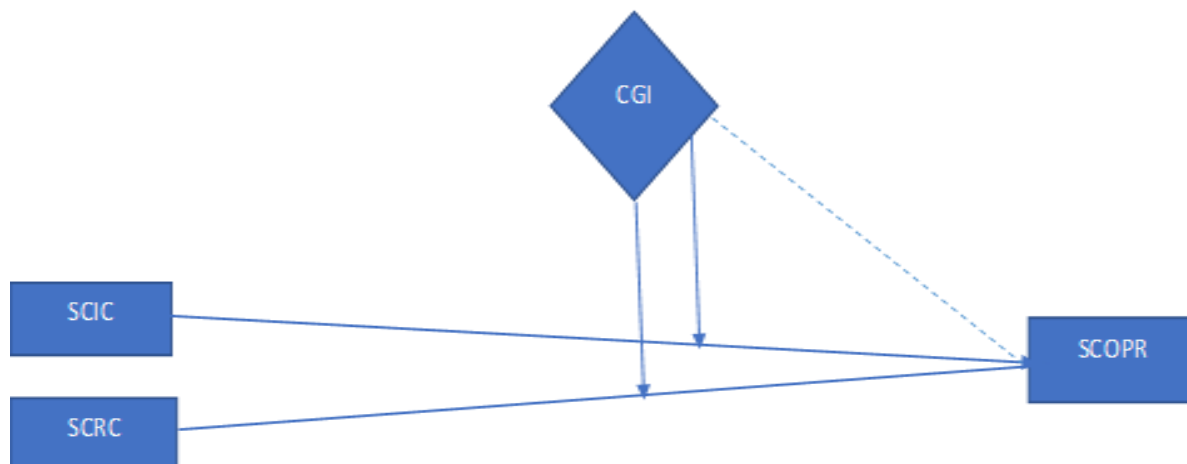


Figure 1: Conceptual framework

3. Methodology

This study carried out on operation 3.0. Methodology

The results of quantitative approach method are based on the questionnaires, it is limited to numbers, statistics, the measurement of data and many forms of statistical analysis. Quantitative research design has been frame for this study, providing assistance to the researcher to thoroughly examine a large sample of respondents; opinions regarding the proposed phenomenon. Moreover, the researcher can take a summarized perspective

of human behaviour. In this regard, the researcher used questionnaire as the main tool in this research in order to understand the determinant factors that affect employees' performance in the public universities. The questionnaire was designed according to the objectives, problem and hypotheses of the study to determine the relative importance of factors that may control the employees' performance in the manufacturing organizations of Indonesia. The data collected through the surveys were loaded into the Microsoft Excel, the IBM SPSS, and Smart-PLS. The five

point Likert scale is used to operationalize the variables and their sub constructs.

4. Research Analysis and Discussion

The SEM-PLS, which in modern times is one of the robust techniques to analyse the data on social issues is used as the statistical tool in current studies. Recently many researchers such as [53] and [54] have employed and argued that whenever we are dealing with some novelty in conceptual models or need an advance assessment of any existing phenomena, we prefer SEM-PLS over other techniques such as multiple regression analysis. The, we are dealing with [53] argued that the PLS-SEM is a two-step equation, which is an advance form of multiple regression and accounts for two assessments namely the inner model assessment and the outer model assessment. The first step is estimation of the reliability and validity of the model. In Smart-PLS, after obtaining the results of reliability and validity for each construct, examining the structural model results is necessary in order to test the hypothesis. There are five steps of procedures in examining the structural model results; (1) examine the structural model for collinearity issues; (2) the significance of path coefficients; (3) followed by examining the level of R² values; (4) assessment of f² effect size; and last but not least, (5) examining the predictive relevance (Q² and the q² effect size). The reason why the SEM-PLS is preferred over the multiple regression is that the earlier handles the multiple equations simultaneously and can produce results with a simultaneous operation by producing a relationship with all direct and intervening phenomena.

Reliability analysis is performed in order to find internal consistency of the items. Cronbach's alpha is the most widely used in order to test the reliability level. In this study, the researcher also required to assess composite reliability in order to compare the result between both reliability analysis and composite reliability. Although there are many findings that found that the value of composite reliability is always higher than Cronbach's alpha

An indicator declared as valid and significant if it has a loading factor over than 0.5 on the targeted construct. Thus, this study analyzed the output of the loading factors which gained through Smart-PLS. Before testing the hypothesis, data reliability and validity was scrutinized. These steps were taken

through PLS 3. It is revealed in Table 1 which shows that factor loading is more than 0.5, average variance extracted (AVE) is more than 0.5 and composite reliability is also more than 0.7. Therefore, it is revealed that the current study attained convergent validity. A measure's content validity refers to the level to which the items produced for its measurement appropriately measures the concept intended to be measured. More importantly, the entire items developed for a measurement of a construct have to load greater on their construct compared to other constructs and this is guaranteed through an extensive literature review. Through such a review, the items that have already been established in literature in terms of their validity are selected. On the basis of the results of the factor analysis, it was confirmed that in this study, the developed items correctly loaded to their respective constructs. According to [53], convergent validity can be examined through factor loadings, reliability analysis, and composite reliability. Furthermore, Average Variance Extracted (AVE) also examined as one of the measures that is useful in establishing validity. Since by analyzing the convergent validity, it can ensure that the variables correlate well with each other within their parent factor, either mediating or dependent variable.

The discriminant validity is one of the measures to examine the interrelationship of the reflective variables with their own indicators. Basically, it shows or measures that the measurement or operationalization of the variables which genuinely are not linked are linked in the case of study. Fornell-Larcker has introduced one of the robust and widely used measures of discriminant validity therefore the current study is using this value as a base to evaluate the discriminant validity. According to [53-59] index of the reliability of a variable must be greater than 0.70. However, the values in cross loadings were same with outer loadings value, the difference is in cross loadings it compares with correlation among constructs. Concisely, the result of 69 evaluating the discriminant validity of this study through Fornell-Larcker Criterion and Cross Loadings is shown in the table 2

Table 1. Convergent and Discriminant Validity

	Indicators	Loadings	CR	AVE
SCIC	SCIC1	.822	0.915	0.812
	SCIC2	.855		
	SCIC3	.890		
	SCIC4	.825		
CGI	CGI1	.943	0.995	0.872
	CGI2	.955		
SCIN	SCRC 1	.944	0.832	0.817
	SCRC 3	.955		
	SCRC 4	.953		
SCOPR	SCOPR1	.993	0.932	0.917
	SCOPR2	.935		
	SCOPR4	.902		
	SCOPR5	.925		

Table 2. Discriminant Validity

	1	2	3	4
SCIC	0.848			
CGI	0.731	0.798		
SCIN	0.518	0.550	0.801	
SCOPR	0.518	0.550	0.801	0.801

As explained in the start of this section that after evaluation of the reliability and validity of the instruments or simply saying after the assessment of measurements of the conceptual model., the next step is to access the structured relationship between

and among the variables. The advantage of SEM-PLS over other statistical technique is that it examines all structured relation simultaneously whereas other measure them indecently. Therefore, in the structural equation modelling the direct and indirect effect are examined. Indirect effect was examined to check the mediation. Bootstrapping procedure at 1000 observation is adopted to specify the significance level of proposed relationships in this process, the p-value was considered. While analysing the data, 0.05 minimum level of p-value was considered to test the hypothesis. According to the direct results, it is shown that all hypothesis has a p-value less than 0.05. Therefore, it accepts H1, H2 and H3 are accepted.

Table 3. Direct Effect

	(β)	SD	T-value	P-Values
H1	0.111	0.035	3.161	0.002
H2	0.207	0.043	-4.810	0.000
H3	0.235	0.123	2.810	0.000

Moreover, Table 4 highlights the moderation effect of customer response in the relationship between the agile supply chain and external supply chain performance. These results of moderation show that for both moderation hypothesis, the t-value is above 1.96 and p-value is below 0.05 which accept H4, and H5

Table 4. In-Direct Effect through Moderation

	(β)	SD	T-value	P-Values
H4	0.229	0.218	5.249	0.000
H5	0.319	0.018	4.319	0.000

Predictive power of the structural model can be assessed by the R2 value of the endogenous construct [53]. Thus, R-squared simply defined as the "percent of variance explained" by the model. In this study the R2 value is 0.240, which suggesting that 24% of the variance of work engagement can be explained by Islamic work ethics and religiosity. While the R2 value of 0.355 suggests that 35.5% of the variance in job

performance can be explained by work engagement.

Table 5. Expected Variance

	R ²
SCIN	35.5%

The results of the current study have shown a great deal of agreement with the hypothesized results.

5. Conclusion

Nowadays, the ways that companies used to compete have changed considerably. The role of customer loyalty in observing overall strategic fit for the firm is quite important, but firms are gradually switching their focus from customer towards production, while making efforts to broaden the scope of operational performance. Only recently, firms have shown a rising tendency for production of high-quality goods at a minimum cost but has considerably lost enticement in achieving competitive advantage. In present era, most focus has been given on delivering customer demanded products at the right place, time and at the ideal price. Some of the researchers have further elaborated this phenomenon, by expressing the foremost role of firms i.e. satisfying requirement of customers, in terms of delivering right product possessing right quantity and quality with suitable technology, to the customers. ***The prime objective of the current study to examine the role of corporate governance in determine the supply chain capability. The study is interested in knowing the direct impact of supply chain information technology capability, supply chain relational capability and corporate governance on the supply chain operational performance of Indonesian manufacturing firms operating in Tin industry. In addition to that we have also examined the moderating role of corporate governance in the relationship between supply chain capabilities and supply chain operational performance. To achieve the unique objectives of the current study, the authors have employed the SEM-PLS technique. The findings of the current study have provided support to with the proposed. The results have shown that the along with customer focus approach the firms are also following the production focus approach. The***

findings of the study will be helpful for policy makers in understanding the issues related to corporate governance supply chain management. In author knower this is among few pioneering studies on these issues. At the centre of a sound supply chain governance approach, there exists a steering group, which generally mean a senior board team, whose task is to ensure existent success of a certain project or attainment of strategic goals and objectives.

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