CAPÍTULO 61

THE EFFECT OF TOP MANAGEMENT ROLE, SUPPLIER RELATIONSHIP, PURCHASING STRATEGIES AND SUPPLY CHAIN INTEGRATION ON PURCHASING PERFORMANCE IN CONSTRUCTION COMPANY.

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Introduction

Similar with products and services industry, construction service will perform well when there is a match between the planned design, budgets and timelines, commonly known as quality, time and cost. All of these three factors have an inverse relationship among them (Soeharto, 1991). It, therefore, needs a proper management skills to manage the process of design and the implementation as well (Asiyanto, 2005). Addressing the implementation of the construction work, procurement and logistics plays an important role to make sure the result of the work meet the time and cost without sacrificing the design quality (Yeo & Ning, 2002). It might be noticed that cost of material required in performing a construction work can reach from 50% to 60% of the total cost of the project and improper supply chain strategy can increase up to 10% of the total cost (Bertelsen, 1993). Taken together, total cost of materials and services could reach approximately up to 90% of the turnover of a construction project. In other word, construction companies has no choice other than to improve the performance of the purchasing division leading to better performance of the company (Bemelmans, Voordijk, & Vos, 2013).

Main goals of purchasing management is to achieve efficiency and effectiveness of the company (Monczka, Handfield, Giunipero, & Patterson, 2011). The strategic purchasing used by the company plays an important role in enhancing the performance of the purchasing division (Widow & Seshadri, 2001). The appropriate purchasing strategies used depends on financial condition of the company and each strategy has different effect on purchasing performance. There is no definitive strategy for certain circumstances, so the purchasing manager's capability is very important to make sure the purchasing performance achieved in any circumstance (Wu & Closs, 2009).

Today, the relationship between supplier and company is evolving in the pursue of mutual benefit through the operation of the business in cooperation with related parties (Heinritz, Farrell, Giunipero, & Kolchin, 1974). The relationship paradigm has shifted from cheapest price orientation into mutually beneficial relationship (Emiliani, 2010). In general, the construction project is an interdependent work which involves many partner organizations, such as the owner, designer of construction organization, equipment providers, material suppliers, bankers, lawyers, government and the surrounding community. The integration among those organizations is very important to ascertain the sustainability of the project activities and most importantly, to achieve the promised lead time, cost and design quality (Yeo & Ning, 2002). Purchasing manager proper competence becomes an obligation needed to establish cross-functional integration and coordination, (Foerstl, Hartmann, Wynstra, & Moser, 2013). Relationships between companies and suppliers are inseparable from building of the trust between each party through communication and negotiation performed by manager (Jack & Powers, 2015).

This research focused on the upstream of the supply chain involving four (4) related variables namely: top management role, strategic purchasing, supplier relationship, and supply chain integration. The role of top management is expected to create establish strategic purchasing, facilitate the relations with suppliers, and promote integration within and outside the organization. Allegedly, strategic purchasing improved purchasing performance directly or through the mediation of supplier relationship and supply chain integration. These three variables, namely strategic purchasing, supplier relationship, and supply chain integration, can increase the purchasing company's Performance. As previously known, the performance of purchasing will improve the performance of the company so that it is not examined on this study. Based on this discussion, this research will examine the influence of top management role on the purchasing performance through strategic purchasing, supplier relationship and supplu chain integration.

Literature review

Supply chain management (SCM) uses the opportunity to improve service quality and reduce costs through the coordination and cooperation in the supply of raw materials and distribution (Siagian, 2005). The theory of supply chain management in the manufacturing industry can be applied in the construction projects (Yeo & Ning, 2002): Procurement functions to convey the value of each chain to optimize the stakeholder satisfaction through 1) development of appropriate strategies and tactics to ensure on time delivery of materials and equipment, 2) applying a good information system to communicate the schedule, the material field requirment, facilitate the shipment of material in the

purse of on time material arrival, 3) continuous improvement process in reducing delays, non value added activity and eliminating the supply and demand uncertainty, 4) reducing the procurement of non critical material and priority on critical material, 5) applying just in time procurement to minimize warehouse and care provision cost and 6) developing relationships with partner who have the ability, commitment and the same goal.

Each company has different view in placing the purchasing function in the management system, (Monczka, Handfield, Giunipero, & Patterson, 2011). In practice, purchasing division and engineering have different approach in addressing the requirement. Engineers tend to have full authority in determining the limitation of quality, safety and performance, while purchasing tends to narrow this authority and ask the engineer only the minimum requirements. Engineers tend to look for material and equipment being able to meet the ideal requirement which generally exceeds the expected costs, while purchasing seek adequate material and achieve the minimum cost to meet the quality, delivery and service. With this difference in the perception, it needs the best cooperation among all division to make the best decision in the pursue of company benefit. Among issues that needs joint decision between division are the amount of minimum stock, order quantity and a reduction use of the warehouse.

The purpose of measuring the purchasing performance is to assess the degree to which procurement meets the requirement. Through this assessment, management understand what action to be taken in enhancing the decision-making process, communication between departments and the perception and motivation of the buyers. Purchasing performance measurement has two key objectives, namely the effectiveness and efficiency, (Heinritz, Farrell, Giunipero, & Kolchin, 1974). Purchasing performance for construction company measure the degree to which the planning and controlling activities ensures the quality and quantity of materials and equipment meet specification, delivery time at minimum cost, (Safa, Shahi, Haas, & Hipel, 2014)

Top management role

Managers play a central role in resolving any problem hindering the strategy execution, and in coordinating various purchase transactions over a variety of suppliers. Improvement of soft skills such as team leadership and relationship management in the division as well as increased technical skill, will lead to increased acceptability by other functions within the company. In other word, better soft skill of manager can support his presence in expediting contribution in the management activity, such as decision-making (Foerstl, Hartmann, Wynstra, & Moser, 2013). Top management takes role in organizing any situation and resolving any obstacles present within the company. Top

management also needs to support and facilitates the professional implementation of supply chain management, improvement in coordination, be involved and take personal responsibility for overseeing the spread of information both within the division and across departments. Companies should not hesitate to invest in providing training and education for the top management personnel to encourage and strengthen their capability in the pursue of facilitating and driving change within the company. One of the long-term investment on supply chain that company can do is building relationships and technology systems. This can certainly be done with the intervention of top managers since it needs certain resources allocation (Sandberg & Abrahamsson, 2010). Top management can support the effectiveness of the relationship with suppliers through collaboration (Jack & Powers, 2015).

Strategic purchasing

Strategic purchasing generally refers to the goal of individual businesses, it focuses on the overall elements of strategic purchasing which is comprised of planning, implementation and control of the purchasing. The main goals is to pursue the enterprise long-term objectives. This is characterized by the presence of communication between the managers and the focus on short-term decisions that affect long-term goals of companies, (Roderiguez, 2009). Relationship between managers will enable them to share the characteristics of each organization, such as willingness to share the risks and benefits and the desire to share resources. Alignment of goals, trust each other and the company value contributes positive benefits to the performance of the company (Jack & Powers, 2015). Strategic purchasing is expected to enhance the company's ability to achieve long-term goals (Roderiguez, 2009). Purchasing and supply strategy initially oriented just as a function of cost efficiency , but today, it is about the choice of make or buy. Since then, the integration with suppliers is a main dimension of strategic purchasing which is more popularly known as partnership sourcing, strategic sourcing, co-markership or reverse marketing (Gonzalez-Benito, 2010).

Supplier relationship

Strategic relationships with suppliers, commonly called supplier relationship, comes out with a collaboration to achieve a common goal instead of individual benefit. Good relationship with supplier will bring in line the customer's wishes, factories and suppliers which at the end lead to better competitiveness in the entire stage f supply chain in the long term run. By collaborating with other companies, organizations can develop economies of scale, improve supplier competence, service quality and inventory management. Thus, each stage of the supply chain can reduce their

unit costs and provide better customer service through collaboration (Jack & Powers, 2015). Through well established relationship with suppliers, the company fosters suppliers to serve as part of the company in order to achieve an efficient and effective production and enhances the company performance (Roderiguez, 2009). Satisfaction, trust, and commitment are the three main key in fostering relationships with suppliers. Awareness of both parties to build a positive relationship, commitment, and confidence requires a well established relationship between company and supplier (Choo, Jung, & Chung, 2009). Today, Company is more focused on their core competencies and consequently it needs to build long-term relationships with fewer suppliers, and integrate them into the company's operating system (Prajogo & Olhager, 2012). It might be noted that addressing supplier assessment, only contributes on the quality of the material, while the establishment of long-term relationships with supplier contributes not only to quality but also on operational performance, particularly in term of cost and time, (Parjogo, Chowdhury, Yeung, & Cheng, 2012).

Supply chain integration

In general, management has responsibility to develop new products and human resources which is required by the company in order to achieve its goals. In case management is not able to do it in the short time, they have choice to temporarily outsource part of its activity to other party being capable of performing better than they do. In the context of construction industry, many activities are outsourced to its sub-contractors since construction consists of complex activities. It means the integration between prime contractors, sub-contractors and suppliers must be in place in order to succeed in accordance with the purpose of outsourcing (Errasti, Beach, Oyarbide, & Santos, 2007). In the same manner, the integration between departments within an organization and coordination over the stages of the supply chain also influence the purchasing performance in term of cost reduction, quality improvement, and product innovation. For a well established purchasing department, it is advised to focus on the improvement of professionalism on the the supply chain function, then later on cross-functional (Foerstl, Hartmann, Wynstra, & Moser, 2013). In other word, improvement within a departement is not less important than cross functional improvement. It might be also noticed that the incorporation of supply chain into company oprational activity will benefit the company with the condition that integration strategy is clearly defined such that each party, suppliers and other parties involved understand its position and responsibilties. Integration may happen when any element in the supply chain is involved during the stage of planning and execution. Integration between organizations can be well established if the integration within company is also well established. (Mellat-Parast & Spillan, 2014).

Hypotheses

The relationship between research variables is described in the research model as shown in Fig. 1. Based on this model, authors propose the following hypotheses as follows:

H1: Top management role affects supply chain integration.

H2: To management role affect supplier relationship.

H3: Top management role affects strategic purchasing

H4: Strategies purchasing affects supplier relationship.

H5: Supplier relationship affects supply chain integration

H6: Integration of supply chain affects purchasing performance

H7: Supplier relationship affects purchasing performance.

H8: strategic purchasing affects purchasing performance.

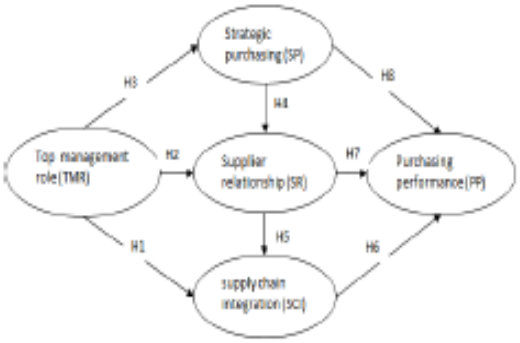

Fig. 1. Research model

Methods

The population of this study were the whole companies engaged in the construction company having legal entity and domiciled in east java Indonesia with the company size ranging from small size up to large size with the experience of 5 years minimum and having applied purchasing system. The data was obtained from primary sources through distribution of questionnaires. Top managers are assigned as respondent for the reason they are the most knowledgeable in respect of company strategy and direcly involved in management decision making. Based on this criteria,136 companies are listed for this study and 125 respondents have completed the questionnaire which means overall response rate was 91.9%. This response rate is high compared to other previous research. The collected data is subsequently analized using smart PLS v2M3. and SPSS version 16.

Operational Definition of variables

Top management role is defined as the extent to which management facilitates and drives the changes in the organization through the determination of company strategy, establishment of relationship with supplier and to integrate all department involved in the process of supply chain. Hence, top management role was assessed by 5 subjective indicators that asked the respondent if management have a clear vision and mission, used standard sytem, assessed individual performance, regularly made changes, resolved the problem and the last, provide training for the human resources development. Strategic purchasing is defined as the degree to which the purchasing department was involved during the process of decision making such that purchasing department performed the procurement efficiently and effectively. Based on this definition, strategic purchasing was assessed using 5 indicators that asked the respondent if purchasing department was involved in the planning process, making plan on the long term horizon, selecting supplier properly, procure the required material and services at the right time and sharing the information with other party. Supply chain integration is operationally defined as the integration of all parties involved in the implementation of the construction work in enhancing the performance of the purchasing. Supply chain integration was measured using 4 indicators that asked the respondent about sharing information with other party, collaboration with other party to resolve the problem, synchronizing all related activities, consulting each other for decision making and understanding each party on any existing pressure. Supplier relationship was defined as the long term relationship between supplier and company in the frame of enhancing company performance through efficiency and effectiveness. This variable was measured with 5 indicators i.e. long term relationship between supplier and company, sharing of resources and performance innovation, evaluation of supplier performance, regular communication with supplier to evaluate current issue and the last, sharing information about stock, price and quality. Those indicators used were assessed using 5 point Likert type scale (1:strongly disagree and 5:strongly agree).

Analysis

Based on its kind of business, all companies included on this study are grouped into four sub-group namely sub-contractors (44%), main contractor 32%, consultant 13%, and developper 11%. Sub – contractor itself covers several kind of business such as piling sub-contractor, bore-pile steel contractors, and others. Among the companies are Boreland Nusantara Ltd. and Perkasa roof Ltd.

Meanwhile, based on respondent position within organization, all respondents are grouped into supervisor (52%), top management (directors, manager and project leader) 30% and field staff 18%.

Table 1. Outer model analysis result

Indicator	Original Sample	Sample Mean	Standard Deviation	Standard Error	T Statistics
PP1	0.627	0.617	0.096	0.096	6.514
PP2	0.706	0.705	0.065	0.065	10.792
PP3	0.752	0.741	0.070	0.070	10.725
PP4	0.671	0.663	0.090	0.090	7.481
PP5	0.761	0.759	0.053	0.053	14.391
PP6	0.744	0.748	0.057	0.057	13.047
SCI1	0.664	0.657	0.124	0.124	5.338
SCI2	0.772	0.770	0.063	0.063	12.182
SCI3	0.702	0.694	0.084	0.084	8.406
SCI4	0.598	0.583	0.117	0.117	5.103
SCI5	0.670	0.666	0.103	0.103	6.515
SP1	0.707	0.696	0.081	0.081	8.757
SP2	0.881	0.875	0.033	0.033	26.947
SP3	0.553	0.535	0.123	0.123	4.483
SP4	0.699	0.680	0.094	0.094	7.414
SP5	0.815	0.815	0.040	0.040	20.207
SR2	0.639	0.636	0.087	0.087	7.307
SR3	0.727	0.721	0.075	0.075	9.643
SR4	0.694	0.693	0.081	0.081	8.586
SR5	0.708	0.705	0.071	0.071	9.953
TMR1	0.630	0.624	0.086	0.086	7.283
TMR2	0.590	0.587	0.100	0.100	5.872
TMR3	0.705	0.699	0.078	0.078	9.029
TMR4	0.791	0.785	0.059	0.059	13.455
TMR5	0.679	0.673	0.077	0.077	8.776
TMR6	0.722	0.716	0.073	0.073	9.932

Analysis result of the inner and outer model can be seen in Table 1 and Table 2, while the path diagram result is shown in Fig. 2. As shown on the Table 1, it can be seen that all indicators of variables are valid as all loading factors exceed the minimum accepted value of 0.5. Model fitness was assessed by determining the value of Q-square, which on this study, equal to 0.866. This value is greater than zero which meant that inner model has predictive relevance. In other word, exogenous latent variable has sufficient magnitude predictive relevance for the endogenous latent variables. Based on Table 2, two hyphoteses from total eighth hypotheses are not supported on this study since its T-statistic <1.96 for significance for $\alpha = 0,05$, namely H4: the relationship between strategic purchasing with the supplier relationship (H4) and H6: the relationship between supply chain integration with the purchasing performance. Meanwhile the remaining 6 hyphoteses are supported as expected.

Table 2. Inner model analysis result

	Original Sample	Sample Mean	Standard Deviation	Standard Error	T Statistics
TMR -> SCI (H1)	0.328	0.328	0.087	0.087	3.785
TMR -> SR (H2)	0.417	0.423	0.109	0.109	3.839
TMR -> SP (H3)	0.576	0.583	0.090	0.090	6.413
SP -> SR (H4)	0.194	0.205	0.109	0.109	1.778
SR -> SCI (H5)	0.459	0.465	0.084	0.084	5.481
SCI -> PP (H6)	0.009	0.011	0.120	0.120	0.075
SR -> PP (H7)	0.513	0.515	0.096	0.096	5.317
SP -> PP (H8)	0.261	0.257	0.123	0.123	2.050

Fig. 2. Model path diagram result

Discussion

As expected, top management role (TMR) has impact on supply chain integration (SCI). However, supply chain integration (SCI) did not affect purchasing peformance (PP) which means that supply chain integration was not a mediating variable between top management role and purchasing performance. The finding that supply chain integration did not affect purchasing performance might be explained due to the reason that supply chain integration was not yet considered by the management as a strategy in enhancing the company goals. It has been also indicated during deeper discussion with several managers that they did not understand well how to establish a good supply chain integration. They take into account only the party directly connected with their department

respectively and did not pay attention how to integrate the supply chain as a whole into the company system.

Other finding from this study is the fact that H6 was not empirically supported on this study. It means that strategic purchasing (SP) did not affect supplier relationship (SR). The explanation for this finding might be due to nature of the construction business itself. It has been well understood that business of construction is naturally a onetime project. It did not repeat the same work all the time. Each time they have a new project, it is normally a different specification and consequently, they need different kind of subcontractor or main contractor. Hence, strategic purchasing they implement does not always take into account the supplier relationship. As explained previously, two from eight hyphoteses were not empirically supported while the remaining six hypotheses were supported. As expected, top management role affects strategic purchasing, supplier relationship and supply chain integration. Meanwhile strategic purchasing and supplier relationship affect purchasing performance. Additional finding resulted in from this study is top management role indirectly affect purchasing performance through strategic purchasing and supplier relationship as mediating variable. Top management role did not affect indirectly purchasing performance through supply chain integration means that the integration of supply chain into company process can be better if at the same time company also establishes an appropriate relationship with capable supplier. Top management gives positive and significant impact on the supplier relationship. The relationship between the construction company with more supplier suppliers. In the world of construction, negotiation is done to achieve the agreed budget together and often in the process of bargaining may be detrimental to either party. While the projection method, is more directed to the company as a determinant contractors and suppliers must strive to meet the needs of the project. The problems that occur was resolved by the parties together, while the supplier is acting as a conduit of information. Any activity that occurred from the supplier typically delivered directly and precisely to the contractor so that the contractor can manage the smooth running of the project.

Top management provides a positive and significant effect on the strategic purchasing. In the use of the strategy, the construction industry is very good at doing the supplier selection. In the process of procurement, the appropriate strategy is chosen to ascertain the smooth procurement process and it is entirely the responsibility of purchasing division. Project leaders are normally not directly involved, but roles more on the controll of material availability at the right time, quantity and quality. From the results of the respondents opinions, it appeared that the purchasing division are rarely involved in the planning process. This means that purchasing division involvement was

considered less important in the planning process. Yet when we look at the research Yeo & Ning, 2002, the greatest opportunity to minimize the price is when the purchasing division involve in the process of planning. Strategic purchasing did not affect the supplier relationship. Strategic purchasing and supplier relationship was just the opposite each other, when the company emphasizes on price to achieve the production performance, then the relationship with the supplier tend to be worse. For that reason, in implementing strategic purchasing, need to do a lot of things to be considered (Chen, Paulraj, and Lado, 2004). Generally, collaboration was not easy to take place because the collaboration should leads to the long-term viability.

As expected, supplier relationship has positive and significant impact on supply chain integration. Good relationships with suppliers and sub-contractors was possible in a good term, but this integration does not necessarily produce a positive performance. Good integration can be demonstrated by the frequent coordination meetings in the project to synchronize all related activities. Commonly, integration in construction project was triggered by a reliable project leader through the fostering of relationship between project managers, sub-contractors and suppliers.

Supply chain integration has no significant effect on the performance of purchasing. The construction industry strongly focused on completion of the project within budget and on schedule. The cost of construction company is highly sensitive against any delays of the finishing. Normally the contraction company resales any waste material and pay additional work. This means that construction industry was not able to finish the work of construction in the manner of efficiency and effectiveness rather, they only focused to performs the project without considering other factor. This circumstances, frequently caused excess of material after finishing the project and subsequently the manager normally resaled the waste material. Otherwise, it will expose another problem on the warehouse availability for the storage of waste material. As well understood, each project leader was ony lresponsible to individual project and orenot allowed to handle more than one project at the same time. The construction work involves many suppliers and sub-contractors and it can be said that it involves many of human resources during the process of work. Consequently, cooperation between parties is a must, otherwise it will raise new. This also caused a more difficult controll on the standard of workmanship as compared to manufacturing companies. In addition, the communications technology built in the construction industry is still lagging behind when compared to the manufacturing industry

Supplier relationship significantly influence purchasing performance. The relationship between the company and the supplier is an investment for both companies (Wagner & Bode, 2014).

Achievement of purchasing performance is affected by contract or policy of the company and suppliers, so the contract and policy guidance as well. Collaborative relationships tend to be avoided because of the development process involves a human and not a technology and likely to occur large deviations (Ritz, 1994). Progress of the construction company itself relies on innovations made by suppliers to create new products in order to achieved a more efficient and effective performance. Supplier relationship is a dominant variable in supporting purchasing performance. Successful relationships will encourage companies to use the same supplier continuously. Evaluation by the company was generally addressed to each supplier to make sure if it the company may use the same supplier in the future. On the other side, form the supplier point of view, contractor relationships with suppliers can be maintained if the construction company performed well its obligations such as timely payment. In addition, the company size also affects the relationship. Normally, large construction companies will give more benefit because the supplier may have a number of projects so that suppliers tend to sustain the relationship.

Strategic Purchasing provides positive and significant impact on the performance of purchasing. The construction project more stressed purchasing strategies to obtain the lowest possible prices and the highest quality possible (Safa, Shahi, Haas & Hipel, 2014). In the process of strategic purchasing, purchasing performance goals are not the same, but it depends on the type of each building project. High-rise buildings pay more attention to material quality and timeliness, as well as ruling out the price. For low-rise buildings, such as low-income housing, generally the performance of purchasing more emphasis on price. In the use of its strategy, the construction industry is not the same as the manufacturing industry for performance assessment and the different types of procurement perproyek to procurement processes in the manufacturing industry.

Conclussion and recommendation

The finding from this study showed that purchasing performance was affected by strategic purchasing and supplier relationships. Purchasing performance is not affected by supply chain integration. The integration of the supply chain is affected by the supplier relationship. Supplier relationship is not significantly affected by the strategic purchasing. Purchasing strategies, supplier relationship, and supply chain integration significantly influenced by the role of top management. Other finding is that top management role indirectly affected purchasing performance through strategic purchasing and supplier relationship as mediating variable.

This research can provide an academic view about the state of the supply chain on the construction industry. Companies need to improve the integration of the system particularly in respect of purchasing and supplier relationship in order to reduce lead time, cost and better quality. The relationship between the companies should be objective so as to create a good collaboration. Moreover, construction firms are expected to be involved in the development of the construction industry. For further research, it is advisable to focus on certain types of companies, such as consultants, main contractors or sub-contractors and if possible, research must be done to compare the performance of companies using materials management company with project management.

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