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Sustainable Civil Engineering Structures and Construction Materials, SCESCM 2016

Innovativeness: a key factor to support contractors' business success

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Abstract

Indonesian contractors are challenged by high levels of competition both locally and globally. In order to be successful in competition, a contractor is required to be innovative. This study aims to clarify the concept of innovativeness and to explore its implementation particularly in Indonesian contractors. Following a thorough examination of the literature on innovativeness, semi-structured interviews were carried out with top managers of contractors in Indonesia to determine the innovativeness characteristics of Indonesian contracting firms. The qualitative data were analyzed using an inductive thematic analysis method. This study found three contractor actions to support innovations: carrying out research and development, challenging staff to be innovative and supporting programs that spark innovation.

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Keywords: innovation; contractors; Indonesia; qualitative data; thematic analysis

1. Introduction

The construction industry in Indonesia has been growing rapidly in the last few years. The size and value of the construction market is one of the most important factors encouraging Indonesia's economic growth. In 2012, the Indonesian Chamber of Commerce and Industry noted a significant increase in the Indonesian construction industry. It was valued at IDR 284 trillion and then it became IDR 369 trillion in 2013. Global Construction 2025 projected the increment in value from 2012 to 2025 to increase by an average of 6% per year. If this estimation is reached, Indonesia's construction industry in the global construction market will move from the position of the tenth biggest to become the fifth biggest.

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In addition to the rapid growth of the construction industry in Indonesia, competition in the Indonesian construction market is high, both locally and globally. The Bureau of Indonesian Statistics identified the number of local contractor was extremely large, in 2013 it was recorded approximately 130,000 contractors. In addition to competition among local contractors, the force of global free trade creates increasingly higher and harsher competition. In 2013, 302 foreign contractors have been registered in Indonesia. This number shows a significant increase compared to the number in the previous two years, with only 128 in 2011. Although the number of foreign contractors entering the Indonesian construction market is very small compared with the number of local Indonesian contractors, they are contractors with very good reputations; therefore they are strong and threatening competitors for the Indonesian contractors to try to deal with. Currently Indonesian contractors also face the 2015 ASEAN Economic Community (AEC), in which ten Southeast Asia countries are launching a single market for goods, services, capital and labor. Obviously the AEC will increase the competition in Indonesia's construction market.

However, these opportunities and challenges are faced by the unpreparedness of Indonesian contractors to excel in business competition. Among that huge number of Indonesian contractors, the majority are small businesses. Wirahadikusumah and Pribadi [1] noted that the majority of the contractors had only poor to fair performance. Out of the 130,000 only about 100 contractors can be considered 'excellent' to be trusted to deliver high quality performance. Large numbers of small contractors with poor performance leads to various other problems in the Indonesian construction industry, such as:

- Low competitiveness because of failure to develop relevant strategies in running their business [2-4].
- Business orientation that focused on short term benefit rather than long term business sustainability [2]
- Low competitiveness, lack of marketing strategy, lack of entrepreneurial strategy, lack of capability to compete with foreign contractors [3]

This situation resulted in un-conducive business environment in the Indonesian construction industry. In order to improve contractors' competitiveness, the contractors in Indonesia, need to be innovative because the appropriate innovations can address the problem of projects, as well as meet the client's demands. Frese [5] mentioned innovativeness refers to creating and implementing new ideas such as new product, new service, new system or new strategy in order to achieve success of the company.

Contractors have been considered as project based firms (PBFs) that run their business on the basis of projects. As PBFs, contractors are characterized by a temporary project's organization within the permanent firm's organization. Contractors are required to deliver project as a unique end product specifically designed to meet clients' demand. In this business circumstances, contractors run their activities in many unique ways. Due to the specific nature of the contractor's business and the condition of contractors' business in Indonesia, innovativeness of contractors in Indonesia is considered as distinct from companies in other sectors as well as contracting companies in other countries. Therefore, this study is aimed at investigating innovativeness of contractors with a specific focus on contractors in Indonesia. In order to achieve this aim, the specific research objectives of this study are: to explore theoretical concepts and previous work on innovativeness with a specific focus on innovativeness in construction and contractors, then to identify the key factors of innovativeness for contractors based upon the experiences of contractors in Indonesia.

2. Literature review

The literature review in this study is aimed to obtain a deeper understanding of the concept of innovativeness and its related aspects such as: antecedents, outcomes and affecting factors. The literature review has been carried out both in general context and in construction as a focus of this study.

2.1. Innovativeness

Innovativeness is interpreted as an effort to gather and to support the invention of creative new products, services and processes [6-8]. Innovativeness was linked to different types of innovations, such as product innovation [9, 10] and service innovation [11]. Product innovativeness was defined as a propensity to introduce innovative product characterized by properties such as newness, uniqueness, pioneering, and technology adoption. Service innovativeness was introduced in order to provide customer satisfaction, meet customers' needs and to improve the

firm’s value at an acceptable risk.

According to Andersson, Bengtsson, Ekman, Lindberg, Waldehorn and Nilsson [12], product innovation is categorized as ‘tangible’ innovation while service innovation is ‘intangible’. The researchers mentioned that innovation was usually associated with tangible innovation only; however, company innovativeness should be focused on intangible innovation as well as business model innovation, networking and management innovation.

Liu and Chen [9] found market orientation and technology orientation as the antecedents of product innovativeness, while Tsai, Liao and Hsu [10] found knowledge integration influenced product innovativeness. The study about service innovativeness has considered both the internet and people as enablers of service innovations. The findings shows that internet innovativeness should be maintained in most industries and people innovativeness is needed in human-dominated industries [11].

2.2. Innovativeness in construction

After a thorough examination has been done regarding several issues related to innovativeness in construction, a theoretical framework of innovativeness in construction was developed as can be seen in Fig. 1. The framework consists of three main components: antecedents, factors that influence innovativeness and outputs of innovativeness. Each component of innovativeness in construction is explained further in the following sections.

Winch [13] mentioned that innovativeness is necessary to excel in competition, especially when dealing with changing conditions. He addressed innovativeness as the extent to which the construction company designed its organization to support the creation of innovation. Several studies linked innovativeness to the competitive advantage of a construction company. Barrett, Sexton and Lee [14] mentioned that appropriate exploitation of innovations can enhance sustainable competitive advantages of small, project based construction firms. By focusing on a large construction company, Pellicer, Yepes and Rojas [15] found innovative performance is an important tool to achieve and maintain success in competition. In the more specific context, Lim, Schultmann and Ofori [16] and Gambatese and Hallowell [17] found that innovative construction firms gained several benefits such as decreasing construction cost and increasing productivity, so that eventually their reputations and success rates will start to improve reputation.

Several studies were carried out to identify factors that influence innovativeness of construction companies. Barrett and Sexton [18] found the innovation activities of small, project based construction firms are predominantly dependent on the commitment of the owner; innovation is directly related to their operational activities. Furthermore Pellicer, Yepes and Rojas [15] found the innovative performance of construction companies is affected by various factors including the demands of the new types of project, global markets, high competition, regulatory demands, business culture and, of course, the financial climate. Following this research, Pellicer, Yepes, Correa and Alarcón [19] found that innovation in construction companies is strongly driven by a project’s technical issues, client’s demands and top management encouragement.

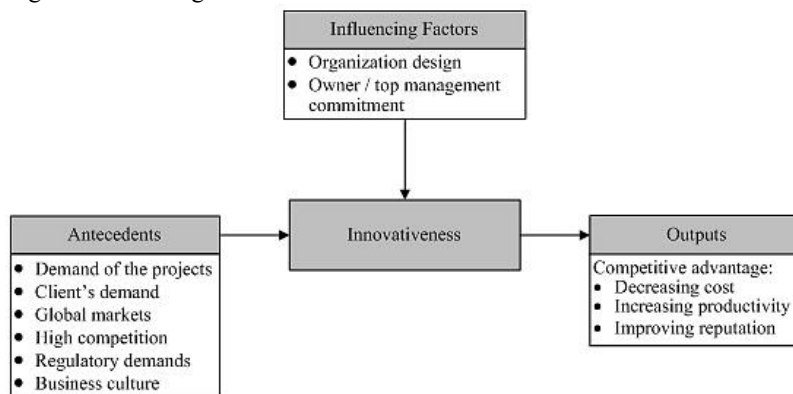


Fig. 1. Theoretical framework of innovativeness in construction

3. Research method

This study adopted two main research methods. First, comprehensive review on several literatures was carried out to gain a better understanding about innovativeness in construction industry. Second, exploratory approach was conducted to identify innovativeness of contractors under specific circumstances of Indonesia. This approach has been chosen due to a lack of previous research in innovativeness in the area that is particularly related to contractors in Indonesia. Data collection and data analysis for exploratory study are explained in detail in the following sections.

3.1. Data collection

Data for this study was collected through face to face semi-structured interviews with the top managers of contractors in Indonesia. The top managers of contractors are considered as an appropriate source of data because they are the most knowledgeable persons regarding the condition of their companies, and all strategic information is in their hands or accessible to them. They are intensively involved in planning, developing and implementing regulations, policies and programs for their companies. According to Quinlan [20], this constitutes judgemental sampling which determines the criteria for potential participants by considering the capacity of participants to provide proper and appropriate information related to the issues under investigation.

Prior to the interview, an interview guide was sent to the interviewees by e-mail in order to give them an idea about the interview. The interview guide consists of several questions about the implementation of innovativeness that were explored based on several references. During the interviews, the format and sequence of questions did not always expressly follow those outlined on the interview guide. Communication varied depending on the flow of the conversation and extra questions were asked to follow up on issues which appeared to be important and relevant to the topic of the interview. The interviews were controlled by the interviewer to make sure the focus of discussion was maintained. Interviews lasted between 30 to 60 minutes and each was audio-recorded and then fully transcribed.

3.2. The process of data analysis

The data collected was analysed using thematic analysis. Braun and Clarke [21] defined thematic analysis as a method for data analysis in order to identify themes that are related to the research questions. There are two ways to implement thematic analysis: induction and deduction. The first follows ‘bottom up’ approach that is data driven, in which themes are identified mainly based on the data. The second follows a ‘top down’ approach that is driven by the related theory to identify themes.

This study adopted the ‘bottom up’ thematic analysis model because of a lack of previous research in the area. The identified themes are directed to the issues that relate to innovativeness of contractors. The following processes were carried out to analyse the data and identify the key factors.

- Each transcript was read twice in order to enable the researcher to be familiar with the data and then initial ideas were extracted from the data.
- The coding process started manually. In this stage, as many phenomena as possible that emerged from interviews were coded.
- The next coding process was done using NVivo 10 software. In this stage, codes were refined and re-categorized into the appropriate nodes that are considered as important issues related to innovativeness of contractors.
- The coding process was refined and then the codes were re-allocated into appropriate themes. The issues that arose were continuously reviewed in three rounds using NVivo 10 software to check whether the issues work in relation to the entire data set or not.
- Finally important issues that explained the innovativeness of contractors were identified then the names and the definitions of the theme is decided.

4. Data Analysis

Data analysis was carried out using the data gathered from 19 top managers of contractors in Indonesia. The contractors where the top managers are involved vary in size and ownership. The ownership of contractors can be private or state, while the size of contractors were varied from small contractors with less than 100 employees to very big contractors with more than 1000 employees. Therefore, information obtained will represent various classes and ownerships of contractors.

Following the process of thematic analysis bottom-up approach, coding was done by clustering together statements which are related to the similar issue in one node or theme. Then based on all codes in one theme, the name of the theme was determined and then the definition and the important issues of each theme were identified to provide better and deeper understanding about the themes.

In order to give an idea about the coding process, the example of coding process for one node is explained here. This example showed statements, which are related to how contractors challenge their staff to create innovation, have been coded in one node. The example of statements that are clustered in one node because they are related to similar issue can be seen in Table 1. These statements are stated by several interviewees and one interviewee can contribute more than one statement.

Table 1 Example of coding

Interviewees	Statements
1	Every 2 years, we held innovation day. All proposed innovations was examined and the finalists should present their ideas on the innovation day.
2	Innovations proposed by staff individually is judged by his or her supervisor and the result will be considered for evaluating staff's performance. For innovations proposed by team, they will get a reward.
3	Usually we held innovations competition. We give reward for the winner, the reward is not always in the form of money but surely we provide a reward.
4	To distinguish the staff who has achievements and who does not. We have standardized reward and punishment system.
5	We give bonus for the staff who has achievements.
6	We have 2 systems for incentive in our company, for staff at high position, the incentive is profit sharing. For staff at the lower levels, an intensive is bonus
7	We have regular program for innovation competition that also cover the improvement of way of thinking. It's started from small scale, from project as well as department in head office. The innovation is proposed to head office, then will be evaluated by innovation team
8	If they work efficiently, we give them point for promotion
9	The last competition is about innovative site office, we have not handed the award to the winner The winner get money and we held ceremony to present the award We have reward and penalty system. If project cost can be reduced, the difference between budgeted and actual costs will be shared to project team, it is done proportionally
10	For example, project team must achieve 10% profit after tax and then they create innovation that increases the profit to 15%. The difference will be shared with them and they get points for promotion Every year we send staff to study in India, Thailand or universities in Indonesia. This program is one type of reward to the staff
11	If they can construct project successfully, they will get incentive, bonus, etc. This incentives motivate people to be innovative. Reward can be material and immaterial such as promotion
12	We provide a freedom, the staff are challenged to create innovation
13	When project has problems on site, they must find solution that they consider it as the best solution If they can construct project under budget, the difference will be shared with them proportionally

After reviewing all codes in this example node or theme, issues related to the contractors actions to challenge staff to create innovations were found. Based on these findings, it was decided the name of this theme is 'challenging staff to be innovative' and then this theme was defined as contractors' willingness to encourage staff to create innovations through an appropriate rewards system, such as bonus, recognition, promotion, etc.

5. Innovativeness of contractors in Indonesia

The analysis of interviews to contractors' top managers in Indonesia found several efforts of contractors to become innovative. In order to be innovative, contractors need to carry out research and development activities by conducting experiments to create new products and/or services. Large contractors usually have a Research and Development (R&D) department to handle these activities with the support of all staff, each of whom is directly involved in a construction project. Small and medium-sized contractors usually do not have a R&D department; therefore, the innovations are developed by the people in a project. Companies usually support this activity as far as the budget is acceptable and the results can be accounted for.

Contractors need to challenge staff to be innovative in order to encourage staff to create innovations. The challenge is carried out through an appropriate rewards system, such as bonus, recognition, promotion, etc. for innovators. In addition, there are contractors that regularly hold formal competitions for innovation among the project teams. Each project is required to produce an innovation; then, the most promising innovation is trialled in several projects and finally, if successful, it is set as a company standard.

Supporting programmes that spark innovation is another effort to create innovations. Contractors have to conduct programmes that encourage the creation of innovations, such as hiring consultants, managing knowledge properly, organizing discussion forums for knowledge and experience sharing, providing training, and determining the target of each project. Besides these programmes, the exemplar of top management behaviour and financial support are also considered as important factors to create innovations.

These findings show that contractors' innovativeness are mostly directed to meet client's demands and to achieve the efficiency and effectiveness of projects. These findings are in accordance to the business environment of contractors as PBFs that run their business on the basis of projects and deliver a project specifically designed to meet the client's needs.

In addition to contractors' efforts to be innovative, this study also found innovativeness supports contractors to be different compared with competitors because they are able to offer something new and different from its competitors such as innovation in construction methods, materials, etc. In particular context of external factors, this study found innovative contractors need to be risk taker because innovation has risks such as technical risk. Then autonomy of staff for proposing suggestions for the improvement of projects and company's performance, as well as, autonomy of the project team in planning and managing projects' were found supporting contractors' innovativeness. Finally Fig. 2 was prepared in order to provide clear picture of the findings of this study.

6. Conclusions

Innovativeness of contractors is characterized by several activities supporting the creation of innovations. Those activities are: (1) carrying out research and development activities, (2) challenging staff to be innovative and (3) supporting programmes that spark innovation. Innovativeness helps contractors to differentiate themselves from their competitors. Innovativeness of contractors is influenced by other factors such as autonomy of contractors' staff and willingness of contractors to take risk.

The explanations about the particular circumstances of contractors' business in Indonesia clarify the issues behind the development of innovativeness in this study. However the findings of this study are considered appropriate for adoption by contractors in general although they need to be examined further and adjusted accordingly to the circumstances of the local construction industry.

The findings of this study provided noteworthy contributions to knowledge in the areas of construction management to fill the gap left by lack of research into the innovativeness of contractors. To date research in construction management is more focused on innovation rather than innovativeness. This study also provides reference on how to be an innovative contractor in order improve competitive advantage in the construction market

place.

Furthermore, in order to be an innovative contractor, both the existing and the target innovativeness characteristics of the company need to be understood. Then strategy can be developed to fill the discrepancy between them. Therefore further studies can focus on development of a model for measuring the level of innovativeness of contractors based on the findings of this study. Subsequently, the relationship between the level of innovativeness and a contractor’s performance can be explored further.

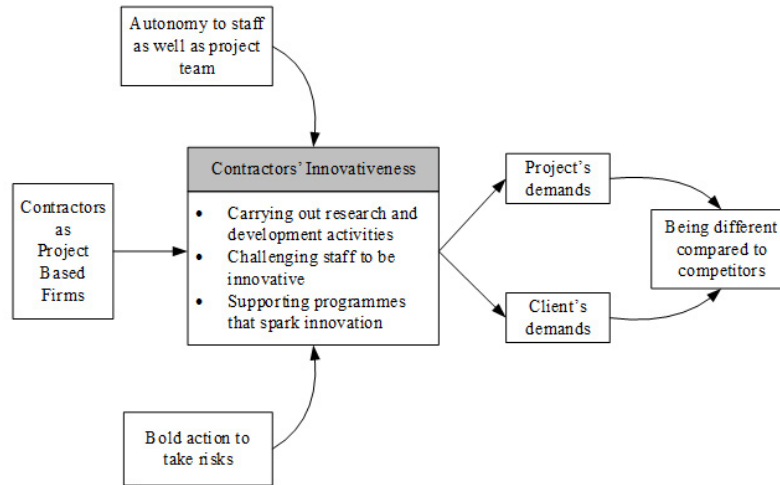


Fig. 2. Innovativeness of contractors in Indonesia

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