

EVALUATING INDONESIAN LARGE CONTRACTORS' PERFORMANCE: A CLIENT SATISFACTION PERSPECTIVE

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ABSTRACT

The fierce competition in the construction industry forces contractors to keep increasing their performance to survive in the market. One of the performance measurements which can be used is client satisfaction, which looks at contractors' performance both during the process of construction and the end product. This research aims to evaluate large contractor performance in Indonesia using 27 criteria adopted from the application of 8 areas of PMBOK (Project Management Body of Knowledge) in a construction project. Data was collected through interviews and questionnaire surveys. Respondents were clients, construction management or supervision consultants as the representation of clients. This research found that in general the large contractors' performance of project management is satisfying. This is indicated by client satisfaction index (CSI) which equals to 71.49%. A two-dimensional grid of the Importance Performance Analysis (IPA) classified the contractors' performance variables into 4 categories, i.e.: (A) Concentrate Here; (B) Keep Up the Good Work; (C) Low Priority; and (D) Possible Overkill, with the mean values of importance and performance are 4.44 and 3.57 respectively. Identification and mapping of these variables is very important for contractors to improve their project management performance towards client satisfaction. These results may represent current picture of Indonesian large contractor performance on factors that are doing well and those that need improvement.

Keywords: Contractor Performance, Client Satisfaction, PMBOK, Client Satisfaction Index (CSI), Importance Performance Analysis (IPA).

INTRODUCTION

The competition among contractors in the construction industry is getting fiercer. To keep surviving in the industry, the contractors have to maintain their top performance. This can be done by ensuring the delivery of good end products as well as the services during the construction process.

Quality assurance for both end products and the services can be achieved by the implementation project management system in a construction project. Project management is the application of knowledge, skills, tools and techniques in project activities to fulfill a project's requirement (Project Management Institute, 2008). The ultimate goal of the application of project management system is to enhance the quality of products and services to achieve the project's objectives i.e. client satisfaction.

Client satisfaction is a term which is more commonly used in construction management literature, while literatures from other disciplines may use the term of customer satisfaction. Clients in construction refer to an organization or owners who use the contractors' professional services, while customers may refer to recipients of products and services from sellers or providers. In this research both terms are considered to have similar meanings, hence used interchangeably. Kärnä (2004) defines customer satisfaction as "a function of perceived quality and disconfirmation". He argues that the customers compare performance of a product, either goods or services, with some performance standard. When the perceived performance is greater than the standard (positively disconfirmed), the customers are satisfied. However, dissatisfaction occurs when the performance is below the standard (negatively disconfirmed).

The quality of product and services has an important role to form the customer satisfaction (Kotler and Armstrong, 2001). In addition, Barkley and Saylor (1994) and Juran (1993) argue that customer satisfaction is synonymous with quality. In the context of construction project, contractor performance is usually considered as a significant contributor to client satisfaction (Yasamis et al, 2002).

The aim of this research is to evaluate large contractor performance at project level in Indonesia using 27 criteria adopted from the application of 8 areas of PMBOK (Project Management Body of Knowledge) in a construction project, i.e. scope management, time management, quality management, human resource management, communications management, risk management, procurement management, and integration management. The objectives of this research are: to identify factors of contractors' performance which contribute to client satisfaction, to measure the client satisfaction on contractors' performance and to examine areas for improvement.

RESEARCH FRAMEWORK

Idrus and Sodangi (2011) evaluated quality performance of contractors in Nigeria. They looked at contractors' quality performance at project level by defining customer satisfaction through assessment of product and service dimensions. This framework is adopted for this research and developed by combining it with eight areas of project management (PMBOK), i.e. scope management, time management, quality management, human resource management, communications management, risk management, procurement management, and integration management. PMBOK (2008) defines project management as an application of the knowledge, skills, tools and techniques to project activities to meet the needs and objectives of a project. The project management process consists of five phases, i.e. starting, planning, executing, controlling, and acceptance. The conceptual framework of quality of product and service within the context of project management in construction projects become the foundation of client satisfaction assessment, as shown by Fig.1 below.

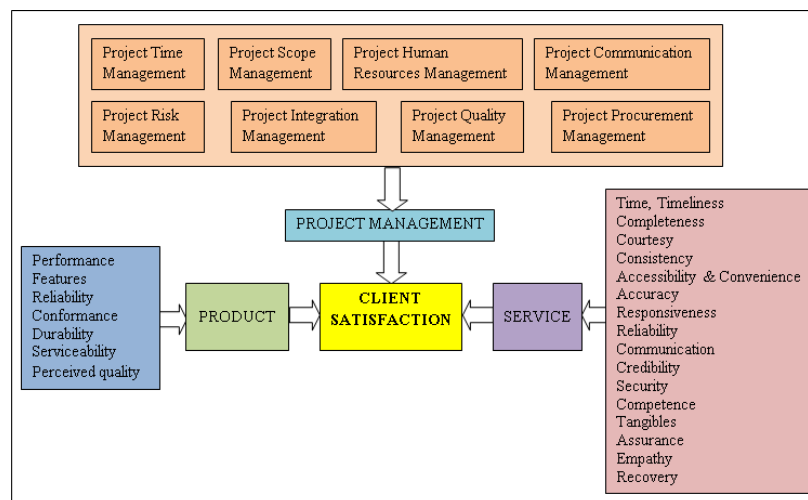


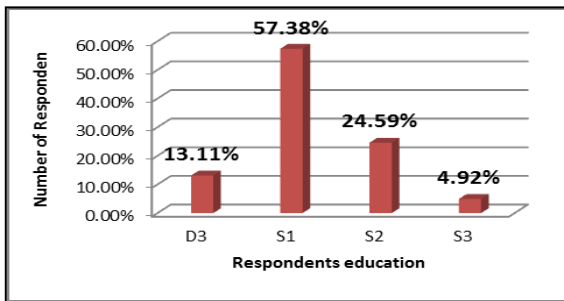
Fig. 1: Conceptual framework for client satisfaction in construction

RESEARCH METHOD

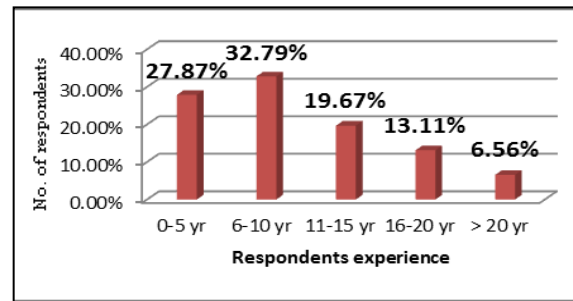
To achieve the aim and objectives of the research, the stages of this research include : identifying the factors that influence client satisfaction based on the implementation of project management in projects, developing instruments and carrying out the measurement of client satisfaction through distribution of questionnaires and interviews, analyzing the results using Client Satisfaction Index (CSI) and Important Performance Analysis (IPA), and drawing conclusion contractor and recommendation. Data was collected through interviews and questionnaire surveys using purposive sampling technique. Questions in the questionnaire basically ask the respondents on the importance and the performance of variables related to contractor performance of project management using a 1 to 5 likert scale. The number of respondents is 61, which consist of 18 (29.51%) project owners, 19 (31.15%) consultant supervisors and 24 (39.34%) construction management consultant.

Profiles of respondents are described in more detail in Figure 2 below. In brief, in terms of education the majority of respondents held bachelor degree (57%), followed by master degree (25%), doctoral degree (5%) and diploma (13%) (Fig.2a). Most respondents' works experience are 6-10 years (33%), followed by 0-5 years (28%) (Fig.2b). Respondents' positions in the project are dominated by team leader (26%) and inspector (39%) (Figure 2c).

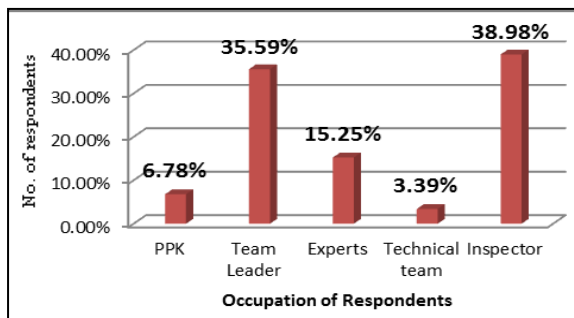
Duration of projects are mostly below 6 months (38%) and below 12 months (41%) (Figure 2d). Most projects of which the contractors' performance being assessed were run in the year of 2012 (46%) and 2011 (28%).



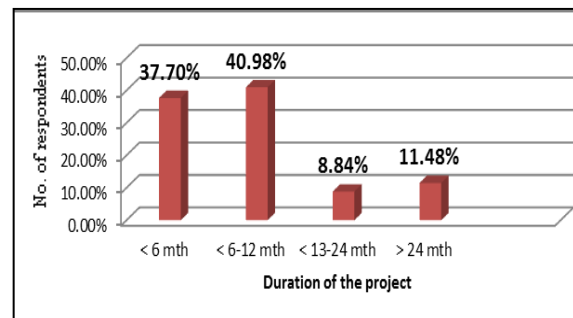
a. Respondents' education



b. Respondents' experience



c. of respondents' positions



d. Distribution of project durations

Fig. 2: Profile of respondents and projects

RESULTS AND DISCUSSIONS

The following two methods were used for evaluating client satisfaction based on project management performance of the contractors, i.e customers satisfaction index (CSI) and importance performance analysis (IPA).

Client Satisfaction Index (CSI)

CSI is used to measure the project management performance of contractor which consider all dimension into two stages for importance and satisfaction. The CSI is calculated by Eq (1), in which WAT (Weight Average Total), and HS (High Scale) are calculated by Eq (2), WS (the weighted satisfaction) score, and MSS (mean satisfaction score), is calculated by Eq (3), WF (the weighted importance) score, and MIS (mean importance score) is calculated by Eq (4). The scale can be calculated by Eq (5) (Simamora, 2005), where m is the highest score, n is the lower score, and b is the class interval. The range of numeric scale for CSI can be categorized as follows: $0\% < \text{CSI} \leq 20\%$ is very dissatisfied, $20\% < \text{CSI} \leq 40\%$ is dissatisfied, $40\% < \text{CSI} \leq 60\%$ is satisfied enough, $60\% < \text{CSI} \leq 80\%$ is satisfied, $80\% < \text{CSI} \leq 100\%$ is very satisfied.

$$\text{CSI} = \frac{\text{WAT}}{\text{HS}} \times 100\% \quad (1)$$

$$\text{WAT} = \text{WS}_1 + \text{WS}_2 + \dots + \text{WS}_{27} \quad (2)$$

$$\text{WS} = \text{WF} \times \text{MSS} \quad (3)$$

$$\text{WF} = \frac{\text{MIS}}{\text{Total MIS}} \times 100\% \quad (4)$$

$$\text{RS} = \frac{m - n}{b} \quad (5)$$

From the data calculated as shown in table 1, the CSI value is 71,49%, which falls into the range of $60\% < \text{CSI} \leq 80\%$. This means that in general the clients are satisfied with the project management performance of contractors.

Important Performance Analysis (IPA)

IPA, a two-dimensional grid classifies the project management performance variables of contractor into 4 categories, i.e.: (1) Concentrate Here; (2) Keep Up the Good Work; (3) Low Priority; and (4) Possible Overkill. \bar{X} , mean value of performance for each variable, is calculated by Eq.(6), while \bar{Y} , the mean value of importance, and n, number of respondents, is calculated by Eq (7). $\bar{\bar{X}}$, mean of all variables of performance, is calculated by Eq.(8), while $\bar{\bar{Y}}$, mean of all variables of importance, is calculated by Eq.(9)

$$\bar{X} = \frac{\sum Xi}{n} \quad (6)$$

$$\bar{Y} = \frac{\sum Yi}{n} \quad (7)$$

$$\bar{\bar{X}} = \frac{\sum_{i=1}^n Xi}{K} \quad (8)$$

$$\bar{\bar{Y}} = \frac{\sum_{i=1}^n Yi}{K} \quad (9)$$

Tab. 1: Calculation of CSI

Var	Mean Value of Importance	Weighting Factor	Mean Value of Performance	Weighting Score
V1.	4.61	3.85%	4.10	0.16
V2.	4.57	3.82%	3.85	0.15
V3.	4.64	3.87%	3.75	0.15
V4.	4.49	3.75%	3.64	0.14
V5.	4.52	3.77%	3.39	0.13
V6.	4.56	3.81%	3.25	0.12
V7.	4.33	3.62%	3.39	0.12
V8.	4.13	3.45%	3.82	0.13
V9.	4.49	3.75%	3.59	0.13
V10.	4.56	3.81%	3.59	0.14
V11.	4.48	3.74%	3.77	0.14
V12.	4.16	3.47%	3.57	0.12
V13.	4.46	3.72%	3.56	0.13
V14.	4.48	3.74%	3.54	0.13
V15.	4.61	3.85%	3.54	0.14
V16.	4.67	3.90%	3.64	0.14

Var	Mean Value of Importance	Weighting Factor	Mean Value of Performance	Weighting Score
V17.	4.23	3.53%	3.36	0.12
V18.	4.44	3.71%	3.36	0.12
V19.	4.07	3.40%	3.59	0.12
V20.	4.26	3.56%	3.39	0.12
V21.	4.49	3.75%	3.49	0.13
V22.	4.59	3.83%	3.57	0.14
V23.	4.33	3.62%	3.49	0.13
V24.	4.51	3.77%	3.64	0.14
V25.	4.02	3.36%	3.34	0.11
V26.	4.44	3.71%	3.70	0.14
V27.	4.62	3.86%	3.54	0.14
Total	119.49	100 %		
Weighted Total = \sum Weighting Score				3.57
Satisfaction Index = $(\text{Weighted Total} / \text{scale}(5)) * 100\%$				71.49%

The mean values of all variables of performance ($\bar{\bar{X}}$) and importance ($\bar{\bar{Y}}$) are 3.57 and 4.44, respectively. The fact that the mean value of performance is greater than 3 indicates a trend of good performance of contractors, while the higher mean value of importance of 4.44 indicates the high expectation of the construction clients towards the performance of contractors. Based on this coordinate of 3.57 and 4.44 as the center, the IPA matrix shown in figure 6 classifies the project management performance variables of contractors into 4 quadrants, i.e.: (A) Concentrate Here; (B) Keep Up the Good Work; (C) Low Priority; and (D) Possible Overkill.

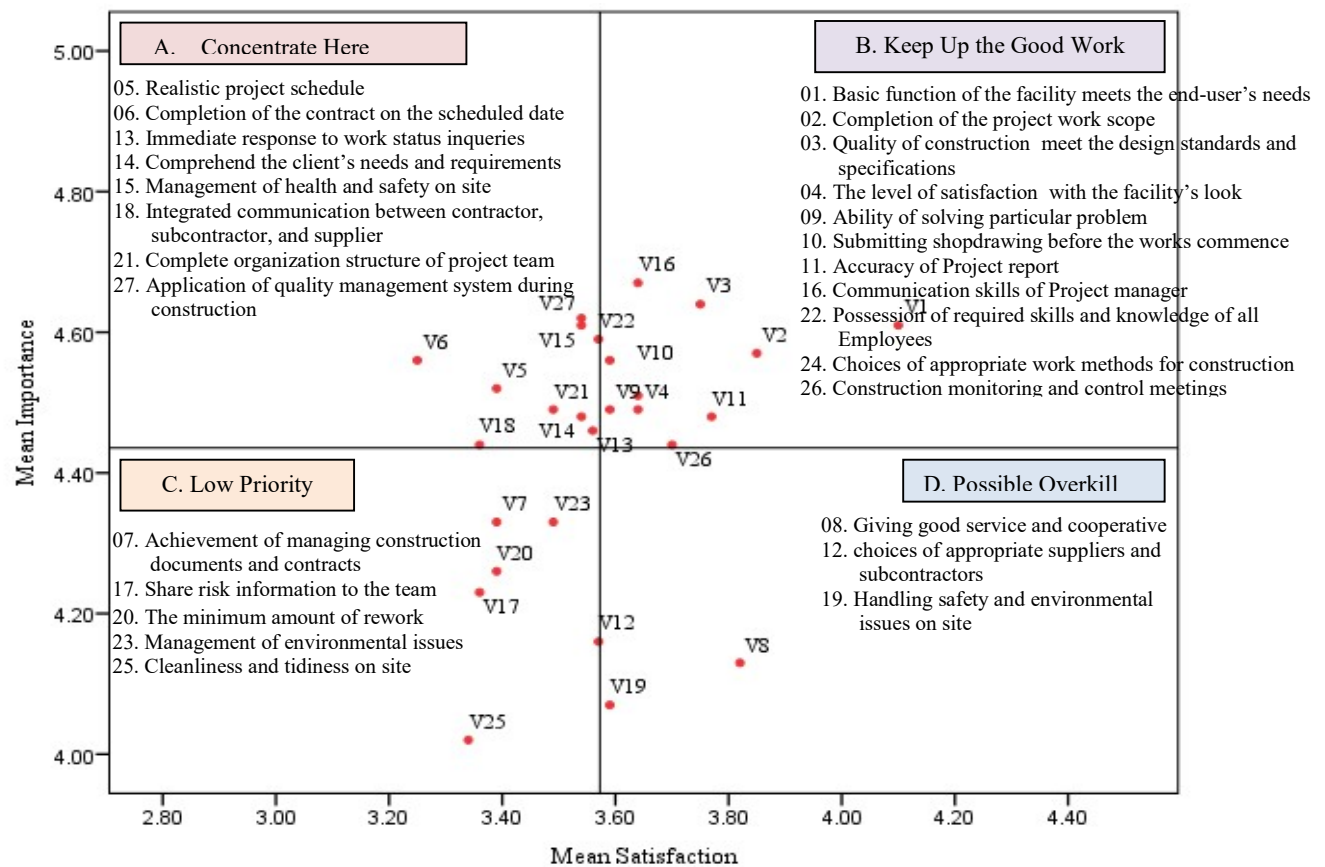


Fig. 3: Four quadrants of IPA matrix

The quadrant „A“ - „Concentrate Here“ shows the variables that need to be prioritized for improvement, because these variables are very important according to the clients, but the level of performance is still not satisfactory. To achieve client satisfaction contractors must focus the improvement programme on the variables in this quadrant. Quadrant „B“ – „Keep Up the Good Work“ shows the variables of contractor performance which need to be maintained, as they are important to the clients and have a high level of performance. Quadrant „C“ - „Low Priority“ shows the variables which are less important for clients and at the same time their performance are not so great. Quadrant „D“ – „Possible Overkill“ shows variables which have a high level of performance, but they are actually seen not so important to the clients.

After the contractor performance variables are classified into the four quadrants, it is necessary to relate these variables according to the management aspects of the PMBOK, as shown by Tab. 2 below. This table shows the distribution of the customer satisfaction variable according to PMBOK areas, and the alternative solutions to improve client satisfaction. For validation, these proposed alternative solutions were already consulted to 2 professionals, i.e. project manager and construction management consultant, both with more than ten years working experience.

Among the four quadrants, contractors „ attention primarily need to be focussed on quadrant „A“ - „Concentrate Here“. It can be seen that in this quadrant, contractors stil have many problems related to aspects of PMBOK, e.g. time management, health and safety, communication, etc. While the improvement for these problems may include delegating work for faster responses to client inquiries, distributing weight of works and managing risks to overcome the problem of unrealistic project schedule due to limited project duration, improvement of health and safety management on site, establishing more effective communication with client, subcontractors and suppliers, etc. This recommendation for improvement is in line with Ahmed and Kangari (1995) who suggest that customer orientation, communication skills and response to complaints play vital role in the overall customer satisfaction in the construction industry.

Tab. 2: Variables of contractor performance in PMBOK perspective and recommendations for alternative solutions

Quadrant	Project Scope Management	Project Time Management	Project Human Resources Management	Project Risk Management	Project Communication Management	Project Quality Management	Project Procurement Management	Project Integration Management
A	Immediate response to work status inquiries	<ul style="list-style-type: none"> Realistic project schedule Completion of the contract on the scheduled date 	Complete organization structure of project team	Management of health & safety on site	Comprehend the client's needs and requirements	Application of quality management system during construction		Integrated communication between contractor, subcontractor, and supplier
	Good ability of project managers to delegate work, can speed up the handling of problems	Weight distribution curve-s in proportion to considering risks	Organizational structure and the list of personnel administration of the project corresponding with the documents tender	More commitment on H&S, enforcement of the use of PPE, and penalties for violations on H&S	More active communication between contractors, construction management and user	Supervision, control, discipline of implementation quality management system		Scope agreements, technical specifications, accuracy, time jobs among contractors, subcontractors, and suppliers
B	<ul style="list-style-type: none"> Completion of the project work scope Quality of construction meet the design standards and specifications Submitting shopdrawing before the works commence 	Construction monitoring and control meetings	<ul style="list-style-type: none"> Communication skills of Project manager Possession of required skills and knowledge of all Employees 	Ability of solving particular problem	<ul style="list-style-type: none"> Accuracy of Project report Coordinating ability and rapport of Project manager 	<ul style="list-style-type: none"> Basic function of the facility meets the end-user's needs Completion of the project work scope Quality of construction meet the design standards and specifications The level of satisfaction with the facility's look Submitting shopdrawing before the work commence 	Choices of appropriate work methods for construction	
	<ul style="list-style-type: none"> Permit of the work and working methods Approval of materials before works commence 	The use and placement of personnel in the organizational structure according to their competencies	<ul style="list-style-type: none"> Coordination meetings regularly and periodically The use and placement of personnel in the organizational structure according to their competencies 	Make the identification, analysis, and response for risks	<ul style="list-style-type: none"> Coordination meetings regularly and periodically The use and placement of personnel in the organizational structure according to their competencies 	<ul style="list-style-type: none"> Submission shop drawing at beginning project Permit of the work and working methods Approval of material before work 	Permit execution of work and the works method	
C	Cleanliness and tidiness on site			<ul style="list-style-type: none"> Share risk information to the team Management of environmental issues 	Achievement of managing construction documents and contracts	The ability to provide the right service the first time with minimum amount of rework		
	Maintaining the cleanliness and tidiness of the project area			<ul style="list-style-type: none"> The contractor may need to inform only relevant risks to customers The contractor is responsible for social & environmental issue 	Comprehensiveness of the administration is still necessary in every phase construction	Implementation of quality management to minimize repair work / rework		
D			Giving service and cooperative	Handling Safety and environmental issues on site		Choices of appropriate suppliers and subcontractors		
			Giving service according to the importance in the achievement of quality, time and cost	Environmental issues, security / socialization in the project is the responsibility of the contractor. The schedule and working methods may need to be adjusted accordingly		Able to become a leader for subcontractors and suppliers they use and have a appraisal evaluation		

CONCLUSIONS

This research found that in general the large contractors' performance of project management is satisfying. This is indicated by client satisfaction index (CSI) which equals to 71.49%. The Importance Performance Analysis (IPA) shows the mean values of importance and performance are 4.44 and 3.57 respectively. The fact that the mean value of performance is greater than 3 indicates a trend of good performance of contractors, while the higher mean value of importance of 4.44 indicates the high expectation of the construction clients towards the performance of contractors. Through this IPA the performance variables are classified into four quadrants, i.e. concentrate here, keep up the good work, low priority; and possible overkill. Identification of these variables is very important for contractors to improve their project management performance towards client satisfaction.

This research has focused on the performance of national large contractors which account less than 20% of the total number of national contractors, and the projects are dominated by building projects. To give a better perspective on the general performance of national contractors, for further research, it is recommended to investigate small and medium contractors and more variety types of construction projects.

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