

The Role of Project Culture in Achieving The Performance of Indonesian Toll Road Projects

Yosi Agustiawan^{1,*} Vaughan Coffey² and Rivan Sutrisno³

¹ *Science and Engineering Faculty, Queensland University of Technology (QUT), Australia.*

^{*} *Corresponding author. Email: yosi.agustiawan@hdr.qut.edu.au*

² *Built Environment School, Queensland University of Technology (QUT), Australia
(v.coffey@qut.edu.au)*

³ *Business School, The University of Queensland (UQ), Australia
(r.sutrisno@uqconnect.edu.au)*

ABSTRACT

The influences of culture at different levels such as national culture, organizational culture and professional culture have become one of the most research topics in construction management. Understanding cultural issues at the project level and their impact on the performance of the construction project is required for the construction sector as a project-based industry. The purpose of this paper is to determine the perceptions of the Indonesian construction practitioners about the impact of the project culture dimensions on the performance of toll road projects. Under the case study umbrella, this research reports two toll road projects whereby the project culture dimensions of these large-scale projects were seen to impact significantly on project performance. Furthermore, this research demonstrates the reliability of using the project culture framework developed by Zuo et al. (1) to evaluate project culture dimensions in the context of Indonesian toll road projects.

Keywords: *Project culture, Project performance, Toll road project*

1. BACKGROUND

Over the last two decades, infrastructure globally has proven to be a critical factor in boosting economic growth. Five key infrastructure sectors; oil and gas extraction, utilities, manufacturing, transportation, telecommunication and social as they continue to be developed can significantly impact on the competitive advantage of any nation, especially those infrastructure developments in developing countries. For instance, the upgrading of transport facilities can make the transfer of workers and goods more efficient and effective. A research study conducted by Oxford Economic [2] calculated that in G7 and E7 countries, the quality of public services was highly correlated to their productivity.

Underperforming projects in Indonesia particularly have an adverse effect on the national development strategic planning. In order to keep up a high level of national productivity, which supports economic growth, the Government attempts to speed up its infrastructure projects in both cities and remote areas. The Jakarta post [3] noted that 35% of power plant projects have failed and the total cost of potential

losses is expected to reach nearly USD 286.96 million. This situation affects the Indonesia government's strategy to increase its position in the Global Competitiveness Index [4] that currently places the country at the 41st rank, far below Singapore (2nd), and lower than its neighbors, Malaysia (25th), and Thailand (34th). This position reflects Indonesian infrastructure is inadequate to support businesses compared to other countries hampering both domestic and foreign investment.

In the construction industry, many researchers have investigated the role of culture in the success or failure of management practice. Numerous studies show that culture in the organization influences different elements in construction industry entities such as the quality decision-making processes [5], quality management implementation [6] and improving knowledge sharing [7]. All of these results support the conclusions of Coffey [8] study of the Hong Kong construction industry that suggested an organization's culture significantly correlates to the performance of that organization. However, few studies have examined the influence of culture at project sites. Since the construction sector is project-based, cultural

influences should not be overlooked during the life cycle of construction projects [1].

Given the studies cited above, it is reasonable to investigate the role of project culture at the project level. It is also essential to understand how project culture influences project performance.

This paper aims to investigate project culture in Indonesian toll roads project and its influence on the performance of the construction project. This paper also intends to provide suggestions with the way culture is managed during project execution phases by discussing the result of the study.

2. LITERATURE REVIEW

2.1. Project culture assessment

Although cultural issues in the construction sector have drawn growing attention from many researchers, studies related to the concept of project culture and its impact on business operations have had several limitations. According to Zuo et al. [1], previous studies have not also clearly accepted the definition of project culture, particularly in the project context. As a result, it is difficult to conceptualize and measure the project culture. For example, the study of Thomas, Marosszeky, Karim, Davis, & McGeorge [9] paid less attention to the specific characteristic of the project organization. Their study directly applied the standard “Competing Values Framework” model as well as the instrument established by Cameron & Quinn [10] when investigating the project culture in Australian construction projects.

Therefore, Zuo et al. [1] suggested that the project culture assessment of one construction development requires a simple and easy instrument to use, and context-specific model. They also defined that project culture is:

The share values, basic assumptions, and belief that the participants involved in a project hold that determine the way they process the project and the relationship which each other in the project environment.

Subsequently, they developed a multi-dimensional framework to assess the project culture in the context of construction projects. The framework consists of five constructs and describes as below:

- *Integrative*: Encouraging project parties to provide advice in the early phases of the project execution.
- *Cooperative*: Stressing on aligning the objectives of various project parties to a collective goal

- *Goal-oriented*: prioritizing on the results, and under specific conditions, accepting risk-taking to accomplish the job.
- *Flexible*: providing a room for innovation and a reward for achievement in the project executions.
- *People-oriented*: providing opportunities for project members to develop their capabilities during project processes.

The use of project culture assessment developed by Zuo et al. [1] is considered appropriate to evaluate project culture in Indonesian toll road projects. It is because the measurement has provided comprehensive findings when investigating construction developments in both China and Australia [11].

2.2 Project Performance Measurement

The performance of a project for either public or private construction developments are traditionally measured by three common criteria, i.e., cost, time, and quality, as known as the “iron triangle”. According to, this conventional measure is simple, easy, and timely to measure project performance, so many projects consider using it as a best practice in demonstrating the specific benefit of their project. However, the iron triangle has overlooked other related elements of construction projects like societal needs and focused only on financial facets. For instance, a study conducted by Willar et al. [6] reported that in the context of the Indonesian construction industry, financial performance is the main criteria for measuring the performance when the sector attempts to achieve ISO 9001 certification. In fact, those authors (ibid 2016) found contradiction findings related to the correlation between certified ISO 9001 and financial performance.

The Organization developed an alternative criterion to measure project performance for Economic Co-operation and Development (OECD). The criterion is utilized to encompass both financial and social facets based on the element of relevance, efficiency, effectiveness, impact, and sustainability [12] and [13]. However, due to the uniqueness of the project environment, to attain the five elements become more difficult [14].

Since a project is complex in nature, performance measurement tools should be developed by considering the environment surrounding the projects. Willar et al. [6] contended that no single performance measurement system is suitable for every country, so each country must create their own measurement to assist the construction sector in assessing its current performance.

As a consequence of the need for comprehensive performance measurement at the project level, Ngacho & Das [13] proposed a comprehensive performance assessment model. The model covers both economic and social evaluation and comprises six factors of key performance indicators (KPIs). The model remains to contain the time, cost, and quality that represent economic aspects, while safety and site disputes capture social aspects. Another factor is the impact of the environment, which is self-explanatory.

This study adapted KPIs from the measurement model developed by Ngacho & Das [13] because the model provides appropriate results when assessing project performance in a developing country like in Kenya. Accordingly, this study selected five performance indices as follows:

- The right material is used for construction work.
- A harmonious relationship exists on the project site.
- There are no disputes due to frequent changes.
- Accidents are reported.
- There are no incidences of union trade agitations.

3. METHODOLOGY

This study used a case study approach because it is appropriate to understand complex phenomena, while it also has the potential for the researchers to retain the holistic and meaningful characteristic of real-life events [15]. A case study approach can bring to light the achievement or challenges presented to a project. Furthermore, numerous studies have adopted this approach by incorporating multiple sources and evidence [1].

The case studies were based on data collected through examining archives (i.e. organizations websites, and public documents), responses to the questionnaire, and formal interviews with project participants from the client, contractor, and subcontractor organizations. The questionnaire was paper-based and directly delivered to the selected project offices. All interviews were semi-structured and lasted around one hour.

Using a-point Likert scaling technique (1= strongly disagree; 2= disagree; 3= slightly disagree; 4= slightly agree; 5= agree; 6= strongly agree) this study measured the perception of the project participants on the project culture and project performance. The project culture framework developed by Zuo et al. [1] was used, while the project performance assessment was adopted from the work of Ngacho & Das [13].

Additionally, a type of interviewing as known as a well-informed traveler was applied when conducting interviews. This technique starts with the background information that has obtained beforehand and then put in place the research problem in the epicenter of the interview [16].

3.1. Data Collection

Table 1: Selected Projects

	Private road (Case A)	toll road (Case B)
Value	> US \$5 million	> US \$5 million
Location	East Java	East Java
Owner	Private company	State-owned enterprise
Contractor	State-owned enterprise	State-owned enterprise

Private toll road (Case A) and Government toll road (Case B) projects, which formed part of the National Strategic Projects/PSTN portfolio [17], were selected (see Table 1). The toll road projects are the highest priority for the Indonesian Government as 52 out of 101 transportation PSTN portfolios are of that type. The Government decided that toll road projects can be funded by either the Government or by private business entities due to the Government's budget limitations (Indonesia Toll Road Authority and BPJT, 2014, p. 9) [18].

The two projects are studied using a comparative method because:

- They were considered in the same industrial environment.
- They were in the same province.
- They were funded by different sectors.

The direct comparisons between the two projects facilitate to explore the following three points:

- The manifestation and impact of project culture during project execution phases.
- Whether the project cultures are different due to different funding models.
- Whether the difference in project culture results in different project performances.

The paper-based questionnaire was directly distributed to ten practitioners, who were actively undertaking the projects in both Case A and Case B. In total, sixteen questionnaires were returned after two weeks, i.e., nine and seven responses from Case A and Case B respectively, accounted for 80% response rate.

Additionally, seven key project personnel from the client, contractor, consultant, and supplier/subcontractor organizations agreed to participate in the interviews. They had at least five years of experience in the construction industry.

4. RESULTS

4.1. The radar chart diagram

A radar diagram of mean values was used to depict the difference of project culture and project performance between the case studies. Figure 1 reveals that in Case A, both goal-oriented and people-oriented culture dimensions have the highest mean values of 5.13, whereas in Case B, the highest mean value is for cooperative culture dimension (5.61). Figure 2 delineates that in Case A, reporting accidents has the highest mean values of 5.43, whereas in Case B, the highest mean value is for both right materials use and no trade union agitations (5.57).

Based on the two figures, the project culture in the Case A was generally stronger than in the Case B. Furthermore, the project performance of the Case A was also better than that of Case B. The results were followed by interviews with some key participants to investigate in-depth information related to the project culture, as well as the performance of the project.

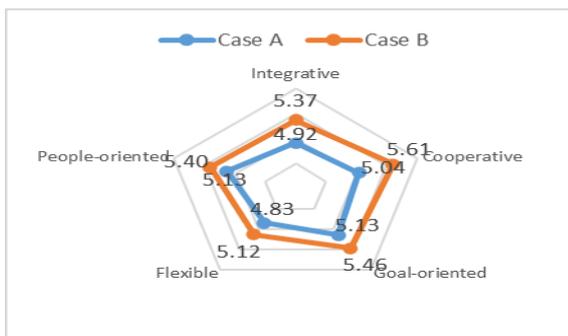


Figure 1. Project culture of the two cases

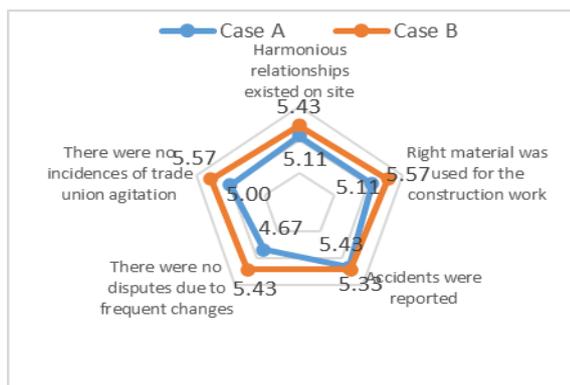


Figure 2. Project performance of the two cases

4.2. Case analysis

4.2.1. Case A

Based on the data from the mean values presented in Figure 1, the dominant project culture value of Case A was a combination of being goal-oriented and being people-oriented. It means that in Case A, taking a risk was allowed for project participants to finish their jobs. At the same time, empowering the project members was also the main concern.

There was a confirmation from interview data that project participants in Case A typically focused on how to finish the job, i.e., goal-oriented. One interviewee reveals that:

In this project, there is a set of procedures for undertaking the project that must be followed by project members. However, sometimes this project overrides some procedures due to the pressure of the target schedule.

The people-oriented value was also identified in Case A during interviews revealing that project members were given chances to contribute to the project's success. One participant reported that project member occasionally encountered difficulty when dealing with government officials:

Communication with the stated Government is ineffective since the number of government officials who organize technical issues related to the toll road projects is limited.

However, since the project members were accepted to initiative address the problems based on their background and experiences, any issues can be resolved at an early stage, as one interviewee recalled:

Conducting informal communication with a government official is useful to discuss any issues and then think a possible solution.

4.2.2. Case B

Examining the mean values of project culture in Case B reveals that being cooperative was the dominant cultural value (see Figure 1). It appears that project participants in Case B focused on collaboration and encouraged project members to actively include in accomplishing project goals.

There was evidence from the interview data that Case B provided a room for collaboration by accommodating any participants' problems and then gave assistance to handle those problems. The collaboration even extended down to the downstream supply chain (sub-contractors). One participant stated that:

We feel free to discuss any subcontractors problems and often provide assistance to accomplish their job.

5. DISCUSSION

There is an indication from the analysis of the case studies revealing that participants in Case A could take a risk to accomplish the work that contributed to improving project members capability of problem-solving. Accordingly, it is not surprising that project parties in Case A focused on the control of accidents. The findings support the constructs of being goal-oriented and people-oriented culture dimensions defined by Zuo et al. [1].

Meanwhile, in Case B, there is evidence that project parties put in place collaboration as their main concern. As a consequence, they always avoided the use of unspecified materials, as it could derail project goals. They also provided a room for effective discussing that led to preventing agitations from a trade union. Again, the findings align with the definition of a cooperative culture dimension developed by Zuo et al. [1]

Results from the case studies also demonstrated that there is no fixed dimension of culture in Indonesian toll road infrastructure projects. The results also showed a prevalence of goal-oriented, people-oriented, and cooperative dimensions (see Figure 1). Drawing from the findings, the project, which was more integrative, more cooperative, more goal-oriented, more people-oriented, and more flexible, has led to better project performance, as shown in Figure 2. The findings support the study of Coffey [8], suggesting that culture in the organization influences overall project success.

6. CONCLUSION

This research shows that the use of a mixed-method in the cross investigation of culture resulted in valuable contributions. This method could demonstrate the particular cultural dimensions that are expected to influence the performance of the project. This research is also relevant to the project management literature by using project culture framework of Zuo et al. [1], as it is useful for investigating project cultural dimensions in the toll road project context.

Due to the small sample size, the correlation between project culture and project performance is unable to draw. However, this study provided intriguing insights into the role of project culture in achieving project performance. Accordingly, future studies can apply a similar questionnaire survey to a much larger sample

to capture comprehensive empirical evidence related to culture and project performance at the project level.

ACKNOWLEDGMENT

This research was funded by the Ministry of Finance, the Republic of Indonesia for financial support under the LPDP (Indonesia Endowment Fund for Education) programs.

REFERENCES

- [1] Zuo J, Zillante G, Coffey V. Project culture in the Chinese construction industry: perceptions of contractors. *Constr Econ Build.* 2012;9(2):17–28.
- [2] Oxford Economic. Capital project and infrastructure spending outlook to 2025 [Internet]. PricewaterhouseCoopers; 2017. Available from: <https://www.pwc.com/gx/en/capital-projects-infrastructure/publications/cpi-outlook/assets/cpi-outlook-to-2025.pdf>
- [3] Parlina I. Stunted projects may lead to losses. *The Jakarta Post* [Internet]. 2016; Available from: <https://global-factiva-com.ezp01.library.qut.edu.au/ga/default.aspx>
- [4] Schwab K. The Global Competitiveness Report 2014-2015 [Internet]. World Economic Forum; 2016. Available from: http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf
- [5] Dharmayanti G, Coffey V, Trigunaryah B. The impact of organisational culture on project selection: what is the appropriate culture type? In: *Proceedings of the Third International Conference on Construction In Developing Countries (ICCIDC–III)*. 2012.
- [6] Willar D, Trigunaryah B, Coffey V. Organisational culture and quality management system implementation in Indonesian construction companies. *Eng Constr Archit Manag.* 2016;23(2):114–33.
- [7] Wiewiora A, Trigunaryah B, Murphy G, Coffey V. Organizational culture and willingness to share knowledge: A competing values perspective in Australian context. *Int J Proj Manag.* 2013;31(8):1163–74.
- [8] Coffey V. *Understanding organisational culture in the construction industry*. New York;London; Spon; 2010.
- [9] Thomas R, Marosszeky M, Karim K, Davis S, McGeorge D. *The importance of project culture*

- in achieving quality outcomes in construction. In: Proceedings IGLC. 2002. p. 1–13.
- [10] Cameron KS, Quinn RE. *Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework*. Third;3;3r. San Francisco, CA: Jossey-Bass; 2011.
- [11] Agustiawan Y, Coffey V, Lamari F. Improving relationship quality between main contractors and sub-contractors in Indonesian Infrastructure Projects. In: MATEC Web of Conferences. EDP Sciences; 2019. p. 2024.
- [12] Ika LA, Diallo A, Thuillier D. Critical success factors for World Bank projects: An empirical investigation. *Int J Proj Manag.* 2012;30(1):105–16.
- [13] Ngacho C, Das D. A performance evaluation framework of development projects: An empirical study of Constituency Development Fund (CDF) construction projects in Kenya. *Int J Proj Manag.* 2014;32(3):492–507.
- [14] Chianca T. The OECD/DAC criteria for international development evaluations: An assessment and ideas for improvement. *J Multidiscip Eval.* 2008;5(9):41–51.
- [15] Yin RK. *Case study research: Design and Methods*. SAGE publications. Thousand oaks. 2009;
- [16] Qoyyimah U. *EFL teachers' professional dilemmas with moral curriculum reform in Indonesia*. Queensland University of Technology; 2015.
- [17] Indonesian Government. PERATURAN PRESIDEN NO 3/2016 [Internet]. Jakarta: Komite Percepatan Penyediaan Infrastruktur Prioritas; 2016. Available from: <https://kppip.go.id/peraturan-terkait/>
- [18] Indonesia Toll Road Authority, BPJT. *Peluang investasi jalan tol di Indonesia* [Internet]. BPJT; 2014. Available from: <http://bpjt.pu.go.id/uploads/investment/62/a0a06d2976927f2cbe9c168e8253a33c.pdf>