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# Leadership Profiles of Successful Project Managers in Indonesia

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***Abstract:***

***Purpose:*** This study examines the possible relationship between leadership competency and project performance within an Indonesia project-based organization setting. Three mediating variables are considered in the analysis: industry type, project complexity, and project strategic value.

***Design/methodology/approach:*** A cross-sectional quantitative survey was administered to empirically evaluate the theoretical model. The targeted population was projected in Indonesia, and a snowball sampling method was utilized. Out of 183 respondents, 81 responded to the invitation, which accounts for a 44.2% response rate. The data was analyzed by using a sub-group qualitative analysis in conjunction with the crisp-set qualitative comparative analysis (csQCA). The sub-group qualitative analysis was presented in the leadership competency maps while the csQCA was reported in configuration tables.

***Findings:*** It was found that the leadership profiles of more and less successful project managers differ, which suggests a positive association between competency and performance. More importantly, the evidence suggests that both industry type and complexity moderate the relationship. The different patterns of leadership profiles for successful managers in three types of industries—construction, information and communication technology (ICT), and consultancy—and under different project complexity levels were observed. No substantial evidence was observed for the moderating effect of the project strategic value. It was also found from the sub-group analyses that across contexts, three attributes of leadership differently influence performance - IQ seems to be more prominent than EQ. The csQCA provides additional evidence on the persistence of IQ in many 'positive' case configurations which are related to superior performance. The csQCA also reports different leadership competency configurations across contexts. Generally, the results agree with the findings of past similar studies in different countries. However, some variations were found at a more detailed level, which may be due to cultural differences.

***Research limitations/implications:*** The study further extends the existing body of knowledge on project leadership, as it provides a new understanding on leadership profile and its efficacy within different contexts of project-based organizations in Indonesia—a case of a developing country. The utilization of both sub-group qualitative analysis and csQCA offers complementary analytical perspectives within a limited sample size.

***Practical implications:*** It exposes project practitioners to different leadership profiles that lead to successful and unsuccessful projects within different settings.

***Originality/value:*** This study provides an original work (theoretical and empirical) on a leadership area of project management within a specific context of a developing country.

***Keywords:*** leadership, performance, Indonesia, project managers, moderation

***To cite this article:***

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## 1. Introduction

Project-based organizations such as information and communication technology (ICT) firms, construction firms, and consultancy firms have been experiencing increasing business competition. Such organizations are characterized by their unique business process by undertaking projects on behalf of their (external) clients. By carrying out projects for clients, project-based firms are expected to deliver valuable services and products and get paid by clients. Project-based organizations generate revenues by undertaking projects for their clients. There is a very clear linkage between project management performance and the wellbeing of the parent executing organizations, and numerous studies have been conducted on the topic.

A notable body of knowledge has emerged from studies on the possible contributions of project managers toward project performance and ultimately organizational success. Many empirical studies have been conducted from the perspective of project managers as individuals. Those studies generally rest on similar basic assumptions, including the following: (a) projects are complex and challenging to manage, and thus, project managers require unique skillsets and competency; (2) in most occasions, project managers do not possess adequate formal managerial authority to effectively manage the projects; (3) project managers should be able to exercise roles beyond management, such as leadership roles. A more detailed elaboration is presented in Section 2.1.

Studies have been conducted within the scope of project leadership. Generally, such studies can be viewed as an extension of leadership works. Theories on leadership have evolved over time. The more recent leadership theory purports two underlying conjectures: (a) leadership attributes comprise multiple attributes which are often called competency; (b) the utility of leadership competency is contextual. Empirical works have been conducted which support the theories within both general management and a specific context of project management. The positive association between leadership attributes and project outcome is evident (Anantatmula, 2010; Geoghegan & Dulewicz, 2008). More refined works which introduce contextual variables within a contingency perspective have also been conducted (e.g., Nixon, Harrington & Parker, 2012).

Despite the existing body of knowledge, there are still uncovered aspects. Most of the past studies on project leadership which contribute to the works of literature seem to emphasize on organizations that operate within the Western, more developed society. In leadership studies, it has been suggested, rather conclusively, that culture is an essential aspect. Insights from a leadership investigation results within a particular cultural setting cannot be directly transferable to other settings. Similar studies which focus on Eastern developing countries are limited. In this regard, further project leadership studies focusing on Eastern and developing countries are deemed necessary. This study explicitly investigates project-based organizations in Indonesia, and to some extent, it is an extension of studies conducted by (Müller & Turner, 2007, 2010), as it replicates and extends the studies into a specific Asia context of Indonesia.

Within the Indonesia setting, this study aims to (a) identify leadership dimensions and attributes which potentially affect project success; (b) identify leadership profiles (i.e., combination of dimensions) that lead to successful and less successful projects for various contexts (i.e., industry type, project complexity level, and project strategic value); and (c) compare the results with those in developed countries.

This study offers two classes of potential contributions. From an academic perspective, it further extends the existing body of knowledge on project leadership, as it provides a new understanding on leadership profile and its efficacy within different contexts of project-based organizations in Indonesia—a case of a developing country. From a practical perspective, it exposes project practitioners to different leadership profiles that lead to successful and unsuccessful projects within different settings.

## 2. Leadership and Project

### 2.1. The Unique Challenges to Managing Projects

From a management perspective, projects provide extra challenges to the involved persons because of its unique features. Projects are characterized by a unique and temporary nature (PMI, 2017). Uniqueness in the project, from a procedural perspective, implies that a project involves a set of once-off activities that lead to a unique process; these activities are always chaotic and never reach a stable or routine condition; accordingly, process standardization is virtually impossible. From the deliverable perspective, project uniqueness implies that the outputs are one-of-its-kind. Moreover, it implies that non-standardized outputs should be expected. Either way, the lack of standardization in process and deliverables may present additional burdens to project managers. Furthermore, issues or problems that arise during a project lifecycle are mostly resolved based on the judgment and decisions of project managers since there are limited standards or guidelines, if any that can be referred. In addition, projects are becoming more complex. Complexity may arise from various aspects, such as the lack of clarity in project requirements from clients, uncertainty in methods of executing projects, unusual size or scale (too large or too small) of projects, and the interdependency or interrelationship among elements within a project.

Project management tasks are in contrast to, for instance, functional management tasks that mostly involve routine problems in an operation management setting. Because of the routine or stable process, operation managers can depend on developed standardized procedures to address most issues and problems. Functional managers are required to make different managerial decisions only for fewer problems that are special and not covered by standardized protocols, i.e., management by exception. Accordingly, operation managers and functional managers might encounter less significant challenges than their counterparts in project management (Mantel, Meredith, Shafer & Sutton, 2008). Project managers daily deal with unique managerial process, because "everything is an exception." Since almost every problem is considered unique, project managers need to allocate a significant portion of their valuable time for resolving problems, which otherwise, can be handled by standard protocols should the problem arise within operation management setting.

Because of the temporary nature of projects, managers would also find themselves in less-than-favorable conditions. Temporary means that projects are performed in a time-constrained fashion to finish before the due date. Project manages typically encounter schedule/time pressure. Consequently, in many occasions, they need to rush crucial decisions without enough time and information to contemplate and deliberate. Project managers are also required to inspire their team members–and perhaps other stakeholders–to do the same.

Temporariness also results in the non-permanent nature of the project organizations. As stated by Tuckman (1965) and Tuckman and Jensen (1977), the project team undergoes various initial stages of development before reaching the "performing" state. Initial project states (e.g., storming and norming stages) would require the team to settle down. Challenges encountered during initial project states are exacerbated by typical project team compositions, which comprise individuals from multiple disciplines. Moreover, instability is a common managerial/leadership issue in projects. It is therefore a responsibility of project managers to address team dynamics, motivate members, and accelerate the process of achieving the high-performance state. The chief project managers need to be flexible and adaptable to make the team work. They should be able to employ various means beyond the formal authority to maximize the performance of the team.

Additional challenges have been observed especially for project managers who work within a functional or weak matrix organizational structure (Cleland, 1995; Mantel et al., 2008). In such cases, project managers are characterized by their lack of formal authority, and thus do not have enough managerial leverages (e.g., reward and punishment system) to effectively manage projects. In some occasions, project managers need to "beg" functional managers for decent team members and other required resources to initiate projects.

Dealing with multiple stakeholders with different, and most often, conflicting interests is another difficulty. Ineffective management of different interests can lead to unnecessary conflicts among project team members and other stakeholders, which potentially hamper team performance. Considering conflict resolution, project managers are required to be able to work beyond their formal authority, to negotiate, to persuade, and to bring all project team members and stakeholders together toward common goals and lead the projects.

From the above illustrations, it is obvious that project managers play a central role for superior project performance (Pinto & Kharbanda, 1995). This is consistent with conventional belief that suggests the importance of project managers in realizing organizational (parent) success (Toney, 1997). A strong indication is demonstrated by the significant challenges encountered by project managers from various sources. Ironically, such managers need to function beyond their formal title (i.e., manager) by actively pursuing and implementing a more substantial role of leadership.

### 2.2. Project Leadership vs. Project Performance

The above elaboration has indicated that project managers should operate beyond the formal authority of managing projects. Effective project managers do not merely administer projects. Moreover, an empirical study in the construction industry by Edum-Fotwe and McCaffer (2000) found that traditional engineering skillsets are no longer sufficient for engineering project management. Project managers, despite their title, should perform more than the classical management definition of planning, organizing, executing, and controlling. House, Javidan, Hanges, and Dorfman (2002, page 5) defines organizational leadership as "the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organizations of which they are members" (page 5). Consistent with this definition, project leadership is viewed in this study as the ability of project managers to engage, motivate, persuade, and influence project members and other stakeholders toward the committed project goals.

Through effective leadership, which extends beyond the technical/administrative/managerial roles of project managers, the intricacy and complexity of project problems can be detected and navigated. Highly qualified leadership can drive the project team and stakeholder to achieve the project goals. Three significant project leadership-related skills according to Edum-Fotwe and McCaffer (2000) are vision and direction, people alignment for co-operation, and motivation and inspiration. This, in return, would contribute to the orchestrated efforts of the project managers to deliver values to clients and parent organizations.

Considering the crucial role of leaders in business contexts, various leadership theories have been developed. Several scholars have also conducted studies pertaining to leadership. Leadership theories that are rooted in different philosophical grounds have been developed and have evolved for many years (Bolden, Gosling, Marturano & Dennison, 2003). Müller, Sankaran, and Packendorff (2017) asserted the balanced leadership between vertical leadership and horizontal leadership in organizational project management. Vertical leadership explains the person-centric leadership (Keegan & den Hartog, 2004) such as senior or project managers. Horizontal leadership is a typical of shared leadership (within project teams) that emerges from the teams or individuals in a team that complements the vertical leader. Empirical studies have also been conducted to observe leadership attributes, and their relationship with other variables such as performance. In addition, studies which highlight variability in contexts, such as cultures and types of industry, have also conducted (e.g., den Hartog, House, Hanges, Dorfman, Ruiz-Quintana & GLOBE Associates., 1999; House, Hanges, Ruiz-Quintanilla, Dorfman, Javidan, Dickson et al., 1999; Müller & Turner, 2007).

Parallel studies within a specific project management setting have been conducted; however, they are not extensive. Anantatmula (2010), for instance, found seven people-related factors of leadership which were categorized into three classes: "givens" (i.e., define roles and processes, create communication clarity); "means" (i.e., communicate expectations, facilitate support, consistent process); and "ends" (i.e., manage outcomes, establish trust). Under the context of sustainable construction project, Tabassi, Roufechaei, Ramli, Bakar, Ismail and Pakir (2016) added the "transformational leadership qualities" (i.e. develops followers into leaders, inspire followers to go beyond their interest) from Daft and Pirola-Merlo (2009) to the leadership competencies of "intellectual competence" and "managerial competence" from Dulewicz & Higgs (2005). DuBois, Koch, Hanlon, Nyatuga and Kerr (2015) highlighted that the leader not only need a technical knowledge but also the positive values, high level of ethics and morality, also the capabilities to lead from the heart.

Some previous empirical studies in different contexts have been conducted to see the relationship between the leadership competencies and performance. Crawford (2005) carried out a quantitative study with respondents of project practitioners from three countries (US, UK, and Australia) in attempt to establish a relationship between

project management competency standard and performance. No evidence of a relationship between widely applied standards of project management competency and performance was found. Geoghegan and Dulewicz (2008) in a similar study examined the possible relationship between project leadership competency and performance in a financial services company in the UK. By using collected 52 project data points, it was found that eight different dimensions of project leadership competencies were statistically related to two out of three dimensions of project performance. Podgórska and Pichlak (2019) analyzed the relationship between the leadership competencies of Polish project leader and the project success using project type as the moderating influence. From the surveyed respondents of 102 project managers and 11 senior project managers, the result pinpointed that the project success was influenced by certain leadership competencies, depending on the type of the project. Thus, project manager should be flexible and must be able to adopt the appropriate leadership style for a typical project.

While, to some extents, current findings are useful for non-Western and non-developed countries contexts, cross-cultural studies show that the results from one culture may not be readily transferable into different cultures. A landmark study by Hofstede (1984) and subsequent studies suggest markedly different cultural dimensions across different countries. An extension of the cross-cultural studies on a possible theoretical and empirical linkage between culture and leadership found the influence of culture on leadership theory. The culturally-determined Implicit leadership theory (CLT) suggests a theoretical ground for the subject (i.e., Project GLOBE; House et al., 1999). Among other interesting findings, the Project GLOBE, which covered more than 60 nations and involved thousands of mid-management respondents of general management, reported that perceptions of effective leadership across different cultures vary significantly for four of six leadership dimensions: "team-oriented," "humane," "participative," "autonomous" (den Hartog et al., 1999; House et al., 1999, 2002).

## 3. Theoretical Model

Figure 1 depicts the proposed theoretical model. $H_1$ purports a direct linkage between leadership competency and project performance. $H_2$ to $H_4$ assert the moderated relationship. The association is supposed to be moderated by the following project contexts: industry type ($Z_1$), project complexity ($Z_2$), and project strategic values ($Z_3$). The individual hypotheses are described as follow.

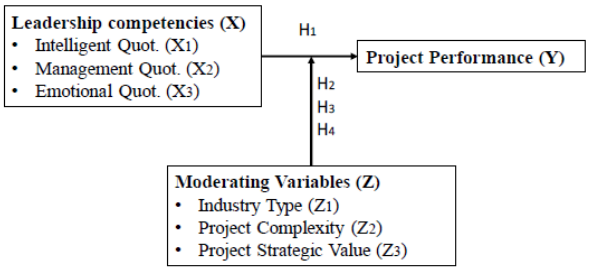



Figure 1. The Theoretical Model

### 3.1. Leadership Competency and Project Performance

As elaborated earlier in Section 2.1, project managers play a crucial role in project success. Because of the unique nature of projects, project managers encounter various unique challenges. It is argued that those challenges cannot be effectively addressed by formal authority of administration/management. Successful project managers actively pursue and implement leadership roles within a project. Leadership competency can help in resolving the challenges of project managers such as the lack of formal authority and opting for non-formal approaches, negotiating with multiple stakeholders with different interests, engaging members on team dynamics, and dealing with resources constraints. Leadership competency would supplement the administrative/managerial roles of project managers. It provides additional leverage for project managers to direct project members and influence project stakeholders to deliver project objectives. Accordingly, project leadership competency would have a positive impact on project performance.

*$H_1$: There is a positive association between leadership competency and project performance*

### 3.2. The Moderating Variables

In principle, it is speculated that challenges for project managers vary with project attributes or contexts. This leads to different requirements for leadership competency. Project performance is, therefore, a combined effect of leadership competency and the context. In other words, the relationship between leadership competency and project performance is moderated by a specific context. The moderation concept of project competency has been examined in some studies. Dulewicz and Higgs (2005) examined projects of organizational changes and found that a specific leadership style fits with a unique type of projects. Müller and Turner (2010) extended the study to cover other types of projects. Crawford, Hobbs and Turner (2005) developed a project classification basis for selecting appropriate competency. The following passages describe the moderation hypotheses for this study.

#### 3.2.1. Industry Type ($Z_1$)

Industry type is chosen as a moderating variable because of the following justifications. Every industry has its unique characteristics, which include attributes of its people, process, and technology. From the people-wise perspective, project stakeholders in construction, ICT, and consultancy sectors would have distinctive education backgrounds, mindsets, and cultures. Construction industry mainly employs engineers, who would employ their unique perspectives and attitudes when carrying out projects. Consultancy, in contrast, involve people with the more diverse backgrounds formed from different cultures. Furthermore, from the process standpoint, different sectors observe different approaches. The project methodology (i.e., waterfall vs. agile) and engagement strategy of stakeholders would vary across the different industries. Consequently, specific project challenges would emerge within an industry setting because of unique features of the specific industry. Project managers encounter challenges which vary across different industry types, and accordingly, a different set of leadership competency profiles is required to address them effectively.

Hence, $H_2$ is formulated as follows:

*$H_2$: The positive association between leadership competency and project performance is moderated by industry type.*

#### 3.2.2. Project Complexity ($Z_2$)

Complexity reflects a more general measure of project challenges. Complexity is viewed as a powerful analytical lens to investigate project challenges (Geraldi, Maylor & Williams, 2011; Hartono, 2018; Maylor, Vidgen & Carver, 2008). Similar to "industry type," the challenges to be addressed by a project manager can vary with project complexity level. For instance, in an ICT setting, a software development project may be considered complex because of its uncertainty in goals. The project may involve intangible products, less specified objectives, and evolving requirement from the clients. Such attributes create extra challenges for the project managers and team. Thus, a highly competent leader is required to effectively address projects with such high complexity. In contrast, projects with a lower level of complexity would encounter fewer challenges. In such a case, the leadership requirement is less demanding.

*$H_3$: The positive association between leadership competency and project performance is moderated by project complexity.*

#### 3.2.3. Project Strategic Value ($Z_3$)

It is argued that project strategic value affects the way an organization sets its priority in committing resources for completing projects. More resources would be committed to projects with high strategic value; in addition, the project managers would face higher expectations and demands to deliver the project successfully. This creates an extra psychological burden to the project manager. (Müller & Turner, 2007) asserted that projects with higher strategic values imply higher complexity; hence, stronger leadership competency is required to address such projects. In contrast, non-strategic projects would create less pressure for the managers. Less complexity level is also expected from such projects; hence, lower leadership competency is required.

The hypothesis is formulated as follows:

*$H_4$: The positive association between leadership competency and project performance is moderated by project strategic value.*

### 3.3. Variables and Dimensions (Final Version)

Table 1 shows the final version of the key variables and dimensions pertinent to this study. The leadership dimensions questionnaire (LDQ) published by Dulewicz and Higgs (2004) was adopted and translated into Bahasa Indonesia. The LDQ comprises three competencies: intelligence quotient (IQ), management quotient (MQ), and emotional quotient (EQ). The operational definition of respective dimensions can be found in the original work by Dulewicz and Higgs (2004). In this study, the 15 sub-competencies (or attributes) in the original LDQ are regrouped into eight based on an exploratory factor analysis by using Indonesia empirical data.

Project complexity as a moderating variable is defined as the challenges to be encountered by project managers when leading and administering a particular project (Hartono, 2018). Project complexity encompasses a broad concept, which can be classified into four elements: size, interdependency, uncertainty in methods, and uncertainty in goals (Hartono, 2018). In this study, "size" did not pass validity and reliability evaluations, and hence, this complexity attribute is excluded from subsequent analysis. In addition, a confirmatory factor analysis (not shown here) suggests that two other complexity attributes in the original classification (i.e. uncertainty in methods' and 'interdependency' are to be grouped into one attribute. Hence, the original four elements were eventually reclassified into two attributes: (1) uncertainty in goals and (2) uncertainty in methods and interdependency.

Project performance as a dependent variable reflects project delivery against a set of standards. In this study, items developed by Müller and Turner (2007) were adopted. The final version consists of twelve items.

| Code | Competency (Dimensions) | Attributes (Sub-Dimensions) | No. of Items | References | Cronbach's α* |
|---|---|---|---|---|---|
| **Leadership Competencies (Independent Variable, X)** | | | | | |
| X.1 | Intelligence quotient (IQ) | 1. Critical analysis and self-vision<br>2. Strategic perspective | 11 | LDQ (Dulewicz & Higgs, 2004) | 0.913 (excellent) |
| X.2 | Managerial quotient (MQ) | 1. Communication, managing resources, and achieving<br>2. Developing team<br>3. Empowering team | 11 | LDQ (Dulewicz & Higgs, 2004) | 0.831 (good) |
| X.3 | Emotional quotient (EQ) | 1. Self-awareness and intuitiveness<br>2. Sensitivity<br>3. Influence (including motivation and conscientiousness) | 11 | LDQ (Dulewicz & Higgs, 2004) | 0.776 (acceptable) |
| **Moderating Variables** | | | | | |
| Z.1 | Industry type | ICT, construction, or consultancy | 1 | (Crawford et al., 2005) | N/A |
| Z.2 | Project complexity | 1. Uncertainty in goals<br>2. Uncertainty in methods and interdependency | 6 | (Hartono, 2018) | 0.543 (poor) |
| Z.3 | Project strategic value | Mandatory, renewal, or repositioning | 1 | (Crawford et al., 2005) | N/A |
| **Project Performance (Dependent Variable, Y)** | | | | | |
| Y | Project performance | Meeting purpose, stakeholders' satisfaction, requirement, or project overall performance | 12 | (Müller & Turner, 2007) | 0.863 (good) |

Note: N/A denotes not available; *George and Mallery (2003) provided the following rules of thumb for reliability scores: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable" (George and Mallery (2003: page 231).

Table 1. Key Variables and Dimensions (Final Version)

## 4. Research Method

A standard procedure is followed in this study for a self-administered cross-sectional survey. Prior to the data collection, an instrument to measure key variables was developed. The instrument development activity comprises the following stages: development of a variable-to-items matrix, items development or adoption, items selection, and items translation (in the case of adoption). The early version of the instrument draft was then evaluated for face validity through a qualitative pilot study. Ten respondents were involved in the iterative, serial process of the qualitative pilot study. Another instrument assessment was performed for construct validity and inter-item reliability. The collected data from the primary survey was utilized to quantitatively compute construct validity and inter-item reliability.

The unit of analysis of the current study is "project entity" with a targeted population of projects from the ICT, construction industry, or consultancy firms in Indonesia. The snowball sampling method is chosen because of the difficulty in identifying the sampling frame for the more rigorous stratified random sampling method. The targeted respondents were individuals who were deemed knowledgeable at the observed projects. Using emails, 78 softcopy version of instrument kits, each consisting of a cover letter and an instrument, were distributed to potential respondents. In addition, 105 packages were personally delivered to the prospective respondents. Out of 183 respondents, 81 responded to the invitation, accounting for a 44.2% response rate.

Each respondent was inquired for past information on a recent project by responding to the prepared instrument. The data was then coded, screened, and cleaned before being used for assessing construct validity and inter-item reliability. The data preparation suggested that 14 respondents were considered ineligible because of their limited experience (less than two years), and accordingly, the associated data was omitted for the subsequent analysis. Furthermore, four additional datasets were excluded because of missing data.

An exploratory factor analysis was carried out for variables with multiple items to check whether the empirical data would confirm the classification of the theoretically derived items. When necessary, items were reclassified with reference to the exploratory factor analysis result.

Prior to the primary statistical analysis, the aggregate scores for critical variables which consist of multiple items were computed by a summated scale method. The method assumes a uniform weighting factor of every item under the same sub-dimension, i.e., a simple averaging operation was performed. A confirmatory factor analysis was performed to evaluate the theoretically derived classification of items. The classification was revised accordingly to reflect empirical data. For instance, for the IQ, "critical analysis" and "vision"—two distinct sub-dimensions in the original LDQ—were combined into a single sub-dimension.

The primary sub-group statistical analysis was conducted to develop and evaluate a leadership competency map for two groups of datasets: projects with higher and lower performances. For each group, a map in the form of a table which reflects a leadership competency profile was constructed. To facilitate a moderation analysis, the map also depicts the refined leadership profiles for specific cases that reflect different contexts. The contexts, which are consistent with the theoretical model, are industry type, project complexity, and strategic value. The hypotheses assessment was mostly performed by sub-group qualitative analysis, including observation of certain patterns and identification of similarities and differences. Hence, the result would be more descriptive in nature.

To provide an additional perspective within the limited sample size setting, the crisp-set qualitative comparative (csQCA) was also utilized. The csQCA provides a systematic and objective approach to investigate *cases* of a limited sample size (Zschoch, 2011). Through csQCA, each observed project leadership case is coded into a combination of conditions (i.e. independent variables in a classical sense, the leadership competency dimensions) and an outcome (i.e. a dependent variable, the project performance). All coded cases are then analyzed (within-subject) by means of Boolean Algebra computations. Certain leadership configurations which are related to project superior performance (a positive configuration) would emerge from the analysis. The csQCA could be repeated to identify specific configurations with low project performance (a negative configuration).

The csQCA was chosen as a complementary analytical approach due to the following reasons. Firstly, the csQCA works very well with a few cases. In fact, csQCA was originally developed as a method to complement a pure qualitative analysis involving few cases with the rigor of a quantitative protocol (Ragin, 2014).

Secondly, the csQCA can analyze cases in a holistic (Gestalt) fashion – and it fits with the current hypotheses being developed. Gestalt views the existence of interrelationships among independent variables on the theoretical model (Miller, 1981; Venkatraman, 1989). It is suggested in Gestalt that the interrelationship is reflected by a pattern / combination / configuration / profile of the independent variables, and such a configuration determines outcomes. As such, instead of observing the resultant of individual contributions of independent variables toward performance (Ragin, 2006), the csQCA identifies specific configurations of project conditions. In a csQCA sense, a configuration of the presence or absence of conditions would determine the outcomes – a concept which perfectly fits with the Gestalt principle and the observed hypotheses.

Thirdly, the quantitative Boolean algorithm also facilitates a more precise, and consistent case analysis. It enables the researcher to focus on building within-subject case configurations which is, whenever possible, solidly grounded to domain-specific theories and substantive knowledge in an interactive manner. The csQCA helps researchers to systematically and logically compare groups of similar cases (i.e. configurations) by means of a repertoire of Boolean logics principles such as necessary and sufficient conditions, prime implicants, counterfactual analysis, and De Morgan's Law.

This study utilized a crisp-set analysis (instead of using other QCA variants of fuzzy-set or multiple-set analysis) at the dimension level (instead of sub-dimension level) to avoid combinatorial difficulties. The current, immature stage of substantive knowledge in project leadership competency would result in difficulty to handle the analytical complexity of fuzzy-set or multiple-set analysis. Moreover, the result of csQCA at the dimension-level would offer a unique, complementary perspective if compared to those of sub-group analysis which was performed at the sub-dimension level.

In this study, a standard protocol of csQCA was employed with the assistance of a software package (developed by Ragin and Davey, 2016) as follows. Two major analyses were carried out to evaluate both high performers (Y) and low performers (~Y). By utilizing the whole datasets, the following analytical steps were respectively performed for both Y and ~Y (Ragin, 2017): (1) defining the boundary of research space (i.e. determining the case conditions (or independent variables, in this case the three leadership types of IQ, MQ, and EQ); (2) developing the truth table by using the Quine-McCluskey algorithm embedded within the software package; (3) observing the distribution of cases (frequency threshold = 2 cases) and consistency of evidence (threshold 0.75) (Ragin, 2017). Any case configurations which do not meet or exceed the frequency threshold were excluded from subsequent analysis. Similarly, any configurations which meet or exceed the consistency threshold were assigned with the [1] code for the performance; otherwise it was assigned with [0]. (3) carrying out the configuration minimization to find the simpler logical form of configurations. Three types of analysis solutions emerge from the computation, namely: parsimony, intermediate, and complex. As mentioned earlier, the limited substantive project leadership knowledge at this level of details hinders the accurate development of parsimonious and intermediate solutions, hence complex solutions were consulted.

The similar protocol was repeated by using a subset of data pertinent to a specific moderation analysis, namely: 'industry type' (three sub-groups) and 'strategic importance (three sub-groups). Such a procedure was followed due to the nature of the data type (i.e. nominal/categorical, with multiple responses). For 'project complexity', the original datasets (which was of ordinal type) were coded into binary numbers and the whole datasets were used for csQCA.

Whenever possible, the results of this study were also compared with those of Muller and Turner (2010). It should be noted that there are slight differences between the research method utilized by Muller and Turner (2010) and that utilized in this study.

# 5. Results and Discussion

## 5.1. Validity and Reliability Tests

### 5.1.1. Validity Test

The validity test was performed to ensure that the questionnaire items measure a concept that they purport to measure based on the selected theory. A two-stage evaluation was carried out: qualitative assessment and quantitative evaluation, as described below.

The qualitative assessment was conducted using a pilot study during the instrument development phase. The evaluation mainly highlighted face validity. Pilot respondents were required to provide feedbacks which include unfamiliar terminologies, possible typographical errors, the logical flow of the questions, and sensitive data. The draft of the instrument was iteratively updated and revised to address the pilot respondents' concerns to the point of reaching a saturation point.

A quantitative assessment was performed using the returned data from the main study. It mainly evaluated the construct validity, which consists of convergent and discriminant validities. Convergent validity suggests that items under the same dimension should conceptually converge as reflected by statistically significant correlation values (i.e., intra-item correlation). Discriminant validity, on the other hand, refers to the notion that items which belong to different dimensions should be distinguished conceptually as reflected by low, insignificant inter-item correlations.

Using Spearman non-parametric tests, both intra- and inter-correlation values were tested. In general, the study found high intra-correlation values among items and lower inter-correlations (not shown here), which suggests good construct validity. For the variables of leadership competency (X) and performance (Y), the result indicated good construct validity. For the moderating variable, only project complexity (Z.4) which comprises multiple items could be tested for validity. Five items from the original variable Z.4 were removed since the intra-correlations were found to be not statistically significant, suggesting a poor convergent validity.

### 5.1.2. Reliability Test

A reliability test was performed to assess the consistency of the instrument. For the reported study, the inter-item reliability was evaluated by computing the Cronbach's alpha values of respective dimensions. Table 1 (last column) shows a variety of results: an excellent to acceptable reliability for dimensions of the independent variable (leadership competencies, X), a poor reliability for the moderating variable (project complexity, $Z_4$), and a good reliability for the dependent variable (performance, Y).

## 5.2. Outlier Detection

A test was carried out to detect the existence of outliers by comparing the Mahalanobis distance value and the chi-square value, which serves as a threshold. If the maximum Mahalanobis distance is larger than the chi-square value, the dataset is considered as an outlier and deserves further observation (Hair, Black, Babin, Anderson & Tatham, 2006). The largest calculated Mahalanobis distance is 61 with a threshold value of 79.082 (n = 63; significance level (alpha) = 0.05). Hence, no outlier was detected within the datasets.

## 5.3. Profiles of Respondents

Table 2 depicts the current designation of the respondents. The majority of the respondents (57% of the respondents) are project managers, and 8% of the respondents are senior managers. Table 3 indicates the working experience of the respondents, with the minimum of two years in project-related works. Around one-third has six to ten years of experience, and 16% reports more than ten years of industry experience.

Table 4 reports the type of industries where the respondents work. Most of the respondents (48%) reported the construction industry while 32% indicated an ICT domain. The rest of the respondents reported working in the consultancy industry. The profile provides a relatively diverse background which is useful for the analysis.

From the reported profiles, it can be summarized that albeit the small sample size, the sample of respondents sufficiently represents the targeted population of project management practitioners in Indonesia and covers relatively diverse types of project-based industries.

| Positions | Total | % |
|---|---|---|
| Project manager | 36 | 57 |
| CEO and COO | 5 | 8 |
| Field engineers | 4 | 6 |
| Senior project manager | 3 | 5 |
| Planning engineer | 2 | 3 |
| Project engineer | 2 | 3 |
| Others | 11 | 17 |
| TOTAL | 63 | 100 |

Table 2. Current Designations of Respondents

| Duration | Total | % |
|---|---|---|
| 2–5 years | 30 | 48 |
| 6–10 years | 23 | 37 |
| More than 10 years | 10 | 16 |
| TOTAL | 63 | 100 |

Table 3. Working Experience of Respondents

| Industry Type | Total | % |
|---|---|---|
| Information and communication technology | 20 | 32 |
| Construction | 30 | 48 |
| Consultancy | 13 | 20 |
| TOTAL | 63 | 100 |

Table 4. Industry Type

### 5.4. Leadership Competency Map and Configurational Table

To develop a leadership competency profile map, two sub-group analytical steps were carried out: aggregation and classification. First, aggregate scores of respective key variables were computed by utilizing a (non-weighted) summated scale procedure (Hair et al., 2006). This was done by calculating the average value of the Likert response values for the respective variables.

Second, the aggregated scores were classified by the following specific rules. The "performance" variable was categorized into two groups: higher and lower performance, by using the median value as a threshold. Furthermore, scores of leadership competency were classified into three distinct levels, namely low, medium, and high, by using 33% and 66% percentiles as limits. For each class, the number of cases for the three levels was then observed, and the most prevalent case (i.e., having the highest case frequency among the three levels of high, medium, and low) was reported to represent the overall score of a specific leadership competency for a given context. For instance, for the case of "more successful projects," considering strategic perspective in a context of industry type, ICT vs. IQ, the data suggests that the proportions of "low," "medium," and "high" groups are 0%, 22%, 78%, respectively. This indicates that the "high" group which comprises respondents with high competency in strategic perspective is the most prevalent for the observed context. The "high" competency was then reported on the map.

Table 5 and Table 6 depict the leadership profile map for more successful projects with the whole datasets (column [3]), industry type (columns [4], [5], and [6]), complexity level (columns [7], [8], and [9]), and strategic value

(columns [10], [11], and [12]) as moderating variables respectively. In contrast, Table 7 and Table 8 indicate the profile of less successful projects.

| Dimension | Sub-Dimension | Overall | Industry Type | | | Complexity | | |
|---|---|---|---|---|---|---|---|---|
| | | | ICT | Construction | Consultancy | Low | Med | Hi |
| [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] |
| *Number of cases* | | *32* | *9* | *16* | *7* | *9* | *10* | *13* |
| IQ | Critical analysis and self-vision | Hi | Hi | Med | Hi | Med | Med | Hi |
| | Strategic perspective | Hi | Hi | Med | Hi | Hi | Med | Hi |
| MQ | Communication, managing resources, and achieving | Hi | Hi | Med | Hi | Hi | Med | Hi |
| | Developing team | Med | Med | Med | Med | Med | Med | Hi |
| | Empowering team | Hi | Hi | Hi | Hi | Hi | Hi | Hi |
| EQ | Self-awareness and intuitiveness | Hi | Hi | Med | Hi | Low | Med | Hi |
| | Sensitivity | Hi | Med | Med | Med | Hi | Med | Hi |
| | Influence | Hi | Hi | Med | Hi | Hi | Med | Hi |

Note: Hi for high, Med for medium, Low for low level

Table 5. Leadership Competency Map for More Successful Projects (Industry Type, Complexity as Moderating Variables)

| Dimension | Sub-Dimension | Overall | Strategic Value | | |
|---|---|---|---|---|---|
| | | | Mandatory | Renewal | Repositioning |
| [1] | [2] | [3] | [10] | [11] | [12] |
| *Number of cases* | | *32* | *16* | *6* | *10* |
| IQ | Critical analysis and self-vision | Hi | Hi | Hi | Hi |
| | Strategic perspective | Hi | Hi | Hi | Hi |
| MQ | Communication, managing resources, and achieving | Hi | Hi | Hi | Hi |
| | Developing team | Med | Med | Hi | Hi |
| | Empowering team | Hi | Hi | Hi | Hi |
| EQ | Self-awareness and intuitiveness | Hi | Hi | Hi | Hi |
| | Sensitivity | Hi | Hi | Med | Med |
| | Influence | Hi | Hi | Hi | Hi |

Note: Hi for high, Med for medium, Low for low level

Table 6. Leadership Competency Map for More Successful Projects (Strategic Value as a Moderating Variable)

| Dimension | Sub-Dimension | Overall | Industry Type | | | Complexity | | |
|---|---|---|---|---|---|---|---|---|
| | | | ICT | Construction | Consultancy | Low | Med | Hi |
| [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] |
| *Number of cases* | | *31* | *11* | *14* | *6* | *15* | *6* | *10* |
| IQ | Critical analysis and self-vision | Low | Med | Low | Low | Med | Low | Med |
| | Strategic perspective | Low | Low | Low | Low | Low | Low | Med |
| MQ | Communication, managing resources, and achieving | Low | Med | Low | Low | Low | Low | Hi |
| | Developing team | Med | Med | Med | Med | Med | Med | Med |
| | Empowering team | Med | Hi | Med | Med | Med | Med | Med |
| EQ | Self-awareness and intuitiveness | Med | Med | Med | Low | Low | Med | Med |
| | Sensitivity | Med | Med | Low | Med | Med | Med | Low |
| | Influence | Med | Med | Med | Med | Med | Med | Med |

Note: Hi for high, Med for medium, Low for low level

Table 7. The Leadership Competency Map for Less Successful Projects (Industry Type, Complexity as Moderating Variables)

| Dimension | Sub-Dimension | Overall | Strategic Value | | |
|---|---|---|---|---|---|
| | | | Mandatory | Renewal | Repositioning |
| [1] | [2] | [3] | [10] | [11] | [12] |
| *Number of cases* | | *31* | *16* | *6* | *10* |
| IQ | Critical analysis and self-vision | Low | Low | Med | Med |
| | Strategic perspective | Low | Low | Med | Low |
| MQ | Communication, managing resources, and achieving | Low | Low | Med | Low |
| | Developing team | Med | Med | Med | Med |
| | Empowering team | Med | Med | Med | Med |
| EQ | Self-awareness and intuitiveness | Med | Med | Med | Med |
| | Sensitivity | Med | Hi | Med | Med |
| | Influence | Med | Med | Med | Med |

Note: Hi for high, Med for medium, Low for low level

Table 8. The Leadership Competency Map for Less Successful Projects (Strategic Value, as a Moderating Variable)

### 5.4.1. The Direct Association between Leadership Competency and Performance

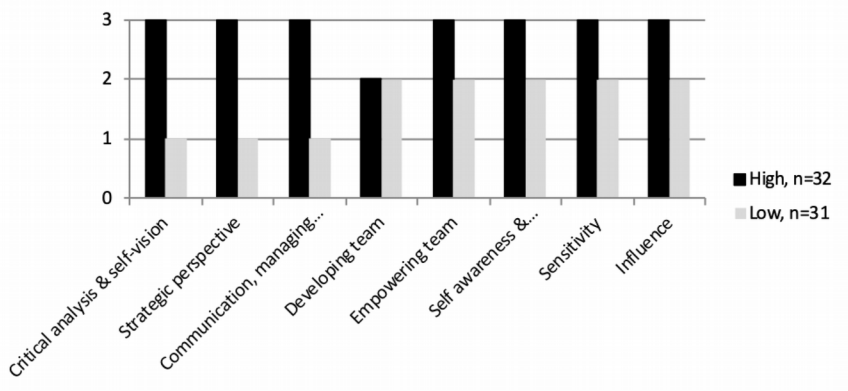
Tables 5 and 6 (columns [3] respectively) offer interesting findings. Overall, a clear distinction regarding leadership competency profiles is observable between the more and less successful projects. It shows that the more successful projects are predominantly attributed to high levels of competencies for all three leadership attributes of IQ, MQ, and EQ; while less successful projects indicate either medium or low levels of competency. Thus, it can be said that high leadership competencies of IQ, MQ, and EQ are generally required for superior project performance.

Figure 2 further details the differences. For all eight leadership attributes in the three dimensions of leadership (IQ, MQ, and EQ), a distinctive pattern for more and less successful projects can be identified. Superior projects can be attributed to highly leadership competent. Less successful projects, in contrast, is more attributable to a low level of IQs, a mixed level (low and medium) of MQ, and a medium level of EQ. The only exception is for the value of

"developing teams" which is not distinguishable for the two groups. This result is mostly consistent with the findings by Müller and Turner (2010) which suggest that all attributes are significant predictors (excluding "intuitiveness").

In general, project performance is explainable by the combined score of leadership competency, and hence, **$H_1$ is supported.**

Table 9 depicts the result for the crisp-set qualitative comparative analysis (csQCA) for the overall datasets (i.e. moderation variables are not considered). Two configurations emerge for the successful projects; while only one is identifiable for the low performers. The first successful leadership competency configuration suggests the presence of high-level scores of IQ and MQ and the absence of EQ (Column A). The second configuration indicates the presence of IQ and EQ and the absence of MQ. From the two successful configurations, IQ is found to be pervasive and it may offer an initial evidence to IQ as a necessary condition for project success. Given the rather low combined score of coverage (0.21), however, the assertion should be treated with caution. Moreover, the analysis provides a single configuration where the presence of high EQ score which is complemented by the absence of the other two leadership dimensions could lead to less successful projects.




Note: 1 for low level of leadership competency; 2 for medium; 3 for high
"High" for high performers; "low" for low performers

Figure 2. Leadership Profiles for More and Less Successful Projects

| Configuration | Solutions | | |
|---|---|---|---|
| | High Perf. (Y) | | Low Perf. (~Y) |
| | *a* | *b* | *c* |
| Intelligence quotient (IQ) | ● | ● | ○ |
| Managerial quotient (MQ) | ● | ○ | ○ |
| Emotional quotient (EQ) | ○ | ● | ● |
| Consistency | 0.80 | 1.00 | 1.00 |
| Raw Coverage | 0.14 | 0.07 | 0.12 |
| Unique Coverage | 0.14 | 0.07 | 0.12 |
| Overall Solution: | | | |
| Consistency | | 0.86 | 1 |
| Coverage | | 0.21 | 0.12 |

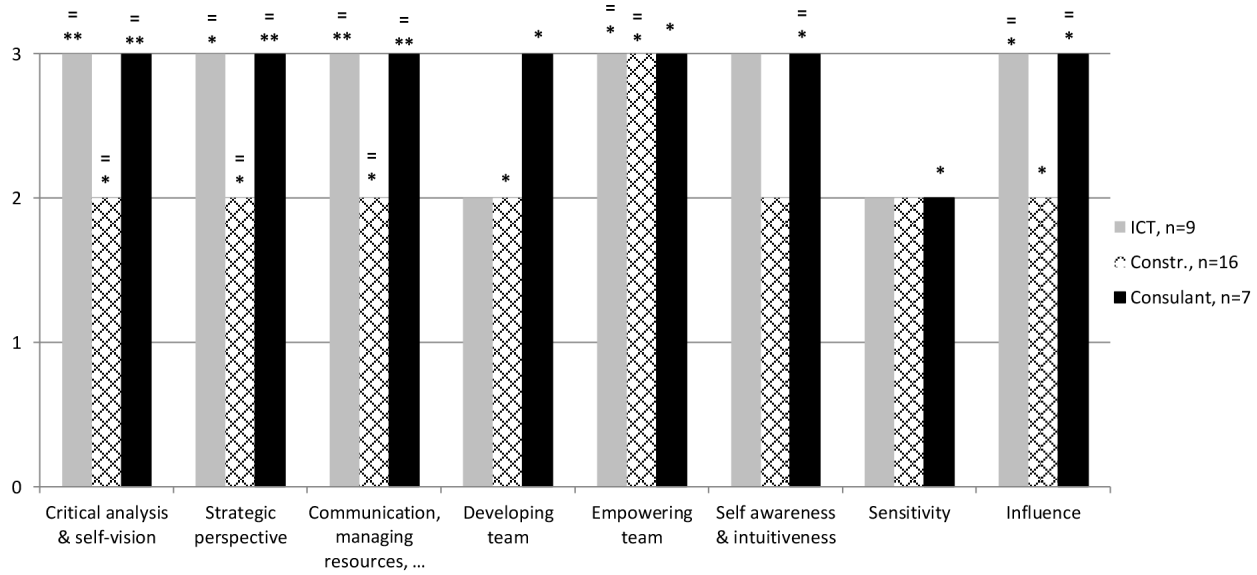
Note: ● indicates the presence of a condition; ○ indicates the absence

Table 9. The Leadership Configuration Table for Overall Datasets

The subsequent analysis aims to evaluate the possible contextual effects of selected moderation variables as discussed in Theoretical Model, Section 3. Whenever possible, a comparative evaluation was performed by presenting the results of previous studies (Müller & Turner, 2007, 2010).

### 5.4.2. Industry Type as a Moderating Variable

Figure 3 explains leadership profiles of successful project managers across three different industries. The figure also reports whether a competency level differs between more and less successful project managers as indicated by [**] for a two-score difference (i.e. markedly different) or [*] for a single-score different (i.e. somewhat different). Furthermore, Figure 3 also suggests whether the current finding is consistent to this of Muller and Turner (2010), as indicated by [=].




Note: 1 for low level of leadership competency; 2 for medium; 3 for high
[*] for single-score difference when compared to low performers; [**] two-score difference
[=] for similarity of finding when compared to Muller and Turner 2010 – high performers

Figure 3. Leadership Profiles across Industry Types for High Performers

The finding suggests that across industries, the difference of score levels between more and less successful managers vary. Leadership competencies under the IQ yield the greatest number of markedly different score levels, being more dominant than competencies which belong to MQ and EQ.

In addition, very similar leadership profiles can be identified for successful projects in ICT and consultancy industry, and a somewhat unique profile of successful project managers emerges in the construction industry. Successful projects in ICT and consultancy exhibit a high level of leadership competency for almost all attributes. In addition, "sensitivity" and "developing team", which happen to yield medium scores for ICT, are considered irrelevant because score levels of the two competencies are not distinguishable for high and low performers. On the contrary, for the construction industry, a medium level of leadership competency in most attributes seems to be sufficient to drive superior performance with "empowering team" being an outlier. The result suggests that project managers in ICT and consultancy sectors require higher competency levels (of IQ, MQ, and EQ) compared to their counterparts in the construction industry.

Table 10 depicts results of the csQCA for three different industry types. It suggests that no combinatorial solution is identifiable for ICT (both more and less successful projects) and consultancy (less successful projects). The construction industry offers an interesting configuration: the presence of high scores for IQ and MQ which is combined with the absence of high EQ scores could lead to high performers. Moreover, an exact configurational reversal yields poor performance [Column D]. For the consultation industry, the only successful profile being

identified requires a combination of high scores for all three leadership competencies. The finding from csQCA to an extent supports the results of the previous sub-group analysis.

The finding of 'industry type as a moderation variable' may reflect the different nature of the projects within the three industries. Construction projects are widely seen as hard, while projects in ICT and consultancy industries are considered softer according to some accounts. Crawford and Pollack (2004) developed a framework to analyze projects within a hard-soft continuum and argue that different levels of hardness require a different management approach. In a sense, construction projects involve concrete deliverables, while ICT and consultancy produce fewer tangible outputs. In addition, construction projects are usually attributed to well-defined, pre-specified objectives and requirements, while those in ICT and consultancy sectors are less clear and always evolving.

Construction projects are also characterized by better-defined front-end planning, which leads to relatively well-described project process. Consequently, compared to their counterparts in ICT and consultancy sectors, project managers in construction projects may benefit from the more favorable project attributes and depend less on their leadership competency to successfully execute and deliver project outcomes. Thus, industry type can be **viewed as an effective moderating variable; hence, $H_2$ is supported.**

| | Solutions | | | | | |
|---|---|---|---|---|---|---|
| | ICT | | Construction | | Consultancy | |
| | High Perf. (Y) | Low Perf. (~Y) | High Perf. (Y) | Low Perf. (~Y) | High Perf. (Y) | Low Perf. (~Y) |
| Configuration | *a* | *b* | *c* | *d* | *e* | *f* |
| Intelligence quotient (IQ) | N/A | N/A | ● | ○ | ● | N/A |
| Managerial quotient (MQ) | | | ● | ○ | ● | |
| Emotional quotient (EQ) | | | ○ | ● | ● | |
| Consistency | | | 1.00 | 1.00 | 0.83 | |
| Raw Coverage | | | 0.17 | 0.13 | 0.56 | |
| Unique Coverage | | | 0.17 | 0.13 | 0.56 | |
| Overall Solution: | | | | | | |
| Consistency | | | 1.00 | 1.00 | 0.83 | |
| Coverage | | | 0.17 | 0.13 | 0.56 | |

Note: ● indicates the presence of a condition; ○ indicates the absence; NA indicates no solution is observed

Table 10. The Leadership Configuration Table across Three Industry Types

### 5.4.3. Project Complexity as a Moderating Variable

Table 11 summarizes the leadership competency profiles which are previously reported in Table 5 and Table 7, columns 7, 8, and 9. Table 11 reveals an interesting pattern of the possible moderating effect of "project complexity." As can be seen, in a highly complex project context, a high-level score of all eight leadership attributes was observed for superior project performance. Furthermore, seven out of eight attributes yielded distinct scores for high and low performers. It can therefore be inferred that when a project is performed within a high complexity context, a medium level of leadership competency is not adequate.

For a medium complexity context, a different profile was observed. All but one leadership attributes under the IQ and MQ could be respectively linked to a variety of project performance. However, all three leadership attributes of EQ could not be associated with the performance. For a low complexity setting, no consistent pattern was identified. Hence, for such a low complexity context, the level of leadership competency (either IQ, MQ, or EQ) is not reliably connected to project performance.

| Dim | Sub-Dimension | Complexity | | |
|---|---|---|---|---|
| | | Low | Med | Hi |
| IQ | Critical analysis and self-vision | Med/Med | **Med/Low** | **Hi/Med** |
| | Strategic perspective | **Hi/Low** | **Med/Low** | **Hi/Med** |
| MQ | Communication, managing resources, and achieving | **Hi/Low** | **Med/Low** | **Hi/Hi** |
| | Developing team | Med/Med | Med/Med | **Hi/Med** |
| | Empowering team | **Hi/Med** | **Hi/Med** | **Hi/Med** |
| EQ | Self-awareness and intuitiveness | Low/Low | Med/Med | **Hi/Med** |
| | Sensitivity | **Hi/Med** | Med/Med | **Hi/Low** |
| | Influence | **Hi/Med** | Med/Med | **Hi/Med** |

Note: X/Y: competency levels for high and low performers respectively. Bold text denotes different attribute levels for high and low performers

Table 11. Project Complexity as a Moderating Variable

| Configuration | Solutions | | | |
|---|---|---|---|---|
| | High Perf. (Y) | | Low Perf. (~Y) | |
| | *a* | *b* | *c* | *d* |
| Intelligence quotient (IQ) | ● | ● | ○ | ○ |
| Managerial quotient (MQ) | ● | ○ | ○ | ○ |
| Emotional quotient (EQ) | | ● | ● | |
| Complexity | ● | ○ | | ○ |
| Consistency | 0.85 | 1.00 | 1.00 | 0.80 |
| Raw Coverage | 0.38 | 0.07 | 0.12 | 0.47 |
| Unique Coverage | 0.38 | 0.07 | 0.06 | 0.41 |
| Overall Solution: | | | | |
| Consistency | 0.87 | | 0.82 | |
| Coverage | 0.44 | | 0.53 | |

**Note:** ● indicates the presence of a condition; ○ indicates the absence; blank indicates don't care

Table 12. The Leadership Configuration Table which Includes Complexity

The findings of the csQCA seems to offer a slightly different perspective when compared to those of the sub-group analysis. Table 12 denotes the result of the csQCA which includes project complexity in the analysis. As can be seen, two configurations emerge for high and low project performance respectively. A high project performance could be achieved by either (a) the presence of IQ and MQ (regardless the status of EQ) for a high project complexity setting, or (b) the presence of IQ and EQ *and* the absence of MQ for a low complexity context. On the contrary, a low performance may be caused by either: (c) the presence of EQ which is complemented by the absence of IQ, MQ, for any project complexity context, or (d) the absence of IQ and MQ (regardless the EQ) for a low complexity setting. It should be noted that the coverage scores are sufficiently high (0.44 and 0.53) which reflect a good case variety for the analysis.

From the explanation, it can be concluded that the association between leadership competency and project performance is not uniform across different levels of project complexity. Thus, it suggests a moderation effect, and hence, **$H_3$ is supported**.

### 5.4.4. Project Strategic Value as a Non-Moderating Variable

Table 13 depicts some interesting insights from the sub-group analysis which consider project strategic value as a possible moderating variable. High performers consistently show a high level of leadership competency for all the dimensions of IQ, MQ, and EQ in all three strategic types. The bold texts also highlight the fact that most leadership attributes have different values for high and low performers. This suggests that nearly all attributes are essential for project success. More specifically, all attributes of the IQ dimension reflect good predictors of project performance, which highlights the importance of IQ for all three contexts. However, considering the level variation of "sensitivity," it is not capable of predicting project performance in all three strategic values. Another interesting finding can be seen for low performing projects. In such cases, the majority (18 out of 24; 75%) of attributes is reported as yielding a medium level of competency. This provides strong evidence that from a strategic value perspective, a medium level of leadership competency is not sufficient in supporting project success.

Table 13 also reports the moderation analysis for project strategic value. As can be seen, the pattern is considerably uniform across the three types of strategic values, and for all three strategic value types, nearly all leadership attributes can distinguish project performance.

Table 14 depicts the result of csQCA which considers three types of project strategic value. Successful mandatory projects could be related to a combined effect of the presence of IQ, MQ and the absence of EQ. On the other hand, a combination of the presence of EQ and the absence of both IQ and MQ could lead to poor mandatory project performance. For the positioning project, the absence of all three competency would lead to poor project performance. A combinatorial solution is not observed either from the project renewal (high/low performance) or positioning (high performance). The many non-solution conditions of the csQCA creates a significant difficulty to obtain additional evidence for the purpose of confirming or rejecting the particular hypothesis. Accordingly, the evaluation of $H_4$ relies more on the previous sub-group analysis than the csQCA. Hence, since there is not enough evidence from sub-group analysis to purport that strategic value is a moderating variable, **$H_4$ is not supported**.

| Dim | Sub-Dimension | Strategic Value | | |
|---|---|---|---|---|
| | | Mandatory | Renewal | Repositioning |
| IQ | Critical analysis and self-vision | **Hi/Low** | **Hi/Med** | **Hi/Med** |
| | Strategic perspective | **Hi/Low** | **Hi/Med** | **Hi/Low** |
| MQ | Communication, managing resources, and achieving | **Hi/Low** | **Hi/Med** | **Hi/Low** |
| | Developing team | Med/Med | **Hi/Med** | **Hi/Med** |
| | Empowering team | **Hi/Med** | **Hi/Med** | **Hi/Med** |
| EQ | Self-awareness and intuitiveness | **Hi/Med** | **Hi/Med** | **Hi/Med** |
| | Sensitivity | Hi/Hi | Med/Med | Med/Med |
| | Influence | **Hi/Med** | **Hi/Med** | **Hi/Med** |

Note: X/Y: competency levels for high and low performers respectively;
Bold text denotes different attribute levels for high and low performers

Table 13. Project Strategic Value as a Non-Moderating Variable

| Configuration | Solutions | | | | | |
|---|---|---|---|---|---|---|
| | Mandatory | | Renewal | | Positioning | |
| | High Perf. (Y) | Low Perf. (~Y) | High Perf. (Y) | Low Perf. (~Y) | High Perf. (Y) | Low Perf. (~Y) |
| | *a* | *b* | *c* | *d* | *e* | *f* |
| Intelligence quotient (IQ) | ● | ○ | N/A | N/A | N/A | ○ |
| Managerial quotient (MQ) | ● | ○ | | | | ○ |
| Emotional quotient (EQ) | ○ | ● | | | | ○ |
| Consistency | 1.00 | 1.00 | | | | 0.71 |
| Raw Coverage | 0.23 | 0.18 | | | | 0.56 |
| Unique Coverage | 0.23 | 0.18 | | | | 0.56 |
| Overall Solution: | | | | | | |
| Consistency | 1.00 | 1.00 | | | | 0.71 |
| Coverage | 0.23 | 0.18 | | | | 0.56 |

Note: ● indicates the presence of a condition; ○ indicates the absence; NA indicates no solution is observed

Table 14 The Leadership Configuration Table across Three Strategic Values

### 5.5. Managerial Insights

From the previous elaboration, the valuable insights can be summarized in the following passages. These include the overall utility attributes of leadership toward performance, the importance of leadership traits beyond managerial role (MQ), the roles of IQ and EQ, and the academic and practical contributions of the current study.

#### 5.5.1. The General Utility of Leadership Competency

The study suggests an overall utility of the leadership competency in Indonesia projects. It was found that, in general, projects are performed better with high leadership competency than with lower competency. This is not surprising, however, given the similar reports as described in Section 2.2. Nevertheless, the finding provides further support for "leadership competency" advocates in project management works of literature within a specific Indonesia context.

#### 5.5.2. Project Leadership: Beyond Managerial Roles

The current study also reveals that "management" competency (as reflected by MQ of the leadership competency) is not sufficient to predict project performance. As seen in the previous result, depending on the context, two other leadership aspects (EQ and IQ) could be essential to explain the variation of project performance. It confirms the assertion that an effective project manager should go beyond managerial roles. A rather limited managerial scope which emphasizes on planning, organizing, executing, and controlling, with a special highlight on resource/team management, would not be sufficient. The finding supports an extended perspective on project leadership which considers at least three key aspects: IQ, MQ, and EQ which is consistent to the leadership competency school of thought.

Interestingly, a specific MQ sub-dimension of "team development" was found to be somewhat a non-predictor of project performance for some contexts and cases. The finding differs from the common belief that suggests the crucial role of team development in project management (Bonebright, 2010; Ericksen & Dyer, 2004; Rickards & Moger, 2000; Tuckman, 1965; Tuckman & Jensen, 1977). A possible explanation may be related to the unique cultural aspect of Indonesia. Following the culture measure developed by Hofstede (1984, 1991) found that firms in Indonesia were characterized by high power distance (score: 78, the highest score among the six dimensions) and low individualism (score: 14, the lowest score). The high-power distance implies that project members accept the unequal distribution of power, and obedience toward the project manager is both expected and accepted as a norm.

Thus, team development becomes less crucial since a project team and its work execution is more dependent on the directive of the superior, who is the project manager in this case. Furthermore, the low individualism suggests a natural tendency on collectivism for Indonesia society. It suggests a high level of interrelationship among the society members. In a project management context, the fact could then be translated into existing highly cohesive teams which can explain the perceived low needs for further team development.

### 5.5.3. The Roles of IQ and EQ

Another important finding is the prominent role of the IQ aspect of leadership to explain project performance. This finding is pervasive in both a general setting and many observed specific contexts. Moreover, IQ becomes the most observable predictor with the greatest gaps of leadership level for high and low performers. This is especially true for consultancy firms, where superior and inferior firms report high and low scores, respectively for the two IQ aspects.

The crisp-set qualitative comparative analysis (csQCA) further suggests the presence of high IQ scores in almost all case configurations along with superior project performance. High IQ scores are identified in all two positive configurations of overall datasets, in the single positive configuration of construction and consultation industries respectively, in two configurations of successful projects within high and low complexity contexts, and in the configuration of successful mandatory projects. In a sense, the result provides early evidence on the necessary condition of high IQ for successful Indonesia projects within various settings.

It should be noted that as indicated in the Theoretical Model of Section 3, the reported study does not rely on traditional, elementary IQ psychometric scores (e.g. verbal, logical reasoning) when defining the IQ aspects of leadership. Instead, it utilizes a self-description on the following: "critical analyses," "self-vision," and "strategic perspective."

In contrast, this study indicates a less prominent role of EQ. While the result also suggests a reasonably significant role of EQ as project performance predictor, its effect is not as noticeable when compared to IQ as indicated by a smaller competency gap between high (mostly high score) and low performers (medium score). In some contexts, such as in ICT and construction industries, two out of three subdimensions of EQ cannot explain project performance. Thus, "self-awareness and intuitiveness," "sensitivity," and "influence" seem to have a milder effect on project success.

Results of csQCA provide further evidence. An interesting example can be seen for the negative configuration on construction industry where the combined effect of *high* EQ, low IQ, and low MQ yields poor project performance. A similar result is observed in cases of mandatory projects, and in projects with high/low complexity. The result, however, should be interpreted carefully. The csQCA does not suggest that the presence of high EQ *alone* would have a detrimental (individual) effect on performance in every context. Rather, csQCA suggests that the *combination* of high EQ and low IQ and MQ yields poor performance. The assertion is further reinforced by another positive configuration in consultancy industry where the presence of the high score of EQ is beneficial for projects when it is accompanied by both high level of IQ and MQ.

The seemingly counterintuitive result of EQ may be explainable from a cultural perspective. Emotional quotient is an important trait for project managers to understand themselves and other people. The understanding could be utilized to make effective decisions to serve the project goals. The culture of the Indonesian society where the projects were carried out strongly tends toward collectivism (as opposed to individualism) and high power distance. The culture may serve as an effective multiplier effect on certain EQ-based leadership attributes. Accordingly, the project team is less dependent on the individual EQ competency of the project manager. Specifically, the "intuitiveness" of project managers is less important because of the highly structured society pertaining to high power distance. In such a culture, managers may rely more on a formalized, structured approach to deal with team members. "Sensitivity" may not be significant because in Indonesia culture, team members expect a more directive, one-way leadership approach which, again, is related to high power distance. Similar reasoning is applicable for "influence," where the external factor (i.e., the culture) has provided a strong natural incentive and expectation of obedience from project team members.

This study suggests that the three competencies do not uniformly predict project performance, and IQ seems to be more prominent than EQ. This finding is not consistent with the result of (Müller & Turner, 2007), which suggests EQ as the strongest competency, followed by MQ, and IQ as a negative predictor in few cases. Moreover, (Müller & Turner, 2010) revealed that successful projects across different contexts exhibit strong competency in EQ (for influence, motivation, conscientiousness), and "critical thinking" being the only effective attribute of IQ. Again, it is speculated that cultural contexts accentuate the differences. Certain factors in projects and organizations seem to substitute the role of specific leadership attributes (Manz & Sims Jr, 1980; Podsakoff, MacKenzie & Bommer, 1996).

### 5.5.4. The Moderation Effect of Project Context and Attributes

This study suggests a moderation effect of project attributes (i.e. complexity) and context (industry type). In particular, a moderation effect was observed for project complexity. Superior performance is driven by distinctive leadership profiles across projects with different complexity levels. The finding is consistent with a body of literature which asserts that a different project complexity levels offer different challenges and hence require different solutions from project managers (Hartono, 2018). In addition, projects from different industry types require different leadership competency profiles to support project success. Successful "soft projects" from ICT and consultancy firms require distinctively higher leadership competency than "hard projects" from construction firms. This may be related to the distinctive nature of soft and hard projects as suggested by Crawford and Pollack (2004). In contrast, a moderation effect is not noticeable for strategic values.

The study of Müller and Turner (2010) paints a slightly different conclusion. It indicated that industry type does not moderate the leadership-performance relationship, which contradicts the current finding. Müller and Turner (2010) also found that project complexity becomes an effective moderator, which agrees with the current study. Furthermore, strategic value is found to be a non-moderating variable in both studies.

### 5.5.5. Academic Contributions

The reported study provides some useful contributions to academic and practical usages. From an academic view, this study extends the existing knowledge pertaining to project leadership literature by observing a specific setting of a developing country of Indonesia. It is demonstrated that the study results are not directly comparable to those of the previous studies. Such unique circumstances may be attributable to the unique cultural setting of Indonesia. Further studies are required to provide more detail insights on the cultural aspects.

The reported study also contributes to the utilization of a more rigorous measure of project complexity. Items for the corresponding moderating variable are developed on the basis of complexity theory, and they can be evaluated for validity and reliability. Analytical results utilizing the more robust measure are expected to be more accurate.

The utilization of csQCA also offers unique perspectives for analytical triangulation. With the relatively small simple size, csQCA enables a systematic case review. In this study, csQCA demonstrates interesting social phenomenon, namely: the importance of analyzing combined effects of variables as opposed to observing individual contributions (as discussed earlier), equifinality, and configurational asymmetry.

The equifinality principle asserts that there multiple (not a single) case configurations may exist which lead to successful projects (Doty, Glick & Huber, 1993; Gresov & Drazin, 1997; Kapsali, 2013). The concept is demonstrated in this study for the overall datasets where positive (successful) configurations could be achieved by either configuration of high IQ, high MQ, and low EQ *or* high IQ, low MQ and high EQ. The configurational asymmetry purports that the mirror image of a certain case configuration may not necessarily result in the opposite outcome. Again, the csQCA for overall datasets suggests the principle. As stated earlier in Section 5.4, a positive configuration emerges from the combined effect of high IQ, Low MQ, and high EQ. However, no evidence is observable to indicate that the opposite configuration (i.e. low IQ, high MQ, and low EQ) in this general setting may result in poor performance.

### 5.5.6. Practical Contributions

From a practical sense, this study offers interesting and workable ideas which are primarily useful for initiatives in pursuant of leadership excellence in project management. The key concept is that superior project performance could be achieved by matching project attributes with the 'right' project manager competency profile. Tables 5 and 6 offer an indication of successful leadership profiles for different project context and attribute. Table 10 further indicates successful profiles for construction and consultancy industries; while Table 12 reveals successful competency for projects with both high and low level of complexity.

The competency profiles could serve as an initial guidance in many fronts. Specifically, in terms of career development, project managers in construction firms are required to cultivate a profile of higher leadership competency, compared to their counterparts in consultancy firms (Figure 3). Likewise, successful project managers in highly complex projects are expected to develop a different set of leadership competency, compared to their equally successful counterparts who typically work on relatively low complex projects (Table 12).

The reported competency profile is also beneficial for a project sponsor who needs to purposely choose a 'right' project manager when setting up a new project team. For professional project managers who move a lot from one industry to another, the study findings provide awareness on the unique leadership requirement for different industry types and complexity levels. They need to adjust their leadership competency to better fit with the new working environment. For aspiring project managers and their mentors, the findings highlight different key leadership attributes that are crucial to excel, given the context of project assignment. The findings further clarify which areas of leadership attributes need to be gradually and systematically improved.

## 6. Conclusion

This study offers both theoretical and empirical evaluations on the utility of project leadership competency in various contexts in a developing country. It was found that in general, leadership competency positively affects project performance. A more detailed analysis found that all three aspects of leadership (IQ, MQ, and EQ) contributes differently to performance.

A sub-group moderation analysis suggests a mixed result. The study reveals a possible moderation effect of "industry type" and "project complexity level." It was found that the effect of leadership competency on project performance is not uniform across three types of industry, i.e., construction, ICT, and consultancy firms. A similar condition was observed across three different levels of project complexity. Results of csQCA further highlight specific leadership competency configurations which drive superior project performance across different project attributes and contexts. In effect, the competence-performance relationship cannot be accurately explained without considering one of the moderating variables. In contrast, no significant evidence was found on the moderation effect of "project strategic value". Moreover, the study highlights some interesting insights and elaborates on the possible practical implications.

This study extends the previous leadership competency studies (Müller & Turner, 2007, 2010), as multiple items of complexity measures were utilized, and the investigation was exclusively performed within an Indonesia setting. The current work generally reveals a similar finding when compared with the past studies, considering the observed the positive leadership competency-performance association and the moderation effects. Some distinct results, however, were found when observing the details. Two key differences are as follows. First, the moderating variables observed in this study and past studies differ. This study found "industry type" and "project complexity" as the effective moderating variables, whereas past studies suggest "project complexity." Second, the order of importance for leadership competencies differ. The current study suggests a more prominent role of IQ than EQ across contexts, while the past study (Müller & Turner, 2007) indicates EQ, MQ, and IQ for the order of importance. The key differences found in the more detailed level can be attributed to cultural aspects; however, this assertion needs further examination. The study also utilizes crisp-set Qualitative Comparative Analysis (csQCA) to systematically analyse case within a relatively small sample size. The csQCA in this study offers a different analytical perspective as well as interesting additional insights which were otherwise overlooked in the previous study which mainly utilized a moderated linear regression analysis.

Despite its potential contribution, this study has some limitations. A relatively small sample size was used, even though some steps had been carried out during the main study to improve participation. The limited sample size motivates the utilization of the sub-group qualitative analysis, which by its nature, is descriptive and less precise when compared to quantitative statistical analysis such as multiple linear regressions or structural equations modeling. To address the small sample size issue, the csQCA is utilized in conjunction with the sub-group qualitative analysis. The csQCA is sufficiently powerful to identify within-subject case configurations which drive superior project performances. Nevertheless, a methodological limitation pertaining to csQCA is observed when no solution emerges from the analysis in some contexts (i.e. ICT, consultancy, and renewal). No solution occurs when no empirical case configuration which passed both consistency and frequency thresholds was observed. Moreover, limited substantive knowledge within the contextual analysis of project leadership is available to further simplify the case configurations. Accordingly, the study findings should be viewed as being tentative and be treated with caution. Along with the previous assertion and since the study is more theoretically-heavy, the finding only offers a partial, tentative practical insight.

Some possible follow-on studies are observed. An obvious subsequent study may expand the sample scope to increase the sample size and case variability. As such, a more advanced analysis of fuzzy-set or multiple-set qualitative comparative analysis which could observe more nuanced perspectives is feasible. In addition, another leadership competency study which distinguishes different aspects of project complexity is worth pursuing. Recent studies in project complexity (Hartono, 2018; Hartono, Sulistyo, Chai & Indarti, in press; Maylor & Turner, 2017) offered compelling evidence to the different, and often conflicting, effects of complexity dimensions on organizational/project performance. This reported study, while recognizes the multiple dimensions of project complexity, analyzes the moderating variable as a single aggregate measure. Moderation analysis within the dimension level (i.e. structural, emergence, and social complexity) may yield additional interesting insights. Another important insight which is highlighted from the study is the possible intervening role of cultural aspects on project leadership. A study which explicitly includes the cultural aspects into the theoretical development and expands the scope of empirical study into multiple cultures within a project setting is then required.

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## Appendix

### Appendix A Variable Matrix

**Independent Variables**

| Variable | Dimension | | Sub-Dimension | Items | | Reference |
|---|---|---|---|---|---|---|
| Leadership competencies (X) | X.1 | Intellectual quotient (IQ) | Critical analysis and self-vision | X.1.1.2 | Identifies the advantages of ideas | IQ, MQ, EQ: LDQ Dulewicz and Higgs (2004) |
| | | | | X.1.1.3 | Aware of the impact of any assumptions made | |
| | | | | X.1.1.4 | Probes the facts | |
| | | | | X.1.1.5 | Makes sound judgement | |
| | | | | X.1.2.1 | Clear vision | |
| | | | | X.1.2.2 | Innovative in all aspects of work | |
| | | | | X.1.3.3 | Identifies opportunities and threats | |
| | | | Strategic perspective | X.1.2.3 | Foresees the changes | |
| | | | | X.1.3.1 | Sees the wider issues | |
| | | | | X.1.3.2 | Balances the short-term considerations | |
| | | | | X.1.1.1 | Selects the relevant information | |
| | X.2 | Managerial quotient (MQ) | Communication, managing resources, and achieving | X.2.1.1 | Organizes all resources efficiently and effectively | |
| | | | | X.2.1.2 | Converts goals into action plans | |
| | | | | X.2.2.1 | Engages others and wins support | |
| | | | | X.2.2.2 | Communications are tailored to others' interests | |
| | | | | X.2.5 | Willing to make decisions involving strong consideration | |

| Variable | Dimension | | Sub-Dimension | Items | | Reference |
|---|---|---|---|---|---|---|
| | | | Developing team | X.2.3.1 | Gives staff autonomy | |
| | | | | X.2.3.2 | Encourages staffs to actively participate | |
| | | | Empowering team | X.2.4.1 | Encourages team to take on challenges | |
| | | | | X.2.4.2 | Encourages team to solve problems | |
| | | | | X.2.4.3 | Encourages team to take on ever more-demanding tasks | |
| | | | | X.2.4.4 | Encourages team to take on ever more-demanding roles | |
| | X.3 | Emotional quotient (EQ) | Self-awareness and intuitiveness | X.3.1.1 | Capable on assessing one's own feeling | |
| | | | | X.3.1.2 | Capable on controlling one's own feeling | |
| | | | | X.3.3.1 | Arrives at clear decisions with ambiguous information | |
| | | | | X.3.3.2 | Arrives at decisions using both rational and emotional perceptions in ambiguous situations | |
| | | | Sensitivity | X.3.4.1 | Considers others' idea | |
| | | | | X.3.4.2 | Perceptive of others' feeling | |
| | | | Influence (including motivation and conscientiousness) | X.3.5.1 | Persuades others to change views based on position | |
| | | | | X.3.5.2 | Follows the change based on an understanding of their position | |
| | | | | X.3.6.1 | Gives energy | |
| | | | | X.3.7.1 | Displays clear commitment to a course of action in the face of challenge and to match words and deeds | |
| | | | | X.3.7.2 | Shows personal commitment to pursuing a solution | |

**Dependent Variables**

| Variable | Dimension | | Sub-Dimension | Items | | Reference |
|---|---|---|---|---|---|---|
| Project performance (Y) | Y.1 | General criterion | Performance on cost, quality, and time | Y.1.2 | Suppliers' satisfaction | Muller and Turner (2007) |
| | | | | Y.1.3 | Project team's satisfaction | |
| | | | | Y.1.5 | Meeting project's overall performance (functionality, budget, and timing) | |
| | | | | Y.1.8 | Meeting the best project's performance (cost) | |
| | | | | Y.1.10 | Reoccurring business with the client | |
| | | | | Y.1.12 | Meeting the best project's performance (quality) | |
| | | | Meeting users' satisfaction | Y.1.1 | End-user satisfaction | |
| | | | | Y.1.7 | Meeting the project's purpose | |
| | | | | Y.1.9 | Clients' satisfaction | |
| | | | Meeting stakeholders' satisfaction | Y.1.4<br>Y.1.6<br>Y.1.11 | Other stakeholders' satisfaction<br>Meeting user requirements<br>Meeting the respondent's self-defined success factor | |

**Moderating Variables**

| Variable | Dimension | | Sub-Dimension | Items | | Reference |
|---|---|---|---|---|---|---|
| Project categorization (Z) | Z.1 | Application area | Industry type | - | ICT/construction/consultancy | Crawford, et al. (2005) |
| | Z.2 | Complexity | Uncertainty in goals | Z.2.3 | Goal clarity | Hartono (2018) |
| | | | | Z.2.4 | Goal tangibility | |
| | | | Uncertainty in methods and interdependency | Z.2.5 | Degree of hazard | |
| | | | | Z.2.8 | Permeability | |
| | | | | Z.2.9 | Internal dependency | |
| | | | | Z.2.10 | External dependency | |
| | Z.3 | Project strategic value | Project strategic value | - | Mandatory/Renewal/Repositioning | Crawford, et al. (2005) |