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The Relationship between Project Management Performance and Stakeholder Satisfaction in Vietnam: Perspectives from the Construction Industry

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This study examines the effects of project management performance and project integration management on stakeholders' satisfaction in the construction sector in Vietnam. Using the Partial least square-structural equation modelling method to analyse data collected from 157 respondents, the findings indicate that project management performance has a significant impact on stakeholders' satisfaction. Moreover, both project manager leadership competency and project integration management are associated with project management performance. The research findings contribute to the theoretical literature in project management of the construction industry and provide recommendations with managerial implications.

Key words: *Project management performance, project integration management, leadership competency, stakeholders' satisfaction.*

Introduction

Integration is a process of building up a management structure that ensures systematic key stakeholders' requirements by design (Asif et al., 2010). Project integration refers to proper coordination among the processes of a project. Integration management, which is the scheduling, budgeting and costing, configuration management, and documentation of a

project, is crucial to project management. Project integration management "ensures successful coordination among project activities" (Demirkesen, 2017).

Additionally, ten core knowledge areas in project management are listed in the "Project Management Body of Knowledge Guide" (PMBOK), in which project integration management is ranked the first knowledge area. According to the Project Management Institute (PMI) (2013), it is the process of combination, unification, and coordination of a project. Several studies have been conducted on the influence of effective integration in the field of project management (Berteaux & Javernick-Will, 2015; Demirkesen, 2017; Halfawy & Froese, 2007; Ospina-Alvarado et al., 2016; Ozorhon et al., 2013). Thus, this study aims to crystalize the effect of project integration management on project management performance and stakeholders' satisfaction to broaden the perspective of management and successful project completion.

Existing studies have suggested that future investigation of the competencies of project managers is necessary to manage projects successfully. According to Anantatmula (2010), further research on the testing model related to leadership using quantitative methods should be conducted in diverse sectors or industries. Also, the project manager's leadership competency is essential for generating the desired results of Berg and Karlsen (2016). Empirical studies regarding this subject remain limited (Yang, Wu, & Huang, 2013). Another suggestion is that the association of leadership competencies needs more research to enrich leadership models (Hollenbeck et al., 2006). Therefore, this study investigates the relationship between project managers' competencies and project management performance to expand the leadership models in the construction project management field.

Although several studies of performance assessment have been conducted, a unified method to assess performance in the construction industry has not been established. Additionally, clarification of stakeholders' satisfaction is necessary to better manage and meet stakeholders' expectations. This study utilizes the project knowledge areas of the Project Management Body of Knowledge (PMBOK) as well as concepts of PMI (2013) to identify associated components for better performance in project management and stakeholders' satisfaction.

Literature Review

Satisfaction

PMI (1996) defines project management as "the application of knowledge, skills, tools, and techniques to project activities to meet or exceed stakeholder needs and expectations from a project." Project stakeholders include individuals and organizations involved in a project, the

interests of which affect the project's results either positively or negatively. Zolin et al. (2012) state that ; the stakeholders best evaluate a successful project. In addition, stakeholders' satisfaction is required for the success of project components such as project management and project success (Baccarini, 1999). Simply assessing a project's success based on cost, schedule, and technical objectives is no longer adequate. Needs, concerns, and issues also need to be addressed by a diversity of project stakeholders (Tuman, 1986). For a project to succeed, the stakeholders, their expectations and interests also need to be identified, managed and influenced. In other words, the role of stakeholders' satisfaction in the project management field is significant; therefore, it has to be clarified.

Project Manager Leadership Competency

Leadership is a process of managing all activities of individuals and organizations by influencing and leading to attain project goals (Hersey & Blanchard, 1982). The competencies of a project manager in terms of leadership are the focus of a rising number of project-based organizations (Kaulio, 2008).

Competence is the ability to mobilize and combine resources such as the knowledge, skills, and attitudes of a person, team, or company to execute an activity. Prior studies also indicate that one crucial factor in a project's success is project manager leadership competency, which determines the extent of success or failure of a project (Geoghegan & Dulewicz, 2008; Müller & Jugdev, 2012; Nixon et al., 2012). Others have investigated the effect of project manager leadership styles on projects' success or performance (Yang et al., 2013; Yang et al., 2012). Finally, a small number of studies on project manager leadership competencies have examined the influence of a leader's orientation toward people on project performance (Ahmed, 2017; Fung, 2014).

Project managers with leadership competencies not only play a crucial role in motivating team members but also can effectively develop project vision and spirit that are clearly attached to the project strategy (Shenhar, 2004). Furthermore, project managers are involved in discovering potential risks and managing them with proper processes and clearly expressing decisions to team members (Ahmed, 2017; Hastak & Shaked, 2000; Strider, 2002; Yoon et al., 2014). Project manager leadership competencies affect project management performance. Therefore, Hypothesis H1 is proposed.

H1. Project manager leadership competency is positively related to project management performance.

Project Integration Management and Project Management Performance

Project integration management encompasses six dimensions: development of the project charter, knowledge integration, process integration, staff integration, supply chain integration, and integration of changes. The project charter is an authorized document delineating a project and identifying the project manager, who has the power to allocate resources for project activities (PMI, 2013). Knowledge integration is the knowledge exchange of project stakeholders, project parties, and data entered into knowledge transfer systems. According to Heising (2012), it is the key factor of sustainable success in project portfolio management. Furthermore, integration leads to the exchange of knowledge, which itself is essential for successful integration (Mitropoulos & Tatum, 2000). Knowledge integration is a key indicator of project integration management and project management performance (Demirkesen, 2017; Grant, 1996; Newell et al., 2004; Schmickl & Kieser, 2008; Song & Song, 2010; Too, 2011).

Process integration describes well-organised, sequenced activities and their coherent interrelationships within processes. Process integration of humans and tasks can promote creating value (Birkinshaw et al., 2000). Yanwei (2012) also identified it as a dimension of project integration management. Demirkesen (2017) stated that process integration is a dominant indicator of project integration management and firms can promote success through effective process integration. Additionally, several studies have pointed out the critical role of process integration in project management performance (Demirkesen 2017; Enberg, 2012; Kleinschmidt et al., 2007).

According to Demirkesen (2017), staff integration is "the integration of project staff into the current project processes," contributing to successful project execution through human resources support, tools and techniques. Moreover, the effectiveness of teamwork is promoted by integration, which is also necessary for teams to work together effectively. Many studies have analyzed staff integration in project management (Carmeli, 2009; Dammer, 2008; Demirkesen, 2017; Enberg, 2012).

Supply chain integration is customers' and suppliers' integration in processes and building instruments for knowledge sharing between customers, suppliers, and project teams. Like other dimensions of integration, many studies have investigated the effect of supply chain integration on project management (Cooper et al., 2004; Enberg, 2012; Kleinschmidt et al., 2007; Wheelwright, 1992).

The integration of changes involves reviewing, evaluating, modifying, and updating project management. Ambiguous scope, priorities, needs, and constraints resulting from the absence of integration in project planning may lead to changes, delays, and redoes, as well as serious

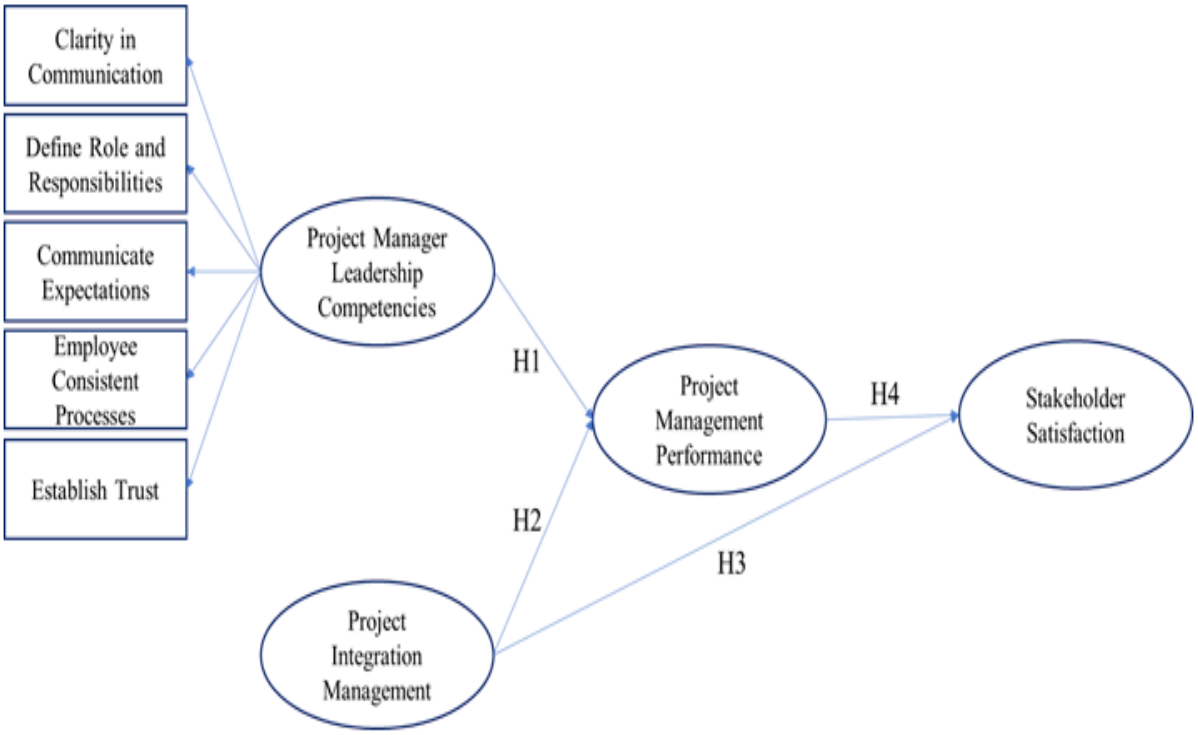
consequences for budgets and schedules (Mitropoulos & Tatum, 2000). Controlling changes in project management can be very effective via integrating construction and design methods. The ability of an organization to deal with changes corresponding to customers' needs is called change management (Brightman & Moran, 2001). Prior studies have found that effective change management and leadership can successfully implement organizational initiatives. Others also indicate the key role of integration of changes in project management.
As some studies have pointed out, project management performance is measured using the project's success, which is the most common indicator. In particular, many studies centralize timing (Chan & Chan, 2004; Egan, 1998; Rad, 2003), budgeting (Berssaneti & Carvalho, 2015; Nudurupati et al., 2007), quality (Chang et al., 2013; Chou et al., 2013), safety (Almahmoud et al., 2012; Bower et al., 2002; Lim & Mohamed, 1999), and clients' satisfaction (Cserháti & Szabó, 2014; Lim & Mohamed, 1999; Nassar & AbouRizk, 2014; Rad, 2003). In this study, these elements are used to measure project management performance. Despite an increase in the number of studies on project management, limited studies have focused on the influence of project management knowledge areas (Chou et al., 2013). Therefore, a step further is taken to investigate potential indicators of stakeholders' satisfaction, including project management performance.

This study aims to consolidate the relationship between project integration management and project management performance and their effects on project success. Therefore, we posit Hypotheses H2, H3, and H4.

H2. Project integration management is positively related to project management performance.
H3. Project integration management is positively related to stakeholders' satisfaction.
H4. Project management performance is positively related to stakeholders' satisfaction.

Figure 1 shows the research model with the four hypotheses.

Figure 1. Research Model



Methodology

Questionnaire design

In this study, a questionnaire survey method is chosen for data collection. According to Hair et al. (2019), the number of participants should be equivalent to or ten times larger than "the largest number of formative indicators used to measure one construct" or "the largest number of structural paths directed at a particular latent construct in the structural model." Each variable is measured on a 5-point Likert scale, ranging from 1 (strongly disagree/very low) to 5 (strongly agree/very high). A project integration management scale, including six items, which are adopted from Demirkesen (2017). The measurement items for six dimensions of project manager leadership competencies are adapted from prior studies (Ahmed 2017; Dulewicz & Higgs, 2005; Kwak & Ibbs, 2002; Mintzberg, 1979; Pinto & Slevin, 1987; PMI., 2007; Whitener et al., 1998). Stakeholders' satisfaction is measured by four items using previous studies' scales (Dvir et al., 2003; Müller & Turner, 2007; Serrador & Turner, 2014; Shenhar & Dvir, 2007). Project performance management is measured with five items adapted from Demirkesen (2017); Lim and Mohamed (1999); Serrador and Turner (2014); Wang et al. (2010); and Zwikael and Globerson (2006). In addition, some adjustments have been made to adapt to the Vietnamese context and make the questionnaire easier to comprehend.

Data Collection

Data collection is conducted using an online survey method with a questionnaire consisting of three parts: the introduction and purpose of the survey, demographic information, and the measurement items of project integration management, stakeholders' satisfaction, project management performance, and project managers' leadership competency. One coauthor has been participating in the Vietnam Project Management Forum since 2012. In addition, he has been a member of the Project Management Institute Vietnam Potential Chapter since 2014. Therefore, the authors have used a snowball sampling method to conduct data collection based on references from association members. The survey was conducted within three months from May 2019 to July 2019 in the two biggest cities of Vietnam: Ho Chi Minh City and Hanoi. The respondents have working experience in construction projects in different construction firms. In addition, to narrow the limitation of Ahmed and Anantatmula's (2017) study suggesting that "future research should collect data on overall project performance from other project stakeholders (i.e., top management, engineering managers, sponsors, contractors, suppliers, organizations, and sectors)," this study surveyed a variety of respondents who play different roles in project performance in construction companies. A valid sample size of 157 was collected to test the research model.

Results

Demographic Description

Table 1 shows the general information about the respondents, including seven aspects: gender, age, education, role in project, working experience, position in a company, and PMP certificate availability. The majority of respondents are males, accounting for 81.5%, while two-thirds of them are between 33 and 49 years old. In addition, the total number of respondents holding bachelor's degrees and master's degrees account for nearly 99%, with only 1.3% of the respondents holding a PhD. Among the 157 respondents, about one-third are general contractors, which accounts for the most significant proportion. In contrast, owners/clients and project management consultants account for, respectively, the second and the third largest percentages with 24.8% and 15.3%. A significant number of respondents having more than 15 years of experience in project management accounts for 44.6%, while those who have less than three years of experience account for only about 10%. Also, a tremendous percentage of respondents are company directors/managers or project managers, accounting for more than 68%. Finally, most respondents, 91.1%, do not have a PMP certificate.

Table 1: Demographic Information

Gender	Male	81.5
	Female	18.5
Age	22-25	3.8
	26-33	16.6
	33-40	26.1
	41-49	42.0
	> 50	11.5
Education	Bachelor Degree	69.4
	Master Degree	29.3
	PhD. Degree	1.3
Role	Owner/Client	24.8
	General Contractor	30.6
	Project Management Consultant	15.3
	Designer	13.4
	Sub-contractor/Supplier	8.9
	Specialist Consultant	4.5
	Other	2.5
Experience	< 3 year	10.2
	3 - 5 years	8.3
	5 - 10 years	14.6
	10 - 15 years	22.3
	> 15 years	44.6
Position	Company Director/Manager	36.9
	Project Manager	31.8
	Project Management Engineer	19.7
	Other	11.5
PMP Certificate	Yes	8.9
	No	91.1

Examination of Measurement Models

Partial Least Square Structural Equation Modeling (PLS-SEM) is chosen to analyze the data for testing the research model, which is complex and includes several constructs and indicators. According to Hair et al. (2019), "the PLS-SEM algorithm makes this possible by computing measurement and structural model relationships separately instead of simultaneously." When the sample size is small, PLS-SEM demonstrates higher reliability compared to covariance-based SEM. "PLS-SEM obtains solutions with small sample sizes when models comprise many constructs and a large number of items" (Fornell & Bookstein,

1982; Hair et al., 2017; Hair et al., 2019). Although the reliability of the PLS-SEM method is controversial, the review of the editors of the study of Ringle and Sarstedt (2016) indicates that PLS-SEM is scientifically reliable. In summary, this study's data analysis uses the PLS-SEM method with SmartPLS 3.0 software.

Initially, outer loadings are assessed to ensure items' validity, which should be above the threshold value of 0.7 (Henseler et al., 2012). A majority of items satisfy the threshold value, but seven items are removed because their values could not meet the required level: CIC1, CIC, ETR4, IM2, IM4, IM6, PMP2, PMP4, PMP5, DDR1, DDR2, and SS2. Cronbach's alpha is used to test each construct's reliability, of which should be from 0.6 to 0.95 (Hair et al., 2019). Most of the results are above 0.7, except for IM and SS (at 0.693 and 0.646). Composite reliability (CR) is another assessment for internal reliability of constructs, with higher values indicating higher reliability. Specifically, the values from 0.6 to 0.7 are "acceptable", and those from 0.7 to 0.9 are considered from "satisfactory" to "good," and the value should not be above 0.95. The results show that all the composite reliability values are above 0.8, ranging from 0.808 to 0.922. Rho_A is a construct reliability measurement defined by Dijkstra and Henseler (2015) that is within Cronbach's alpha and the composite reliability. All rho_A coefficients of constructs satisfy the threshold of 0.7, indicating good reliability. The minimum range of average variance extracted (AVE) that is acceptable is 0.5 or higher, which demonstrates the construct is 50% or more of the variance of its items. Table 2 shows the outer loadings, Cronbach's Alpha, rho_A, composite reliability, and AVE of all constructs in the hypothetical model.

Table 2. Reliability and Convergent Validity

	Outer Loadings	**Cronbach's Alpha**	**rho_A**	**CR**	**AVE**
Clarity in Communication (CIC)		**0.781**	**0.785**	**0.859**	**0.605**
CIC2	0.712				
CIC3	0.796				
CIC4	0.825				
CIC6	0.773				
Communicate Expectations (CXP)		**0.736**	**0.746**	**0.834**	**0.558**
CXP1	0.707				
CXP2	0.721				
CXP3	0.818				
CXP4	0.739				
Define Role and Responsibilities (DRR)		**0.737**	**0.738**	**0.850**	**0.655**
DRR3	0.803				
DRR4	0.806				
DRR5	0.818				

Employee Consistent Processes (ECP)		**0.718**	**0.721**	**0.825**	**0.558**
ECP1	0.708				
ECP2	0.706				
ECP3	0.746				
ECP4	0.783				
Establish Trust (ETR)		**0.703**	**0.704**	**0.835**	**0.629**
ETR1	0.752				
ETR2	0.828				
ETR3	0.795				
Project Integratıon Management (IM)		**0.642**	**0.649**	**0.805**	**0.580**
IM1	0.784				
IM3	0.744				
IM5	0.755				
Project Management Performance (PMP)		**0.736**	**0.736**	**0.850**	**0.654**
PMP1	0.794				
PMP3	0.812				
PMP4	0.821				
Stakeholder Satisfaction (SS)		**0.646**	**0.649**	**0.808**	**0.584**
SS1	0.780				
SS3	0.765				
SS4	0.747				

Discriminant validity is the extent to which a construct is distinct from others. Table 3 shows that the discriminant validity of variables is at acceptable levels, which is calculated using Fornell and Larcker's (1981) metric.

Table 3: Discriminant Validity (Fornell-Larcker Criterion)

Fornell-Larcker Criterion										
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	**CIC**	0.778								
2	**CXP**	0.535	0.747							
3	**DRR**	0.668	0.593	0.736						
4	**ECP**	0.555	0.520	0.584	0.793					
5	**ETR**	0.385	0.340	0.406	0.313	0.761				
6	**IM**	0.846	0.784	0.874	0.740	0.471	0.623			
7	**PMLC**	0.418	0.318	0.472	0.243	0.516	0.475	0.809		
8	**PMP**	0.586	0.519	0.644	0.411	0.456	0.780	0.431	0.809	
9	**SS**	0.503	0.405	0.526	0.298	0.471	0.543	0.502	0.415	0.764

Eventually, we evaluate the thresholds of the Heterotrait-Monotrait ratios (HTMT), which is the mean value of the item correlations across constructs relative to the mean of the average correlations for the items measuring the same construct (Hair et al., 2019). This study follows the criterion of 0.85 proposed by Henseler et al. (2015). As a result, Table 4 shows the HTMT values, which satisfy these thresholds. Based on the results, discriminant validity is confirmed. All constructs meet the levels of acceptable convergent and discriminant validity.

Table 4 : Discriminant Validity (Heterotrait-Monotrait Ratio)

Heterotrait-Monotrait Ratio (HTMT)									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	**CIC**	**Criteria ≤ 0.85**							
2	**CXP**	**0.692**							
3	**DRR**	0.888	**0.805**						
4	**ECP**	**0.750**	**0.721**	**0.824**					
5	**ETR**	**0.527**	**0.490**	**0.591**	**0.449**				
6	**IM**	**0.551**	**0.436**	**0.637**	**0.340**	**0.748**			
7	**PMP**	**0.771**	**0.699**	0.876	**0.567**	**0.669**	**0.578**		
8	**SS**	**0.717**	**0.609**	**0.772**	**0.451**	**0.699**	**0.720**	**0.606**	

Structural Model Assessment

According to Shmueli and Koppius (2011), the coefficient of determination (R-square) measures the predictive power of the model, of which a value of 0.75 is considered substantial, a value of 0.50 is deemed to be moderate, and a value of 0.25 is considered weak (Henseler et al., 2009). R-square values of constructs range from 0.387 to 0.768. Specifically, the variance of 38.7% of stakeholders' satisfaction (SS) is explained by project integration management (IM) and project management performance (PMP), whereas 41.6% of the variance of project management performance (PMP) is explained by project integration management (IM) and project manager leadership competency (PMLC).

For the hypothetical relationship evaluation, path coefficients are tested with the results of all hypotheses that are supported. Table 5 and Figure 2 show that project management performance (PMP) has the most significant impact on stakeholders' satisfaction (SS) with a coefficient of 0.353, whereas that of project integration management (IM) on stakeholders' satisfaction (SS) is the lowest at 0.288. However, project integration management (IM) significantly affects project management performance (PMP), which has a path coefficient equal to 0.376. The impact of project manager leadership competencies on project manager performance is moderate at 0.298.

Figure 2. Testing hypothesis results

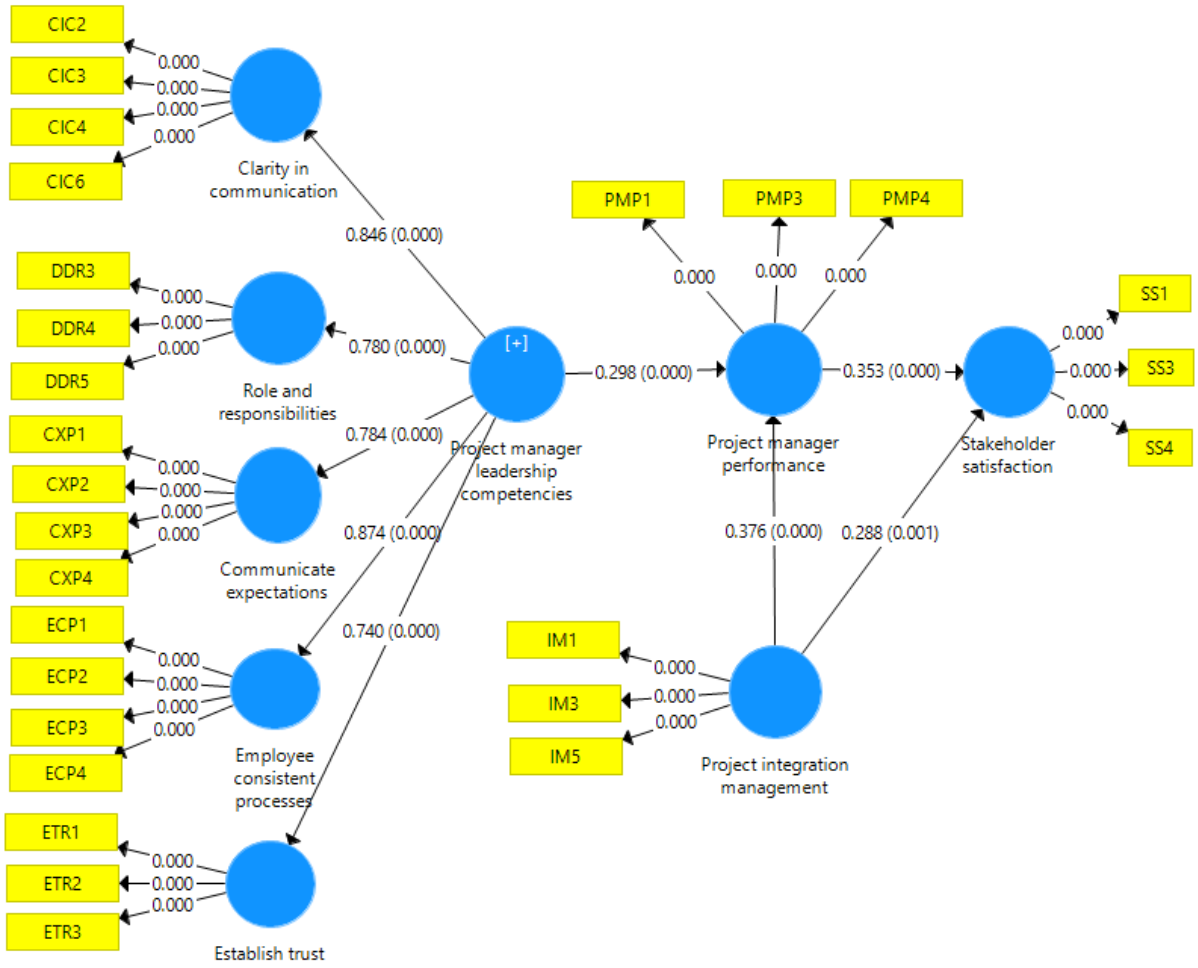


Table 5: Structural Path Estimates

Hypotheses	Estimates	P Values
H1. Project manager leadership competencies -> Project manager performance	0.298	**0.000**
H2. Project integration management -> Project manager performance	0.376	**0.000**
H3. Project integration management -> Stakeholder satisfaction	0.288	**0.001**
H4. Project manager performance -> Stakeholder satisfaction	0.353	**0.000**

Discussion

The purpose of the PLS-SEM approach is to forecast rather than to assess the model fit. Figure 2 provides an overview of the structural model results with the path coefficient of each

hypothesis that is derived using Smart PLS ver. 3.0. In general, this study examines the predictors of project management performance and stakeholders' satisfaction in project management. The results indicate that all the hypotheses are supported. In particular, project integration management is more significant compared to project management performance in terms of determining stakeholders' satisfaction, which is the factor that has the most significant coefficient in the results. Moreover, project integration management is an important predictor of project management performance, which strengthens the finding of Demirkesen and Ozorhon (2017), who stated that there is a "strong interaction between integration and performance" and "Integration is one of the most important components of successful project execution." This implies that integration management should be emphasized not only to ensure stakeholders' satisfaction but also to enhance project management performance. This result is an important contribution to the literature of project management, specifically, in project performance.

Additionally, the positive relationship between project manager leadership competency and project management performance is supported, thereby confirming Ahmed and Anantatmula's (2017) finding that it is "the significant relationship between project manager leadership competency and project performance." In other words, it is the project manager whose competencies have an essential impact on the quality of project management performance regarding communication clarity and expectations, roles and responsibilities provision, supervision of employees' processes, and trust among relationships. The result underscores the critical role of the project manager in project management as well as project performance.

Conclusion and Recommendations

Conclusion

The study sheds new light on project management and engineering studies investigating the relationship of project management performance and stakeholders' satisfaction with their indicators. First, project integration management is a substantial indicator of both project management performance and stakeholders' satisfaction. Second, there is a positive relationship between project manager leadership competency and project management performance. Finally, in addition to project integration management, project management performance is a moderate indicator of stakeholders' satisfaction. In addition to theoretical contributions, some recommendations for practitioners are suggested.

Managerial Recommendations

Project managers who have leadership competencies and integration management can significantly positively affect project management performance. There is a higher chance of a project's success if a project manager is carefully selected initially. To enhance the leadership competencies of the project manager, it is important to focus on these key facets: communicating and satisfying communication expectations, defining roles and responsibilities, creating consistent processes for employees, and establishing trust. Therefore, some recommendations are suggested for project managers to improve their work in managing projects and to pay more attention to critical points in project management generally and in Vietnam's context specifically.

First, communication needs to be specific, clear and punctuated to create an effectiveexchange of information. Hence, the information system should be well-tailored for the communication's needs. Because many new rules and regulations are implemented every year, continuously updating information is compulsory to keep up with the fast-changing laws in Vietnam. Another issue in communication is that project managers should clarify targets to prepare proper reports and related information, whether they are for internal teams or external partners or stakeholders. Hence, the information could be controlled and tailored for each receiver, which minimizes the ambiguity of information, and more importantly, meets the communication expectations among parties. Second, well-defined roles and responsibilities of parties and among each member of a party must be determined before the project is executed. In Vietnam, roles and responsibilities do not seem to be clearly defined in project management; thus, it will require more concentration in the future to increase the quality of projects. Also, directions for solving problems should be stated from the beginning before signing contracts so that if any issue arises during the project execution, a solution will be immediately available. Third, a project management process with consistency as well as clear and simple description should be developed to ensure smooth workflows and project efficiency. Fourth, trust is vital in any relationship and thus must be established among the parties and members of the project team.

In practice, one of the most common problems in project management is that when it comes to changes, the project plan must be changed immediately, including updating information, paperwork, and human resources reprovisioning. As a result, project progress will slow down, which can delay completion of the project. Designs will need to be revised, and the budget will need to be increased based on the changes. One possible solution is that the project charter development should be emphasized so the project manager could quickly adapt to the situation when a problem arises.

The three most prioritized factors in project management performance are timeline, budget, and safety. During project execution, the timeline and budget usually need to be updated periodically. If there is any change in the stakeholder's request, the project manager must write a report to send to the stakeholders to clarify all changes in the project plan and discuss any incremental costs. Therefore, the project manager is the one who will announce changes to the departments of the project team and adjust documents and licenses. As long as project managers effectively implement these recommendations, project management performance will achieve the desired results, thus leading to satisfaction from the stakeholders.

Limitations

Some constraints regarding the scope of the research and data collection are unavoidable in this study. First, this study does not include government policies in project management, which should be further investigated. Next, risk management due to external factors such as natural disasters or unexpected incidents can be explored in future research to improve the model. Because this study employed a self-reported survey, there may be biases that affected the responses in the data. Also, the survey was only distributed in the construction sector within Vietnamese territory. Thus, replicating the model is recommended in other sectors or countries to obtain more comprehensive results and extend the literature of project management.

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