LINKING TRANSFORMATIONAL LEADERSHIP AND PROJECT SUCCESS: ROLE OF WORK ENGAGEMENT AND PROJECT COMPLEXITY

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ABSTRACT
This study examines the direct, mediating, and moderating effects of Transformational Leadership (TL), Work Engagement (WE), and Project Complexity (PC) on Project Success (PS). Using survey methods and multivariate data analysis through structural equation modeling with 326 project managers in Vietnam, the results show that TL scientifically predicts PS; TL positively impacts WE; WE strongly influences PS; and the link between TL and PS is moderated by PC and mediated by WE. The results indicate that project-oriented businesses should consider TL when hiring for project management roles and offer transformational leadership training to assist project managers in becoming more exceptional. Future studies could use longitudinal research to understand better how the impact of these antecedents on project success changes over time.

Keywords: transformational leadership; project success; work engagement; project complexity

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INTRODUCTION
Since many project-based businesses view project success as their main goal, it is an important topic for academics researching project management (Fernando et al., 2018). The human element is the most valuable resource in project-oriented businesses (Kaliyeva et al., 2022). (Kaliyeva et al., 2022). This is also the main cause of poor project performance (Zaman, 2020), as the work environments can be sensitive to leadership behaviors (Hoffman & Sergio, 2020). In projects, transformational leadership is one of the human factors that needs to be considered. Transformational leadership always inspires and builds cohesion in the leader-follower relationship (Raziq et al., 2018). Regarding how transformational leadership affects organizational performance, opinions about it continue to differ despite an increase in studies on the topic in temporary organizations like projects. Research has shown that efficacy, efficiency, and project success have all been positively correlated with transformational leadership (Ali et al., 2021; Zaman et al., 2020). Meanwhile, some other studies have suggested that successful project implementation will be hindered by transformational leadership (Tajasom et al.,
2015; Zheng et al., 2017). These differing views prove that previous studies have disagreed with the findings on the correlation between transformational leadership and project success. Therefore, the effectiveness of transformational leadership in project-based organizations remains inconclusive (Abbas & Ali, 2023). Hence, the role of leadership (Zhang et al., 2018) and especially leadership style (Aga et al., 2016) on project success needs further research. Given the above arguments, it can be said that leadership style, specifically transformational leadership style, needs further exploration in terms of its relationship with project success. Therefore, this study’s first goal is to continue investigating whether transformational leadership affects project success.

The reason for the difference in research results related to the impact of transformational leadership on project success may be due to the existence of a mechanism between these two concepts (Zhao et al., 2021). One of the mediating mechanisms between transformational leadership and project success proposed by transformational leadership theory is the mediating effect of follower attitudes (e.g., work engagement) (Juyumaya & Torres, 2022). Transformational leadership fosters work engagement by enabling followers to perform their duties effectively and remain involved in their employment (Barroso Castro et al., 2008). Followers with high work engagement are always enthusiastic about their work, building a balance between work and life (Schaufeli and Bakker, 2010), so it is not surprising that the result creates project success. From the perspective of emotional contagion theory (Schoenewolf, 1990), followers’ work engagement is predicted to be a key factor in creating project success through transformational leadership. Transformational leadership and follower work engagement correlate directly (Balwant et al., 2019). A favorable exchange relationship will be developed between the leader and follower when the leader displays positive emotions, thereby stimulating the follower’s work motivation (Gemeda and Lee, 2020). For this reason, the second objective of this study is to evaluate the mediating role of follower work engagement between transformational leadership and project success. Because project activities are temporary and have uncertain factors such as rapid changes or unknown risks (Amoatey and Hayibor, 2017), the project’s boundary circumstances may also have an impact on how strongly or weakly transformational leadership and project performance are related. Contingency theory suggests that contextual conditions (as moderating variables) influence organizational performance (Donaldson, 2001). According to Ali et al. (2021), project complexity is one contextual factor essential to the project level. Among the contextual variables, project complexity is an expected boundary condition most emphasized in requiring further exploration when investigating project success (Parent-Rocheleau et al., 2020). This evidence represents a research gap that is empirically investigated further through the third objective of the study.

In several respects, the project management literature is enhanced by this study. First, it expands upon understanding how transformational leadership affects project outcomes. Second, it looks into whether transformational leadership may be a reliable indicator of followers’ work engagement. Third, it evaluates whether transformational leadership and project success are mediated in terms of employee work engagement. This is the basis for a better theoretical understanding of the mediating mechanism of work engagement through which transformational leadership leads to project outcomes. And fourth, there are not enough studies on how complexity and project success are related. Project complexity will be related to transformational leadership and effective project outcomes; this study elucidates the relationship and to the body of knowledge in project management. By tackling the aforementioned study goals, scholars can gain a comprehensive scholarly understanding of the mediating mechanism of work engagement through which transformational leadership within project environments, consequently comprehending the mechanisms that contribute to the triumph of any project.

**LITERATURE REVIEW**

Conceptually, idealized influence, individual consideration, intellectual stimulation, and inspirational drive are some qualities used to describe transformational leadership (Bass and Avolio, 1994). Transformational leaders encourage people to accomplish objectives by...
creating a long-term vision (Adhyke et al., 2023). Previously, researchers have examined the effectiveness of transformational leadership in various contexts. Several studies have examined the impact of transformational leadership on employee outcomes in functional organizations, such as job performance (Lai et al., 2020) and organizational effectiveness (Alrowwad et al., 2020). However, there is little research on the impact of transformational leadership on project-related outcomes (Abbas & Ali, 2023). There is some conflicting evidence on the relationship between transformational leadership and project outcomes/organizational outcomes. Many studies have shown the positive impact of transformational leadership on project outcomes. For example, transformational leadership guides and motivates staff to achieve organizational goals by articulating a vision that makes employees more aware of the relevance of the organization’s objectives, core values, and achievements (Jensen and Bro, 2018). The primary goal of transformational leadership is to inspire and motivate team members to complete projects successfully (Zaman, 2020). Leaders who embody transformation provide bright things about the future of projects by promoting stakeholder engagement, eventually resulting in the project’s success (Aga et al., 2016). However, in contrast to the above results, Alshehhi et al. (2023) found that transformational leadership does not significantly impact organizational performance in the United Arab Emirates. Zheng et al. (2017) suggested that leaders may have difficulty applying transformational leadership to nurture the intrinsic long-term needs of employees from project-based organizations in China. Keller (2006) found a negative relationship between transformational leadership and cost performance in US-based organizations. Therefore, the project management literature still requires further exploration of the relative relationship of leadership style to project success (Abbas & Ali, 2023). Transformational leadership significantly affects Project performance among workplace outcomes (Fareed & Su, 2021; Kabore et al., 2021). Therefore, this study proposes the first research hypothesis as follows:

Hypothesis H1: Transformational leadership has a positive impact on project success.

Three characteristics of positive work-related attitudes are included in work engagement: dedication, vigor, and absorption (Schaufeli and Bakker, 2010). Given that highly engaged employees are consistently excited about their work and eager to put in more effort, followers' work engagement is anticipated to play a significant role in the project's success (Gutermann et al., 2017).

It is possible to use the emotional contagion theory to explain how transformational leadership and work engagement affect project success. Transformational leadership has a strong emotional component, and one reason it might influence project outcomes is by increasing follower involvement (Bass, 1985). Emotional contagion occurs as people observe each other and social norms are constructed. According to Wu and Wu's (2019) research, leaders commonly use various emotional expression techniques to sway their followers. Employees feel less intimidated and are more likely to offer creative ideas without fear of repercussion when leaders express positive emotions and are less critical of them (Barrick et al., 2015). As a result, a favorable exchange relationship will be developed between the leader and the employee, thereby increasing the employee’s willingness to contribute to work (Wu and Wu, 2019). In a project context, because the project manager is in a senior position, emotional contagion can be stronger than the influence of an ordinary employee (Torrente et al., 2013).

According to Rich et al. (2010), engaged employees tend to work more intensely, pay closer attention, and focus more on their tasks over extended periods. They have higher trust in their organization and have better relationships with their employers, and are less likely to quit and are more satisfied with their jobs (Babcock-Roberson and Strickland, 2010). Because engaged employees often view the organization’s success as their success, they are more likely to respond positively to job requirements and contribute to organizational performance (Buil et al., 2019).

A project is a temporary organization (Turner and Müller, 2003). Thus, it is not unexpected that a fundamental aspect of follower work engagement is its connection to project success (Gutermann et al., 2017). Matthews et al. (2018) recognized that several people-related factors
lead to project success, including follower engagement. The primary factor boosting the efficacy of all project types is human engagement from the project manager and the team (Haffer and Haffer, 2015). Even so, not much study has been done on how transformational leadership and follower engagement interact, and how this affects project success. Consequently, the following hypotheses are put forth:

Hypothesis 2a: Transformational leadership (TL) is positively related to work engagement (WE).

Hypothesis 2b: Work engagement (WE) is positively related to project success (PS).

Hypothesis 2c: Work engagement (WE) mediates the relationship between transformational leadership (TL) and project success (PS).

In the field of project management, project complexity is one of the most significant issues (Lu et al., 2015). Project complexity includes task complexity, uncertainty, risks, and project team structure (Tyssen et al., 2014); it is also considered an important contextual characteristic (Luo et al., 2017). According to Luthans and Stewart’s (1977) contingency theory, contextual variables influence the causal relationship between performance and management variables. Making appropriate judgments in practice to manage projects effectively will stem from understanding the requirements' complexity (Geraldi et al., 2011).

Because emerging features can open up new options, project complexity can benefit project outcomes (Bjorvatn & Wald, 2018). Transformational leadership has a greater impact on transient organizations, such as projects, due to the project's complexity (Tyssen et al., 2014). Mata et al. (2023) showed that project complexity negatively and positively moderates project success. On the positive side, Mata et al. (2023) reasoned that most complex projects can be managed successfully if they are handled by examining previous successful initiatives.

Leaders with a transformational leadership style who are always enthusiastic, optimistic, innovative, and creative (Bass & Avolio, 1994) will most likely be able to meet the complex requirements of the project. Therefore, this study assumes that project complexity enhances the influence of transformational leadership on project success, which is consistent with the views expressed by Mata et al. (2023) and Tyssen et al. (2014). As a result, the subsequent hypothesis is offered:

Hypothesis H3: Project complexity moderates the relationship between transformational leadership and project success.

METHODOLOGY

Participants and procedure

This study investigates the impact of project manager transformational leadership on project success by mediating follower engagement and under the moderating effect of project complexity. In previous studies, followers could be used to evaluate leaders’ leadership abilities as well as their attributes (e.g., Ahmad et al., 2022; Charbonnier-Voirin et al., 2010). In the present study, the unit of analysis is a single completed project in any project management sector in Ho Chi Minh City, Vietnam. Respondents were asked to provide feedback on any project completed no more than five years ago and in which they participated as members. Many researchers have applied such sampling techniques (e.g., Ahmad et al., 2022; Aga et al., 2016); and the convenience sampling method with direct sampling was used for the quantitative survey. Cross-sectional data were used in this quantitative analysis. 450 questionnaires were sent to members who worked on projects. The total number of samples meeting the requirements was 326 (accounting for 73%).

Regarding gender, men accounted for 62% and women 38%. The average age of respondents was 36.2 years old. In terms of project management fields, information technology projects accounted for 22.2%, engineering and construction projects 34.4%, environmental projects 20.3%, new product manufacturing projects 14.2%, and other projects 8.9%.

Measures

A 5-point Likert scale was used in the questionnaire, with 1 denoting "strongly disagree" and 5 denoting "strongly agree." The scales employed to evaluate the correlations between variables were derived from reputable earlier project management studies. In particular, the study inherited Bass’s 12-item transformational leadership scale (1985) to
measure individualized consideration, intellectual stimulation, inspirational motivation, and charismatic influence. These four dimensions of transformational leadership are closely related to each other and are combined into a single overall measure (Cheung & Wong, 2011; Wang and Rode, 2010). The study conducted by Aga et al. (2016) is the source of the 14-item project success (PS) structures. The Utrecht Work Engagement Scale-9 [UWES-9] (Schaufeli et al., 2006) is a condensed version that assesses vigor (VI), dedication (DE), and absorption (AB) as three components of work engagement. These dimensions of work engagement were measured using a total of 9 items with 3 items per dimension. Four items comprise project complexity, based on Tyssen et al. (2014).

SmartPLS 4.0.9.5 was used for the data analysis process.

**DATA ANALYSES AND RESULTS**

**Measurement model**

Convergent Validity, discriminant Validity, and internal consistency of the constructs are among the aspects of the measuring model that were assessed. As the initial part of the measurement model, internal consistency was evaluated using composite reliability (CR) and Cronbach's alpha, with a goal threshold value of 0.70 (Ringle et al., 2018). The next component of the measurement model was convergent Validity. This component was evaluated through an Average Extracted Variance (AVE) index with a limiting criterion value of 0.50 (Ringle et al., 2018). Based on Table 1's findings, the model's latent constructs all exhibit composite reliability and convergent Validity. To evaluate the discriminant Validity of the notions, the Heterotrait-Monotrait Ratio (HTMT) was utilized, which makes up the third component of the measurement model. Henseler et al. (2016) stated that the values of the HTMT ratio to verify discriminant Validity should be between 0.190 and 0.85. All of the HTMT values in this investigation meet the criteria. As a result, Table 2 indicates that the constructs' discriminant Validity was satisfied.

<table>
<thead>
<tr>
<th>Table 1. Internal consistency reliability and Convergent Validity</th>
</tr>
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<tbody>
<tr>
<td><strong>Variables</strong></td>
</tr>
<tr>
<td>Transformational leadership (TL)</td>
</tr>
<tr>
<td>Vigor (VI)</td>
</tr>
<tr>
<td>Dedication (DE)</td>
</tr>
<tr>
<td>Absorption (AB)</td>
</tr>
<tr>
<td>Project Complexity (PC)</td>
</tr>
<tr>
<td>Project success (PS)</td>
</tr>
</tbody>
</table>

Source: author's work.

<table>
<thead>
<tr>
<th>Table 2. Discriminant Validity using HTMT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variables</strong></td>
</tr>
<tr>
<td>AB</td>
</tr>
<tr>
<td>DE</td>
</tr>
<tr>
<td>PC</td>
</tr>
<tr>
<td>PS</td>
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<tr>
<td>TL</td>
</tr>
<tr>
<td>VI</td>
</tr>
</tbody>
</table>

Source: author's work.
Structural model assessment
The structural model of the proposed research model illustrates the connections among its constructs. These associations were investigated using the PLS-SEM (Partial Least Squares Structural Equation Modeling) approach on 5000 bootstrapped samples. The purpose of Hypothesis H1 is to investigate if TL benefits PS. With \( p = 0.000 \) and \( \beta = 0.258 \), Table 3’s findings demonstrate that TL positively affects PS, and Hypothesis H1 is therefore supported. The next hypothesis is H2a, which considers whether TL positively impacts WE. With \( \beta = 0.488 \ (p = 0.000) \), the results in Table 3 show that TL significantly impacts WE. Hypothesis H2a is therefore supported. Hypothesis H2b examines whether WE has a positive influence on PS. Table 3’s results (\( \beta = 0.415 \), \( p = 0.000 \)) support the acceptance of H2b.

Mediation analysis
Next, hypothesis H2c investigates whether WE mediate the TL and PS interaction. With \( \beta = 0.203 \ (p = 0.000) \), the results in Table 4 show that the impact of TL on PS is completely through WE, therefore H2c is accepted.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Path</th>
<th>Path coefficients</th>
<th>P-value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>TL -&gt; PS</td>
<td>0.258</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>H2a</td>
<td>TL -&gt; WE</td>
<td>0.489</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>H2b</td>
<td>WE -&gt; PS</td>
<td>0.414</td>
<td>0.000</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Source: author's work.

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Path</th>
<th>Path coefficients</th>
<th>P value</th>
<th>Confidence intervals bias corrected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effects</td>
<td>TL -&gt; WE -&gt; PS</td>
<td>0.203</td>
<td>0.000</td>
<td>0.151</td>
</tr>
<tr>
<td>Total effects</td>
<td>TL -&gt; PS</td>
<td>0.461</td>
<td>0.000</td>
<td>0.365</td>
</tr>
</tbody>
</table>

Source: author's work.

Table 5. Moderating analysis (Hypothesis 3)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Path</th>
<th>Path coefficients</th>
<th>P value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3: PC x TL -&gt; PS</td>
<td>PC and TL -&gt; PS</td>
<td>0.064</td>
<td>0.039</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Source: author's work.

DISCUSSION
The project manager is the strategic leader in charge of ensuring project success (Zhang et al., 2018). Since inadequate leadership is the reason for 80% of project failures, more empirical studies on transformational leadership are needed, according to current project management literature (Raziq et al., 2018; Zaman et al., 2020). This study has looked at how transformational leadership affects project success, as well as the effect of work engagement and project complexity.

First, the first hypothesis, which examines the connection between project success and
transformational leadership, yielded positive results. The conduct of project managers is essential to the projects' success (Shao, 2018). Transformational leadership is vision-focused leadership, which uses behaviors to positively express the vision and encourage followers to achieve goals consistent with the vision. These are the important factors needed in project coordination and leading the project to success (Balwant, 2019). The results supporting hypothesis H1 are themselves supported by previous project success studies (Aga et al., 2016; Ali et al., 2021; Fareed and Su, 2021; Kabore et al., 2021).

Second, the study has shown that both work engagement and project success are significantly correlated with transformational leadership and that transformational leadership's impact on project success is partly mediated by work engagement. These associations are confirmed by support for hypotheses H2a, H2b, and H2c, respectively. When employees feel they are being treated well and appreciated by their employers, they are more likely to increase their work efforts and enhance their work engagement (Alfes et al., 2013). Transformational leaders nurture employees' positive mental states, helping them realize their potential, which increases employee work engagement (Yan et al., 2021). Engaged workers put more effort into their work and make greater contributions to the goals of the company (Buil et al., 2019). It can be seen that leadership is important in creating more favorable conditions for employees in an effective work group (Eubanks et al., 2016).

Finally, supporting evidence for the hypothesis of project complexity is provided by H3, which demonstrates how this boundary condition increases the positive impact of transformational leadership on project success. A skilled project manager can overcome obstacles by establishing guidelines, such as planning for flexibility or forming problem-solving teams to handle ambiguities (Zaman et al., 2020). A leader with a transformational leadership style will most likely be able to meet the requirements posed by the project's complexity because they are always enthusiastic, optimistic, innovative, and creative (Hartono et al., 2019). Consequently, the more complex the project, the higher the impact transformational leadership has on project success.

CONCLUSION, IMPLICATIONS, AND RECOMMENDATION

By addressing the three research objectives mentioned above, this study has partly clarified the hesitation that has existed in many previous studies about the correlation between transformational leadership and project success. The study examined the mediating and moderating functions of work engagement and project complexity in the causal link that exists between transformational leadership and project success. An explanation for the higher likelihood of project success among project managers who adopt a transformational leadership style could be provided by this data. This could be because project success is a direct result of followers' increased work engagement and motivation brought about by transformational leadership.

These results imply that transformational leadership is required to encourage followers' work engagement and accomplish project success. The results also indicate that to help project managers become better, project-oriented organizations should consider candidates' transformational leadership styles when hiring for project management roles. They should also look into the best ways to train project managers in transformational leadership. These are necessary because they contribute to promoting project success, which in turn improves operational efficiency for project-oriented organizations.

Certain shortcomings with this study need to be fixed in further studies. First, data were gathered from Vietnamese project managers, so future research models must be replicated in other contexts. Next, leadership styles other than transformational leadership may be examined to gain a clearer view of how a project's success is affected by leadership style. Additionally, future research could use longitudinal research to understand better how the correlation of these antecedents on project results changes over time.
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