

Building team resilience in Project Management – A comparative study between construction and ICT industries

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Abstract

The project work is structured in and around teams. Changes in the business environment is known as part of the domain of Project Portfolio Management. Resilient teams are more likely to be productive, agile, and innovative during turbulent times. This study aims to investigate whether team resilience is influenced by individual resilience and transformational leadership style. This research is a descriptive quantitative study as the authors want to see how the influence of individual resilience and transformational leadership is to team resilience. A survey using a structured questionnaire is necessary to measure the perception of targeted respondents. Total 349 data from returned questionnaire was analyzed using PLS. The study showed that Individual Resilience and Transformational Leadership, are significantly influencing Team Resilience in both construction and ICT industries. However, Individual resilience has a more significant influence on Team Resilience in construction than ICT industry. However, Transformational Leadership has less influence on Team Resilience in construction than in ICT.

Keywords

Individual resilience, Project Management, Team Resilience, Transformational Leadership

1. Introduction

The project work is structured in and around teams. Teams are defined as an interdependent group of individuals who share responsibility and are focused on a common goal (Moga, 2017). Changes in the business environment is known as part of the domain of Project Portfolio Management (Killen et al., 2008, 2012; Killen & Hunt, 2010, 2013). Furthermore, the aspects of risk and uncertainties in Project Portfolio may lead to changes not only in Project Portfolio (Teller, 2013; Teller & Kock, 2013) but also in individual projects (Assad et al., 2020; Besner & Hobbs, 2012; Ortiz et al., 2019; Project Management Institute, 2017). Such conditions will lead to challenges in the project organization, especially for the project teams. Furthermore, project complexity, such as institutional and stakeholders (Dille et al., 2018; ElWakeel & Andersen, 2019), socio-economic (Elia et al., 2020), and technology (Shenhar et al., 2005) will also add problems to the projects thus leading to further pressure to the project teams. Resilient teams are more likely to be productive, agile, and innovative during turbulent times (Sharma, 2016). The difference between a resilience team and not could be the difference between survival and breaking down when facing adversity (Vera, Rodríguez-Sánchez and Salanova, 2017).

Resilience is the capacity to bounce back (and beyond) from setbacks and positively cope and adapt to significant changes (Sharma & Sharma, 2016a). Team resilience is defined as “a team’s belief that it can absorb and cope with strain, as well as a team’s capacity to cope, recover, and adjust positively to difficulties” (Carmeli, Friedman and Tishler, 2013).

Team resilience has a different construct from the individual resilience (Sharma and Sharma, 2016; Vera, Rodríguez-Sánchez and Salanova, 2017; Hartwig *et al.*, 2020). A team with each member having individual resilience is not necessarily become a resilience team. Lack of communication and support could result in poor team effectiveness (Hartwig *et al.*, 2020). However, studies argue that, from an individual perspective, individual resilience contributes to team resilience (Sharma and Sharma, 2016; Vera, Rodríguez-Sánchez and Salanova, 2017; McEwen and Boyd, 2018; Hartwig *et al.*, 2020). More individual resilient are less likely to experience physical and emotional difficulty while struggling with adversity (Cooper, 2013; Morgan *et al.*, 2013) in (Sharma & Sharma, 2016b).

Meanwhile, leadership is known to have a critical role in team resilience. During a crisis or difficult times, leaders' roles are providing guidance, creating stability and trust, and engaging with the team to ensure the organization returns to productivity (Lockwood, 2005; Bowers *et al.*, 2017; Hartwig *et al.*, 2020). During a difficult time, leaders who have a sense of belonging to the team can increase the willingness of the team to contribute to group objectives. The same thing goes for social support among members. The leadership style which shows high team identity and support is understood as transformational leadership.

This study aims to investigate whether team resilience is influenced by individual resilience and transformational leadership style with two hypotheses:

H1: Individual resilience positively influences the team resilience

H2: Transformational leadership positively influences the team resilience

The research model shows the proposed hypotheses as depicted in Figure 1.

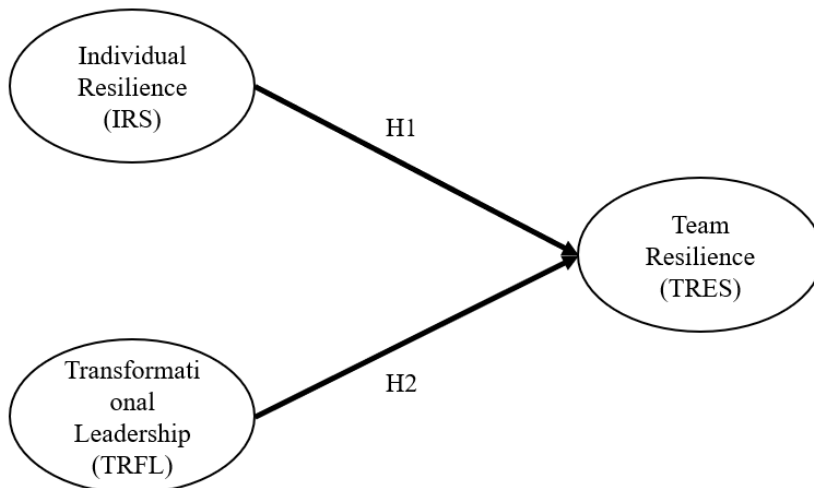


Figure 1. Proposed research model

3. Methods

This research is a descriptive quantitative study as the authors want to see how the influence of individual resilience and transformational leadership is to team resilience. A survey using a structured questionnaire is necessary to measure the perception of targeted respondents. Furthermore, the survey is conducted via online using Google Form. Questionnaires contained statements related to the variables and other additional information such as gender, age, educational background, industry, size of the team, length of team establishment, type of team project, and perceived project difficulty. For questions related to variables measured, a six-scale Likert (from 1 strongly disagree to 6 strongly agree) was used for respondents to rate their opinion. With a six-scale Likert, the mid-point is omitted to avoid social desirability bias (Nadler, Weston and Voyles, 2015).

This study uses a purposive data collection method. The target respondents were project management team members from the Information and Communication Technology or ICT and Construction industries. All measurement scales used in the present study were measured using a framework from a previous study. Individual resilience) was measured

by 9 items modified from Tonkin (2016), Transformational leadership was measured by 6 items modified from Aragon-Correa et al., (2007) and Chen et al. (2014), and team resilience was measured by 8 items modified from (Mallak, 1998). Data collected was analyzed with SmartPLS version 3.2.9. Structural equation model (SEM) is used because relationship among related latent variables is to be explored simultaneously. All measurements criteria are based on (Hair et al., 2017).

4. Results and Discussion

From the total collected data of 349 respondents, a descriptive analysis has been conducted to explore the data distribution prior to further analysis.

Table 1. Sample characteristics

Category	Breakdown	Percentage
Roles/Function	<i>Managers/Senior Managers</i>	51.86 %
	<i>Others</i>	5.73 %
	<i>Team leaders/Supervisors</i>	16.91 %
	<i>C-Level/Business Owners</i>	4.30 %
	<i>Staffs</i>	21.20 %
Industry background	<i>Construction</i>	41.32 %
	<i>ICT</i>	30.54 %
	<i>Others</i>	28.14 %
Company type	<i>National private company</i>	52.99 %
	<i>Multinational company</i>	14.07 %
	<i>State owned company</i>	23.65 %
	<i>Others</i>	9.23 %
Numbers of projects that have been handled	<i>First projects ever</i>	6.30 %
	<i>Up to 5 projects</i>	23.21 %
	<i>5 to 10 projects</i>	21.49 %
	<i>More than 10 projects</i>	49.00 %

From Table 1, the respondents are dominated by the construction and ICT industry, and most of the respondents work in national private companies with >10 handled projects.

The measurement model is further tested using SEM PLS technique with SmartPLS 3.2.9 software and categorized into 2 major groups: construction and ICT. The Cronbach's α , composite reliability (CR) and average variance extracted have been generated in Table 2.

Table 2. Reliability and validity of test results

Construct	Cronbach's α		Reliability and Validity Composite Reliability (CR)		Average Variance Extracted (AVE)	
	Construction	ICT	Construction	ICT	Construction	ICT

Individual resilience (IRS)	0.797	0.847	0.867	0.890	0.621	0.619
Transformational Leadership (TFRL)	0.916	0.912	0.935	0.930	0.705	0.656
Team Resilience (TRES)	0.859	0.880	0.899	0.909	0.642	0.624

From Table 2, all constructs exceed the minimum required value. It can be concluded that the constructs show adequate reliability of measurement scales and sufficient convergent validity of both categories. Furthermore, the R² is also generated using the same test result as shown in Table 3.

Table 3. R Square testing result (Consolidated)

	R Square		R Square Adjusted	
	Construction	ICT	Construction	ICT
Team Resilience	0.536	0.551	0.529	0.542

Table 3 also shows that both the R² and Adjusted values of the Construction group are smaller than ICT. It means that both variables TRFL and EMRS influence 53.6/52.9 percent of the variable TRES in construction compared to 55.1/54.2 percent in ICT. The structural model was then tested to examine discriminant validity, construct loadings and cross-loadings. The results were summarized in Table 4.

Table 4. Correlation matrix (Construction/ICT)

	Individual resilience	Team Resilience	Transformational Leadership
Individual resilience	0.788/0.787		
Team Resilience	0.570/0.520	0.840/0.810	
Transformational Leadership	0.509/0.452	0.685/0.708	0.801/0.790

Table 4 shows that all latent variables consist of items that are higher compared to other constructs for both groups. The model is further tested after having an assurance of an adequate model. According to Wetzels et al. (2009), the Goodness of Fit (GoF) can be calculated using the square root of products of average AVE and average R². Furthermore, the study also suggests that the GoF using PLS is small (0.1), medium (0.25), and large (0.36). The model GoF is hence 0.59 for both the construction and ICT groups. It shows that the model is significantly fit.

The hypotheses are also tested using bootstrapping of 5.000 sub-samples. The result is shown in Table 5.

Table 5. Results of hypotheses tested using SEM (Consolidated)

	Standardized Coefficient (β)		t-value		Hypothesis test	
	Construction	ICT	Construction	ICT	Construction	ICT
Individual resilience - > Team Resilience	0.298	0.251	3.974	2.606	0.000	0.009

Transformational Leadership -> Team Resilience	0.533	0.594	7.649	6.466	0.000	0.000
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Based on the result in Table 5, it can be concluded that both relationships from IRS to TRES and TRFL to TRES are significant, as both have T-value >1.96. The hypotheses are hence both accepted for construction and ICT groups. The standardized coefficient β of IRS to TRES in construction is relatively higher in comparison with ICT. However, it is the other way around in TRFL to TRES.

6. Conclusion

Based on the analysis, it can be concluded that both variables, Individual Resilience and Transformational Leadership, are significantly influencing Team Resilience in both construction and ICT industries. However, Individual resilience has a more significant influence on Team Resilience in construction than ICT industry. However, Transformational Leadership has less influence on Team Resilience in construction than in ICT.

Project management teams have to deal with risk and uncertainty from the project portfolio level to the individual level. Furthermore, project complexity will add to the challenges faced by the project management team. Moreover, projects are performed by project management teams that consist of various individuals from different background. Therefore, team resilience is critical to the success of project management. It seems that resilient teams are more likely to be productive, agile and innovative during turbulent times.

This study has a limitation where the data comes from a number of respondents during the peak time of the second wave of COVID-19. It did not reflect the team resilience during the first wave, where most industries were highly affected by the pandemic. Furthermore, this study only explores two independent variables, individual resilience and transformational leadership. Further research should aim to other industries. In addition, further research can be performed in the form of case studies to validate this study result.

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