INTERNATIONAL JOURNAL OF INDUSTRIAL MANAGEMENT (IJIM)
ISSN: 2289-9286 e-ISSN: 0127-564X
VOL. 13, ISSUE 1, 422 – 437
DOI: https://doi.org/10.15282/ijim.13.1.2022.6921

ORIGINAL ARTICLE

THE EFFECT OF TOP MANAGEMENT SUPPORT AND COLLABORATIVE TEAM ON PROJECT PERFORMANCE IN MALAYSIAN CONSTRUCTION INDUSTRY: MODERATING EFFECT OF TRUST

Muhammad Zul Fikri Mohd Zureehan[1], and Khai Loon Lee[1*]

[1]Faculty of Industrial Management, Universiti Malaysia Pahang, 26600 Pahang, Malaysia.

ABSTRACT – This paper examines the effect of the top management support and collaborative team on project performance in the construction industry in Malaysia. Besides, this paper further investigates the moderating effect of trust in the relationship. With the support of Resource-Based View (RBV) theory, a quantitative research design was applied to test the hypotheses and accomplish the research objectives. The population of 2342 companies were obtained from the Malaysian Construction Industry Development Board (CIDB) 2020. The minimum sample size is 107 companies, as suggested by G-power. A total of 150 online survey questionnaires were distributed using a simple random sampling technique and received 123 responses. The data was analyzed by using Partial Least Square Structural Equation Modelling (PLS-SEM) with the support of SmartPLS software. The findings show that the effect of top management support on project performance and the moderating effects of trust are not supported while the collaborative team has a positive effect on project performance. In conclusion, construction companies should focus on the collaborative team in improving their project performance.

ARTICLE HISTORY
Received: 13-9-2021
Revised: 28-10-2021
Accepted: 15-3-2022

KEYWORDS
Top Management Support
Collaborative Team
Trust
Project Performance
Construction Industry

INTRODUCTION

Nowadays, many researchers are struggling to evolve the philosophy to enhance project performance. According to Ahmed, Azmi, Mohamad, and Ahmad (2016), projects execute an operational strategy. The top management claims that the crucial position in project performance and top management that support inadequacy can lead to the project's failure. The project's progress towards the capacity to achieve its eagerness for improvement is measured by the execution of projects in a country (Alsuliman, 2019). According to Alsuliman (2019), in 2017, the Ministry of Municipal and Rural Affairs (MOMRA) tackles the evidence that nearly 75 percent of construction projects surpass the scheduled period and have been postponed. By 2020, the Malaysian government has revealed that in order to revolutionize the construction industry, there is a need to improve construction quality (Othman, Norfarahhanim, Ghani, & Woon, 2020). The delay affecting construction projects in different quarter countries will involve uncertainties to many researchers' big construction projects (Aziz & Abdel-hakam, 2016).

Project performance is essential in the Malaysian construction industry. Also, there are some barriers and challenges to the implementation of this aspect in the industry. This is clear from Kerzner's assertion that problems relating to people play a key factor in project development, stressing the crucial management and leadership functions of a project manager (Adu, 2019). Furthermore, a lack of trust in the collaborative team will influence the achievement of the project (Buli, 2019). Other than that, problems such as values, interests, and needs of an individual collaborative team could arise in project performance (Kokkonen, Kokkonen, & Vaagaasar, 2017). Top management principles and cognitive structures dictate their ability to perceive the knowledge they receive. In other words, the manager's characteristics decide their behaviour, affecting the organization's efficiency (Le, Wan, Wang, & Zhang, 2020). Past studies also showed that the failure of project shareholders to cooperate and encourage successful teamwork is the main factor that causes low success on development projects (Adu, 2019). Besides, poor trust in top management could lead to the fragmentation of organizations in the construction industry (Qian and Papadonikolaki, 2019).

There are several issues in the Malaysian construction industry that trigger low project performance. Commonly, organizations are becoming more and more complicated, and unprecedented problems are being updated due to overrun costs (Simard, Aubry, & Laberge, 2018). The crisis is shown inefficiently because of a shortage of support from top management due to the conflict between individual rationality and organizational goal (Ong & Bahar, 2018; Le, Wan, Wang & Zhang, 2020). Furthermore, the low project performance problem is inadequate funds to sustain the project's development due to the owner's late payment and weak cash flow management (Alsuliman, 2019). Top management support is the main concern for many ventures and business processes (Ong and Bahar, 2018) and has provided mixed evidence (Lo and Wang, 2019). Furthermore, there are still limited investigations of trust that need to be developed to enhance project performance (Buvik and Rolfsen, 2015). To answer the questions mentioned above, this paper examines

*CORRESPONDING AUTHOR |K. L. Lee | ✉ leekhailoon@ump.edu.my

the effect of top management support and collaborative team on project performance in the Malaysian construction industry. Besides, this paper further investigates the moderating effect of trust on the relationship between top management support, collaborative team, and project performance in the Malaysian construction industry.

LITERATURE REVIEW

Resource-Based View Theory

In particular, the Resource-Based View (RBV) theory recognizes that information is a crucial tool in project performance (Lo and Wang, 2019). Within an organization, data is collected and put together for others to imitate. Top management support can be seen in the context of differential expertise and multiple viewpoints. Hence, RBV theory on the moderator variable confidence with top management support and collaborative team contributed significantly to project success in this study. An RBV perspective shows that the competitive benefit derives from the efficient and effective implementation of a collaborative team on project performance (Hernandez-Espallardo, Osorio-Tinoco, & Rodriguez-Orejuela, 2018). Company resources are the firm's strength for the project to increase efficiently and effectively. RBV-based project performance will rise through the trust-moderating, collaborative team by human resources, and capabilities pool (Phina, Arinze, Chidi, & Chukwuma, 2018). Furthermore, RBV indicates that top management is a crucial asset contributing to the project's success objectives and acting as a foundation for competitive advantages (Chan, Ko, Au, & Yeung, 2018). Therefore, RBV may positively or negatively affect the construction industry's project efficiency (Muldoon, Bauman, & Lucy, 2018).

An Overview of Construction Industry in Malaysia

The construction industry in Malaysia drives economic growth and evolution. Commonly, organizations are becoming more and more complicated, and unprecedented problems are being updated due to overrun costs (Simard et al., 2018). Furthermore, the problem created by poor project output in the construction industry is that the project was not designed to succeed (Ahmed et al., 2016). According to Aziz and Abdel-hakam (2016), it may cause a delay in the construction project because the preparation and scheduling are not being adequately followed. Even it is common to delay building projects, these delays may be caused by the owner, contractor, and third party, which also may co-occur.

Top Management Support

The top management support is a senior-level person that has leadership and management skills. Top management serves a working environment with a good facility and encourages team members to implement the projects. Top management can support it as it is important in the project's progress to make it successful (Ahmed et al., 2016; Sperber & Linder, 2016). Top management support is critical for project results to study through recent research that distinguished project success as crucial for project performance. In general, top management is the individuals who function as chief executive officers, a manager that has the right criteria to lead the company (Ong & Bahar, 2018). Effective planning and support from top management are nearly always crucial for a project to succeed (Ahmed et al., 2016; Musambayi, 2018). According to Mozumder (2018), organizational outcomes seem to be more likely to be affected by top management by programmatic decision-making and organizational support. Top management capabilities include expertise, abilities, skills, and knowledge, which improve the business performance (Mölders et al., 2019; Le et al., 2020).

Collaborative Team

A collaborative team can be defined as regularly connecting, cooperating, and assisting others in their work by exchanging information and skills (Tlapa, Limon, & García-alcaraz, 2016). Collaboration and cooperation are separable definitions defined as a creative process in which collaborative individuals or organizations at a crossroads public aim through information exchange, education, and agreement construction (Adu, 2019). There may be a collaboration between top management and a collaborative team. It is only used for collaborative teamwork. Interpersonal cooperation within a project team can be promoted. The degree of collaboration has various important factors to be aware of (Bond-barnard, Fletcher, & Steyn, 2018). Collaboration requires more complicated project management because complementary roles must be delegated to the parties involved and organized relationships (Guzzini and Iacobucci, 2017). The company may develop collaborative knowledge or experience over time (Bellini, Piroli, & Pennacchio, 2019; Rojas & Lu, 2017; Harris & Lyon, 2013).

Trust

Trust is defined as a defining principle (Javed, Syed, & Javed, 2018). Predictability and expectations of other attitudes or trusts will influence the output by triggering the relationship between the team (Bond-barnard et al., 2018; Buvik & Rolfsen, 2015). Trust is the psychological state involving the desired exposure based on the positive belief of the actions (Mozumder, 2018). Thus, human-related project management issues significantly influence project failures (Javed et al., 2018). Nevertheless, trust is a common method that promotes collaboration in the project (Lin, Dang, & Liu, 2016). Trust typically grows when all parties consistently abide by the same rules, principles, and values (Kujala, Lehtimäki, & Pučėtaitė, 2016). Bond-barnard et al. (2018) stated that trust could be sustained in the high degree of top management and collaborative teams. Besides, the author has said that trust is a principal principle in philosophy, psychology, business, and sociology. Studies have shown that previous trust rates apply to organizational behaviour and engagement (Qian & Papadonikolaki, 2019). In addition, Bachmann and Inkpen (2011) described that trust is a 'state of mind'. A person

cooperates with another person during project progress. This also has strong backing on trust definition where it is stated as the hope of another.

Project Performance

The project performance in this literature is defined as a project's progress, targeted by the project goals (Lu, Cai, Wei, Song, & Wu, 2019). Project performance involves achieving a continuous evaluation of the project in cost, scope, and budget to assess the project's relative success (Bond-barnard et al., 2018). Project performance is an essential predictor for organizations to achieve their goals or objectives in both small and medium-sized developed and emerging economies, and large organizations (Rehman, Mohamed, & Ayoup, 2019). Musambayi (2018) hypothesized that project performance is encouraged to access value-added incubation services as the money flow of the project, the duration of the project taken to construct, and the quality of the product to build the building. Project management explains the need to meet project targets within the timeline and budget to achieve success (Caniëls, Chiocchio, & van Loon, 2019). During the construction phase, the management must maintain and assess those responsible for delivering a project (Wu, 2020). The construction industry has faced ever-increasing and sophisticated demands that require the most resource-efficient use (Kaur, Arif, & Akre, 2016).

Research Hypotheses

Top management support will enhance the loyalty and performance of workers towards the company (Mölders et al., 2019). Top management support shows inspiring visions and actions as the main model that improves project performance and recovers the Malaysian Construction Industry project (Lin et al., 2016; Musambayi, 2018). In addition, younger top management support teams are effective and efficient in handling the project rather than older top management. Hence, they are normally ideal for scheduling management in megaprojects (Le et al., 2020). Otherwise, other research found top management support had contributed a paradigm jump to organizational success (Lo and Wang, 2019). Management is supposed to be active in any step of the project life cycle, especially in conceptualization, preparation, and implementation. Senior management and collaboration teams need to be positive and dedicated to process improvement efforts (Antony, 2019). Top management support has been closely linked to project efficiency and is considered one of the leading success factors, whereas successful executive involvement could significantly contribute to project performance (Ong and Bahar, 2018).

H1: Top management support positively affect project performance in the construction industry in Malaysia

Cooperation between organizations may lead to the success of project performance (Bond-barnard et al., 2018). This collaboration means the company acquires specialized expertise and uses that expertise to gain additional value through experience (Bellini et al., 2019). According to Caniëls et al. (2019), effective collaboration among team members is seen as the main element for the success of the project performance. Thus, to establish an effective collaboration in teams, both climates must be present within the organization. Extant literature also suggests that organizational teamwork could produce better outcomes (Adu, 2019). Cooperation culture reduces competition in the workplace and increases the ability to share sensitive information (Kucharska, 2017).

H2: Collaborative team positively effect project performance in the construction industry in Malaysia

Trust also facilitates efficient contact and sharing of knowledge conducive to the development of skills and project experience. The overall interest is achieved when cooperative members can consider the new definition with high trust (Lu et al., 2019). Therefore, top management support's trust increases management decision-making, promoting creativity and turning the intellectual stimulation given by transformative top management into advantageous outcomes (Lin et al., 2016). Trust in supporting top management plays a factor in teams' and organizations' effective functioning, mainly when it is dynamic and unstructured, and needs interdependence, communication, and information sharing (Lampaki & Papadakis, 2018). Trust in top management results in a shared, highly competent perception (García-Granero, Fernández-Mesa, Jansen, & Vega-Jurado, 2018). When a CEO is showing a high level of trust in team members' expertise which is also considered as functionally diverse top management support, top management support members will have greater trust in their ability to achieve team goals. The author indicated that the contextual factors significantly impact the degree of trust in the construction project which can result in the project expectations exceeding cooperation between top management and collaborative team, personal participation of project managers experience, and anticipated potential organizational collaboration. High trust levels may improve the performance of the project (Zuppa and Issa, 2016).

H3: Trust positively moderates the effect of top management support on project performance in the construction industry in Malaysia

In the construction industry, high rates of exchange of knowledge and reliable logistics commitments from the beginning of a project are required to promote a trust-based collaborative environment (Bond-barnard et al., 2018). Furthermore, high trust means shared team expertise is reliable and useful, which encourages the culture for the exchanging information without worrying intention and actions of the partner (Bellini et al., 2019; Corral de Zubielqui et al., 2019). A project with the top level of trust that will continue to reciprocate its employees is more likely to invest in

staff training and growth (Xu, Fernando, & Tam, 2019). The source of trust will influence and affect the project efficiency, the interplay of the willingness to invest in employee training, and the loyalty to the project.

Trust is the most frequently cited success for building a partnership. Higher levels of trust are expected to improve the collaboration effectiveness. Trust is also considered a willingness to accept partners to improve morale in the team and give impactful results (Qian and Papadonikolaki, 2019; Kaur et al., 2016). Trust between employees in the workplace affects their mood and behaviour, contributing to confidence in products and their ability to achieve project goals. Trust arises from personality between two or more individuals in the sense of interaction-based trust, without regard to or connection to organizational arrangements (Bachmann & Inkpen, 2011).

H4: Trust positively moderates the effect of a collaborative team on project performance in the construction industry in Malaysia

Theoretical Framework

Based on the discussion mentioned above, the theoretical framework of this study is shown in Figure 1.

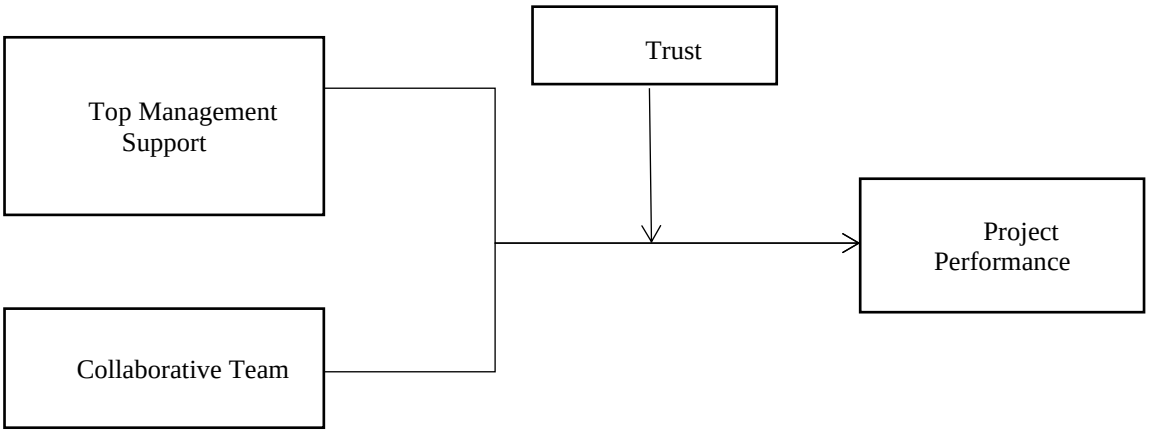

Figure 1. Theoretical framework

METHODOLOGY

This review focuses on the study and analyzes the relationship between top management support (TMS) and collaborative team (CT) on project performance. Based on Construction Industry Development Board (CIDB) 2020, there are 2342 construction organizations to form the population of this study. The contractor's grade focuses on grades one to seven, where the research area was conducted in Kota Bharu, Kelantan. This research's target respondents were employees (executive director, project manager, construction coordinator, site manager, site supervisor, engineer, and architect) working in the construction industry in Malaysia. To determine the minimum sample size, researchers used G-power 3.1.9.4 statistical analysis software as a tool to calculate the minimum sample size. The minimum sample size that this study required was 107 organizations. This study used a proportionate cluster random sampling technique to withdraw the sample. Before distributing the survey questionnaire, the survey questionnaire went through pre-test procedures. It is to ensure the reliability and validity of the questions in the survey questionnaire. A total of 150 questionnaires were distributed to the respondent and the feedback received was 123 responses. Hence, the response rate of this study is 82 percent and can be used for data analysis. The quantitative method was chosen for this study as it consumes a shorter time than qualitative methods. To ensure construct validity and reliability of the measurement quality, it must prevent the respondents from answering a neutral point. Next, the five-point Likert scale to quantify the instrument was used in the questionnaires. In addition, Smart-PLS 3.2.8 software was used to analyze the data. Three assessments were conducted, which are normality, measurement model, and structural model assessment.

RESULTS AND FINDINGS

Respondent Profile

The demographic profile of the respondents is presented in this section. The questionnaire of the study received feedback a total number of 123 responses. Based on Table 2, the first demographic item is the highest level of education, which are categorized as a total of 101 respondents who have bachelor's degrees (82.11%), 4 have a doctoral degree or above (3.25%), 9 have Master's or Specialist's degree (7.32%), 5 respondents graduate only from high school or equivalent (4.07%), 4 have technical school certification (3.25%). The next item is the duration of the respondents working in the company. The highest number of respondents is 60 (48.78%) in the working 2 to 5 years category, while the lowest is 6 to 10 years on the company with 12 (9.76%). Furthermore, the item is participating for future research, and the respondent

agrees to contribute with a total number 100 which is 81.30%, while 23 (18.70%) respondents do not wish to participate in future research. Meanwhile, there are total numbers of 85 who want to receive a copy of the executive summary of the research with 69.11% whereas only 38 respondents do not want a copy of the executive summary with 30.89%.

Table 1. Respondent profile

Demographic Items	Count	Percentage (%)
Educational level		
High school or equivalent	5	4.07
Technical school certification	4	3.25
Bachelor's degree	101	82.11
Master's or Specialist's degree	9	7.32
Doctoral degree or beyond	4	3.25
How long have you been in this company?		
Less than 1 year	26	21.14
2 to 5 years	60	48.78
6 to 10 years	12	9.76
More than 10 years	26	21.14
Please indicate if you would like to participate in future research? (e.g.: visit your site)		
Yes	100	81.30
No	23	18.70
Please indicate if you would like to participate in future research? (e.g.: visit your site)		
Yes	85	69.11
No	38	30.89
Total	123	100%

Company Profile

Table 2 shows that majority of the contractors involved in the survey are from G7 and they are in the engineer position. A few of them are architect site manager and construction coordinator. The majority of the companies were established more than ten years and less than 50 employees were in the company.

Table 2. Company profile

Demographic Items	Count	Percentage (%)
Grade of Contractor		
G1	17	13.82
G2	9	7.32
G3	14	11.38
G4	23	18.70
G5	18	14.63
G6	7	5.69
G7	35	28.46
Position		
Architect	2	1.63
Construction Coordinator	9	7.32

Demographic Items	Count	Percentage (%)
Engineer	44	35.77
Executive Director	16	13.01
Project Manager	20	16.26
Site Manager	8	6.50
Site Supervisor	24	19.51
Age of company		
Less than 1 year	9	7.32
2 to 5 years	28	22.76
6 to 10 years	25	20.33
More than 10 years	61	49.59
Number of employees		
less than 50	121	98.37
51-100	2	1.63
101-999	0	0.00
more than 1000	0	0.00
Grand Total	123	100.00

Descriptive Statistics

A descriptive statistic is essential for a straightforward interpretation of data and a summary for the quantitative data analysis. The sample size (N), mean, and standard deviation of the key constructs were also shown. Furthermore, the sample size (N) of this study is 123. Mean value contributes to top management support and collaborative team and project performance, moderated by trust. Next, the standard deviation was used to explicitly explain the homogenous top management support, collaborative team, trust, and project performance. As shown in Table 3, the top management support mean value is between 3.927 and 4.333, with standard deviation ranges between 0.571 and 0.810. The indicator for top management support (TMS) is TMS1 until TMS10. Furthermore, the mean of the collaborative team is between 3.943 and 4.374, and the standard deviation is between 0.630 and 0.880. The collaborative team (CT) item has ten items that started from CT 1 until CT 10. Also, the mean for the moderating effect of trust is between 3.740 and 4.073, while the standard deviation is between 0.754 and 0.978. The indicators of trust are T1 until T10. Last but not least, the dependent variable in this study is project performance, which has a mean value between 3.976 and 4.260 and standard deviations between 0.710 and 0.945. Then, the indicator for project performance (PP) is PP1 up to PP10.

Table 3. Descriptive statistics

Variable	Items	Sample Size (N)	Mean	Standard Deviation
Top Management Support	TMS 1	123	4.268	0.571
	TMS 2	123	4.252	0.739
	TMS 3	123	4.268	0.663
	TMS 4	123	4.130	0.674
	TMS 5	123	4.187	0.810
	TMS 6	123	4.293	0.634
	TMS 7	123	3.927	0.734
	TMS 8	123	4.228	0.696
	TMS 9	123	4.228	0.684
	TMS 10	123	4.333	0.646
Collaborative Team	CT 1	123	4.374	0.630
	CT 2	123	4.098	0.668
	CT 3	123	3.943	0.747

Variable	Items	Sample Size (N)	Mean	Standard Deviation
	CT 4	123	4.122	0.880
	CT 5	123	4.195	0.793
	CT 6	123	4.163	0.714
	CT 7	123	4.016	0.732
	CT 8	123	4.024	0.791
	CT 9	123	4.163	0.737
	CT 10	123	4.033	0.721
Trust	T 1	123	4.024	0.860
	T 2	123	4.049	0.918
	T 3	123	3.927	0.847
	T 4	123	3.740	0.978
	T 5	123	4.073	0.788
	T 6	123	4.000	0.754
	T 7	123	3.902	0.840
	T 8	123	3.854	0.772
	T 9	123	3.911	0.807
	T 10	123	4.000	0.874
Project Performance	PP 1	123	4.203	0.945
	PP 2	123	4.081	0.782
	PP 3	123	3.976	0.841
	PP 4	123	4.171	0.751
	PP 5	123	4.089	0.710
	PP 6	123	4.154	0.765
	PP 7	123	4.260	0.784
	PP 8	123	4.041	0.737
	PP 9	123	4.114	0.767
	PP 10	123	4.049	0.854

Normality Assessment

Table 4 explained the normality of the sample by using the skewness and kurtosis tests value. However, the range between -7 to 7 indicates the kurtosis test. Meanwhile, the value between -2 to 2 indicates the skewness test in the normal range. Therefore, the normality of the sample is appropriate. For multicollinearity, each predictor's inflation factor variance (IFV) should be below 5 (Hair et al., 2014).

Table 4. Normality assessment

Construct	Normality Statistics	
	Skewness	Kurtosis
Top Management Support	-0.684	1.573
Collaborative Team	-0.426	0.104
Trust	-0.573	0.293
Project Performance	-0.662	0.406
Multivariate		**2.376**

Assessment of Measurement Model

Smart-PLS3 software was used to analyze the Partial Least Square-based Structural Equation Modelling (PLS-SEM) (Hair, Sarstedt, Ringle, & Mena, 2012). SEM can measure latent variables at the observational level (outer or measurement model) and evaluate the theoretical (inner or structural model) relationships between latent variables (Hair

et al., 2012). This technique is an extensive, scalable, and flexible causal-modeling capability. For measurement model assessment, two types of validity must be conducted: convergent validity and discriminant validity. Figure 2 illustrates the modified PLS path model after deleting PP2, T7, and T9 due to the low outer loading value, which is less than 0.50.

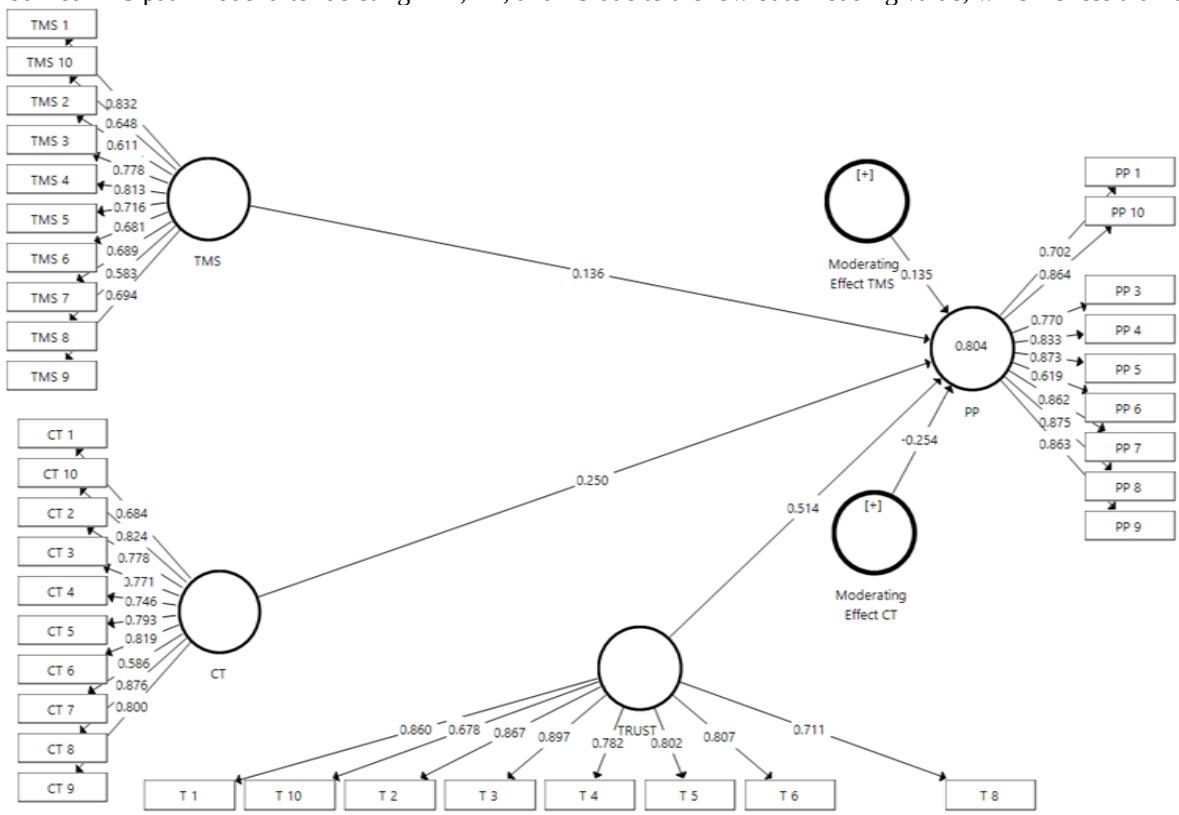

Figure 2. Modified PLS path model

Convergent Validity

The convergent validity is to refers to the positive correlation of the same construct and by assessing the outer loading, average variance extracted (AVE), composite reliability (CR), and Cronbach's Alpha (Janadari et a., 2016; Hamid et al., 2017). Therefore, the values must be according to its threshold values in which the outer loading must exceed 0.40 (Hair et al., 2011), AVE must exceed 0.5, CR and Cronbach's Alpha must exceed 0.7 (Hair et al., 2020; Hamid et al., 2017; Janadari et al., 2016).

Based on Table 5, the entire factor loading exceeded 0.500. Factor loadings value for top management support ranges between 0.583 and 0.832. Furthermore, the factor loadings value for the collaborative team is between 0.586 and 0.876. Next, the factor loading value for trust is between 0.678 and 0.897. Lastly, the value factor loading for project performance is between 0.619 and 0.875. Based on Table 5, all the values AVE are 0.50 and above. AVE for top management support is 0.502. This indicates 50.20% of the total variance. Next, the value AVE for the collaborative team is 0.559 which indicates 55.90% of the variance. Besides, the AVE for trust is 0.646, which means 64.60% total variance explained by the construct. Moreover, the AVE for the moderating effect of top management support and collaborative team is 0.562 and 0.559. Lastly, AVE for project performance is 0.658 which indicates 65.80% of the variance.

In addition, CR is an assessment of the measurement model's internal consistency. The interpretation of CR and Cronbach's alpha is closely similar. Table 5 shows that CRs of all the latent variables exceeded 0.70. The value of CRs for top management support, CT, trust, and project performance is 0.909, 0.936, 0.935 respectively, and project performance is 0.945. The moderating effect of top management support and collaborative team is between 0.989 and 0.990 respectively. Based on Table 6, all latent construct reliability is acceptable because the value of CRs is more than 0.7.

Table 5. Convergent validity

Construct	Item code	Item	Outer loading	Cronbach's alpha	AVE	Composite Reliability
Top Management Support	TMS 1	Top management is very capable of performing its task.	0.832	0.891	0.502	0.909
	TMS 2	Top management has much knowledge about the work that needs to be done.	0.611			
	TMS 3	Top management has specialized capabilities that can increase our performance.	0.778			
	TMS 4	Top management actions and behaviours are very consistent.	0.813			
	TMS 5	Top management is well qualified.	0.716			
	TMS 6	Top management has a strong sense of justice.	0.681			
	TMS 7	I never have to wonder whether top management will stick to its word.	0.689			
	TMS 8	Top management tries hard to be fair in dealing with others.	0.583			
	TMS 9	Top management looks out for what is important to me.	0.694			
	TMS 10	I feel confident about top management skills.	0.648			
Collaborative Team	CT 1	The culture of the management in my organization is characterized by teamwork, consensus and participation.	0.684	0.923	0.595	0.936
	CT 2	We believe the other party will bring professionalism and dedication on the project.	0.778			
	CT 3	We believe the other party will not exploit us to maximize profits.	0.771			
	CT 4	We believe the team member committed to achieving the goals.	0.746			
	CT 5	Team members actively participate in decision-making regarding the achievement of project goals.	0.793			
	CT 6	We believe team members are good problem-solving skills.	0.819			
	CT 7	There is a willingness to collaborate across organizational units within the organization.	0.586			
	CT 8	All teams and departments are aware of consumer satisfaction.	0.876			
	CT 9	Team members feel like part of the family in their team.	0.800			
	CT 10	The team is fast in adopting new innovative solutions.	0.824			
Trust	T 1	We believe that the project participant is upright and honest.	0.860	0.92	0.646	0.935
	T 2	We believe that each other commitment is reliable.	0.867			
	T 3	We believe that all participants involved in the project will comply with the contract.	0.897			
	T 4	We believe that the project participants trust each other working ability.	0.782			
	T 5	We are certain that the other participants can perform their tasks.	0.802			

Construct	Item code	Item	Outer loading	Cronbach's alpha	AVE	Composite Reliability
	T 6	We are certain that the others can meet the technical and management requirements.	0.807			
	T 8	We believe the construction changes factor impact the trust	0.711			
	T 10	We believed the type of contract would impact the trust.	0.678			
Project Performance	PP 1	The project is within the budget.	0.702	0.933	0.658	0.945
	PP 3	The participants of this project maintain good cooperation	0.770			
	PP 4	The results or deliverables of the project meet the expected objectives.	0.833			
	PP 5	This project creates positive impacts on end-users.	0.873			
	PP 6	The owner is satisfied with the project results	0.619			
	PP 7	The project satisfies the client's special requirements.	0.862			
	PP 8	The project participants can solve most problems encountered.	0.875			
	PP 9	The construction and deliverables quality accord with the standard.	0.863			
	PP 10	The project passed the quality inspection.	0.864			

Note: PP2, T7, and T9 is deleted

Discriminant Validity

Discriminant validity explains the range in which the construct is different from others. This assessment is used to prevent multicollinearity issues when the study included a latent variable. The indicator loading must be above all its cross-loading (Hair et al., 2014). Discriminant validity assessment using Heterotrait-Monotrait ratio of correlation (HTMT) measure must be below the more conservative threshold of 0.85 and significantly lower than 0.9 over the sample size (Ringle & Ting, 2018). Discriminant validity issues and empirical evidence are required to use the HTMT criterion due to its high sensitivity and specificity (Madina, Adolescents, Lee, & Baek, 2017). HTMT criterion is important for interpreting the causal effect in the modeling analysis (Madina et al., 2017).

Table 6. Heterotrait-Monotrait (HTMT) criterion

	CT	Moderating Effect CT	Moderating Effect TMS	PP	TMS	TRUST
CT						
Moderating Effect CT	0.342					
Moderating Effect TMS	0.269	0.848				
PP	0.872	0.356	0.308			
TMS	0.766	0.336	0.327	0.747		
TRUST	0.834	0.277	0.286	0.895	0.776	

Note: TMS (Top Management Support), CT (Collaborative Team), PP (Project Performance)

Assessment of Structural Model
Hypotheses Testing

In this study, there are four hypotheses to be tested. To test the hypotheses, bootstrapping was applied. Hair et al (2014) examined each indicator's weight and loading, and use bootstrapping to assess their significance. Furthermore, according to Hair et al. (2018), the t-value must be greater than 1.645 and the p-value must be less than 0.05 when determining statistical significance. The suggested number of bootstrap samples is 5000, and the number of cases should equal the number of observations in the original sample. The result shows that H1, which is the relationship between top

management support and project performance is negative. This is because the t-value is 1.123, and the p-value is 0.131. These two values do not achieve the expected value. Therefore, the H1 is not supported. Next, the relationship between the collaborative team and project performance is positive. The hypothesis is supported by the t-values of H2, which is 2.262 is greater than 1.645 and p-value is 0.012. Hence, the hypothesis is supported.

Table 7. Result of hypotheses testing

Hypo-theses	Path	Std. Beta (β)	Standard Deviation (STDEV)	t-values	p-values	Bias	Confidence Interval 5%	Confidence Interval 95%	Decisions
H1	TMS -> PP	0.136	0.121	1.123	0.131	-0.011	-0.075	0.309	Not Supported
H2	CT -> PP	0.250	0.111	2.262	0.012	-0.038	0.014	0.386	Supported

Note: $p < 0.05$

Moderating Effect

In this study, two hypotheses were tested and trust is moderating in the relationship between collaborative team, top management supported, and project performance. Based on Table 8, the results show that the t-values do not support H3 as t-value is 1.428 and p-value is 0.077. H4 has t-values of 0.996 and p-values of 0.160.

Table 8. Result of moderating effect

Hypo-theses	Path	Std. Beta (β)	Standard Deviation (STDEV)	t-values	p-values	Bias	Confidence Interval 5%	Confidence Interval 95%	Decisions
H3	TMS -> Trust -> PP	0.135	0.094	1.428	0.077	-0.005	-0.022	0.267	Not Supported
H4	CT -> Trust -> PP	-0.254	0.255	0.996	0.160	0.111	-0.400	0.428	Not Supported

Note: $p < 0.05$

Assessment on Coefficient of Determination (R^2), Effect Size (f^2), Blindfolding (Q^2)

The coefficient of determination (R^2) and blindfolding (Q^2) must be measured to evaluate the structural model. R^2 refers to a combination of independent variable effects on the dependent variable. Furthermore, R^2 also can be described as the amount of variance in the dependent variable by linking the independent variable to it. Hair et al, (2014) stated that R^2 values of 0.75, 0.50, or 0.25 for endogenous latent variables in the structural model can be described as substantial, moderate, or weak. Table 9 shows that the values of R^2, 80.40% of the variance of the project performance are determined by the top management support and collaborative team.

Furthermore, the effect size (f^2) allows assessing an exogenous construct's contribution to endogenous latent variables. Besides, the predictive relevance is used to obtain cross-validated redundancy measures for each endogenous construct. Both procedures are mainly to assess the structural model (Sabri & Wan Mohamad Asyraf, 2014). Values of 0.02, 0.15, and 0.35 are considered small, medium, and large respectively. Also, the f^2 is evaluated by the ratio between the part explained and the part not-explained ($f^2 = R^2/ (1- R^2)$ (Brasileira et al., 2014). Table 9 shows a small effect on the project performance from top management support and collaborative team.

Moreover, the blindfolding technique is used to achieve the Q^2 for the specified omission distance. Hair et al, (2014) stated the Q^2 values higher than zero indicates that the exogenous constructs have predictive relevance for the endogenous construct under consideration. Table 9 indicates that the model shows predictive accuracy with the value of 0.512 for project performance.

Table 9. Assessment on R^2, f^2 and Q^2

Construct	TMS	CT	Trust	PP
R^2	-	-	-	0.804
f^2	0.028	0.070	-	-
Q^2	-	-	-	0.512

DISCUSSION

This research predicts that top management support and project performance have a positive relationship. Unpredictably, the result of the findings is opposing the expectations. The hypothesis is not supported because top management is less likely to affect project performance (Huang, Maharjan, & Thakor, 2020). Construction industries depend on top management for project performance if they have authorization and accountability during the project. Moreover, the employer employed fresh graduates to the company negatively affected the project performance (Zidane, Hussein, Gudmundsson, & Ekambaram, 2016). In addition, the performance of projects in the construction industry is insignificant to top management throughout the implementation of projects performance (Ahmed, 2016). The top management support is unlikely to bring a necessary change to a project performance where decentralized teams are temporarily formed to deliver a project (Love, Ika, Matthews, & Fang, 2020). Furthermore, the employees preferred the top management to have less autonomy in project performance (Isakovic, 2018).

The finding of this study contributed to and strengthened previous theories and conceptual model in the context of the construction industry in Malaysia, where the collaborative team and project performance has a positive relationship. According to Bond-barnard et al, (2018), collaborative team and project performance have a positive relationship if the degree of collaboration increases. This study predicted this hypothesis to be consistent with other research, which found that the relationship between the collaborative team and project performance in industry has a positive relationship (Caniëls et al., 2019; Bellini et al., 2019).

The study assumes that the moderating effect of trust has a positive relationship between top management support and project performance. However, the findings of this study revealed that the relationship is contrary to the expectations. Trust is not essential for top management unless it becomes distrusting and individual keeps depending on each other (Ryciuk, 2017). In addition, the perception of trust between top management did not impact people who rely on them for the project performance (Guinalíu & Jordán, 2016). Interestingly, higher education negatively impacts top management's trust in project performance (Lourenço, Dellaert, & Donkers, 2020). Higher education is one of the most important aspects of the construction industry because it will ensure a good outcome (Reddy, Xie, & Tang, 2016). Non-compatibility in top management is the main reason to misrepresent the value of the project. This is not enough for the moderating effect of trust to enhance the top management support on project performance. Also, the author stated that the top management support has strong credibility of trust and can improve project performance (Wu, 2020).

Next, the findings show that the relationship negatively affects trust between the collaborative team and project performance. Collaborative teams in large companies usually follow the contract document during the project (Ryciuk, 2017). Trust is crucial in enhancing fearless, integrity, and liquidity between employees, especially for fresh graduates (Zidane et al., 2016). The fresh graduates need more experience during the project to enhance collaborative team and project performance trust.

CONLUSION AND IMPLICATIONS

In conclusion, this study contributes to understanding the effect of top management support and collaborative team in project performance that is moderated by trust. There are four hypotheses discussed in this study. According to the study's findings, one hypothesis is significant, while the other three hypotheses are not significant. The project performance has become an interesting topic to many people, especially in the construction industry, higher education institutions, government, and research institutions around the world. This study also focused on trust in the top management team as a valuable organizational resource that can alleviate the dysfunctional effects of organizational politics. This study suggested a useful improvement in enhancing project performance for the construction industry in Malaysia. Therefore, this study can be a reference for future studies.

The implication of this study is that the research revealed that the collaborative team plays an important role in project performance, while top management support and moderating of trust are less important in improving project performance. This study suggested a useful improvement in enhancing project performance for the construction industry in Malaysia. Therefore, the practical implication in this study can be a reference for future researchers and practitioners. Empirical research adds to the corpus of knowledge about project performance in terms of theoretical implications. Additionally, by comparing it to the building sector in Malaysia, it might provide a unique perspective. Also, for the sake of practicality, this study revealed an understanding of the collaborative team to the construction industry in Malaysia to better project performance. This research will help to increase awareness about collaborative team impact on project performance.

LIMITATIONS AND RECOMMENDATIONS

Even though this study provides insightful findings and contributions to theoretical and practical implications, it still has some limitations to address. Since this study is a quantitative research study, it only investigated the relationship between top management support and collaborative team on project performance that is moderated by trust. Naturally, the main limitation is that this study only can answer 'what' questions such as the relationship to the project performance. As a recommendation, the future researcher can investigate or examine the relationship of top management support, collaborative team, trust, and project performance by using exploratory or mixed-method through multiple case study analysis as triangulation to answer why and how questions. This is because there is still limited study applied in mixed-method research design in this field.

REFERENCES

Adu, E. T. (2019). Assessment of performance of teamwork in construction projects delivery in, 230–250. doi:10.1108/JEDT-01-2019-0025

Ahmed, R. (2016). Top management support and project performance: An empirical study of public sector projects. *2016 International Annual Conference of the American Society for Engineering Management, ASEM 2016*, (November 2016). doi:10.2139/ssrn.3044377

Ahmed, R., Azmi, N., Mohamad, B., & Ahmad, M. S. (2016). Effect of multidimensional top management support on project success : an empirical investigation. *Quality & Quantity*, 151–176. doi:10.1007/s11135-014-0142-4

Alsuliman, J. A. (2019). Causes of delay in Saudi public construction projects. *Alexandria Engineering Journal*, *58*(2), 801–808. doi:10.1016/j.aej.2019.07.002

Antony, J. (2019). Top ten reasons for process improvement project failures, *10*(1), 367–374. doi:10.1108/IJLSS-11-2017-0130

Aziz, R. F., & Abdel-hakam, A. A. (2016). Exploring delay causes of road construction projects in Egypt. *Alexandria Engineering Journal*, *55*(2), 1515–1539. doi:10.1016/j.aej.2016.03.006

Bachmann, R., & Inkpen, A. C. (2011). Understanding Institutional-based Trust Building Processes in Inter-organizational Relationships, (March). doi:10.1177/0170840610397477

Bellini, E., Piroli, G., & Pennacchio, L. (2019). Collaborative know-how and trust in university–industry collaborations: empirical evidence from ICT firms. *Journal of Technology Transfer*, *44*(6), 1939–1963. doi:10.1007/s10961-018-9655-7

Bond-barnard, T. J., Fletcher, L., & Steyn, H. (2018). Linking trust and collaboration in project teams to project management success. doi:10.1108/IJMPB-06-2017-0068

Brasileira, R., Cient, E., Lam, B. De, Avalia, F., Review, D. B., & Revis, O. J. S. (2014). Structural equation modeling with the smartpls, *13*, 56–73. doi:10.5585/remark.v13i2.2717

Buli, H. (2019). HR Practices for Supporting Interpersonal Trust and Its Consequences for Team Collaboration and Innovation.

Buvik, M. P., & Rolfsen, M. (2015). ScienceDirect Prior ties and trust development in project teams – A case study from the construction industry. *JPMA*, (2014). doi:10.1016/j.ijproman.2015.06.002

Caniëls, M. C. J., Chiocchio, F., & van Loon, N. P. A. A. (2019). Collaboration in project teams: The role of mastery and performance climates. *International Journal of Project Management*, *37*(1), 1–13. doi:10.1016/j.ijproman.2018.09.006

Chan, J. H. T., Ko, A. C. K., Au, A. K. M., & Yeung, M. C. H. (2018). A relational perspective on pure project performance: Network centrality and cinematic achievements in the Hong Kong film industry. *Management Research Review*, *41*(6), 753–772. doi:10.1108/MRR-11-2017-0373

Corral de Zubielqui, G., Jones, J., & Audretsch, D. (2019). The influence of trust and collaboration with external partners on appropriability in open service firms. *Journal of Technology Transfer*, *44*(2), 540–558. doi:10.1007/s10961-018-9696-y

García-Granero, A., Fernández-Mesa, A., Jansen, J. J. P., & Vega-Jurado, J. (2018). Top management team diversity and ambidexterity: The contingent role of shared responsibility and CEO cognitive trust. *Long Range Planning*, *51*(6), 881–893. doi:10.1016/j.lrp.2017.11.001

Guinalíu, M., & Jordán, P. (2016). Generación de confianza en el líder de equipos de trabajos virtuales. *Spanish Journal of Marketing - ESIC*, *20*(1), 58–70. doi:10.1016/j.reimke.2016.01.003

Guzzini, E., & Iacobucci, D. (2017). Project failures and innovation performance in university–firm collaborations. *Journal of Technology Transfer*, *42*(4), 865–883. doi:10.1007/s10961-016-9554-8

Hair, J. F., Ringle, C. M., Sarstedt, M., Hair, J. F., Ringle, C. M., & Sarstedt, M. (2014). PLS-SEM : Indeed a Silver Bullet PLS-SEM : Indeed a Silver Bullet, *6679*(2011). doi:10.2753/MTP1069-6679190202

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*. doi:10.1007/s11747-011-0261-6

Harris, F., & Lyon, F. (2013). Transdisciplinary environmental research : Building trust across professional cultures. *Environmental Science and Policy*, *31*, 109–119. doi:10.1016/j.envsci.2013.02.006

Hernandez-Espallardo, M., Osorio-Tinoco, F., & Rodriguez-Orejuela, A. (2018). Improving firm performance through inter-organizational collaborative innovations: The key mediating role of the employee's job-related attitudes.

Management Decision, *56*(6), 1167–1182. doi:10.1108/MD-02-2017-0151
Huang, S., Maharjan, J., & Thakor, A. V. (2020). Disagreement-induced CEO turnover. *Journal of Financial Intermediation*, *43*(November 2018), 100819. doi:10.1016/j.jfi.2019.01.006
Isakovic, A. A. (2018). Examining the impact of organizational culture on trust and career satisfaction in the UAE public sector. doi:10.1108/ER-02-2017-0038
Javed, S. A., Syed, A. M., & Javed, S. (2018). Perceived organizational performance and trust in project manager and top management in project-based organizations Comparative analysis using statistical and grey systems methods. doi:10.1108/GS-01-2018-0009
Kamolson, S. (2007). Fundamentals of quantitative research. *Language Institute Chulalongkorn University*, (1, 2–3), 20.
Kaur, S., Arif, M., & Akre, V. (2016). Effect of Social Media on Trust in Virtual Project Teams of Construction Sector in Middle East, *2*, 419–429. doi:10.1007/978-3-319-45234-0
Kokkonen, A., Kokkonen, A., & Vaagaasar, A. L. (2017). Managing collaborative space in multi-partner projects. *Construction Management and Economics*, (July), 1–13. doi:10.1080/01446193.2017.1347268
Kucharska, W. (2017). Relationships between Trust and Collaborative Culture in The Context of Tacit Knowledge Sharing. *Journal of Entrepreneurship, Management and Innovation*, *13*(2017), 61–78. doi:10.7341/20171344
Kujala, J., Lehtimäki, H., & Pučėtaitė, R. (2016). Trust and Distrust Constructing Unity and Fragmentation of Organisational Culture. *Journal of Business Ethics*, *139*(4), 701–716. doi:10.1007/s10551-015-2915-7
Lampaki, A., & Papadakis, V. (2018). The impact of organizational politics and trust in the top management team on strategic decision implementation success: A middle-manager's perspective. *European Management Journal*, *36*(5), 627–637. doi:10.1016/j.emj.2018.07.005
Le, Y., Wan, J., Wang, G., & Zhang, B. (2020). Exploring the missing link between top management team characteristics and megaproject performance, *27*(5), 1039–1064. doi:10.1108/ECAM-12-2018-0566
Lin, H. C., Dang, T. T. H., & Liu, Y. S. (2016). CEO transformational leadership and firm performance: A moderated mediation model of TMT trust climate and environmental dynamism. *Asia Pacific Journal of Management*, *33*(4), 981–1008. doi:10.1007/s10490-016-9468-x
Lo, F., & Wang, Y. (2019). Does TMT cultural diversity contribute to firm performance and do socialization and tenure matter ? A test of two competing perspectives. doi:10.1108/PR-11-2018-0468
Lourenço, C. J. S., Dellaert, B. G. C., & Donkers, B. (2020). Whose Algorithm Says So: The Relationships Between Type of Firm, Perceptions of Trust and Expertise, and the Acceptance of Financial Robo-Advice. *Journal of Interactive Marketing*, *49*, 107–124. doi:10.1016/j.intmar.2019.10.003
Love, P. E. D., Ika, L., Matthews, J., & Fang, W. (2020). Shared leadership, value and risks in large scale transport projects: Re-calibrating procurement policy for post COVID-19. *Research in Transportation Economics*, (October), 100999. doi:10.1016/j.retrec.2020.100999
Lu, P., Cai, X., Wei, Z., Song, Y., & Wu, J. (2019). ScienceDirect Quality management practices and inter-organizational project performance : Moderating effect of governance mechanisms. *International Journal of Project Management*, *37*(6), 855–869. doi:10.1016/j.ijproman.2019.05.005
Madina, M., Adolescents, A., Lee, S. U., & Baek, H. (2017). Discriminant Validity Assessment : Use of Fornell & Larcker criterion versus HTMT Criterion Discriminant Validity Assessment : Use of Fornell & Larcker criterion versus HTMT Criterion.
Mölders, S., Brosi, P., Spörrle, M., & Welpe, I. M. (2019). The Effect of Top Management Trustworthiness on Turnover Intentions via Negative Emotions: The Moderating Role of Gender. *Journal of Business Ethics*, *156*(4), 957–969. doi:10.1007/s10551-017-3600-9
Mozumder, N. A. (2018). A Multilevel Trust-based Model of Ethical Public Leadership. *Journal of Business Ethics*, *153*(1), 167–184. doi:10.1007/s10551-016-3341-1
Muldoon, J., Bauman, A., & Lucy, C. (2018). Entrepreneurial ecosystem: do you trust or distrust? *Journal of Enterprising Communities*, *12*(2), 158–177. doi:10.1108/JEC-07-2017-0050
Musambayi, N. J. (2018). Leadership and firm entrepreneurial performance in county governments in Kenya. *Journal of Global Entrepreneurship Research*, *8*(1). doi:10.1186/s40497-018-0117-3
Ong, C. H., & Bahar, T. (2018). Factors influencing project management effectiveness in the Malaysian local councils. doi:10.1108/IJMPB-09-2018-0200
Othman, I., Norfarahhanim, S., Ghani, M., & Woon, S. (2020). The Total Quality Management (TQM) journey of Malaysian building contractors. *Ain Shams Engineering Journal*, *11*(3), 697–704. doi:10.1016/j.asej.2019.11.002
Phina, N., Arinze, S., Chidi, F., & Chukwuma, D. (2018). The Effect of Teamwork on Employee Performance: A Study of Medium Scale Industries in Anambra State. *International Journal of Contemporary Applied Researches*, *5*(2), 174–194.
Qian, X. A., & Papadonikolaki, E. (2019). Shifting trust in construction supply chains through blockchain technology. doi:10.1108/ECAM-12-2019-0676
Reddy, K. S., Xie, E., & Tang, Q. (2016). Higher education, high-impact research, and world university rankings: A case of India and comparison with China. *Pacific Science Review B: Humanities and Social Sciences*, *2*(1), 1–21. doi:10.1016/j.psrb.2016.09.004
Rehman, S., Mohamed, R., & Ayoup, H. (2019). The mediating role of organizational capabilities between organizational performance and its determinants. *Journal of Global Entrepreneurship Research*, *9*(1). doi:10.1186/s40497-019-0155-5

Ringle, C. M., & Ting, H. (2018). Convergent validity assessment of formatively measured constructs in PLS-SEM, *3*. doi:10.1108/IJCHM-10-2017-0649

Rojas, B. H., & Lu, D. (2017). Moderated effect of value co-creation on project performance. doi:10.1108/IJMPB-03-2017-0033

Ryciuk, U. (2017). Identification of Factors Related to Trust Formation in Construction Supply Chains. *Procedia Engineering*, *182*, 627–634. doi:10.1016/j.proeng.2017.03.168

Sabri, A., & Wan Mohamad Asyraf, W. A. (2014). The importance-performance matrix analysis in partial least square structural equation modeling (PLS-SEM). *International Journal of Mathematical Research*, *3*(1), 1–14. doi:10.18488/journal.24/2014.3.1/24.1.1.14

Simard, M., Aubry, M., & Laberge, D. (2018). ScienceDirect The utopia of order versus chaos : A conceptual framework for governance , organizational design and governmentality in projects, *36*, 460–473. doi:10.1016/j.ijproman.2018.01.003

Sperber, S., & Linder, C. (2016). The impact of top management teams on firm innovativeness : a configurational analysis of demographic characteristics , leadership style and team power distribution. *Review of Managerial Science*. doi:10.1007/s11846-016-0222-z

Tlapa, D., Limon, J., & García-alcaraz, J. L. (2016). Six Sigma enablers in Mexican manufacturing companies : a proposed model. doi:10.1108/IMDS-06-2015-0265

Wu, G. (2020). How different strengths of ties impact project performance in megaprojects : the mediating role of trust, *13*(4), 889–912. doi:10.1108/IJMPB-09-2019-0220

Xu, Q., Fernando, G. D., & Tam, K. (2019). Trust and firm performance: A bi-directional study. *Advances in Accounting*, *47*, 100433. doi:10.1016/j.adiac.2019.100433

Zidane, Y. J.-T., Hussein, B. A., Gudmundsson, J. Ø., & Ekambaram, A. (2016). Categorization of Organizational Factors and Their Impact on Project Performance. *Procedia - Social and Behavioral Sciences*, *226*(1877), 162–169. doi:10.1016/j.sbspro.2016.06.175

Zuppa, D., & Issa, R. (2016). Perceptions of trust in the US construction industry, *23*(2), 211–236. doi:10.1108/ECAM-05-2015-0081

CONFLICT OF INTEREST

The author(s), as noted, certify that they have NO affiliations with or involvement in any organization or agency with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, jobs, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, expertise or beliefs) in the subject matter or materials addressed in this manuscript.

AUTHORS' BIOGRAPHY

Author's Full Name: Muhammad Zul Fikri Bin Mohd Zureehan
Author's Email: zukfikrizureehan@gmail.com
Author Professional Bio (not more than 50 words): Muhammad Zul Fikri holds a bachelor's degree of Project Management with Honours from Universiti Malaysia Pahang (UMP). After the graduation, he is an assistant project manager in consultant civil & structure at Jurutera Perunding Zakie.

Author's Full Name: Khai Loon, Lee
Author's Email: leekhailoon@ump.edu.my
Author Professional Bio (not more than 50 words): Ts. Dr. Lee Khai Loon is a Senior Lecturer and Deputy Dean of Academic and Student Affairs in Faculty of Industrial Management (FIM), Universiti Malaysia Pahang (UMP). He specialized in supply chain management, technology management, operation management, industrial engineering, and business management. He holds a Doctor of Philosophy (PhD) in Supply Chain Management and Bachelor Degree in Technology Management from School of Technology Management and Logistics, Universiti Utara Malaysia (UUM). He has a long industrial experience and teaching undergraduate and postgraduate students in the university. He is a chartered member of The Chartered Institute of Logistics and Transport (CMILT) Malaysia and UK, the Professional Technologist in Malaysia Board of Technologists (MBOT), the Certified Trainer (TTT) by HRDF, the Certified Trainer for MonsoonSIM, and Mendeley Advisor.