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ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)

Vol 9, Issue 12, December 2022

Study on the Relationships between Project Critical Success Factors (CSFs) and Project Performance of Public Projects in Malaysia

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Abstract— This study examines the relationships between the public projects Critical Success Factors (CSFs) and project performance in Malaysia. In addition, this study would contribute significantly in the aspect of the CSFs integration with the Malaysia public projects performance which was explained by three dimensions: time, cost and quality. Furthermore, it was shown empirically that the 26 Critical Success Factors which were grouped into six variables were significantly relevant in predicting the project performance. Data collection was conducted through a 10-point scale survey questionnaire and using stratified random sample technique. The completed public projects in Peninsular Malaysia were used as the data resources for this research. The data gathered was screened and followed by descriptive statistics. Further on, the data was analyzed through factor analysis followed by the reliability test. Pearson correlation analysis and multiple regression analysis were applied to identify the relationship between the CSFs and the project performance. Based on this study, it was determined that critical success factors comprised of planning and networking, financial, company background, company experiences, technical equipment, and policy significantly explained the project performances which were comprised of time, cost and quality. Furthermore, an empirical equation was produced as an evidence of the predicting ability of the CSFs on the public projects' performance.

Key words: Critical Success Factors, Project Performance, Public Projects, Factor Analysis.

I. INTRODUCTION

A project can be considered successful if it meets at least four criteria, i.e. schedule, budget, performance, and customer satisfaction. Furthermore, the construction projects success also depends significantly on the project quality performance.

Project quality control involves periodic inspection of the construction activities and facilities in order to meet the desired outcomes as required by the contract. Construction performance has been traditionally measured based on the "iron-triangle" concept of time, cost and quality (Belassi and Tukel, 1996)[1]. However, performance indicators have also included the other aspects of project performance measurement over the years.

Based on the investigation in the literature it has become apparent on the need to strengthen the identification of the CSFs which will be to control or monitor the construction process, construction performance and its outcome before the project is awarded to the contractor, while the project is in progress and also to provide process transparency and feedback whenever it is required.

A construction project requires multiple stages for different processes and different parties. Stage process control in each stage is considered to be important and essential. The purpose of monitoring and controlling the project process performance was to achieve the desired end-project goals. The project development very early stages such as during the pre-project stage are crucial to the project success. Any decision made during these early stages cannot easily be altered or modified without causing significant impact to the project process and project costs (Othman, Hassan and Pasquire, 2004) [2]. A number of construction projects experts asserted that planning efforts implemented during the project early stages is the key for the overall project process. The early stages process significantly influence the project success rather than efforts implemented during project later stages (Dumon, Gibson and Fish, 1997) [3]. The pre-project stages that were not well performed may cause poor performance due to poor project scope definition, modifications that cause cost overruns and project delays (Gibson and Hamilton, 1994) [4]. Therefore, it is beneficial to be able implement an effective project control during the stages of the construction.

The Malaysia government was tremendously faced with project problems due to projects delay, cost overrun and poor quality which require further investigation. Therefore, it becomes very important to determine the relationship of the project Critical Success Factors with the project performance as well as predicting the performance of the contractors in the public projects.

This paper discusses finding of a research study related to the identification of the public project Critical Success Factors (CSFs) and measuring the relationship of the Critical Success Factors to the project performance namely the project time, cost and quality as well as identifying the predicting ability of the CSFs on the project performance. An empirical equation was produced as an evidence of the predicting ability of the CSFs on the public projects performance

II. RESEARCH OBJECTIVES

The research main objectives are comprised of:

i) Identifying the Critical Factors for Malaysia public projects success.

ii) Examining the relationships between projects CSFs and project performance as perceived by the government agencies and the predicting ability for the public projects performances.

III. SIGNIFICANCE OF THE STUDY

The study main contribution will be on the theoretical part in terms of strengthening the previous researches on the predicting ability of the CSFs on the construction projects implemented by the Malaysian public projects' contractors. The main contribution of this research will be the synthetization of the CSFs, and grouping of those factors based on the themes for the contractors' project performance in public projects. In addition, this study also presented the statistical and empirical evidences that the CSFs are evidently proved to be relevant, valid and applicable in predicting the public project performance particularly in Malaysian construction industry context.

IV. LITERATURE REVIEW

Various ways of procedures are used to evaluate the suitability of contractors in different countries. In fact, there is hardly any uniformity in selection procedures between the public, semi-public and private sectors. They may also differ based on the project types. The Malaysia public sector clients normally will select the contractors through an open tendering process. The proposed projects will normally be advertised in mainstream newspapers (tender invitation) whereby the potential contractors will be shortlisted after bid evaluation.

Contractors represent those who are responsible to implement the design into product, i.e. project. It is a requirement for Malaysian contractors to register with the Construction Industry Development Board (CIDB) and Pusat Khidmat Kontraktor (PKK). As a matter of fact, the construction industry role in terms of the nation economy is significantly crucial in terms of its ability to create an economics other industries multiplier effect such as manufacturing, financial services and professional services.

Many performance measurement models can be found in the literature. Among others, Goncharuk (2009)[5] suggested an approach for enterprise modelling, breaking down the manufacturing planning and control into units of discrete decision making and then certain appropriate performance measures were eventually attached to each decision. On the other hand, Duggirala et al. (2008) [6] suggested the use of the performance measurement questionnaire for strengths and failings identification in the existing performance measurement system and proposing a workshop to develop, revise and re-focus the performance set of measurement. Pereira and Marosszeky's (2009)[7] proposed the development of the balanced scorecard using interviews with members of the project senior management team to come up with differences in project strategic priorities which will be resolved through facilitated workshops. In fact, project performance variations have been a major issue among researchers particularly in the construction industry. They have been trying to find solutions by studying the relationships between variables (EI-Mashaleh et al.,2007[8]; Jones and Kaluarachchi, 2008[9]; sourcing opinions (Jaafar, H., 2001)[10]; hypotheses testing and proving (Walker, 1995[11]; Pinto and Prescott, 1990[12]; Pinto and Slevin, 1987[13]) and mathematical or statistical models development (Ireland, 1985[14]; Moshini and Davidson, 1992[15]; Jaafar, H., 2005[10]). Related studies were conducted to identify the significant relationships and to determine appropriate methods to solve and explain the problems of the construction industry.

Furthermore, it was conveniently summarized from various research findings that the issue of project success as complex. The project success issue is a multi-faceted problem whereby the solution is highly dependent on the research context. It was shown that there were significantly large number of factors that may influence the project performance, particularly in terms of the project performance dimensions namely cost, quality and time.

Time, Cost and Quality as the Measurement of Project Performance

Previous analysis by the researcher in an unpublished research in 2011 proposed that the percentage of journal quoting the listed objectives as the main project objectives. It was determined that Time, Cost and Quality were the three main project objectives based on a study on 101 journals. Quality represents the highest percentage at 91.1% followed by cost and time with 82.2% and 80.2% respectively (Ayub, 2011) [16]. This result was in line with the 'Iron Triangle' concept which states that time, cost and quality were the most important criteria to consider for a project performance success. Therefore, it was obvious that project performance has already been clearly defined and dimensioned into three main aspects namely time, cost and quality.

Critical Success Factors affecting project performance

The literature presents a large number of variables which were presumably affecting the project performance. The literature review shows that there are 26 Critical Success Factors that affect project performance (Ayub, 2011). Findings of the previous scholars, such as Pheng and Hong (2005) [17], White and Fortune (2002)[18] and Westerveld (2003)[19] deduces that the factors can be clustered to a

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ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)

Vol 9, Issue 12, December 2022

specific group of themes of. The review came up with specific factors which were six group as: (1) Planning and Networking (Labor availability; Understanding of design and specification; Planning and scheduling; Networking and access; and Communication and feedback channel; (2) Financial (Financial background; Equipment and material; Cash flow projection; Project cost estimation; and Detailed cost proposal; (3) Company Background (Personnel; Company profile; and Adequacy of contractor class); (4) Company Experiences (Working experience; Workmanship quality; Teamwork and coordination skills; Project risk and mitigation; Subcontractors control; and Ethic and transparent) (5) Technical Equipments (Technological background; Proactive quality culture; Quality assurance program; and Technical background) and (6) Policy (Occupation, safety and health requirement; and Environmental requirements compliance).

Figure 4.0 represents the conceptual framework which was used as the guideline for this study. It was conceptualized that there were six direct relationships between the CSFs and Project Performance as stated below:

i) The relationship between Planning and Networking and Project Performance.
ii) The relationship between Financial and Project Performance.
iii) The relationship between Company Background and Project Performance.
iv) The relationship between Company Experiences and Project Performance.
v) The relationship between Technical Equipments and Project Performance.
vi) The relationship between Policy and Project Performance

Theoretical Justifications of the Relationships between Critical Success Factors and Project Performance

In system theory, the formation of a construction project organization is from the small systems or subsystems that are interrelated and operationally directed toward the objective of the organization. The system theory is conceptually consisting of cycle of events, that is, the input from the environment, the process of the input, and the output to the environment. In this study, the Critical Success Factors are viewed as one of the organizational initiative to improve efficiency and effectiveness in ensuring continuous improvement of performance of the project, i.e. time, cost and quality. The system theory seems to be fit and suitable to become the underpinning theory of this study, which is linking the CSFs and project performance among contractors in Malaysia. It is therefore deduced that the CSFs explained in the earlier section are the inputs a system approach, while the outputs are time, cost and quality of a system in a construction project.

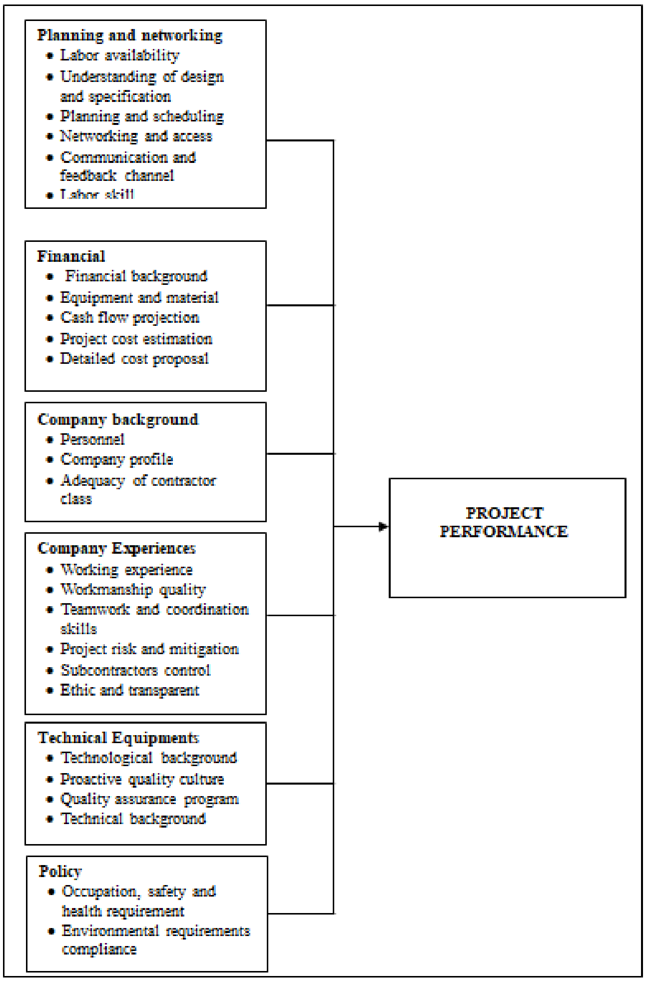

Figure 4 0: Conceptual Framework

V. RESEARCH METHODOLOGY

Pearson Correlation analysis was implemented to investigate the relationship between the CSFs with the project performance of public projects in Malaysia. In addition, Multiple Regression analysis was conducted to understand the significant predictors for the project performance of the Malaysia public projects. For that purpose, a questionnaire set was prepared consisting the following: i) the cover letter on the first page, ii) Section 1: General information on respondent and the firm in Section 1, iii) project information in Section 2 , iv) survey on Critical Success Factors in Section 3 , v) survey on project performance in Section 4

Sampling Procedure

The study was conducted in eleven (11) states of the Peninsular Malaysia. Proportionate stratified random sampling technique was employed in this study whereby the respondents were divided into mutually exclusive group (Sekaran, 2006) [20]. The appropriate sample size was selected according to Krejcie and Morgan (1970) [21]; and Sekaran (2006) [20]. Based on the identified sample of 1083 of government agencies in the Malaysian Peninsular would

ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)

Vol 9, Issue 12, December 2022

be 274. Table 5.0 presents the required sample size for the agencies population size. In order to reach the required sample size of 274 responses, 500 set of questionnaires were distributed. As a result, 403 questionnaires were returned with 80.6% response rate.

Table 5.0: Research Size of Sample

Respondents Organization	Sample Population (*N*)	Required Sample Size (*n*)
Agencies in Malaysia	1083	274

Source: Based on Sekaran (2006) [20] and Krejcie and Morgan (1970) [21] sample size guide.

Pilot Study

The pilot study was conducted for content validity by referring to the experts of project management and project performance fields for verification and validation of the questionnaire. In addition, the pilot study was to allow the identification of any problem by the researcher in the actual study. The test of internal consistency reliability was implemented for variables intercorrelation by measuring the Cronbach's alpha (∝) constructs value (Sekaran, 2006)[20]. Table 5.1 shows the pilot study summary.

Statistical Analysis

Extraction of factors were done by utilising principal components and Varimax rotation. Measurement for acceptance loading level, the cross loading with a minimum eigenvalue 1.0 and variance explained percentage were also used as the guideline in item selection. For the measurement of instrument internal consistency, analysis of reliability analysis was also applied on the extracted factors. The normality test and linearity test were also conducted as well to ensure the collected data for this study are suitable with the statistical assumption.

Table 5.1: Level of Instruments Reliability in Pilot Study

Variable & Dimensions	Cronbach's Alpha	Items Dropped
Planning and Networking	0.824	
Labor availability		0
Understanding of Design and Specification		0
Project Planning and Scheduling		0
Networking and Access		0
Communication and Feedback Channels		0
Labor skill		0
Financial	0.864	
Financial Background		0
Equipment and Material		0
Cash Flow Projection		0
Adequacy of Project Cost Estimation		0
Detailed Cost Proposal		0
Company Background	0.894	
Personnel		0
Company Profile and Organization Structure		0
Adequacy of Contractor Class		0
Company Experiences	0.786	
Working Experience		0
Workmanship Quality		0
Teamwork and Coordination skills		0
Project Risk Identification and Mitigation		0
Subcontractors Controls		0
Ethic and Transparent		0
Technical Equipment	0.790	
Technological Background		0
Proactive Quality Culture		0
Quality Assurance Program		0
Technical Background		0
Policy	0.814	
Occupation, Safety and Health Requirement		0
Environmental Requirements Compliance		0
Total number of dropped items in pilot study		0

Based on the interpretation of Alstone's (2001) scale, values according to the ten-point scale in ascending order in the questionnaire are as follows: 1 and 2= "very poor," 3 and 4 = "below average/poor," 5 and 6 = "average," 7 and 8 = "above average," and 9 and 10 = "excellent".

Factor Analysis

Exploratory factor analysis was utilised to explore the structure of items under the same component. The analysis main purpose was to understand the factors with the corresponding items for grouping under same component of each construct and to verify the items as determined by previous researchers. Other than that, the factor analysis was also applied to decrease the variables overlapping to a smallest possible group of factors (Hair et al., 1998) [23].

Reliability Analysis

Cronbach's alpha coefficient purpose was to measure the various items reliability in the study and to ensure that the scales used in the study were not ambiguous whereby all items belong to the same factor were actually evaluating the same specified dimension. A high value of alpha coefficient indicates a greater consistency between all items under each factor and greater confidence level that the measurements reliability is not ambiguous whereby all items belong to the same factor were actually evaluating the same specified dimension. A high value of alpha coefficient indicates a greater consistency between all items under each factor and greater confidence level that the measurements reliability is acceptable. The reliability minimum acceptance level was applied in the analysis (Nunnally, 1978) [24], where a Cronbach's value of 0.7 is considered as the minimum acceptable value.

Correlation Analysis

According to Pallant (2005) [25], the coefficient (r) value represents the relationship strength between variables and to determine whether it is correlated positively or negatively. The coefficient value should be from negative (-1) to positive (+1) while 0 coefficient value means there is no correlation at all. Cohen (1988) stated that correlation of 0.1 to 0.29 (+ or -) represents a weak; 0.3 to 0.49 (+ or -) indicate fair and 0.5 to 1.0 (+ or -) represents a good and strong relationship positively or negatively.

Standard Multiple Regression

Multiple regression measures the potential ability a group of independent variables in predicting an dependent variable as the performance objective. Standard multiple regression analysis is used to measure the predicting ability of the independent variables or quality factors to predict the project performance as well as showing the project performance best predictor (Pallan, 2005) [25]. The R^2 significance indicate the relationship strength between quality factors and project performance. A larger R^2 value shows a better potential of the quality factors in predicting the performance of the project. In addition, when t value was significant, Beta value was also used to determine the positive or negative relationship between the dependent and independent variables.

VI. DATA ANALYSIS AND DISCUSSION

For the analysis of data, the descriptive analysis was implemented first followed by the factor analysis, correlation analysis and lastly the regression analysis. The purpose of the correlation analysis was to test the relationship between the independent variables (Critical Success Factors) and the dependent variable (Project Performance). Multiple regression was conducted to derive the quality predictive model or the predicting empirical equation for the study.

Profile of Respondents

Table 6.0 shows the respondents characteristics in the study.

Table 6. 0: Respondents Profile

Respondents	Frequency	%
Position in agency		
Director	34	8.4
Deputy director	11	2.7
Assistance director	35	8.7
Engineer	135	33.5
Project engineer	29	7.2
Executive officer	34	8.4
Supervisor	77	19.1
Others	48	11.9
Age		
Below 20 years old	1	0.2
20-25 years old	22	5.5
26-30 years old	80	19.9
31-35 years old	100	24.8
36-40 years old	67	16.6
41 years old and above	133	33.0

Profile of Project

Table 6.1 shows the project characteristics in the study.

Table 6.1: Project Profiles

Parameter	Frequency	%
Type of Tender		
Open tender	376	93.3
Closed tender	1	0.2
Negotiated tender	18	4.5
Others	8	2.0
Type of Contract		
Design Build	33	8.2
Turnkey	9	2.2
Lump Sum	157	39.0
Project Management	14	3.5
Consultant	188	46.7
Bill of Quantities	2	0.5
Others	0	0
Class of Project's Contractor Based on PKK		
A	126	31.3
B	76	18.9
C	83	20.6
D	70	17.4
E	29	7.2
F	19	4.7
Class of Project's Contractor Based on CIDB	14	3.5
G1	29	7.2
G2	27	6.7
G3	67	16.6
G4	67	16.6
G5	84	20.8
G6	115	28.5
G7		

Implementation of Factor Analysis for Critical Success Factors

All of the 26 items of the quality factors were analyzed through the factor analysis. The twenty-six items of the quality factors were applied in the analysis of principle component followed by varimax rotation. All items results were targeted to measure sampling adequacy (MSA) value larger than 0.5. The Kaiser-Meyer-Olkin value of sampling adequacy was at 0.884, and Bartlett's Test of Sphericity was significant at 0.000. Therefore, the six factors matched the of eigenvalues selection criteria larger than 1.0, describing total variance of 82.18%. Every individual loading was above the value of minimum 0.5 (Hair et al., 2010) [26]. are shown in Table 6.2 shows the results KMO and Bartlett's tests. Table 6.3 presents the rotated factors and factor loading for factor analysis.

Table 6.2 : Result of KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Sampling Adequacy Measure.		.884
Bartlett's Test of Sphericity	Approx. Chi-Square	16315.644
	df	325
	Sig.	.000

Table 6.3: Rotated Factors and Item loading

Quality Factors	Factor	Communality	Eigenvalue	Variance	Mean
Planning and networking			13.125	50.480	6.17
Labor availability	0.791	0.762			
Understanding of Design and Specification	0.724	0.763			
Project Planning and Scheduling	0.719	0.772			
Networking and Access	0.811	0.755			
Communication and feedback Channels	0.797	0.738			
Labor skill	0.792	0.756			
Financial			2.882	11.084	6.55
Financial Background	0.868	0.936			
Equipment and Material	0.432	0.407			
Cash Flow Projection	0.865	0.957			
Adequacy of Project Cost Estimation	0.876	0.969			
Detailed Cost Proposal	0.867	0.954			
Company Background			1.543	5.936	6.79
Personnel	0.831	0.880			
Company Profile and Organization Structure	0.815	0.880			
Adequacy of Contractor Class	0.806	0.835			
Company Experiences			1.485	5.710	6.58
Working experience	0.667	0.880			
Workmanship quality	0.780	0.832			
Teamwork and coordination skills	0.796	0.836			
Project risk identification and mitigation	0.669	0.880			
Subcontractors Controls	0.661	0.879			
Ethic and Transparent	0.693	0.885			
Technical Equipment			1.263	4.856	6.10
Technological Background	0.588	0.759			
Proactive Quality Culture	0.836	0.852			
Quality Assurance Program	0.838	0.848			
Technical Background	0.612	0.756			
Policy			1.069	4.111	6.53
Occupation, Safety and Health Requirement	0.695	0.803			
Environmental Requirements Compliance	0.692	0.791			
Total Variance Explained	82.176				
KMO	0.884				
Bartlett's Test of Sphericity	0.000				

Qsn: Serial number of items in the questionnaire (prior factor analysis).

ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)

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Factor Analyses Summary

Table 6.4 shows the factor analyses summary for variables applied in this study. The variables recorded high Cronbach's alpha value means that the items used for measuring planning and networking, financial, company background, company experiences, technical equipment, and policy are relevant. Overall, the total variances explained for the study was between the range of 4.11% to 50.48%.

Table 6.4 : Summary of Factor Analyses

Variables	No. of items retained	No. of items dropped	Factor Loading	Variance explained	Cronbach's Alpha
Planning and Networking	6	0	0.719-0.811	50.480	0.924
Financial	5	0	0.432-0.876	11.084	0.941
Company Background	3	0	0.806-0.831	5.936	0.969
Company Experiences	6	0	0.661-0.796	5.710	0.941
Technical Equipments	4	0	0.588-0.838	4.856	0.886
Policy	2	0	0.692-0.695	4.111	0.988
Total	26	0			

Testing the Conceptual Framework

The factor analysis for time, cost and quality appeared as a single dimension of project performance. It shows that the respondents' time, cost and quality were interrelated. Hair et al. (2010)[26] suggested that for a composite variable, the items for time, cost and quality in the questionnaire reflected the respondents individual and collective behavior on the project performance. The conceptual framework to show the relationship between CSFs and the Project Performance is presented in Figure 4.0.

The Relationship between Critical Success Factors and Project Performances: Pearson Correlation Analysis

According to Pallant (2005) [25], in order to test the relationships between the CSFs namely planning and networking, financial, company background, company experiences, technical equipment, and policy, and performances, the correlation analysis was conducted to clarify the relationship between variables strength and direction. Pearson correlation was used for analysis because the items for measuring the variables were of the ordinal type. Additionally, another important aim was to evaluate the quality factors in influencing the dependent variable (project performance).

The correlation analysis between planning and networking and project performance indicates positive direction with a strong variables relationship (r = .804, n = 403, $p < 0.001$).

The correlation analysis between financial and project performances shows positive direction with a strong variables relationship (r = .829, n = 403, p < 0.001).

The correlation analysis between company background and project performances shows positive direction with a strong variables relationship (r = .661, n = 181, $p < 0.001$).

The correlation analysis between company experiences and project performances shows positive direction with a strong variables relationship (r = .734, n = 181, $p < 0.001$).

The correlation analysis between technical equipment and project performance shows positive direction and strong relationship (r = .603, n = 181, $p < 0.001$).

The analysis between policy and project performance indicates a positive direction and strong relationship (r = .538, n = 181, $p < 0.001$).

The correlation coefficient (r) value is categorized as strong if its value is between 0.5-1.0 (Cohen, 1998) [27]. The relationship direction will be positive if r value is positive. Based on the Pearson correlation results stated above, it is proven that there is a significant relationship between the project Critical Success Factors and the Project Performance of Malaysia public projects.

Multiple Regression Analysis

Multiple regression analysis was implemented to derive a model for measuring the independent variables (quality factors) effects in predicting the performance of the Malaysian government public projects. The Multiple Regression analysis was also used to show that there is a significant relationship between the CSFs (planning and networking, financial, company background, company experiences, technical equipment and policy) and Project Performance of the Malaysia public projects. Fundamentally, the main focus was to study the predicting ability of planning and networking, financial, company background, company experiences, technical equipment and policy on project performance of the public project consisted of time, cost and quality dimensions.

Critical Success Factors and Project Performance

As previously stated, Multiple Regression analysis was applied to understand the significant relationship between Critical Success Factors (planning and networking, financial, company background, company experiences, technical equipment and policy) and Project Performance of the Malaysia public project. Table 6.5 presents the performed multiple regression results. For all independent variables, there is no multicollinearity problem at tolerance value larger than 0.1 and VIF value smaller than 5. Multicollinearity indicates a high correlation between two or more independent variables in evaluating similar dependent variable. Pallant (2005) proposed a tolerance value higher than 0.10, or a variation inflation factor (VIF) higher than 10. Table 5.3 VIF value shows less than 10 (VIF < 10) meaning that the independent variables were not evaluating the same dimension. The results value shows that the CSFs explained significantly the project performance (R^2 = 0. 0.876, F = 467.251, $p < 0.01$).

Table 6.5: Multiple Regression results for quality factors and project performance

Variables	B	*t*	Sig.	Tolerance	VIF	Std. Error
Constant	-0.767	-5.415	.000			.142
Planning and networking	0.330	14.387	.000	.517	1.934	.023
Financial	0.369	14.375	.000	.466	2.146	.026
Company background	0.104	4.505	.000	.491	2.037	.023
Company experiences	0.225	7.774	.000	.413	2.419	.029
Technical equipments	0.098	4.310	.000	.559	1.788	.023
Policy	-0.016	-0.780	.436	.552	1.810	.020

$R^2 = 0.876$, $F = 467.251$, Sig. = 0.000

The empirical predicting equation for the analysis is shown as below:

Y = α + β1 X1 + β2 X2 + β3 X3 + β4 X4+ β5 X5 + β6 X6 + e

where; Y = Innovativeness; α = Constant; β = Coefficient B; X1 = Planning and networking: X2 = Financial; X3 = Company background; X4 = Company experiences; X5 = Technical equipments; X6 = Policy; e = Standard Error

Fundamentally, the equation of the performance prediction is shown as below:

Project Performance = α + β1 Planning and Networking + β2 Financial + β3 Company Background + β4 Company experiences+ β5 Technical Equipments + β6 Policy + e

The resulting multiple regression equation for Project Performance prediction is given as the equation below:

Project Performance = -0.767+ 0.330 Planning and Networking + 0.369 Financial + 0.104 Company Background + 0.225 Company Experiences+ 0.098 Technical Equipments + -0.016 Policy + 0.142

The predicting equation shows that Financial appears to be the most powerful predictor of the project performance (0.369), while Planning and Networking is the second significant predictor (0.330) followed by Company Experiences (0.225), Company Background (0.104), Technical Equipment (0.098) and lastly Policy (-0.016).

The multiple regression analysis indicated that that CSFs (Planning and Networking, Financial, Company Background, Company Experiences, Technical Equipments and Policy) are evidently positive and related significantly with Project Performance of the Malaysia public projects. It was also evidently shown in the Pearson moment correlation that there was a significant relationship between CSFs and the Project Performance of the Malaysian public projects.

VII. CONCLUSION

There were 26 dimensions of Critical Success Factors (CSFs) determined in this study. Furthermore, it was found that there were six main groups namely: i) planning and networking, ii) financial, iii) company background, iv) company experiences, v) technical equipment, and vi) policy. The most significant contribution of this study was the grouping of the factors into six main themes representing the public projects Critical Success Factors. These factors were proven to be significantly crucial in measuring the Malaysian public projects performance. In addition, this study also found that the CSFs were significantly correlated with the public projects project performance. Through the Pearson Correlation analysis, the relationship between CSFs had been successfully tested with the project performance. It was proven that there were positive relationships between the independent and dependent variables. Finally, the independent variables ability to predict the public projects performance was also successfully proven. It is recommended that a combination method of quantitative and qualitative in research design and data collection to be used in future research to order to strengthen the research outcome and results while increasing the response rates of respondents.

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