

TOLL ROAD DEVELOPMENT STRATEGY WITH *PUBLIC-PRIVATE PARTNERSHIPS (PPPs)* SCHEME WITH A FACTOR APPROACH AND PROJECT SUCCESS CRITERIA

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Abstract

In providing funding for toll road construction projects, many developing countries have implemented PPP procurement schemes, including Indonesia. This funding scheme is believed to be an innovative procurement process model and has good prospects for the future of the construction industry in the world. However, in its implementation, the Indonesian government is currently faced with various problems that have the potential to have a negative impact on the management and development of toll roads in Indonesia. Therefore, the main purpose of this study is to develop a method for evaluating the success of PPP toll road projects and determine the current and future PPP toll road construction project strategies. Methodology of this study, using *the Exploratory sequential mixed methods* approach involving four stages of research. Through *the Systematic Literature Review (SLR)* from reputable scientific journals in various countries, questionnaire surveys were developed. The survey results were analyzed using the multivariate statistical method with the help of *Partial Least Square (PLS-SEM) analysis software, analytical hierarchy process (AHP)* and *Relative Importance Index (RII)* method. The results of this research found 20 critical success indicators and four dimensions of project success as well as current and future toll road development strategies. This study produces a new way to assess the success of PPP toll road projects which is very important and can inspire the government in making policies, legislation and regulations as well as innovative strategies in building PPP toll roads.

Keywords: Project Success Criteria, Critical Success Factors, PPP, Toll Roads, Development Strategy.

1. INTRODUCTION

The current Indonesian government has contributed quite *significantly* to infrastructure development, especially toll roads. With the construction of toll roads, it is hoped that it can provide easy access across regions and increase the efficiency of goods distribution costs to support economic growth. One of the strategies designed to obtain funding sources, the government has currently adopted the Public Private Partnership (PPP) *procurement model*, this cooperation model has been used by most developing countries (Liu et al 2016; Kavishe et al 2018). is an alternative and innovative procurement model that offers good prospects for the future of the world's construction industry PPP (Osei-Kyei and Chan 2016). Although the model is a good procurement model, in its implementation, the Indonesian government is currently faced with various problems that have the potential to have a negative impact on the management and development of toll roads, including land acquisition problems, planning readiness, time delays and excess project costs, and environmental disturbances. PPP This is a challenge in itself to determine how to evaluate the success of the project and what strategies must be carried out so that the results of the toll road construction are in line with the current and future expectations of the government and the community.

The success of a project needs to be evaluated with appropriate measurement criteria and methods (Davis 2017), as project success is the basis for managing and controlling current projects as well as for future project planning and orientation. In order to evaluate the success of a project, there must be a difference between the success of project management and the success of the project because these are two closely related concepts, but there are significant differences. Successful project management focuses on the project process and predetermined constraints as well as time, cost and quality and is measured against short-term goals. Meanwhile, the success of the project is measured against the long-term goals, focusing on the impact of the project results in full. So as to evaluate the success of the project there are many aspects that must be taken into account that cannot be separated (Ika and Donnelly 2017).

To evaluate project success, Project Success Factors and Criteria have been widely accepted in the literature as two fundamental components, which are measures of project success (Alvarenga et al 2019). Based on *reviews* of reputable journals from different countries, several studies have identified the criteria for project success (e.g., Turner and Xue 2018; Altarawneh and Samadi 2019; Hansen et al 2021; Gunawan and Andreas 2023). And many other studies identified about the success factors of the project (e.g., Chou and Pramudawardhani 2015; Meng and Boyd 2017; Volden and Welde 2022). However, the results of this study are not comprehensive and only give birth to ambiguous concepts. Here it is clear that the researchers do not have a common concept about the success of the project. In addition, it was not found from the results of previous research that produced an index or weight of project success criteria, so that the results of the research were very difficult to be used as a basis for evaluating the success of the project. Therefore, the purpose of this study, is not only to fill in the gaps in the existing literature, but furthermore, by developing a comprehensive framework to assess the success of the project as well as determine the current and future PPP schematic toll road construction strategy.

The results of this study produce a new way to evaluate the success of a very important project and produce a new strategy in planning and implementing the construction of toll roads with PPP schemes that are quite effective. In addition, the results of this study can inspire the government in making policies, legislation and regulations as well as innovative strategies in evaluating the success of projects in both the short and long term.

2. RESEARCH METHODS

The main purpose of this study is to develop a method for evaluating the success of toll road infrastructure projects under the PPP scheme and current and future toll road infrastructure development strategies, involving four research steps.

Step one: Identify the factors and criteria for the success of the project using *the Exploratory sequential mixed methods approach*. According to Creswell and Clark (2017), the sequential mixing method is suitable to be used if a phenomenon has not been conceptualized, explored in depth in the literature. Through *Systematic Literature Review (SLR)* from reputable scientific journals in various countries, it will result in the identification of factors and criteria for project outcomes. Followed by quantitative analysis to get interpretations from experts, practitioners and academics who have adequate knowledge and experience about the success of the project. To obtain the

validity and reliability of the data, Guttman scale analysis was used, and to obtain the level of importance, the Relative Importance Index (RII) *analysis was used*.

Second step: To obtain a causal relationship between the project success factors and the project success criteria, based on the findings from the first step, a Phase 2 questionnaire containing statements about the criteria and success factors of the project as measured by Scale Likert lima poin. The data from the questionnaire survey was analyzed using Multivariate statistical methods with the help of *software analysis Partial Least square (PLS-SEM)*, According to Hair et al (2021), *PLS-SEM* suitable for use in circumstances when analysis relates to testing *theoretical framework dari prediction perspective* and the structural model is complex. In addition to PLS SEM method *Relative Importance Index (RII)* It is used to determine the ranking of the influence of project success indicators on project success criteria.

Step three: To obtain the weight of the project success criteria as a basis for evaluating the success of the PPP toll road project, starting by developing the findings from step 2, into a hierarchical model followed by creating a phase 3 regional plan with a nine-point scale. To determine the weight of the criteria, the results of the questionnaire data were analyzed using the analytical hierarchy process (AHP) *method* with the help of *Expert Choice 11 software*. And to determine the weight of the sub-criteria, data from the ranking results of the influence of project success indicators on project success criteria is used.

Step Four: To obtain the strategy and direction of the current and future toll road development, a SWOT analysis is used. The findings from step 3 were developed to obtain strengths and weaknesses from internal factors and opportunities and threats from external factors. In determining the weight of internal and external factors, a stage 4 questionnaire with a scale of 9 points was developed and to determine the rating, a questionnaire with a scale of 4 points was used. The questionnaire result data was analyzed by *an analytical hierarchy process (AHP)* with the help of *Expert Choice 11 software* and excel programs. The study ended with a discussion, conclusions, implementation and recommendations.

3. RESULTS AND DISCUSSION

3.1 Research Data Analysis

Based on the results of the *Systematic Literature Review (SLR)* from scientific journals in various countries, 49 indicators were found that the researcher divided into 8 project success factors. Considering that the previous research only discussed the project success criteria, therefore with the limitations of the literature and there is still no conceptual commonality about the project success criteria, the researcher considers the project success criteria based on the essence of the concept by summarizing the project success criteria to; Project Management Success, Impact on stakeholders, Meeting Strategic Organizational and Business Objectives and Sustainability.

Based on the results of the distribution of the phase 1 questionnaire through google form, 55 respondent answers were collected, then the data analysis was divided into two parts, namely, the validity and reliability test of the Guttman scale and *the analysis of the important level*.

Test the Validity and Reliability of the Guttman Scale

There are two parameters that must be measured to validate the Guttman scale questionnaire survey, namely, the *Coefficient of Reproducibility* and the *Coefficient of Scalability*. The condition for receiving the value of the reproducibility coefficient is that if the reproducibility coefficient has a value of > 0.90, it is calculated by the formula:

$$K_r = 1 - \left(\frac{e}{n}\right) \quad (1)$$

Where:

K_r = Reproducibility Coefficient; e = number of errors/error value = 48; n = number of statements multiplied by the number of respondents = 3025

$$K_r = 1 - \left(\frac{48}{3025}\right) = 0,984 > 0,90$$

The requirement for receiving the scalability coefficient value is if the scalability coefficient has a value of > 0.60.

$$K_s = 1 - \left(\frac{e}{x}\right) \quad (2)$$

Where:

K_s = Scalability Coefficient; e = Number of error values = 48; x = 0.5 ({number of statements multiplied by number of respondents} – number of answer choices) = 1485.

$$K_s = 1 - \left(\frac{48}{1485}\right) = 0,968 > 0,6$$

Guttman Scale Reliability Test

The assessment criteria if an instrument is said to be reliable if the value of the KR-20 reliability coefficient is more than 0.70 ($r > 0.70$). The results of the Kuder-Richardson test are as follows:

$$r = \frac{k}{(k-1)} \left(\frac{S^2 - \sum pq}{S^2}\right) \quad (3)$$

Where:

r = Overall reliability of the test; $\sum pq$ = Sum of multiplication results between p and q = 0.825; k = Many items = 55; S^2 = Variance of total score = 3.47

$$r = \frac{55}{(55-1)} \left(\frac{3,47-0,825}{3,47}\right) = 0,776 > 0,7$$

Based on the validity and reliability test of the respondents' answers, valid and reliable answers were produced.

Important Level Analysis

To obtain the level of importance from the factors and criteria for the success of the project, the *Relative Importance Index (RII)* method is used.

Table 1: Relative Importance Index (RII) Jawaban Responden

Factor	Code	RII	Importance level
1. Planning and Design Factors	PD		
Project definition and objectives	PD1	1	High (H)
Project feasibility study and	PD2	1	High (H)
Land acquisition	PD3	0.98	High (H)
Project plan development strategy	PD4	0.98	High (H)
Project initial cost planning	PD5	1	High (H)
Detailed project timeline	PD6	1	High (H)
Scope, drawings and specifications	PD7	1	High (H)
2. Procurement Factors	PROC		
Transparency and adequacy of funding	PROC1	0.94	High (H)
Effective procurement methods	PROC2	1	High (H)
Comprehensive contract documentation	PROC3	1	High (H)
Contract procedures and arrangements	PROC4	0.98	High (H)
3. Project Management Factors	PM		
Innovative project management	PM1	1	High (H)
Communication and coordination	PM2	1	High (H)
Quality standards and scope	PM3	0.98	High (H)
Meet the target time	PM4	0.98	High (H)
Meet budget	PM5	0.98	High (H)
Project control and evaluation	PM6	0.96	High (H)
Risk management management	PM7	0.98	High (H)
Changes and new technologies	PM8	1	High (H)
4. Human Resources Factor	TBSP		
Project manager experience	SDM1	0.98	High (H)
Decision-making skills, and conflict management	SDM2	1	High (H)
Project manager authority	SDM3	0.98	High (H)
Team member competencies and experience	SDM4	1	High (H)
Project priorities and Clarity of the project team's roles and responsibilities	SDM5	0.98	High (H)
Education and Training	SDM6	0.98	High (H)
5. Stakeholder Management Factors	STH		
Stakeholder Management	STH1	0.98	High (H)
Top management involvement, commitment and support	STH2	1	High (H)
Decision-making skills	STH3	0.98	High (H)
Commitment of project participants	STH4	1	High (H)
Stakeholder satisfaction	STH5	0.98	High (H)
6. Contractor Factors	WITH		
Competence and experience of contractors	WITH1	0.98	High (H)
Financial capabilities of the contractor	WITH2	0.98	High (H)
Allocating all resources	CON3	1	High (H)
Project scheduling and control	CON4	1	High (H)
K3 Control	CON5	1	High (H)
Contractual legal liability	WITH6	0.98	High (H)
7. Business Factors	UNTIL		
commitment and support of the Government	UP TO1	1	High (H)
Political, social and economic environment	BIS 2	0.98	High (H)
Macroeconomic stability	UP TO 3	0.98	High (H)
Community support and involvement	UP TO 4	1	High (H)
Proper allocation and sharing of risk	UP TO 5	0.96	High (H)
Financial market availability	UP TO 6	0.92	High (H)
Proper regulations and legal framework	UP TO 7	0.98	High (H)
Good Government Governance	UP TO 8	1	High (H)
8. Sustainability Factors	THEIR		

Integration of sustainability into project management practices	SUS1	0.98	High (H)
Environmental resource conservation policy	SUS2	1	High (H)
Environmental Performance Monitoring	SUS3	0.96	High (H)
Assessment of costs and benefits	SUS4	0.96	High (H)
Impact of the project on society and the environment	SUS5	0.98	High (H)
Project Success Criteria	SC		
Project management success criteria	SC1	1	High (H)
Criteria for impact on stakeholders	SC2	0.96	High (H)
Criteria for organizational strategic objectives	SC3	0.96	High (H)
Eligibility Criteria	SC4	0.98	High (H)

Based on the results of the analysis, *the important level* is at a high level. Thus, the statements submitted by the researcher as many as 49 project success indicators and 4 project success criteria, can represent the perception of experts, academics and practitioners in the construction field and are eligible to be used as research analysis data.

3.2 Evaluation of Project Success Factors and Criteria Models

This research model contains 9 latent variables, namely Planning and Design (*PD*); Procurement Process (*PROC*); Project Management (*PM*); Project Human Resources (*HR*); Stakeholder and client management (*STH*); Contractor (*CON*); Business (*BIS*); Sustainability (*SUS*); and Project Success Criteria (*SC*). Figure 1, shows the relationship between the latent variable and its reflective indicator as the basis for the analysis. Based on the results of the phase 2 questionnaire through google form, 285 respondent answers were collected, and then the questionnaire results data was analyzed using *PLS-SEM*. The *Partial Least Square function* can be grouped into 2 parts, namely the measurement model (*outer model*) and the structural model (*inner model*). The evaluation of *the outer model* is more towards the validity and reliability test, while the *inner model test* is more towards regression, which describes how the causal relationship between the project success factor and the project success criteria is described.

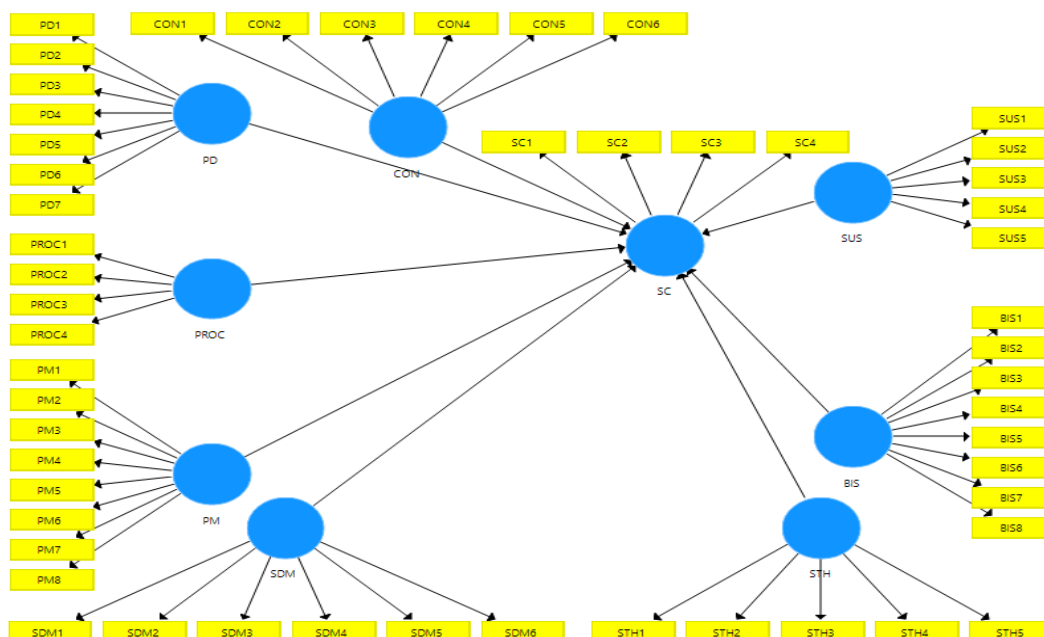


Figure 1: Model Specifications

Evaluation of the reflective *measurement model (outer model)*. according to Hair et al (2021) includes *Convergent validity* and *Discriminant validity*. *Convergent Validity*: measures the validity of each indicator against its latent variables, using measuring tools, *outer loadings and average variance extracted (AVE)*. *Discriminant Validity*: measures the extent to which a construct is completely different from other constructs by using measuring tools, *cross loadings, Heterotrait-Monotriate Ratio Of Correlations (HTMT)* and using the square root of the AVE Fornell-Larcker Criterion.

Measurement Model (*Outer Model*)

Convergent dan Discriminant validity

Table 2, shows the *Convergent validity* test which results that all constructs are valid by having an outer loading value of > 0.7 and an AVE value of > 0.5 which means that in terms of *outer loading* and AVE values, all constructs have met the required *convergent validity*.

Based on the results of the root test of AVE (Fornell-Larcker Criterion) shown in Table 2, it is obtained that all the roots of AVE of each construct are greater than their correlation with other variables, so it can be concluded that all constructs in this PLS model have met the requirements of *Discriminant Validity*.

Table 2: Convergent Dan Discriminant Validity

Construction	Indicator	Loading	AVE Scores	Uji Fornell Larcker
Planning and Design (PD)			0,797	0,893
	PD1	0,911		
	PD2	0,910		
	PD3	0,908		
	PD4	0,863		
	PD5	0,888		
	PD6	0,897		
	PD7	0,87		
Procurement Process (<i>PROC</i>)			0,832	0,912
	PROC1	0,918		
	PROC2	0,910		
	PROC3	0,929		
	PROC4	0,891		
Project Management (PM)			0,824	0,908
	PM1	0,889		
	PM2	0,906		
	PM3	0,904		
	PM4	0,922		
	PM5	0,916		
	PM6	0,914		
	PM7	0,912		
	PM8	0,898		
Human Resources (HR)			0,833	0,913
	SDM1	0,901		
	SDM2	0,927		
	SDM3	0,902		
	SDM4	0,896		
	SDM5	0,929		
	SDM6	0,923		
STH Stakeholders)			0,842	0,917
	STH1	0,925		
	STH2	0,925		

	STH3	0,897		
	STH4	0,910		
	STH5	0,929		
Contractor (CON)			0,804	0,897
	WITH1	0,876		
	WITH2	0,908		
	CON3	0,896		
	CON4	0,908		
	CON5	0,904		
	WITH6	0,889		
Business (BIS)			0,808	0,899
	UP TO1	0,883		
	BIS 2	0,888		
	UP TO 3	0,877		
	UP TO 4	0,923		
	UP TO 5	0,903		
	UP TO 6	0,904		
	UP TO 7	0,917		
	UP TO 8	0,895		
Sustainability (SUS)			0,823	0,907
	SUS1	0,905		
	SUS2	0,926		
	SUS3	0,896		
	SUS4	0,915		
	SUS5	0,893		
Project Success Criteria (SC)			0,860	0,927
	SC1	0,918		
	SC2	0,930		
	SC3	0,932		
	SC4	0,928		

Although the research data has met the requirements of *Discriminant Validity*, some experts are of the opinion that *cross loading* and the root of AVE (Fornell-Larcker Criterion) are less sensitive in assessing the validity of discrimination as an alternative to using the *Heterotrait-Monotriate Ratio Of Correlations* (HTMT) value must be less than 0.9.

Table 3: Heterotrait-Monotrait Ratio (HTMT) Antar Konstruk Latent

	UNTIL	WITH	PD	PM	PROC	SC	TBSP	STH
UNTIL								
WITH	0,723							
PD	0,824	0,743						
PM	0,808	0,749	0,825					
PROC	0,804	0,753	0,838	0,818				
SC	0,642	0,72	0,695	0,668	0,715			
TBSP	0,772	0,739	0,807	0,769	0,824	0,676		
STH	0,849	0,783	0,807	0,853	0,833	0,591	0,774	
THEIR	0,812	0,793	0,805	0,81	0,834	0,543	0,796	0,791

Table 3, presents the results of the HTMT test that is smaller than 0.9 so that it can be concluded that all constructs in this PLS model have met the requirements of *Discriminant Validity* required based on the HTMT value. Thus, the PLS-SEM model has met the *Convergent and Discriminant validity*.

Reliability Test

The reliability of the construct can be seen from the *crombachs Alpha value and the Composite Reliability value* of each construct.

Table 4: Composite Reliability

Indicator	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
PD	0,957	0,965	0,797
PROC	0,933	0,952	0,832
PM	0,970	0,974	0,824
TBSP	0,960	0,968	0,833
STH	0,953	0,964	0,842
WITH	0,951	0,961	0,804
UNTIL	0,966	0,971	0,808
THEIR	0,946	0,959	0,823
SC	0,946	0,961	0,860

Based on the results of the analysis in Table 4, it shows that the *composite reliability* and *cronbachs alpha* values of all constructs have exceeded 0.7, which shows that all constructs have met the required reliability.

Based on the overall value of the results of the *outer model test*, it was concluded that all indicators were valid in measuring the construct and all reliable constructs, so that the test could be continued at the inner model testing stage.

Structural Model Evaluation (Inner Model)

Asumsi Partial Least Square

The assumption or condition that must be met in the analysis of the inner model is that there is no multicollinearity problem. To evaluate collinearity in the structural model (*Inner Model*), the value of the Variance Inflating Factor (VIF) is used. According to Sarstedt et al (2016), to indicate there is no multicollinearity, the VIF value must be less than 5.00.

Table 5: VIF Goodness of Fit Value

Construction	BRIGHT	Goodness of Fit Model		
		R Square	R Square Adjusted	Q Square
UNTIL	4.142			
COULD	2.928			
PD	4.191			
PM	4.308			
PROC	4.128			
TBSP	3.491			
STH	4.594			
THEIR	4.055			
SC		0,648	0,638	0.548

Table 5, shows the VIF values of the entire inner model of the entire construct below 5.00, which means that there is no multicollinearity in the analyzed model.

Evaluasi Goodness of Fit Model

To ensure that the PLS model to be estimated to test the relationship between the fit research variables *and the analyzed data*, *R Square*, *Q Square* and *SRMR values of the model* were tested. *R Square* will show the strength of the model in predicting dependent variables, *Q Square* will show the level of *predictive relevance of the model*

and SRMR will show the level of *goodness of fit of the model*. Table 5, shows that the *R square* value of 0.648 is in the category of moderate. The *Q square* value is 0.548, indicating that this study has a good observation value.

SRMR is a standardized residual mean value that is a measure of the model's error. SRMR measures how well the model under test matches the data. The smaller the SRMR value, the better the model matches the data. Table 6, shows that the SRMR *estimated model* value of 0.032 is in the *perfect fit category*.

Table 6: SRMR

	Saturated Model	Estimated Model
SRMR	0,031	0,032

Based on the overall value of *the goodness of fit model* test results, it can be concluded that the model matches a series of observations made so that the data can measure the relationship between variables very well, or the model made matches the research data.

Direct Effects

In the PLS analysis, after the model is proven to be fit, the influence test between variables can be performed. In this study, only the direct influence was tested because there were no intermediate variables (mediators). To evaluate the direct influence, path coefficients between constructs are measured to see the significance and strength of the relationship.

Table 7: Direct Influence

	Original Sample (O)	T Statistics (O/STDEV)	P Values
BIS - SC	0.203	2.471	0.014
KON - SC	0.489	8.686	0.000
PD - SC	0.208	2.462	0.014
PM - SC	0.240	2.893	0.004
PROC - SC	0.358	3.681	0.000
SDM - SC	0.179	2.231	0.026
STH - SC	0.360	2.955	0.003
SUS - SC	0.501	4.142	0.000

Based on the results of the analysis of the direct effects inner model in Table 7, it shows that the entire *p value* < 0.05, this shows all the constructs of PD, PROC, PM, SDM, STH, CON, BIS, SUS have a direct positive effect on the success criteria of the SC-project. The next test is to see the significance of the influence between variables by looking at the value of the statistical t-significance value. In this study, the *t*-value for the number of 285 respondent data is 1.65. The results of the study showed that the statistical *t*-value was greater than the *t*-value. This table shows that the exogenous variable is stated to be significant in the endogenous variable.

Critical Success Factor Influence Rankings (CSFs)

The results of the analysis described above, have found that the eight factors of project success have a positive and significant effect on the project success criteria. To develop a project success measurement model, a ranking of the influence of success indicators on project success criteria is made which is taken by the top 15 rankings.

Table 8: Ranking of the Influence of Project Success Indicators

	Number (N)	$\Sigma\Omega$	RII =	Ranking
			$\Sigma\Omega/A.N$	
PM4	285	966	0.678	1
PD7	285	959	0.673	2
PM8	285	958	0.672	3
UP TO 6	285	956	0.671	4
PD3	285	949	0.666	5
PD4	285	947	0.665	6
PD6	285	945	0.663	7(2)
PRC1	285	945	0.663	7(2)
SDM3	285	942	0.661	8
PM2	285	939	0.659	9
PRC3	285	937	0.658	10(3)
PRC4	285	937	0.658	10(3)
SDM4	285	937	0.658	10(3)
PD1	285	936	0.657	11
UP TO 7	285	932	0.654	12
WITH6	285	930	0.653	13
PM1	285	929	0.652	14(2)
PRC2	285	929	0.652	14(2)
UP TO 3	285	928	0.651	15(2)
UP TO 8	285	928	0.651	15(2)

Table 8, shows the top 15 ranking of critical success indicators that have a significant effect on project success. These findings reflect indicators that affect the success of project management and business success. There is an interesting thing in this study that the sustainability factors and the impact of the project on stakeholders are not so much attention from respondents that they are considered less important for the success of the project. However, environmental problems continue to occur and have become a serious problem for the sustainability of toll road development in Indonesia. There is a lot of evidence from research results that discuss the integration of sustainability into project management concepts, including (Bayiley and Teklu 2016; Lasrado et al 2016; Silvius and Schipper 2016; Banihashemi et al 2017; Martens and Carvalho 2017; Aarseth et al 2017; Hueskes et al 2017), this shows the importance of sustainability criteria in realizing the success of the project. In addition, the impact of a project on stakeholders is an important indicator for project success (Joslin and Müller, 2015; Bayiley and Teklu 2016). And it has a positive impact on business performance (Jugdev et al 2019) which must be managed with a focus on achieving strategic and long-term goals (Zwikael et al 2018). Therefore, in this study, the researcher still includes the project impact criteria and sustainability remains the basis for analysis in determining the weight of the criteria for the success of the construction of toll roads under the PPP scheme.

3.3 Project Success Criteria Weights

The hierarchy model is formed starting from the main hierarchy is the goal of the success of the PPP scheme toll road infrastructure project. Furthermore, it is decomposed into four criteria as the second hierarchy, namely project success criteria including Project Management Success Criteria (SC1), Impact Criteria to Stakeholders (SC2), Organizational Strategic Goals Criteria (SC3) and Sustainability Criteria (SC4). The third regulation is developed based on the influence of CSFs indicators on project success criteria plus researcher analysis. To determine the weight of the criteria and

sub-criteria, a phase 3 questionnaire was developed and 52 questionnaire answers were collected. The results of the comparative data analysis between the 4 main criteria of project success, produced an inconsistency value of 0.05, this shows consistent analysis results. The highest criterion weight is Project Management Success with a weight of 37.20%, followed by the Sustainability criterion with a weight of 24.10%. The weight of the third criterion is the Project Impact criterion to Stakeholders with a weight of 23.40% and the weight of the fourth criterion is Organizational and strategic business objectives with a weight of 15.30%. The project success sub-criteria are calculated based on the data from the respondents' responses, the influence of critical success factors on the project success criteria which is formulated into the weight of the sub-criteria. Overall, the results of the analysis can be seen in Table 9.

Table 9: Format of Success Assessment of PPP Schemed Toll Road Projects

No	Indicator	Weight	Assessment Percentage	Assessment Weight	Assessment Methods
			(%)		
I.	Project Management Success Criteria				
1	Meet the planned time target	0,098			1 Gantt chart; Earned Value Management (EVM);
2	Meet quality and scope standards	0,092			2 Standar ISO/IEC 25010; Quality Performance Index (QPI)
3	Realization of project costs according to the Budget Plan	0,090			3 Baseline proyek; EVM; Project Cost Management
4	Controlled occupational health and safety	0,092			4 Safety Performance Index (SFPI)
	Sum	0,372			
II.	Impact on Stakeholders				
1	Stakeholder satisfaction with project outcomes	0,072			1 Infrastructure Service Satisfaction Index (IKLI); IKM (Ministerial Regulation of PAN and RB No. 14 of 2017)
2	Impact of the project on society and the environment	0,073			2 Gross Regional Domestic Product (GDP); Life Cycle Assessment (LCA)
3	Impact of Land Acquisition on the Community	0,089			3 IKM (Ministerial Regulation of PAN and RB No. 14 of 2017)
	Sum	0,234			
III.	Strategic Organizational & Business Goals				

No	Indicator	Weight	Assessment Percentage	Assessment Weight	Assessment Methods
			(%)		
1	Achievement of project objectives	0,031			1 Balance Scorecard; Key performance indicators (KPIs)
2	Proper regulations and legal framework	0,030			2 Infrastructure Service Satisfaction Index (IKLI)
3	Good Government Governance	0,030			3 Infrastructure Service Satisfaction Index (IKLI)
4	Availability of financial markets	0,032			4 Infrastructure Service Satisfaction Index (IKLI)
5	Macroeconomic stability	0,030			5 economic growth, inflation, per capita income, and a decrease in the number of unemployed.
	Sum	0,153			
IV.	Sustainability Criteria				
1	Integration of sustainability into construction project management practices	0,079			1 Sustainable Development Goals (SDGs)
2	Environmental resource conservation policy	0,088			2 Benefit-Cost Analysis (BCA) Method
3	Consistent environmental Performance monitoring at multiple levels	0,074			3 <i>Geographic Information System (GIS)</i> ; IoT sensors and technologies; Satellite Image Mapping Analysis
	Sum	0,241			
	Total Amount	1,000			Category :

Current and Future PPP Schemed Toll Road Project Success Strategies

Strategy Formulation Stage With SWOT

The first stage is the identity of internal and external factors summarized from the findings of determining the weight of the success criteria of the PPP toll road project so that several alternative strategies are obtained which are outlined in the SWOT Matrix as shown in Table 10.

Table 10: SWOT Matrix for the Success of PPP Schemed Toll Road Projects

		Strengths		Weaknesses	
	S1	There is support, policies and government guarantees	W1	Requires a high initial investment	
	S2	Project management using effective project management concepts	W2	The quality of human resources is poorly trained, the budget is limited and the	

					project implementation is limited
		S3	Connectivity between regions improves	W3	Lack of socialization of the benefits of toll road construction to the community.
		S4	Strong political and economic stability and an effective legal system.	W4	Political competition, unstable economic conditions and lack of political agreement
		S5	Existence of Natural Resources and Environment Conservation Policy	W5	Changes in government policies related to financing and regulations
				W6	Excessive use of natural resources and lack of attention to the environment
OPPORTUNITIES		STRATEGY SO		STRATEGY WO	
O1	Increased connectivity for economic growth, and new jobs	SO1	Leverage government support and policies, as well as strong political and economic stability to invest in sustainable toll road projects to improve connectivity, economic growth and create new jobs (S3; S4; S5; O4; O5; O1)	WO1	Building creative and innovative financing strategies in overcoming toll road funding problems, improving the quality and productivity of human resources as well as monitoring and evaluating project costs, time and quality, to meet the needs of the community,, Increasing connectivity, economic growth and opening new jobs (W1; W2; O3; O1)
O2	Increasing the competitive advantage and competitiveness of toll road infrastructure	SO2	Utilizing the management of toll road projects using effective project management concepts and government policies on saving natural resources and the environment to increase the competitive advantage and competitiveness of toll road infrastructure at the global level (S2; S5; S1; O2)	WO2	Minimizing the possibility of changes in government policies and regulations as well as the depletion of natural resources by monitoring and proactively approaching trends and developments in government policies and regulations to build sustainable toll roads, increase investment and economic growth and develop business centers (W3; W5; O5; O4)
O3	The increasing needs of the community and the potential for toll road development in each region.	SO3	Leveraging strong political and economic stability and an effective legal system as well as government policies on saving natural resources and the environment to build sustainable toll roads, meet the needs of the community, increase connectivity, economic growth and create new jobs (S4; S5; O5; O3,O1)	WO3	Improving political relations and compromises and creating economic stability to build sustainable toll roads, protect biodiversity and maintain healthy ecosystems for all living things (W4; O5)
O4	Increase investment and				

	economic growth and develop business centers.				
O5	Building sustainable toll roads, protecting biodiversity and maintaining healthy ecosystems				
THREATS		ST STRATEGY		WT STRATEGY	
T1	There is an economic gap, social jealousy	ST1	Utilizing government policies and support in the sustainable development of toll roads, to overcome economic disparities, social jealousy and rejection as well as conflicts between the government and the community (S3; S5:T1; T3)	WT1	Optimizing the investment needs for sustainable toll road construction and improving the quality of human resources to overcome the increase in resource prices and technological changes (W1; W2:T2)
T2	Rising resource prices and technological changes	ST2	Leveraging political and economic stability and an effective legal system to overcome the disruption of the investment climate and raise investor expectations in investing in the stock market (Q4; T4)	WT2	Socialize the benefits of toll road construction to the community, to avoid rejection and conflict between the government and the community as well as legal issues related to land ownership and compensation (W6; T3)
T3	Rejection and Conflict in the community as well as legal issues related to land ownership	ST3	Utilize effective project management concepts to address resource price increases and technological changes (S2; T2)	WT3	Improving political relations and compromises and creating economic stability to avoid disruption to the investment climate and raise investor expectations in investing in the stock market (W4; T4)
T4	Disruption of the investment climate that can lower investor expectations			WT4	Monitoring consistent environmental performance at various levels as well as Building effective teams to avoid the threats of climate change and natural disasters, rising resource prices and technological change (W5; T5)
T5	Climate change and natural disasters				

Tahap Analisis IFAS (*Internal Strategic Factor Analysis Summary*) dan EFAS (*External Strategic Factor Analysis Summary*)

The second stage of SWOT analysis is to compare the results of factor identification. Comparison between external factors, namely opportunities and threats, and internal factors, namely strengths and weaknesses. After the matrix of internal and external strategic factors was prepared, then a questionnaire was made and 53 responses were obtained.

Table 11: IFAS Matrix Analysis

Code	Variable Strengths	Weight	Rating	Score
S-1	Connectivity between regions improves	0.067	4.000	0.266
S-2	Government support and guarantees in financing	0.139	3.000	0.417
S-3	Strong political and economic stability and an effective legal system.	0.126	3.000	0.378
S-4	Natural Resources and Environment Conservation Policy	0.084	3.000	0.251
S-5	Projects are managed using effective project management concepts	0.085	3.000	0.254
Total Strengths Score				1.565
Code	Variable Weaknesses			
W-1	Requires a large initial investment	0.070	3.000	0.209
W-2	Changes in government policies related to financing and regulations	0.111	2.000	0.221
W-3	High political competition and unstable economic conditions	0.131	2.000	0.262
W-4	Depreciation (drain) of natural resources	0.089	2.000	0.177
W-5	Poorly trained human resources, limited budget and implementation	0.062	2.000	0.123
W-6	Lack of socialization of the benefits of toll road construction to the community	0.040	3.000	0.119
Total Skor Weaknesses				1.110
IFAS Matrix Total Score		1.000		2.675

Table 11 shows that the total score of the IFAS matrix is 2,675, which indicates that there is an internal strength that has a significant influence on the internal of the organization.

Table 12: EFAS Matrix Analysis

Code	Opportunities	Weight	Rating	Score
O-1	Increasing economic growth, creating new jobs and economic competitiveness globally	0.154	2.000	0.308
O-2	Achieve project success and increase competitive advantage through communication development and technological innovation	0.054	2.000	0.107
O-3	The increasing needs of the community and the potential for the development of large toll road infrastructure in each region	0.117	3.000	0.351
O-4	Investment in large-scale expressway projects, which can increase investment growth as well as develop business centers	0.080	2.000	0.160
O-5	Building sustainable highways, protecting biodiversity and maintaining healthy ecosystems for all living things	0.095	2.000	0.190
Total Skor Opportunities				1.116
Code	Ancaman (Threats)			
T-1	Economic disparities, social jealousy	0.195	4.000	0.780
T-2	Rising resource prices and technological changes	0.092	3.000	0.275

T-3	Denial and Conflict between the government and the community and Legal issues	0.117	4.000	0.468
T-4	Disruption of the investment climate that can lower investor expectations in investing in the stock market	0.049	3.000	0.146
T-5	Climate change and natural disasters	0.049	3.000	0.146
Total Threat Score (Threats)				1.814
EFAS Matrix Total Score		1.000		2.930

Table 12 shows a total EFAS matrix score of 2,930, indicating that the organization can respond to opportunities and threats quite highly.

Tahap Grand Strategy Matrix

The third stage is to determine *the Grand Strategy*, which is the matching stage in the strategy formulation process. *The grand strategy matrix* functions to position an organization into a matrix consisting of four quadrants. From the quadrant, it can be identified how the current and future position of the organization is so that it can make it easier to formulate an organization strategy. In this study, the difference in the score of the IFAS matrix on the X axis is 0.455 and the difference of the EFAS matrix on the Y axis is – 0.698.

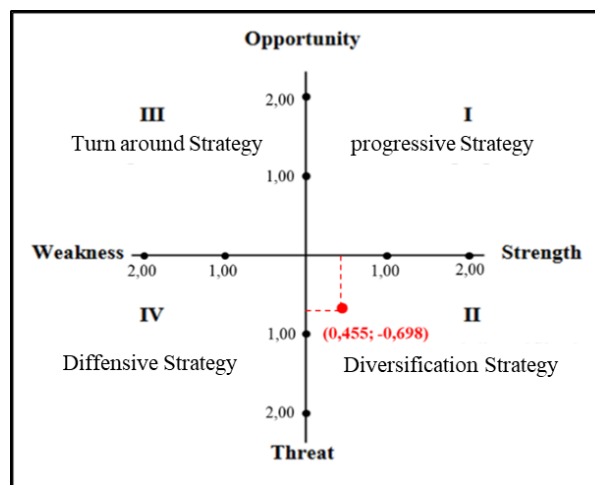


Figure 2: Quadratic Diagram of SWOT Analysis of the Success of PPP Schemed Toll Road Projects

Based on the SWOT quadrant above, it is obtained that the current and future toll road development strategy is in quadrant II with an ST (*Strength-Threat*) strategy. Although the organization faces various threats, it still has significant internal strength. Seeing this condition, it is recommended to use a diversification strategy, which is to use strengths to get project success in the short and long term while overcoming threats that may occur during the project.

The development of the IFAS and EFAS matrix can formulate a SWOT matrix combination strategy based on the total score in the IFAS and EFAS matrix, as follows:

Table 13: Combination of SWOT Strategy Matrix

	Strengths	Weaknesses
Opportunities	SO STRATEGY	WO STRATEGY
	1,565+1,116 =2,681 (24%)	1,110+1,116= 2,226 (20%)
Threats	ST STRATEGY	WT STRATEGY
	1,565+1,814=3,379 (30%)	1,110+1,814= 2,924 (26%)

Based on the combination of the SWOT matrix in Table 13, the value of the ST strategy is 3.379 or 30% and the WT strategy is 2.924 or 26%. Thus, in formulating a strategy for the success of toll road projects under the PPP scheme, a combination of strategies, ST (*Strength-Threat*) and WT (*Weakness-Threat*) can be applied. This condition shows that the organizational situation has significant internal strengths, but faces various threats and some internal weaknesses. Thus, organizations must use their power to overcome threats and minimize internal problems and improve organizational performance to achieve the success of PPP toll road construction projects.

Discussion

This study explores the critical success factors into sub-criteria of project success under the four-dimensional framework of success criteria.

A. Project Success Criteria

Project Management Success Criteria

The first dimension is the criterion "Project Management Success", representing the most fundamental dimension in this study. This dimension is a short-term measure associated with the traditional view of meeting time, cost and quality goals (*triple constraint*) and occupational health and safety. These criteria can be assessed immediately during implementation, and immediately after the completion of the project. Many in the literature agree with this statement and until now it still remains the dominant measure in determining the success of a project (Williams et al 2015; Pollack et al 2018). Management *triple constraint* An effective one is critical to the success of the project (Pollack et al 2018) and has been the most widely accepted project success criterion since the 1970s and remains highly integrated in the project management literature (Pollack et al 2018; Charles et al 2021). To achieve the success of these criteria, it is necessary to carry out consistent and effective project control and evaluation as well as feedback to monitor the progress of cost, time and quality, so as to minimize project risks. In addition, in the process of implementing the project, it is important to control occupational health and safety that can reduce the risk of injury and death in the workplace, and minimize accident-related costs.

In meeting these criteria, several very important project success indicators must be considered by stakeholders, including, Effective project plan development strategy, Project procurement, Competence and authority of the project manager. Effective communication and coordination.

Project plan development is essentially a business plan that considers the challenges and opportunities of the organization further ahead. By implementing an effective project plan development strategy, it is possible to project resources to be managed more effectively.

The competitive procurement process is considered a useful way to achieve *value for money* in PPP (World Bank Institute 2012). This can be achieved if there is transparency of costs and open information about the adequacy of funding in front of tender participants. Transparency in an efficient and effective procurement process must lead to the success of PPP projects (Simon et al 2020).

PPP contractual arrangements are usually long-term, complex and involve collaboration between the public and private sectors for mutual benefit. In this situation, there needs to be some variation in the contractual arrangements that can

accommodate the changes. Contract variations must be formulated and managed properly, so that they can provide various benefits, including facilitating risk transfer, increasing the value of money, increasing efficiency and easing the financial burden of the public sector.

The project manager is the key to the success of a project that can determine the achievement of project objectives and align internal and external teams. Therefore, the Project Manager must be given authority in determining the strategy to start the project, understanding the requirements, evaluating the project, analyzing and monitoring the progress of the project. Giving sufficient authority to the project manager is important which ranks third for the success of the project (Tavassolirizi et al 2020). A project manager must have technical and managerial skills such as the ability to integrate project constraints, manage time, manage costs, manage resources, and deal with stakeholders.

Project Impact Criteria to Stakeholders

While successful project management can indicate a well-managed and efficient project, it may not indicate long-term success or benefit to the organization. Therefore, the researcher explores the success criteria with a second dimension, namely "Impact on stakeholders". This dimension represents the needs and expectations of both internal and external stakeholders by assessing the extent to which project outcomes have an impact on stakeholders.

Stakeholder satisfaction is the level of agreement that people and groups have in a stake in the success of a project. Based on the results of several studies (e.g., Pankratz and Basten 2014; Davis 2014; Joslin dan Müller 2015; Lamprou and Vagiona 2018; Altarawneh and Samadi 2019), it was found that stakeholder satisfaction is critical to the success of the project. The greater the stakeholder support, the greater the chances for project success, as stakeholder satisfaction can influence decisions taken and can provide roles and responsibilities as well as strategic direction to achieve project success.

In addition, organizations must strive to create value for the community by meeting or exceeding community expectations, solving problems, meeting needs, and aligning with the social values of the community. Therefore, it is necessary to measure the level of impact on the community and the environment to find out the extent to which the results of the project have a positive impact on the community without environmental disturbance.

The construction of toll roads will cause a reduction in agricultural land and changes in the function of the surrounding land which has the potential to reduce the livelihood of farmers. The results of previous research showed that land problems are a very important indicator for the success of the project (Tadewos and Patel 2018; Tavassolirizi et al 2020; Kandiyoh et al 2022) which can result in delays in project development (Kandiyoh et al 2022). To solve land problems, solid cooperation with all stakeholders is needed, both from internal and external elements. Building a land acquisition planning team is very necessary, with membership not only having technical skills but also the art of how to understand the interests of the community, socialize and communicate well and influence the affected communities.

Criteria for Strategic Organizational and Business Goals

The construction of toll roads, in addition to aiming to prosper the community and also to create business success for investors. To accommodate this, the researcher developed a project success criterion with a third dimension, namely "Strategic Organizational and Business Objectives". This dimension is assessed based on, the achievement of project objectives, appropriate regulations and legal frameworks, good governance, availability of financial markets and macroeconomic stability.

Project objectives can provide a framework that can ensure that the project is well planned and executed. Clearly outlined project objectives can encourage project team members to evaluate their work consistently and realign in case of deviations. Several studies reveal that project definitions and objectives rank top for project success (Banihashemi et al 2017; Lamprou and Vagiona 2018). In developing project objectives, it is necessary to involve all relevant stakeholders at various levels who can explain the benefits of toll road construction for the community and the environment.

The concept of PPP as a public policy has a direct relationship with the legal and regulatory conditions where the project is implemented. Therefore, to achieve the success of the project, a clear and comprehensive legal and regulatory framework is needed that can allow contracts to be definitively defined and help contracting parties and other stakeholders to understand the limits of their authority and rules of the game.

Building good governance is an important task for every country that contributes to transparency, accountability, community participation, efficiency, and wise decision-making. This requires commitment from the government, political institutions, society, and others.

The PPP funding scheme emphasizes the importance of the availability of an effective financial market to provide financing for toll road projects. The government, which plays the role of a regulator, needs to establish a market-based co-financing scheme and increase access to credit in the development of toll road infrastructure. The financial market as a means of business funding can provide benefits for the Government, among others, as a source of state tax revenue, increasing economic growth and creating jobs for the community. Meanwhile, the benefits for investors have the potential to get high financial returns, not only in the increase in capital value but also in the right to receive dividends from the investments they have.

Macroeconomic stability is closely related to the State's financial problems. Because it can affect economic growth, price stability, and open new jobs. Some of the problems that often arise in the stability of the economy are problems in banking and bad loans, the existence of a domestic exchange rate crisis on external debt, unemployment, poverty and economic growth. Macroeconomic analysis needs to be carried out with the aim of seeking a balance in the balance of foreign payments such as the sale and purchase of goods and services, grants from abroad, and financial transactions between domestic and foreign populations. The balance of foreign payments must be in a balanced position to avoid a deficit. Therefore, Macroeconomic analysis is important to be used to maintain the country's economic stability. So that economic actors abroad can trust and want to invest.

Sustainability Criteria

To see long-term success, the project success criteria were developed with the fourth dimension, namely "Sustainability". This dimension is measured by the integration of sustainability into project management practices, environmental resource conservation policies and consistent environmental Performance Monitoring at various levels

The definition of sustainable development, has been widely accepted by the scientific community (Martens and Carvalho 2017). The concept of sustainability and the sustainable project completion process are both very important because they can have high social, economic and environmental impacts. Many researchers have discussed the integration of sustainability into project management concepts (e.g., Ihuah et al 2014; Banihashemi et al 2017; Martens and Carvalho 2017; Aarseth et al 2017; Hueskes et al 2017), this shows that sustainability factors are very important in realizing project success.

Integrating sustainability into project management is a set of principles that govern the entire project life cycle by executing project management beyond traditional parameters by prioritizing environmental, social, and economic sustainability. By integrating sustainability in project management, it can result in sustainable projects that are efficient, well-managed, and provide long-term benefits.

The policy of saving environmental resources is a crucial step in protecting the ecosystem from environmental damage that can occur due to toll road construction activities. Environmental resource conservation policies are the key to the success of sustainable projects (Martens and Carvalho 2017). This policy must be communicated to all stakeholders and the community including a commitment to continuous improvement, pollution prevention, and sustainability should be a framework for the setting of goals and objectives for toll road development.

The use of natural resources always has implications for environmental quality and forest sustainability. Consistent environmental performance monitoring is therefore essential to maintain the sustainability of nature and ensure a better future for future generations. Consistent monitoring of environmental performance at various levels can reduce potential impacts on the environment and improve compliance levels as well as reduce environmental liability risks.

B. Current and Future PPP Schematic Toll Road Development Strategy

In this study, it has been found that the current and future toll road development strategies are using the ST (Strengths-Threats) strategy. To carry out this strategy, there are three strategies that can produce the success of the current and future toll road construction, namely, (1) Utilizing government policies and support in the sustainable development of toll roads and improving connectivity between regions, to overcome economic disparities, social jealousy and rejection from the community. (2) Utilizing strong political and economic stability as well as an effective legal system and government policies on saving natural resources and the environment to build sustainable toll roads, meet the needs of the community, increase connectivity, economic growth and create new jobs. (3) Utilize the concept of effective project management to cope with the increase in resource prices and technological changes.

Economic inequality is a phenomenon that occurs in various countries, including Indonesia. Many factors cause economic disparities, including demographic factors,

imbalances in people's income, uneven development, lack of jobs and so on. This problem is expected to be overcome by increasing connectivity between regions resulting from government support and policies that lead to the success of sustainable toll road development. Government support in the form of guarantees is very important to increase private sector confidence, and make it easier to invest in funding toll road construction. With the Government's guarantee to investors, it is hoped that it can ensure that the toll road construction project runs as planned so that it can improve the community's economy while eliminating economic disparities and social jealousy. In addition, the Government must socialize the benefits of toll road construction to the community, so that it can educate the public and minimize the threat of rejection from the community.

The concept of PPP as a public policy has a direct relationship with the political atmosphere in the country where the project is implemented. Political and economic stability can create an environment conducive to economic growth. Investment and business tend to develop better in a stable political atmosphere because they can provide legal certainty. Political instability and an ineffective legal system allow for changes in public policy that can hamper the implementation of PPP projects.

Implementing an effective project management strategy is one of the keys to project success. Effective project management must include, careful planning, proactive risk management, effective communication, solid team management, continuous monitoring and evaluation. In this way, it is hoped that the use of resources can be optimized so that it can overcome the increase in resource prices and technological changes.

In the strategy combination analysis, a combination of ST (*Strengths-Threats*) strategy and WT (*Weaknesses-Threats*) strategy was obtained. There are several organizational weaknesses, especially in anticipating changes in government policies related to financing and regulations for toll road construction. Changes in policy and regulation are often driven by a variety of factors, such as technological advancements, political changes, social needs, and environmental emergencies. Anticipating policy changes requires active monitoring of trends and developments in governance and regulations. Organizations need to have a team or individuals responsible for monitoring and reporting on potential changes that could affect the project.

4. CONCLUSION

This research was preceded by a literature review through *the Systematic Literature Review* which included scientific journals from various countries. In this study, 49 indicators and 4 project success criteria have been found. These findings have been verified and validated by experts, practitioners and academics who have sufficient knowledge and experience of the success of the project shown in Table 1. Furthermore, 49 project success indicators are divided into 8 factors, using the SEM PLS method, resulting in all eight project success factors having a significant and positive effect on the project success criteria. The results of the evaluation of the combined effect of the causal relationship of 8 project success factors on the project success criteria resulted in an R Square value of 0.648 (strong descriptive model). This shows that if the success factors of a project are managed correctly, it will have a great chance of achieving project success. In addition, this study produced 20 critical

success indicators that affect the success of the project shown in Table 8. This critical success indicator requires special understanding and attention from stakeholders during the planning and implementation process of the PPP toll road project.

This study produces four main criteria that must be considered in assessing the success of the construction of PPP schemed toll roads. The success dimension is more emphasized on the success of Project management with a weight of 0.372, followed by development sustainability with a weight of 0.241, impact on stakeholders with a weight of 0.234 and Strategic Organizational and Business goals with a weight of 0.153. In addition to the framework for the success of the project, the study also produces three strategies that can produce the success of current and future toll road construction, namely, (1) Utilizing government policies and support in the sustainable construction of toll roads and improving connectivity between regions, to overcome economic disparities, social jealousy and rejection from the community. (2) Utilizing strong political and economic stability, an effective legal system and government policies on saving natural resources and the environment to build sustainable toll roads, meet the needs of the community, increase connectivity, economic growth and create new jobs. (3) Utilize effective project management concepts to cope with rising resource prices and technological changes. In addition, organizations or governments need to minimize several internal problems and improve organizational performance to get success in toll road construction projects under the PPP scheme.

Implementation and Recommendations

This study results in a new way to assess the success of a very important PPP toll road project. The results of this study can inspire the government in making policies, legislation and regulations as well as innovative strategies in evaluating the success of projects in both the short and long term.

Planning for the success of toll road construction must be part of the government's integrated strategic thinking and the success dimension must be determined as part of the Government's strategic objectives, and must be included in decision-making before starting the construction of toll roads under the PPP scheme.

Although this study contributes to science by providing a comprehensive framework for assessing project success and determining current and future PPP schemed toll road construction strategies, more research is needed, especially related to the operationalization of project success criteria assessment based on the weighting of the criteria that have been found in this study.

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