ANALYSIS OF FACTORS INFLUENCING THE PERFORMANCE OF COMMITMENT MAKING OFFICIALS IN CONSTRUCTION PROJECTS IN THE AGAM DISTRICT REGIONAL GOVERNMENT ENVIRONMENT

OLITIA RAHMI¹, ZAIDIR², WAHYUDI P UTAMA BQS³

Fakultas Teknik, Univesitas Bung Hatta^{1,2,3}
Email: oliti.ara@gmail.com¹, zaidir2000@yahoo.com², wahyudi@bunghatta.ac.id³
DOI: http://dx.doi.org/10.31869/rtj.v7i2.5051

Abstract: The increase in the budget allocation for procurement of goods or services in the Agam Regency Government cannot be separated from the problem of procurement of goods or services. In Agam Regency, the problem that often arises in the appointment of commitment making officials is limited human resources in managing construction work so that many projects are found to be late in completing their work. The aim of the research is to identify factors and determine the most dominant factors that influence commitment making officials performance in construction projects in Agam Regency, and create a measurement model for the relationship between commitment making officials performance. The research method used is a quantitative research method, namely by distributing questionnaires to respondents. The results of the research conducted show factors that influence commitment making officials performance in construction projects in Agam Regency, namely the Technical Capability and Workload factors, the Capability factors in planning and control, the Knowledge and Budget Factors and the Skills Factors.

Keywords: Analysis of Factors, Commitment Making Officials, Construction Projects, Agam

A. Introduction

Procurement of goods/services activities is one of the main elements in a country's development activities. Since the 60s, issues and problems in the procurement of goods/services have received the attention of the international community. Government regulations regarding the procurement of goods/services in Indonesia are regulated in Presidential Regulation no. 54 of 2010, which has undergone six changes so far, the first change is Presidential Regulation no. 35 of 2011, the second amendment to Presidential Regulation no. 35 of 2011, the third amendment to Presidential Regulation no. 172 of 2014, the fourth amendment to Presidential Regulation no. 4 of 2015, the fifth amendment to Presidential Regulation no. 12 of 2021

Procurement of goods/services has a very important role in implementing national and regional development. To ensure that the implementation of the Procurement of Goods/Services runs in accordance with the provisions and regulations of applicable laws and regulations, general guidelines have been created as stated in article 8 of Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods/Services as amended by Presidential Regulation Number 12 of 2021 concerning Amendments to Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods/Services, which contains the determination of 8 procurement actors, one of which is the Commitment Making Officer.

Commitment Making Officials are officials who are responsible for implementing the procurement of goods and services in government agencies who play an important role in the implementation of goods and services procurement projects. In simple terms, the Commitment Making Officer's job is to maintain and supervise the entire state expenditure process from the beginning of planning to the end of completion and ensure that all aspects of the procurement run in accordance with applicable regulations, both technical and administrative. The Commitment Making Officer is one aspect that has a big influence on the continuity of projects in government agencies, especially in the implementation of the management system carried out, so that in its implementation it is hoped that it can produce construction work on time, quality and cost. The scope of work is in

accordance with what has been planned and while maintaining the quality of work in accordance with the scope, contract quality plan, technical specifications stipulated in the contract document, and all of this cannot be separated from the performance of human resources, including human resources in the position of Commitment Making Officer.

Performance or performance often interpreted as the result or performance of work. Performance has a broader meaning, not only stating the results of work, but also how the work process takes place. This has a strong relationship with the organization's strategic goals, customer satisfaction and making economic contributions (Koriawan, 2011). Commitment Making Officials have a heavy responsibility in realizing quality development so they must be able to comprehensively examine the results of supervisory consultant reports in the field. This means that the Commitment Making Officer must understand the supervisory consultant's report in terms of data accuracy, accuracy of investigation, accuracy of design and quality of implementation. Mulyono (2013) concluded the results of his research that in PPK quality control, contractors and supervisory consultants must understand project activities comprehensively from various aspects.survey, investigation, design, land acquisition, action program, construction, operation, until maintenance.

Since 2013, the Agam Regency Government has implemented Electronic Procurement Services in the auction process for procurement of goods/services. The budget ceiling for procurement of goods/services continues to increase from year to year. This shows the seriousness of the Agam Regency regional government in regional development. Increased budget allocation for procurement of goods/services in the District Government. Agam, cannot be separated from the problem of procurement of goods/services. In Agam Regency, the problem that often arises in the appointment of Commitment Making Officers is the limited human resources in managing construction work so that many projects are found to be late in completing the work.

The role of Commitment Making Officials in the activities and projects implemented in Agam Regency is not yet optimal due to the problem of limited capabilities of Commitment Making Officials in the field of projects being implemented, such as limited ability and experience in terms of field engineering, understanding of the work methods used, and still not the role of the Commitment Making Officer in terms of communication and coordination regarding the work carried out to the parties involved within the scope of the project both internally and externally (Development Administration Section, 2022). Due to the low performance of the Commitment Making Officer mentioned above, the projects handled experienced work delays and some even had contracts terminated. From the results of the initial observations or observations that the author made, this was due to a lack of experience and the placement of Commitment Making Officials which was not in accordance with their educational background, not to mention the role and surrounding environment which also influenced the performance of Commitment Making Officials in the field.

B. Methods

In this research the author used a quantitative research method, namely by distributing questionnaires to respondents. The selected respondents were owners, consultants, contractors involved in construction project work within the Agam Regency Regional Government for the 2020 to 2022 fiscal year. Based on the problem formulation and research objectives to be achieved, the research stages can be summarized in the form of a research methodology flow diagram presented in Figure 1 as follows:

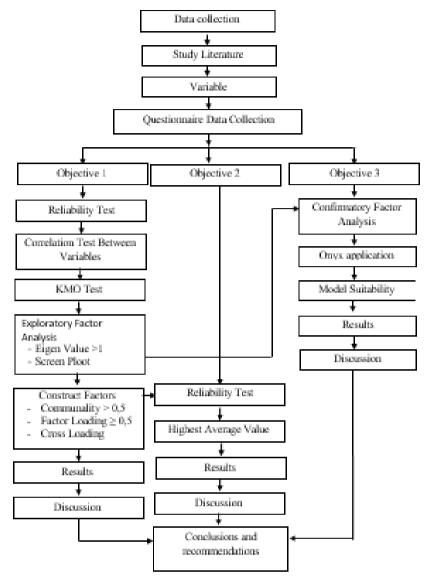


Figure 1. Research Methodology Flow Diagram

C. Results and Discussion

Data analysis

Reliability Test

The results of the reliability test in this research can be seen from the following table 1. Table 1. Reliability Test Results

	Cronbach's Alpha	
Cronbach's	Based on	
Alpha	Standardized Items	N of Items
.860	.861	30

The correlation results between variables show that three variables X13, X14, and X18 have correlation values below 0.3, which means they have low correlation with other variables. For those in yellow, the correlation value between variables is > 0.3, while for those in red, the correlation value between variables is < 0.3. The correlation results between variables show that three variables X13, X14, and The results of the correlation between variables can be seen in Table 2.

Table 2. Correlation Between Variables

Next, another reliability test was carried out for 27 variables. Based on Table 2 reliability Statistic above it can be seen that the valueCronbach's Alpha is $0.865 \ge 0.60$ so it can be said that the research reliable.

Tabel 2. Reliability Statistics

	Cronbach's	
	Alpha	
	Based on	
Cronbach's	Standardize	N of
Alpha	d Items	Items
.865	.865	27

Assumption Test/KMO (Kaiser Mayer Oiken) and Bartlett's

The test results shown in Table 3 found values KMO and Bartlett's Test of Sphericity is 0.679 which is above 0.50 with a significance of 0.000 which is below 0.05, it is stated that the sample has met the requirements and the analysis can continue. Once the conditions are met, the factor analysis can continue.

Tabel 3. KMO Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measu	.679	
Bartlett's Test of	Approx. Chi-Square	1709.745
Sphericity	Df	351
	Sig.	.000

Communalities

Based on the results of the analysis that has been carried out, a summary of the results is found as shown in Table 4.

Tabel 4. Communalities

		Extractio
	Initial	n
X1	1.000	.659

X2	1.000	.696
X3	1.000	.712
X4	1.000	.627
X5	1.000	.646
X6	1.000	.585
X7	1.000	.669
X8	1.000	.690
X9	1.000	.665
X10	1.000	.777
X11	1.000	.763
X12	1.000	.769
X15	1.000	.770
X16	1.000	.730
X17	1.000	.687
X19	1.000	.680
X20	1.000	.760
X21	1.000	.764
X22	1.000	.725
X23	1.000	.758
X24	1.000	.688
X25	1.000	.638
X26	1.000	.782
X27	1.000	.707
X28	1.000	.776
X29	1.000	.719
X30	1.000	.601

From table 4 above, there are 27 variables that have a correlation coefficient value of > 0.50 which can explain the factors formed, provided that the greater the communalities value, the closer the relationship between the variable in question and the factor formed. The calibration criteria used for factor extraction are eigen-value greater than 1 and using the Varimex rotation type. In analysis*total variance explained* The contribution of the total factors formed will be classified. The greater the contribution value indicates the researcher's carefulness or accuracy in selecting the dimensions to be tested.

Tabel 5. Total Variance Explained

		10001	. 1000.		<u>-</u>				
					Extraction Sums				
				of	Squa	ared	Rotation Sums of		
	Init	ial Eigenv	alues	L	Loadings			Squared Loadings	
					%		_		
					of				
					Va				
		% of			ria	Cumu		% of	Cumu
Comp		Varianc	Cumula	Tota	nc	lative	Tota	Varia	lative
onent	Total	e	tive %	1	e	%	1	nce	%
1	6.346	23.503	23.503	6.34	23.	23.50	2.97	11.02	11.02
				6	50	3	6	1	1
					3				

2	2.718	10.066	33.569			33.56	2.43	9.015	20.03
				8	06	9	4		6
	1.760		40.110	1.5	6	10.11	2.25	0.714	20.55
3	1.768	6.550	40.119	1.76	6.5 50	40.11 9	2.35	8.714	28.75
4	1.632	6.044	46.162	1.63		46.16	2.23	8.258	37.00
7	1.032	0.044	40.102	2	44	2	0	0.230	8
5	1.623	6.012	52.175	1.62	6.0	52.17	2.16	8.018	45.02
				3	12	5	5		6
6	1.458	5.402	57.577	1.45		57.57	1.92	7.131	52.15
	1 000	4.000	62.456	8	02	7	5	6.550	7
7	1.323	4.899	62.476	1.32		62.47	1.82	6.758	58.91
8	1.127	4.175	66.651	1.12	99 4.1	66.65	1.59	5.904	64.81
O	1.127	4.173	00.031	7	75	1	4	3.704	9
9	1.047	3.879	70.529	1.04		70.52	1.54	5.711	70.52
				7	79	9	2		9
10	.854	3.163	73.692						
11	.809	2.995	76.687						
12	.770	2.852	79.540						
13	.689	2.553	82.093						
14	.619	2.293	84.385						
15	.561	2.076	86.461						
16	.522	1.935	88.396						
17	.464	1.720	90.116						
18	.403	1.493	91.609						
19	.403	1.492	93.101						
20	.369	1.368	94.469						
21	.302	1.118	95.587						
22	.277	1.026	96.612						
23	.269	.997	97.610						
24	.213	.789	98.398						
25	.184	.681	99.079						
26	.132	.489	99.568						
27	.117	.432	100.00						
			0						

Extraction Method: Principal Component Analysis.

From table 5 above, it can be seen that the variables analyzed can be grouped into 9 factors, namely those that have eigenvalues that show a number greater than one. Meanwhile, the scree plot graph (figure 1) identifies 5 factors that should be formed, because the graph starts to flatten at component 5.

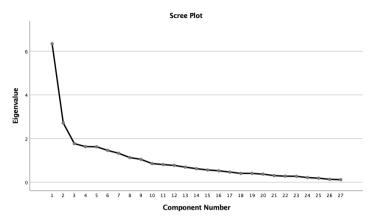


Figure 2. Scree Plot

Then carry out repeated factor analysis by setting the Extraction Factor to 5 based on the scree plot results (Nasril et al., 2021). At this stage, it is done again Communalities and The test results can be seen in table 6, there are 17 variables which have a correlation coefficient value > 0.50 and which can explain the factors formed with the provisions that the greater the communalities value, the closer the relationship between the variable in question and the factors formed and the 10 variables (X4, X6, X9, X11, X16, X19, X21, X22, X25) has a correlation coefficient value <0.50.

The test results shown in Table 7 found values KMO and Barttletts Test of Specherity is 0.711 which is above 0.50 with a significance of 0.000 which is below 0.05, it is stated that the sample has met the requirements and the analysis can continue.

Tabel 7 KMO and Bartlett's Test

Kaiser-Meyer Samplii	.711	
Bartlett's Test of Sphericity	Approx. Chi-Square	890.314
	Df	136
	Sig.	.000

The next stage, look again Communalities and As a result of the analysis that has been carried out, a summary of the results is found as shown in Table 8.

Tabel 8. Total Variance Explained

		Initial Eigenv	alues	Extract	tion Sums of Squ	uared Loadings
		% of	Cumulative			
Component	Total	Variance	%	Total	% of Variance	Cumulative %
1	4.623	27.195	27.195	4.623	27.195	27.195
2	2.286	13.447	40.643	2.286	13.447	40.643
3	1.531	9.007	49.650	1.531	9.007	49.650
4	1.369	8.054	57.704	1.369	8.054	57.704
5	1.129	6.642	64.346	1.129	6.642	64.346
6	1.020	6.002	70.348			
7	.840	4.939	75.287			
8	.630	3.704	78.991			
9	.598	3.518	82.509			
10	.537	3.159	85.668			
11	.500	2.942	88.610			
12	.438	2.579	91.190			
13	.390	2.292	93.482			
14	.357	2.103	95.584			
15	.312	1.836	97.420			
16	.255	1.499	98.920			
17	.184	1.080	100.000			

Extraction Method: Principal Component Analysis.

Matrix Rotation Analysis

Based on the results of the tests that have been carried out, 17 variables can be seen that will form factors that influence PPK performance in construction projects in Agam Regency, as seen in Table 9 below:

Tabel 9. Rotated Component Matrix^a

	Component				
	1	2	3	4	5
X12	.727				
X17	.707				
X29	.588				
X20	.520				
X1		.737			
X7		.726			
X3		.678			
X10			.737		
X30			.727		
X2			.596		
X8			.588		

X27		.818	
X28		.815	
X26		.564	
X15			.841
X24			.583

Extraction Method: Principal Component

Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

a. Rotation converged in 19 iterations.

Factors influencing PPK performance in construction projects in the district

In this study, of the five factors defined, only four factors were acceptable. Factor five only has two variables so it is not considered, so factor identification is defined as follows:

Table 10. Grouping of Factors Based on Factor Analysis

Factor	Code Variable	Variable
	X12	Accuracy in examining shop drawings submitted by contractors
Factor 1: Technical	X17	Other main tasks performed by PPK
Capability and Workload	X29	Encouragement from superiors to perform better
	X20	PPK education background
Esstan 2. Abilita in	X1	Develop appropriate/appropriate procurement plans
Factor 2: Ability in planning and controlling	Ability to control and evaluate work implementation according to work pla	
controlling	X3	Availability of sufficient implementation time
	X10	Accuracy in signing payment agreements
Factor 3: Knowledge	X30	Work that is considered fun/comfortable
and Budget	X2	Availability of sufficient fund allocation
and Budget	X8	Understand the applicable laws and regulations in contracts
Factor 4:	X27	Self-confidence in performing tasks
Communication and Motivation	X28	High self-motivation in work
	X26	How to communicate well in organizations

Technical Capability and Workload Factors

This technical capability and workload factor influences the performance of the PPK, because in carrying out its duties the PPK must have capabilities in the technical field of implementation. A PPK should have technical knowledge such as being able to understand shop drawings and technical educational background will influence a PPK's abilities. The results of research (Yeni.T, 2016) show that PPK technical knowledge influences technical abilities and influences PPK performance in managing road construction projects in Agam Regency.

Ability in planning and controlling

For the capability factor in planning and control, in the form of the PPK's ability to carry out appropriate/appropriate planning including planning in terms of time so that the results of the construction project are as expected, both in terms of quality, time and cost.

Knowledge and budget factors

For this factor, with the basic knowledge it has, PPK can be thorough in checking payment approval documents (SPP), and PPK must also understand the applicable laws and regulations, so that the implementation of construction work runs in accordance with the regulations.

Motivational and Communication Factors

For this communication and motivation factor, it influences PPK performance in construction projects in Agam Regency, because by communicating we can provide information needed by other people or groups so that with that information the decision making process can be carried out well, supported by Robbins' theory (2013) which found that communication helps develop motivation by explaining to employees what to do, how they work well. Meanwhile, self-motivation from PPK itself also has an influence, because every activity carried out by a person is driven by a force within that person. If a person is motivated, he will do everything in his power to make what he wants come true (Cici., 2015).

Dominant factors influencing PPK performance in construction projects in Agam Regency

To determine the dominant factor, use the average value of each factor and measure the reliability and consistency of each factor, for each factor a value is obtained. Cronbach's alpha for each factor \geq 0.60. From measuring the reliability and consistency of each factor, a value is obtained Cronbach's alpha, for Factor 1 = 0.669, Factor 2 = 0.693, Factor 3 = 0.718, Factor 4 = 0.685, Factor 5 = 0.43, for the alpha value of Factor 1, Factor 2, Factor 3 and Factor 4 is above the threshold of 0.6 Meanwhile, for factor 5 the alpha value is less than 0.6, so that the factor results determined in the results of this research are 4 factors.

Factor Average Cronbach's alpha Factor 1: Technical Capability and 3,71 0,669 Factor 2: Ability in planning and 4,329 0,693 controlling Factor 3: Knowledge and Budget 4,072 0,718 Factor 4: Communication and 3,691 0,685 motivation

Table 11. Dominant Factors

From table 12 above, based on the average value, the most dominant factor influencing PPK performance in construction projects in Agam Regency is Factor 2 Ability in planning and control, because PPK responsibilities start from planning, goods/services procurement process, implementation to with handover. For each defined factor, the dominant variable is seen from the average value of each variable, as in the table below.

Table 12. Dominant variable of each factor

Factors and Variables	Average
Factor 1 Technical Capability and Workload	
X12. Accuracy in examining shop drawings submitted by contractors	3,80
X17. Other main tasks performed by PPK	3.86
X29. Encouragement from superiors to perform better	3,61
X20. PPK educational background	3,57

Factor 2. Ability in planning and controlling	
X1. Develop appropriate/appropriate procurement plans	4,49
X7. Ability to control and evaluate carrying out work according to the work plan	4,21
X3. Availability of sufficient implementation time	4,29
Factor 3. Knowledge and Budget	
X10. Accuracy in signing payment agreements (SPP)	4,19
X30. Work that is considered fun/comfortable	3,65
X2. Availability of sufficient fund allocation	4,35
X8. Understand the applicable laws and regulations in contracts	4,10
Factor 4. Communication and Motivation	
X27. Self-confidence in performing tasks	3,75
X28. High self-motivation in work	3,63
X26. How to communicate well in organizations	3,70

or Factor 1, the most dominant influence on PPK performance is the other main tasks carried out by PPK, factor 2 which most dominantly influences is preparing appropriate/appropriate procurement plans, factor 3 is the most dominant influence on the availability of sufficient fund allocation, and for factors The 4 most dominant is self-confidence in carrying out tasks.

Model for Measuring Relationships with KDP Performance Development of Structural Equation Models

The four-factor structure derived from EFA was validated through CFA using the Onyx program. The model constructed through this application is then validated by paying attention to the parameter values of construct reliability and goodness of fit tests. Maximum likelihood is the most frequently used and powerful estimation method for measuring structural paths and factor loadings (Awang 2012; Chin et al. 2008). Preliminary results, as shown in Fig. 4.2, reveals that Model-1 has not achieved acceptable estimates of standard parameters including standard regression weights (> 0.5) and squared multiple correlation (R2 > 0.25) except for paths X2, X8, X10 and X30. The initial model (Model-1), as shown in Figure 4.2, could not achieve the desired fit index (Goodness of fit) with indicators RMSEA=0.126, SRMR= 0.098, CFI=0.737 and TLI=0.648)

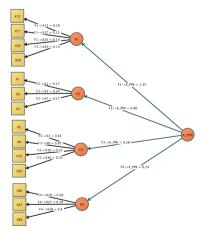


Figure 3. Model-1

Attempts were made to improve model fit by sequentially removing observed variables that had relatively lower R2 values. There was a significant increase in the R2 and Goodness of fit values after

eliminating X29. Model 2 in Figure 3 shows the values of RMSEA=0.126, SRMR= 0.093, CFI=0.762 and TLI=0.669. The same method is carried out again by discarding X30 because it has the lowest R2 value. However, because it did not provide significant results, the X30 was retained.

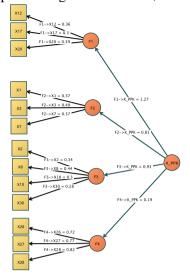


Figure 4. Model-2

In the next step, the Model-2 indices are carefully analyzed. The correlation value of each variable is observed. Try to correlate variables on the same factor by looking at the magnitude of the correlation value. However, this step also does not provide satisfactory model results. After several trials and errors, the best model results were obtained after correlating various variables and factors as shown in Figure 4. Model-3 gives the values RMSEA=0.12, SRMR= 0.082, CFI=0.823 and TLI=0.700. Therefore, the validity of the K-PPK Factor structure obtained through EFA is not fully confirmed.

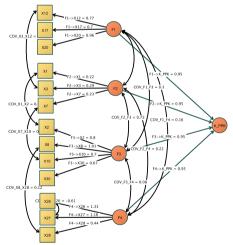


Figure 5. Model-3

Several reasons why this applies, which may need to be proven in further research, include:

- 1. Number of samples. Even though the sample adequacy test states that the sample size is sufficient to carry out EFA, the number of 150 is still considered very small by some experts (Lingard and Rowlinson, 2007).
- 2. Variables that are not validated in the questionnaire.

3. Determination of the number of factors. Determining the number of factors is based on an eigenvalue of more than 1.0 and reading the scree plot graph. These two methods provide different decisions on the number of factors worth retaining

D. Conclusions

The conclusions from this research are:

- d) The results of the research conducted showed 4 factors that influence performance office of the commitment maker in construction projects in Agam Regency, namely Technical Capability and Workload factors, Capability factors in planning and control, Knowledge and Budget Factors, Communication and Motivation Factors
- e) Dominant Factors that influence performance office of the commitment maker in construction projects in Agam Regency, namely the ability to plan and control, due to responsibility office of the commitment maker starting from planning, the process of procuring goods/services, implementation to handover.
- f) Performance Relationship Measurement Model office of the commitment maker Construction of Structural Equation Models. After several trials and errors, the best model results were obtained after correlating various variables and factors as shown in Figure 4.4. Model-3 gives the values RMSEA=0.12, SRMR= 0.082, CFI=0.823 and TLI=0.700. Therefore, the validity of the K-PPK Factor structure obtained through EFA is not fully confirmed.

References

- [1] Bahairi. 2011. Faktor-Faktor yang Mempengaruhi Kinerja Pejabat Penatausahaan Keuangan Satuan Kerja Perangkat Daerah (PPK/SKDP) di Lingkungan Pemerintah Provinsi Bangka Belitung. Universitas Terbuka, Jakarta.
- [2] Chainar Elli Ria. 2016. Analisa Faktor- Faktor Yang Mempengaruhi Kinerja Pegawai Dinas Bina Marga Provinsi Sumatera Utara. Ekonomi Manajemen, VOL.5 NO.2(2), 14.
- [3] David. 2019. Analisis Faktor-Faktor Penyebab Keterlambatan Penyelesaian Proyek Konstruksi Gedung Di Kota Sawahlunto. Tesis Universitas Bung Hatta
- [4] Dmyati, H., & Nurjaman, K. 2015. Manajemen Proyek. Bandung: CV Pustaka Setia
- [5] Ervianto, I. . 2005. Manajemen Proyek Konstruksi Edisi Revisi. Yogyakarta: Andi.
- [6] Gunasti, A. 2015. Faktor-Faktor yang Mempengaruhi Kinerja Manajer Proyek pada Proyek Konstruksi. Jurnal Media Teknik Sipil, 13(1), 31. https://doi.org/10.22219/jmts.v13i1.2540
- [7] Hery. 2017. Kajian Riset. PT. Grasindo. Jakarta
- [8] Irawan, alex. 2020. Faktor-Faktor Yang Mempengaruhi Peningkatan Kinerja PPK Pada APBD Kabupaten Kerinci. Padang: Universitas Bung Hatta.
- [9] Made, Pastiarsa, 2015, Manajemen Proyek Konstruksi Bangunan Industri, Perspektif Pemilik Proyek, Cilegon: Teknosain.
- [10] Moloeng, Lexy J. 2012. Metodologi penelitian Kualitatif. Bandung: PT. Remaja Rosdakarya
- [11] Muhammad Abdi Siregar. 2012. Kompensasi Disiplin dan Lingkungan Kerja Sebagai Prediktor Terhadap Kinerja PNS di Dinas PU Kota Batam.
- [12] Nasril, S , dkk. 2021. Model Pengukuran Faktor Iklim Keselamatan (Safety Climate) Konstruksi (Studi Kasus Proyek Jalan di Sumatera Barat). Universitas Bung Hatta
- [13] Padma Arianie, Ganesstri. 2017. Perencanaan Manajemen Proyek Dalam Meningkatkan Efisiensi Dan Efektifitas Sumber Daya Perusahaan (Studi Kasus: Qiscus Pte Ltd). Jurnal Teknik Industri, Vol. 12, No. 3, September 2017.
- [14] Rahmawanto, R., Wicaksono, A., & P. Budio, S. 2012. Faktor-Faktor Penentu Peningkatan Kinerja Pejabat Pembuat Komitmen (PPK) Pada Satker APBN Dan SKPD Provinsi Kalimantan Timur. Jurnal Media Teknik Sipil, 10(2), 183–191. https://doi.org/10.22219/jmts.v10i2.1793
- [15] Santoso Singgih. 2012. Aplikasi SPSS pada Statisik Multivariat. Jakarta: Elex Media

- Komputindo.
- [16] Supihati, S. 2014. Analisis Faktor-faktor Yang Mempengaruhi Kinerja Karyawan Perusahaan Sari Jati Di Sragen. Jurnal Paradigma Universitas Islam Batik Surakarta, 12(01), 115677.
- [17] Sutopo, Y. dan A. Slamet. 2017. Statistik inferensial. Andi: Yogyakarta
- [18] Tugiman dan Bambang Syairudin. 2018. Pengembangan Critical Succes Factor (CSF) untuk Menunjang Kinerja Pejabat Pembuat Komitmen (PPK) dalam Pembangunan Jembatan Ketapang di Banyuwangi. Institut Teknologi Sepuluh Nopember.
- [19] Yeni, T. 2016. Studi Penilaian Kinerja Pejabat Pembuat Komitmen (PPK) dalam Pengelolaan Konstruksi Proyek Jalan di Kabupaten Kerinci. Universitas Bung Hatta.
- [20] Hendra. A. 2019. Analisis Pengaruh Kompetensi Pejabat Pelaksana Teknis Kegiatan Terhadap Kualitas Proyek di Kabupaten Pesisir Selatan. Universitas Bung Hataa.