Gartner Model and Partial Least Square Regression for Evaluation the Maturity Level E-Government Public Services in Provincial Papua

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Abstract

Governance in Indonesia in the era of technology 4.0 is required to follow changes and accommodate every community's aspirations quickly. The level of participation and become an advantage of E-government in breaking the divide between the government and the people in Indonesia. The level of public participation that continues to increase if it is open makes E-Government much needed in Indonesia. However, there are still many government information systems that are created and implemented that do not work optimally both in regional and central governments. The purpose of this research is to provide basic data, follow-up data, and all that is needed for the development of an E-Government strategy. Measuring the maturity level of E-government is needed to determine the extent of the implementation of E-Government in Papua Province. The model used to measure the level of maturity in the study is the Gartner Model. Gartner's model suggests four critical phases of e- government evolution: web presence, interaction, transaction, and transformation. The research methodology uses a questionnaire and the calculation uses the average score of each dimension. To find out the relationship between the dimensions and the criteria used the Partial Least Square method. The results of the research that the maturity level of E-Government is 4.06 (predictable process). The dimensions of transformation and usability affect public participation in using e-government in Papua Province.

Keywords *— Maturity Level, Gartner Model, Partial Least Square, E-Government*

1. INTRODUCTION

E-Governance in Indonesia in the era of technology 4.0 is required to follow changes and accommodate every community's aspirations quickly. Since 2003 through Presidential Instruction No. 3[1]. The Indonesian government must have the initiative to make information disclosure through the development of E-government. In the Presidential Instruction, every government administrator is required to organize a government that is clean, transparent, and able to respond to the demands of change effectively[2]. To encourage the acceleration of government bureaucratic reform, the Ministry for the Empowerment of State Civil Apparatus issued Ministerial Regulation No. 11 of 2015 concerning the 2015-2019 RJPMN (National Medium-Term Development Plan) and Nawacita, one of which encourages the acceleration of

E-Government infrastructure development in Indonesia[3]. Furthermore, in 2018 the government issued a presidential regulation of the Republic of Indonesia Number 95 of 2018 concerning an electronic-based government system. In the presidential regulation, the government hopes to improve the quality of government administration and increase public participation in development through an electronic-based government system (e-government). Furthermore, in the 2018 Presidential Regulation, the government included SPBE in the National Long-Term Development Plan (RPJP) 2005-2025[4].

E-government as part of internet products has become a topic of discussion in internet and mass media discussions and is popular after being linked to the regional autonomy policies of districts/cities in Indonesia. E-government is related to the use of information technology (such as Wide Area Networks, the internet, and mobile communications) by government agencies that can transform government relations with citizens (G2C), business actors (G2B), and other government agencies[5]. The level of participation and openness are the advantages of e-government in breaking the barriers between the government and the people in Indonesia. According to a survey conducted by the EDGI (E-Government Development Index) in 2022, Indonesia was ranked 77th, up from 88th in 2020[6].

The increasing level of public participation wants an open bureaucracy to make e-government very much needed in Indonesia. There are many government initiatives to create budget transparency and build public trust in the government through various systems. However, there are still many government information systems that are created and implemented that do not function optimally at both the regional and central government levels. This was revealed in a study which proved that in 110 information system projects running in the government, only 27% of information system projects were completed on budget and on time, while the remaining 55% had problems and 10% of projects were canceled[7].

According to the biggest challenge in implementing e- government in Indonesia is the ability and readiness of management to accept change and work culture using e- government[8]. Several further obstacles become the concept of implementing e-government, including several regions in Indonesia that have not been touched by commercial communication networks, information sharing between institutions is still very low, and human resources that do not have a culture of digitally documenting every work. Measuring the maturity level of e-government is needed to determine the extent to which the successful implementation of e-government in government organizations is by applicable regulatory standards. The purpose of the e-government maturity assessment is to provide baseline data, follow-up data, and all that is needed for the development of an e- government strategy. Maturity level assessment helps identify priorities for e-government development to increase competitiveness and provide information to the public.

Measurement of maturity level becomes a reference that can be used to improve the system that has been used by the government. The selection of the right model to measure the maturity level of e-government is very important to get the expected results. This study uses the Gartner model with the stage maturity model (SSM) measurement method. The Gartner model focuses on the level of system integration. The use of the Gartner model is expected to

describe the maturity level of e-government. The measurement of the maturity level of e-government, there is a change in the pattern and structure of the development of e-government.

2. RESEARCH METHOD

Related Work

In this section, we classify related works in the literature into two classes: (i) we will discuss the Gartner model and (ii) we will discuss Partial Least Square – SEM regression.

A. Gartner Model

Gartner is one of the models used to measure the maturity level of e-government. The Gartner model is used to measure the level of maturity[9]. Gartner's model suggests four critical phases of the evolution of e-government, namely web presence, interaction, transactions, and transformation.

- Web Presence

A website that can provide information such as the government's vision and mission, address of government offices, opening hours of government services, and several documents relevant to the public.

- Interaction

Some facilities such as basic search capabilities, forms for complaints, links to relevant sites, and e- mail addresses of relevant officials.

- Transaction

Build an application that allows the public to make payment obligations online and independently.

- Transformation

Redefined government service delivery by passing a single point. The focus of the Gartner model is to analyze the integration process at the system level. The selection of Gartner as a maturity assessment model is appropriate for use in local governments in Indonesia. The analysis is carried out on two sides, namely the government side and the community side feel and use e-government.

B. Partial Least Square – SEM

PLS-SEM is one of the analytical methods in quantitative research from SEM which is called variance or component- based SEM. PLS-SEM is a multivariant analysis technique for

analysis that has predictive properties with weak theory. The purpose of using PLS-SEM is to test the predictive relationship between constructs[10]. The main purpose of PLS-SEM is to predict and develop theory. This is to see the relationship or influence between these constructs. PLS-SEM is used for research not to test existing strong theories, but to develop theories. PLS-SEM only uses a recursive/unidirectional variable relationship model. Some studies choose to use PLS-SEM because the data sample is small, it does not require data with a normal distribution. PLS- SEM has been used for many studies and can explain and describe the relationship between constructs built in the research model. PLSR finds a linear regression model by projecting the predictor variables and the response variable to a new space[11].

In the analysis using PLS-SEM, there are two stages carried out, namely model estimation and model evaluation. There are three stages in model estimation, namely making a weight estimate score, path coefficient, loading factor, and location parameters.

There are two stages of model evaluation, namely measurement model and structural measurement. PLS-SEM can also be divided into three components, namely structural models, measurement models, and weighting schemes. The outer model relates indicator 5 to the latent variable. One indicator can only be associated with one latent variable. A weighting scheme is used to assign internal weights. The data used in the study used a non-probabilistic approach such as accidental sampling, purposive sampling, and other sample collection techniques.

Table 1. Analysis Assessment Criteria[12]

No	Criteria	Description
1	Loading Factor	Load factor value 0.5
2	Cross-Loading	Nilai cross-loading setiap indikator harus lebih besar dari nilai cross loading indicattor pada konstruk lainnya
3	Composite reliability	The cross-loading value of each indicator must be greater than the cross-loading indicator value in other constructs
4	AVE	The value is used to explain how well the indicator explains the latent variable AVE > 0.5
5	Latent construct correlation	The correlation value between latent variables is smaller than the squared value of AVE
6	R Square	R2 value > 0.7 is categorized as strong. R2 value of 0.67 is categorized as substantial R2 value of 0.33 is categorized as moderate R2 value of 0.19 is categorized as weak
7	P-values	Significant value P-values 0.1 (significant enough) P-values significant value 0.05 (significant) P-values significance value 0.01 (very significant)
8	Path Coefficient	Shows the relationship between the influence of the independent variable and the dependent variable. A positive path coefficient value indicates a positive effect while a negative path coefficient value indicates a negative effect.

The design and testing were carried out after classifying the problems into a questionnaire. Test the questionnaire by matching the statements to the Gartner model. Questions that are not by the Gartner model are corrected according to Table

Questions are also adapted to the situation in the Papuan provincial government

The questionnaire model trial was conducted on 20 respondents who are competent in the IT field, including those involving the Papuan Provincial Government. After being adjusted and corrected, then data sampling is carried out to be measured as a whole.

Table 2. Maturity Level Assessment Indicator[13]

Aspect	Phase 1 Presence	Phase 2 Interaction	Phase 3 Transaction
Organizational Readiness (OR)	Not available or just formality requires awareness	Available but the structure is still limited, need trust	Available and defined formally, through vision and mission, able to make a choice
Governance and Leadership Readiness (GLR)	Simply limited to implementation with Limited Knowledge Resources, the existence of information/data collection	There are technical instruction and stakeholder management capabilities, the use of important information	There is technical guidance and formal implementation guidance as well as dimensional knowledge. Information sharing and data protection are required
Customer/Stakeholder Readiness (CR)	Just simply receiving information, needs to be made aware of the importance of public information	Know and be aware of the importance of information	Understanding the transactional rules and making it a real need
Competence/ Human Readiness (HR)	Experienced operators or techniques	Human resources are suitable with knowledge with limited experience	Human resources are suitable with knowledge, having experience in their field with the addition of appropriate short-course competence
Technology Readiness (TR)	Simply connected to LAN, intranet, or internet with not guaranteed connection reliability,basic web, bulletin board	Network infrastructure is largely achieved with an adequate connection. E-mail, download, search engine, electronic data interchange	Having NOC and supporting infrastructure with reliable capacity, connectivity, and security. E-filling system, interoperability technology
Legal Readiness (LR)	Unclear or simply in the form of commands or instructions	Organization internal rules	Good national rules, clear, and protected system implementation, and stakeholder rules

3. RESEARCH RESULTS AND DISCUSSION

A. Garnier Model

In calculating the questionnaire, the paper uses the framework used, namely the Maturity Level assessment indicator. In the implementation of the last dimension, which was originally integration, it was modified into transformation. There are 6 criteria from each phase that are measured in the calculation of the questionnaire, including:

- Organizational Readiness (OR).
- Governance and Leadership Readiness (GLR)
- Stakeholder Readiness (CR)
- Human Resources (HR)
- Technology Readiness (TR)
- Laws and Regulations (LR)

Each phase measured includes 4 main phases of the Gartner model and 2 additional phases are added to obtain information about usability and e-government participation in the Papua Provincial Government. The following is an overview of the assessment matrix in Tables 3 and 4.

Table 3. Gartner Model Measurement Matrix

Criteria (Dimensions)	Existence	Interaction	Transaction	Transformation
OR	365	379	371	382
GLR	366	371	374	376
CR	361	380	358	381
HR	384	366	354	361
TR	386	381	360	377
LR	382	399	378	381
Totalscore	**2244**	**2276**	**2195**	**2258**
Average	**4.08**	**4.12**	**3.98**	**4.10**

From the results of the analysis and observation obtained the value of each dimension contained in the Gartner model used. Calculation of the data obtained 6 values in each measurement dimension. The Gartner model shows the maturity dimensions of each criterion based on the dimensions of existence, interaction, transaction, and transformation. Meanwhile, 2 additional dimensions that have the same criteria are added with 4 assessment criteria, namely ease of use (KP), the openness of data and information (KD), public services (PP), and public interest (KM). The results of the overall system maturity assessment are shown in Tables 3 and 4. The results of the measurement of each dimension of each criterion were obtained from the number of questionnaire scores from 92 respondents for each dimension of the criteria.

Table 4. Measurement Results On The Dimensions Of Participation And Usability

Criteria (Dimensions)	Participation	Usability
OR	373	369
GLR	376	372
CR	372	369
HR	375	378
TR	368	333
LR	385	376
KP	369	357
KD	339	378
PP	378	381
KM	389	385
Total score	**3698**	**3724**
Average	**4.05**	**4.10**

From Tables 3 and 4, the average value of the highest level of e-government maturity in the Papua Provincial Government on the interaction dimension is at a value of 4.12 (predictable process) indicating a strong system interaction between users and e-government. Meanwhile in Dimensional Transformation 4.01 (predictable process). This shows that the e-government of the Papua Province has been able to follow and make changes. The lowest value on the transaction dimension is 3.98 (Established Process). Even though it is included in the established process, this proves that e- government in Papua Province is still lacking in terms of transaction dimension e-government maturity. In the interview session, the resource person also stated that there were still improvements in the system in terms of services to the public through e-government and in terms of transactions.

The presence dimension is at a value of 4.08 (predictable process). A score of 4.08 indicates that almost all OPDs in the Papua Provincial government have a system/website for each OPD. Meanwhile, the additional dimension of Usability is at 4.01 predictable process. This proves that the employee/manager already has the expertise or there is structured assistance in the management of e-government. The level of community participation or managers in using e- government is at 4.05 (predictable process). This shows that the managers are familiar with the existence of e-government in facilitating work and the Papuan people are familiar with the e-government of the Papua Province. So that the process of further development can be easier because people have more confidence in the advantages of e-government in terms of transparency or openness of government information. The overall level of e-government maturity level in the Papua Provincial government according to the model is within the predictable threshold both in terms of management and supervision.

1) Garnier Model – Dimension of Existence

The existence dimension is to see the existence of e- government websites as part of the government's public service system. There are 6 criteria for the dimensions of existence, namely organizational readiness to provide e- government, governance in presenting a website,

rules for stakeholders with the existence of e-government, the competence of e-government managers, government infrastructure readiness, and e-government regulations in the 95th Presidential Instruction. 2018. The presence dimension measures websites that can provide information such as the government's vision, and mission, government office addresses, government service opening hours, and several official documents relevant to the public.

Criteria Assesment Dimension Existence

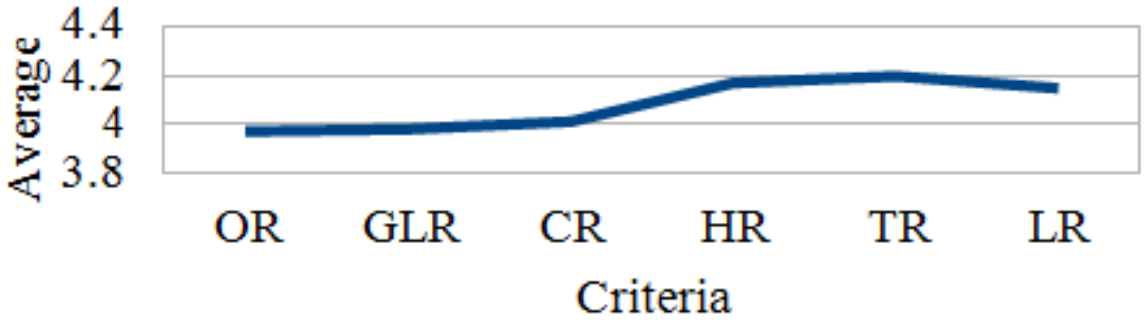


Figure 1. Total Score Criteria Existence Dimension

In Table 5 it can be seen that the maturity level of each criterion is evenly distributed. Governance (GLR) and organizational readiness (OR) are a concern because they have a maturity level of 16% of the measurement aspect maturity level. So it can be concluded that the existence of e- government in the Papua Provincial Government, needs to improve aspects of organizational readiness and better governance in terms of the level of readiness of the OPD.

Table 5. Dimension of Existence – Garnier Model

Criteria	OR	GLR	CR	HR
Total Score	365	366	361	384
Average	3.97	3.98	4.01	4.17

2) Garnier Model – Interaction Dimension

The interaction dimension measures the development of e- government that has been used and provides information to the public. Of the 92 respondents who filled out the interaction dimension questionnaire, they received an assessment of 4.1 (predictable process).

Table 6. Dimensi Interaksi – Garnier Model

Criteria	OR	GLR	CR	HR	TR	LR
Total Score	379	371	380	366	381	399
Average	4.12	4.03	4.13	3.98	4.14	4.34

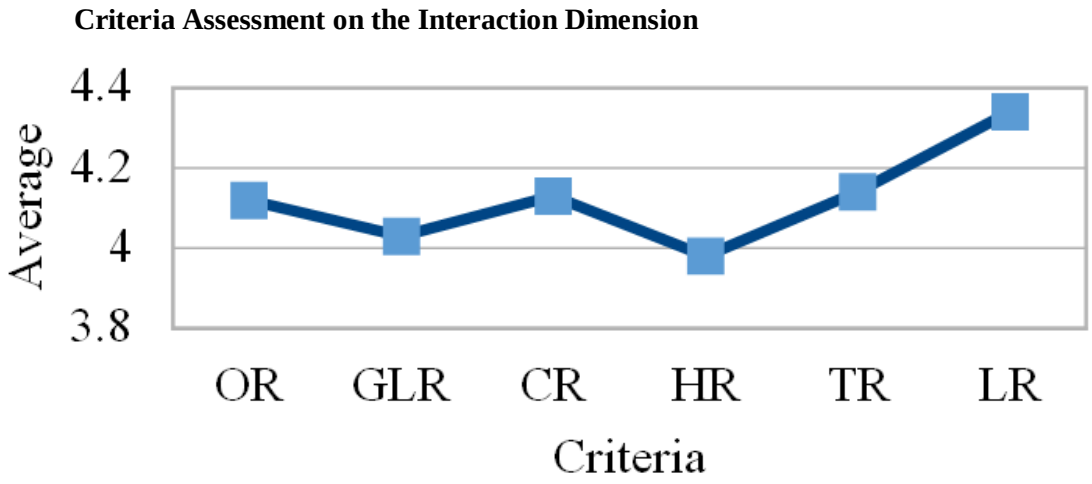


Figure. 2. Criteria Assessment on The Interaction Dimension

From Table 6 and Figure 2, it can be seen that the value of HR or the readiness of human resources in managing e- government interactions with the community is still lacking. Although it is included in the predictable assessment and has matured in terms of e-government, it is still necessary to improve the readiness of human resources by training or socializing e-government in each OPD.

3) Garnier Model – Transaction Dimension

Build an application that allows the public to pay their obligations online and independently. Such as paying taxes and renewing all kinds of permits. The main goal of e-government is to break regulations that have been full of complicated procedures to be easy with the intermediary of information systems. The ease of managing all permits or paying taxes to the government makes people more interested in using e-government.

In Table 7 the maturity level of the transaction dimension can be seen from the 6 criteria, there are 3 criteria that indicate the measurement scale is less than 4. The two criteria are stakeholder readiness (CR), resource readiness (HR), and technology readiness (TR). The readiness of human resources in accepting e-government is very necessary for the achievement of successful community services. In addition, the existence of stakeholders who become government partners is also needed to build better governance between the government and government business.

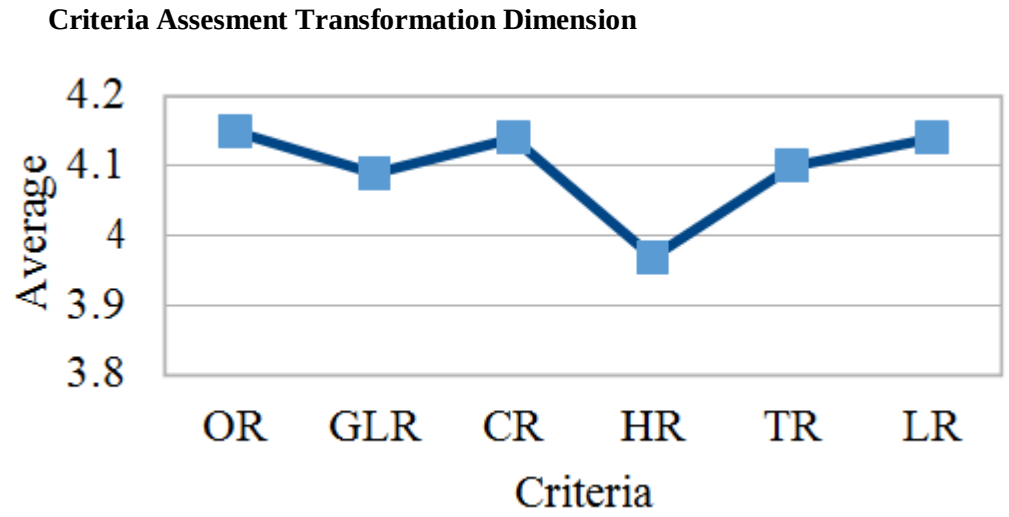
Table 7. Transaction Dimension – Garnier Model

Criteria	OR	GLR	CR	HR	TR	LR
Total Score	371	374	358	354	360	378
Average	4.03	4.07	3.89	3.86	3.91	4.11

4) Garnier Model – Transformation Dimension

The transformation dimension in developing e- government is important because e-government must be able to be developed by government goals such as being a smart city, or a

smart village. In terms of budget transparency, the Papuan provincial government can transform e-government by having a special portal for monitoring village funds and achievements in development. From Figure 3, it can be seen that all criteria are in the predictable process maturity level. Therefore, the process of developing e-government into a smart city is very possible. In addition to human resources who are ready to accept change, there are regulations and references for any e-government transformation that lead to the achievement of accountable public services.



5) Garnier Model – Usability Dimension

a) Usability includes 3 things that are effective, efficient, and attractive to users. The usability dimension has 10 criteria, 6 criteria are the same as the Gartner model and 4 additional criteria. 4 additional criteria in the usability dimension, namely ease of use (KP), the openness of data, and information (KD), public services (PP), and public interest.

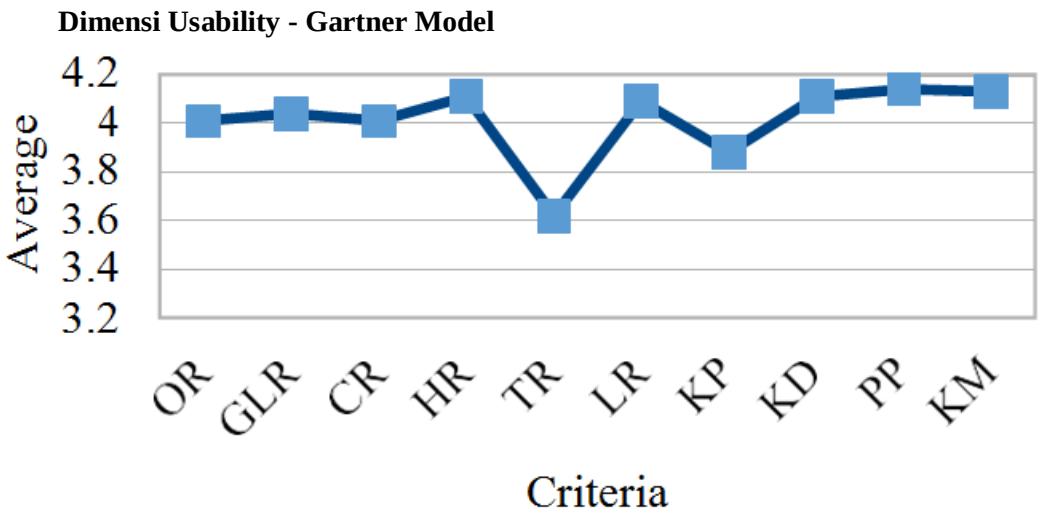


Figure 4. Criteria Assessment On The Usability Dimension

b) The assessment of the usability dimension in the Papua Provincial Government in Figure.4 shows that the highest level of maturity is found in the criteria for public interest in government governance, while the lowest level of maturity is in ease of use (KP). This maturity proves that the readiness of technology in the application of e-government is still lacking. Starting from the main infrastructure to equipment related to e- government services is still lacking

6) Garnier Model – Participation Dimension

E-government is very closely related to government transparency and accountability so that the level of public participation can increase. The participation referred to in this study is the participation of the community in using and supervising e-government. With community participation, it is hoped that good government and community relations (Government to Citizen) will be created. In other words, the main purpose of building e-government is to bring the government closer to its people through various channels found in e-government.

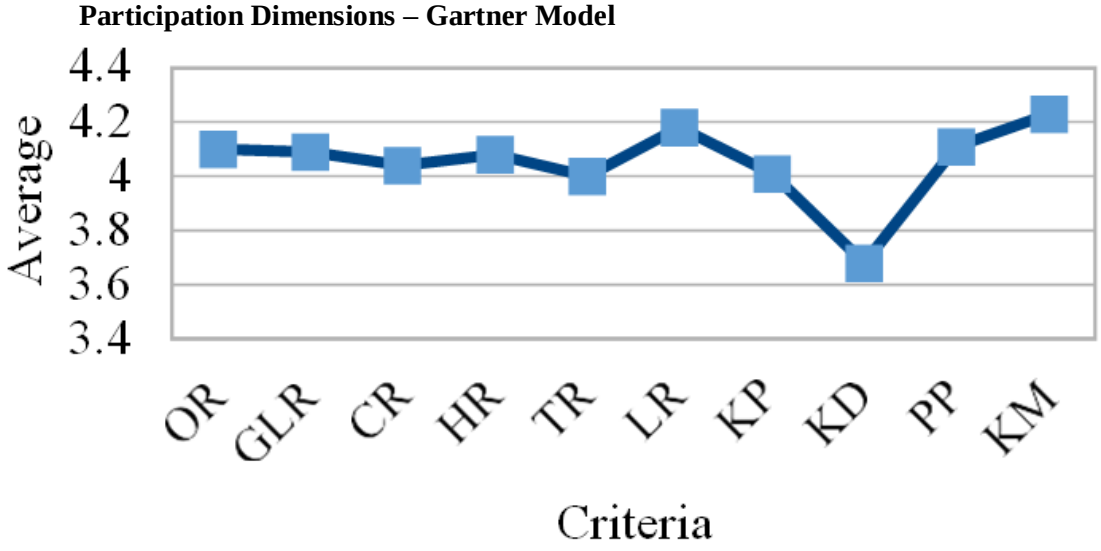


Figure 5. Criteria Assessment on the participation Dimension

The participation dimension of the maturity level of the Papua Provincial Government's e-government system as shown in Figure 5, shows that all criteria are at a value of 4 (predictable process). The criteria with the highest score on user convenience (KM) with an average rating of 4.23, while the lowest score on data and information disclosure is 3.68.

B. Partial Least Square - Outer Model Evaluation

The evaluation of the outer model is carried out by testing its validity and reliability. The validity test is used to measure the indicators that make up the variables, while the reliability test is used to test the variables that make up the model.

The validity test is done by measuring the value of the loading factor (FL) and cross-loading of each indicator. The threshold value for the loading factor is 0.5, while the cross-loading value must be greater than the cross-loading value for the variable. In the initial

measurement, the FL value on the X31, X34, X51, and X53 indicators has an FL value of less than 0.5. So the indicator must be removed so that the model becomes valid. Furthermore, measurements were made for FL and there was no FL below 0.5 as shown in Table VIII. Furthermore, the measurement of the cross-loading of each variable is carried out. The value of cross-loading must be greater than the value of the cross-loading indicator of the variable. All indicators of each variable meet the criteria for measuring the inner model.

Table 8. Faktor Loading (Fl)

Indicator	Loading Factor	Indicator	Loading Factor
X11	0.763	X32	0.784
X12	0.608	X33	0.651
X13	0.774	X35	0.874
X14	0.842	X36	0.664
X15	0.832	X41	0.806
X16	0.794	X42	0.857
X21	0.743	X43	0.871
X22	0.810	X44	0.826
X23	0.736	X45	0.771
X24	0.809	X46	0.736
X25	0.808	X52	0.770
X26	0.695	X54	0.580

The next measurement on the outer model is reliability testing on the criteria of each variable. Reliability testing includes Cronobach Alfa (CA), Composite Reliability (CR), and Average Variance Extracted (AVE). With the model test criteria CA > 0.6, CR > 0.6, and AVE > 0.5. The test results can be seen in Figure 6.

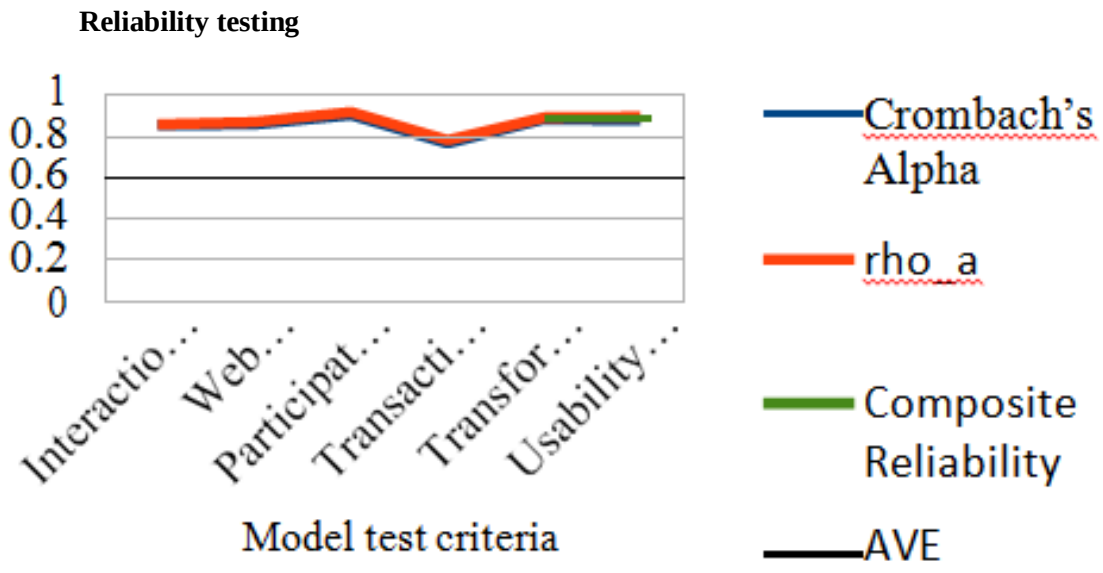


Figure 6. Test Result Outer Model

C. Partial Least Square - Inner Mode Evaluation

The measurement of the inner model is used to see the relationship between the variables in the model and to test the hypotheses that have been set. In the measurement of the inner model, this paper uses a significance P-value < 0.05 (significant). Furthermore, to see the relationship between variables by looking at the value of path coefficients. Positive path coefficient values indicate a positive relationship between variables, while negative values indicate a relationship between variables. P-value and path coefficients as in Table IX.

Table 9. Inner Model Measurement Results

Construct	P-Values	Path Coefficients	Hypothesis Results
H1:X1 → Y	0.355	-0.066	Rejected
H2:X2 → Y	0.051	0.163	Rejected
H3:X3 → Y	0.235	0.084	Rejected
H4:X4 → Y	0.000	0.386	Received*
H5:X5 → Y	0.000	0.439	Received*
*Consistensi Pvalue < 0.05			

4. CONCLUSION

E-Government is the foundation of bureaucratic transformation in Indonesia which must be accompanied by changes in the pattern of transformation and governance of e-government. The Papuan Provincial government that has e- government has been successfully tested using the Garner model. The overall e-government maturity level shows a score of 4.06 (predictable process). Meanwhile, for each dimension, Gartner model can show the maturity level of the website presence dimension 4.08 (predictable process), and transaction dimension 3.98 (established process). Meanwhile, there are 2 additional dimensions, namely the usability dimension 4.01 (predictable process) and the participation dimension 4.05 (predictable process).

The level of e-government participation in Papua Provicial is influenced by the dimensions of usability, and transformation. It is proven by the P Value of less than 0.05 significance. While the other 3 dimensions, namely the dimensions of existence, interaction, and transactions, do not affect the level of public participation in using e-government.

5. REFERENCES

[1] D. Hartanto, J. Dalle, A. Akrim, and H. U. Anisah, "Perceived effectiveness of e-governance as an underlying mechanism between good governance and public trust: a case of Indonesia," Digit. Policy, Regul. Gov. , vol. 23, no. 6, pp. 598–616, 2021, doi: 10.1108/DPRG-03-2021-0046.

[2] M. Mussad, "E-Government, the Era of Disruption and the Future of Public Service in Indonesia," Int. J. Artif. Intell. Res., vol. 6, no. 1, 2022, doi: 10.29099/ijair.v6i1.346.

[3] S. Uthari and N. Mayang, "Overview of Digital Agriculture Technologies in Indonesia : Policies , Implementation , and Covid- 19 Relation Research mapping," pp. 1–11, 2022.
[4] R. A. Gati, "Artificial Intelligence and Indonesia Government Cyber Security Strategies."
[5] S. Sanjoyo, A. Sulistiyono, and A. Riwanto, "Electronic Recap as a Transparency of Pancasila Democracy in the Regional Head Election," 2022, doi: 10.4108/eai.8-6-2021.2314326.
[6] E. Ismagilova, L. Hughes, N. P. Rana, and Y. K. Dwivedi, "Security, Privacy and Risks Within Smart Cities: Literature Review and Development of a Smart City Interaction Framework," Inf. Syst. Front., vol. 24, no. 2, pp. 393–414, 2022, doi: 10.1007/s10796-020-10044-1.
[7] V. B. Arifanti et al., "Challenges and Strategies for Sustainable Mangrove Management in Indonesia: A Review," Forests, vol. 13, no. 5, pp. 1–18, 2022, doi: 10.3390/f13050695.
[8] D. K. A. Wardana, M. Kamil, and Y. S. Hijri, "Implementation of E-government in Education Services through the Development of Education Management Information Systems (SIMDIK) in Malang City," J. Public Policy, vol. 3, 2022, [Online]. Available: https://sister.utu.ac.id/jppolicy/article/view/4975.
[9] V. P. Nguyen, "The Critical Success Factors for Sustainability Financial Technology in Vietnam: A Partial Least Squares Approach," Hum. Behav. Emerg. Technol., vol. 2022, 2022, doi: 10.1155/2022/2979043.
[10] O. Okwuashi, C. Ndehedehe, and H. Attai, "Tide modeling using partial least squares regression," Ocean Dyn., vol. 70, no. 8, pp. 1089–1101, 2020, doi: 10.1007/s10236-020-01385-1.
[11] M. Haenlein and A. M. Kaplan, "A Beginner's Guide to Partial Least Squares Analysis," Underst. Stat., vol. 3, no. 4, pp. 283–297, 2004, doi: 10.1207/s15328031us0304_4.
[12] A. Nias and S. M. Roni, "PLS analysis – Guidelines to evaluate measures," ResearchGate, no. November, pp. 1–4, 2014, doi: 10.13140/2.1.2368.2240.
[13] D. Hradecky, J. Kennell, W. Cai, and R. Davidson, "Organizational readiness to adopt artificial intelligence in the exhibition sector in Western Europe," Int. J. Inf. Manage., vol. 65, no. May 2021, 2022, doi: 10.1016/j.ijinfomgt.2022.102497.