Analysis of User Adoption Levels of JAKI Application Using the Government Adoption Model (GAM)

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Abstract: This study delves into an analysis of the adoption patterns within the Jakarta Today e-government application (JAKI) through the dual lenses of the Government Adoption Model (GAM) and the Structural Equation Model (SEM). Encompassing JAKI users aged 17 years and above, the research encapsulates a substantial sample size of 384 individuals. The research findings underscore the pivotal role of key factors in driving e-Government adoption within the context of JAKI. Notably, Perceived Service Response, Perceived Trust, Perceived Uncertainty, Perceived Security, and Privacy collectively wield a significant and affirmative impact on the Adoption of e-Gov. However, intriguingly, factors including Perceived Awareness, Computer-self Efficacy, Availability of Resources, Perceived Ability to Use, Perceived Compatibility, Perceived Functional Benefit, Perceived Image, Perceived Information Quality, and Multilingual Option do not exert a notable influence on the Adoption of e-Gov. These insights proffer invaluable guidance for the Jakarta City Government, facilitating an enhanced understanding of user perceptions and needs. By meticulously addressing the determinative factors that engender a favorable adoption environment, the government stands poised to elevate the efficacy and reach of its e-government service, thus fostering greater citizen engagement and interaction with the JAKI application.

Keywords: Adoption of e-Gov, e-government, Government Adoption Model (GAM), JAKI application, User Adoption Levels

INTRODUCTION

The introduction of e-Government has resulted in dramatic changes in administrative paradigms, with the goal of fostering efficient public service delivery and tighter citizen-government contact (Samuel et al., 2020). This paradigm change is based on the ultimate goal of not only streamlining administrative operations, but also of creating a more dynamic and responsive interface between citizens and government authorities (Millard, 2023).

The incorporation of electronic technology into administration, as exemplified by e-Government, represents more than just a technological advancement. It signifies a deliberate shift toward leveraging the power of digital tools to reimagine the very foundation of public service delivery (Shareef et al., 2011). This revolution aims to overcome traditional bureaucratic constraints by providing quick, personalized, and interactive access to government services (Iannacci et al., 2019). It hopes to accomplish this through bridging the gap between the administrative apparatus and the citizens it serves.
The Jakarta Smart City initiative, launched in 2014, is a prime example of this transition. This effort has grown into a trailblazing paradigm for aligning technology and governance, with the goal of overcoming administrative barriers and improving service efficiency (Arif Wahyudi et al., 2022). The Jakarta Smart City program’s fundamental goal is to bridge the gap between government and the general public. It envisions a future in which technology serves as a conduit for seamless, real-time, and tailored service access. This integrated structure not only makes administrative operations run more smoothly, but it also paves the way for good governance by increasing openness and inclusivity (Parry et al., 2021).

One of the applications supporting the Smart City concept in Jakarta is the Jakarta Kini (JAKI) application (Naomi et al., 2021). This application was launched in September 2019 by the Jakarta Smart City Management Unit to implement information technology. The Jaki application offers several features such as JakWarta, JakRespons, JakPangan, JakPantau, JakSiaga, JakWifi, Jejak, JakPenda, JAKISPU, JakSurvei, and LaporVideo.

The population of DKI Jakarta has reached 10,644,776 according to the 2021 population census. However, as of September 2021, the JAKI application has only been downloaded approximately 2,309,536 times. Therefore, there is still a relatively low number of DKI Jakarta residents utilizing this application. Thus, research is needed to explore the e-government services provided by the JAKI application.

**LITERATURE REVIEW**

**The Concept of E-Government**

Technology and Information Systems are among the solutions for improving bureaucracy and achieving better governance. The provision of services between governments and from the government to the public is also crucial in this regard. The concept of E-Government exemplifies the application of information system for providing government services to the public and implementing electronic business practices in the governmental sector (Mensah, 2020). The development of e-government is an effort to enhance the quality of public services effectively and efficiently through the use of electronic systems (Setiawan et al., 2021). Therefore, the willingness of the public to accept and use these systems becomes crucial in determining the success of implementing e-government.

**JAKI Application**

The JAKI application launched on Friday, September 27, 2019. This application is available for both iOS and Android users and aims to facilitate the public in accessing information within the DKI Jakarta Province. JAKI Application is a technology-based platform that contributes to the realization of the Jakarta Smart City concept (Rodhi et al., 2022). It leverages internet technology to create a smarter Jakarta.

**Government Adoption Model (GAM)**

The Government Adoption Model (GAM) is a model or framework designed to understand the relationship between the public's adoption of e-Government implementation. The term "adoption" here refers to the acceptance of the public to learn, embrace, and utilize the system of the e-Government application itself (Mensah, 2020). The GAM concept consists of 14 variables, namely perceived compatibility, perceived awareness, availability of resources, computer self-efficacy, perceived ability to use, multilingual option, perceived information quality, perceived trust, perceived uncertainty, perceived security, perceived privacy, perceived functional benefit, perceived image, and perceived service response (Ahmed et al., 2023).

**METHOD**

In this study the authors used a methodology that is in accordance with the Government Adoption Model (GAM) model with the following stages of analysis (Arif Wahyudi et al., 2022).

![Figure 1 Research Methodology](image-url)
The data in this study used primary data sourced from questionnaires distributed to respondents. The population in this study is the Jakarta community. Then the sample is taken from users who have used the JAKI application and are over 17 years old. Determination of the number of samples in this study using the Lemeshow formula with a total sample of 385 respondents (Lwanga & Lemeshow, 1991).

\[
n = \frac{z^2 \cdot P \cdot Q}{d^2} = \frac{z^2 \cdot P(1 - P)}{d^2}
\]

\[
n = \frac{(1,96)^2 \times 0,5 \times 0,5}{(0,5)^2}
\]

\[
n = 3,8416 \times 0,5 \times 0,5
\]

\[
n = 0,0025
\]

\[
n = \frac{0,9604}{0,0025} = 384,16
\]

The author uses a model from the Government Adoption Model (GAM) which is carried out in the Structural Equation Modeling (SEM) process which is adjusted to users of the Jakarta Kini Application (JAKI).

Figure 2 Research Model (Researcher Property)

The hypotheses in this study are summarized in the following table:

<table>
<thead>
<tr>
<th>Hypothesis 1</th>
<th>Perceived awareness (PA) has a positive relationship with the Adoption of e-Gov</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 2</td>
<td>Computer-self Efficacy (CSE) has a positive relationship to the Adoption of e-Gov</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>Availability of Resources (AOR) has a positive relationship to the Adoption of e-Gov</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>Perceived Ability To use (Patu) has a positive relationship to the Adoption of e-Gov</td>
</tr>
<tr>
<td>Hypothesis 5</td>
<td>Perceived Compatibility (PC) has a relationship with the Adoption of e-Gov</td>
</tr>
</tbody>
</table>

Kirani, Zahra Anadya

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Hypothesis 6  Perceived Functional Benefit (PFB) has a positive relationship to the Adoption of e-Gov
Hypothesis 7  Perceived Image (PI) has a positive relationship to the Adoption of e-Gov
Hypothesis 8  Perceived Information Quality (PIQ) has a positive relationship to the Adoption of e-Gov
Hypothesis 9  Perceived Service Response (PSR) has a positive relationship to the Adoption of e-Gov
Hypothesis 10 Multilingual Option (MO) has a positive relationship to the Adoption of e-Gov
Hypothesis 11 Perceived Trust (PT) has a positive relationship to the Adoption of e-Gov
Hypothesis 12 Perceived Uncertainty (PU) has a positive relationship to the Adoption of e-Gov
Hypothesis 13 Perceived Security (PS) has a positive relationship to the e-Gov Adoption
Hypothesis 14 Perceived Privacy (PP) has a positive relationship to e-Gov Adoption

RESULT

Hypothesis testing was conducted using bootstrapping in SmartPLS 4. This testing was carried out based on the evaluation of the original sample values, t-statistic, and p-value. If the t-statistic value is greater than 1.96 and the p-value is less than 0.05, then the hypothesis is accepted, indicating a significant influence in the hypothesis testing. The coefficient value of beta (original sample) indicates the positive or negative relationship between independent and dependent variables. The following are the results of the bootstrapping test for hypothesis testing in this study:

Table 2 Hypothesis Test Results ADOP 11

| Hypothesis | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values | Ket. |
|------------|---------------------|-----------------|----------------------------|-----------------------------|----------|------|
| AOR -> ADOP1 | 0.087 | 0.083 | 0.051 | 1.699 | 0.089 | Rejected |
| CSE -> ADOP1 | 0.055 | 0.048 | 0.059 | 0.936 | 0.349 | Rejected |
| MLO -> ADOP1 | 0.035 | 0.029 | 0.038 | 0.918 | 0.358 | Rejected |
| PA -> ADOP1 | 0.103 | 0.100 | 0.062 | 1.669 | 0.095 | Rejected |
| PATU -> ADOP1 | 0.063 | 0.073 | 0.088 | 0.710 | 0.478 | Rejected |
| PC -> ADOP1 | 0.064 | 0.070 | 0.081 | 0.788 | 0.431 | Rejected |
| PFB -> ADOP1 | 0.095 | 0.091 | 0.048 | 1.998 | 0.046 | Accepted |
| PIQ -> ADOP1 | 0.150 | 0.156 | 0.091 | 1.640 | 0.101 | Accepted |
| PP -> PT | 0.419 | 0.418 | 0.103 | 4.078 | 0.000 | Accepted |
| PS -> PT | 0.402 | 0.402 | 0.096 | 4.190 | 0.000 | Accepted |
| PSR -> ADOP1 | 0.145 | 0.144 | 0.041 | 3.526 | 0.000 | Accepted |
| PT -> ADOP1 | 0.245 | 0.233 | 0.112 | 2.187 | 0.029 | Accepted |
| PU -> PT | 0.124 | 0.124 | 0.051 | 2.419 | 0.016 | Accepted |
| Pi -> ADOP1 | -0.019 | -0.015 | 0.057 | 0.339 | 0.734 | Rejected |

Table 3 Hypothesis Test Results ADOP 21

Kirani, Zahra Anadya

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DISCUSSIONS

The Effect of Perceived Awareness on e-Gov Adoption

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.161 is greater than the conditional value of 0.05 with a t-statistic value of 1.403 less than the t-table value of 1.96 and a path coefficient value of 0.101 which means that hypothesis is rejected. Therefore Perceived Awareness does not significantly influence the Adoption of e-Gov. The results of this hypothesis have the same results as research conducted by Setiawan, Winarno and Fudholi, (2021) which states that Perceived Awareness is not proven to influence a person's intention to use e-government services.

The existence of the JAKI application, which is a source of digital information for the people of DKI, has not been widely socialized, so there are still many people or users who do not have full awareness of obtaining knowledge or benefits in the form of information. This is because other OPDs (Regional Apparatus Organizations) are still not integrated with the JAKI application due to the absence of regulations governing it. And this is an inhibiting factor in providing services to the community (Amri, 2022).

The Effect of Computer-self Efficacy on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.839 is greater than the conditional value of 0.05 with a t-statistic value of 1.203 less than the t-table value of 1.96 and a path coefficient value of 0.012 which means that hypothesis is rejected. Therefore Computer-self Efficacy has no significant effect on the Adoption of e-Gov.

The disconnect between Computer-self Efficacy and Adoption of e-Gov means that the users or the public do not need the ability to use a computer device because the JAKI application is a smartphone-based application. The JAKI application has been designed to be as easy as possible and has 4 principles, one of which is mobile first (Andriyanto et al., 2021). This application can be downloaded with the Android and IOS operating systems on smartphones so that users can easily access it.

Effect of Availability of Resources on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.185 is greater than the conditional value of 0.05 with a t-statistic value of 1.326 less than the t-table value of 1.96 and a path coefficient value of 0.070 which means that hypothesis is rejected. Therefore the Availability of Resources does not have a significant effect on the Adoption of e-Gov.

The Smart City concept adopted by the JAKI application aims to optimize information and communication technology to identify, evaluate, and control various types of data effectively and efficiently (Andriyanto et al., 2021). The use of the JAKI application has been greatly simplified, where users can directly access themselves without the need to obtain special equipment facilities to support access. In addition, users can also access it with a low internet quota so they don't always need high internet speed.

Kirani, Zahra Anadya
The Influence of Perceived Ability to Use with the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.169 is greater than the conditional value of 0.05 with a t-statistic value of 1.377 less than the t-table value of 1.96 and a path coefficient value of 0.113 which means that hypothesis is rejected. Therefore Perceived Ability to Use does not significantly influence the Adoption of e-Gov. The results of this hypothesis have the same results as research conducted by Giriwana, Dany and Krisna, (2022) which states that Perceived Ability to Use has not been proven to affect Adoption of e-Gov.

The JAKI application has several obstacles in terms of the effectiveness of its use, which is in accordance with research conducted by Setiawan, Winarno and Fudholi, (2021) applications that often close the app or exit suddenly when accessing information, for example when opening a map in the information section regarding COVID-19 19. In addition, the occurrence of errors in the application system or system incompatibility with the field is a deficiency that must be corrected in the future. The difficulty of finding a button for a feature also makes it difficult for users and takes a lot of time to find it.

The Effect of Perceived Compatibility on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.427 is greater than the conditional value of 0.05 with a t-statistic value of 1.794 less than the t-table value of 1.96 and a path coefficient value of 0.060 which means that hypothesis is rejected. Therefore Perceived Compatibility does not significantly influence the Adoption of e-Gov.

The use of JAKI is an interactive digital application that serves the needs of the community by providing official, up-to-date, effective and efficient information media. The e-Government system in the JAKI application is not yet fully compatible with the lifestyle and way of users getting information and how to interact. Users prefer and are used to in-person interactions. As an example where the JAKI application has a feature, namely JakRespons. Users can make reports about events around the Kelurahan. This is not suitable for users who are more used to and like direct reporting.

Effect of Perceived Functional Benefit on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.086 is greater than the conditional value of 0.05 with a t-statistic value of 1.718 less than the t-table value of 1.96 and a path coefficient value of 0.080, which means that hypothesis is rejected. Therefore Perceived Functional Benefit does not significantly influence the Adoption of e-Gov.

The JAKI application is considered quite good as a tool to provide information, but there are still several components that need to be optimized to make its function more optimal. The lack of functional benefits of this application can be seen one of them from the speed of the information provided. The speed of information and public services must be increased because other public services owned by the Special Capital Region of Jakarta have different levels. To provide accurate information, the JAKI application must be directly integrated with several government agencies. Therefore, the speed of public services must be increased consistently to ensure that the public can know the latest information developments.

The Influence of Perceived Image with the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing results, a P-value of 0.734 was obtained for Adop11 and 0.983 for Adop 21 which was greater than the conditional value of 0.05 which means that the hypothesis was rejected. The t-statistic value was 0.339 for Adop11 and 0.022 for adopt 21 which is smaller than the t-table value of 1.96. The path coefficient value is -0.019 for Adop11 and -0.001 for Adop21. Therefore, Perceived Image does not significantly influence the Adoption of e-Gov.

By combining service features created by the government and the community, such as start-up companies, JAKI does offer features that reflect citizen design services. However, this has nothing to do with the use of the application because the JAKI application is only focused on providing integrated digital and information services without raising the social status of an organization or community.
The Effect of Perceived Information Quality on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, the P-value of 0.101 is greater than the conditional value of 0.05 with a t-statistic value of 1.96 and a path coefficient value of 0.150 which means that hypothesis is rejected. Therefore Perceived Information Quality does not significantly influence the Adoption of e-Gov. The results of this hypothesis have the same results as research conducted by Rodhi, Fadhllurrahman and Aknuranda, (2022) which states that Perceived Information Quality has no effect on Adoption of e-Gov.

The JAKI application still does not provide up-to-date information. This is because the speed in providing new information is less than optimal. The services provided are only limited to reporting which will later be reported to the respective regional admins and this will provide a longer response time. The government policies provided are also incomplete. This makes this application must continue to be developed in order to provide better quality information.

The Effect of Perceived Service Response on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing results, a P-value of 0.000 was obtained for Adop11 and 0.010 for Adop21 which is smaller than the conditional value of 0.05 which means that the hypothesis is accepted. The t-statistic value of 3.526 for Adop11 and 2.507 for Adop21 is greater than the t-table value of 1.96. The path coefficient value is 0.145 for Adop11 and 0.105 for Adop21. Therefore, Perceived Service Response has a significant effect on the Adoption of e-Gov.

In the JAKI application, all user actions can be processed through the Quick Response Community (CRM) system if they have some difficulties or problems using it. It is striving so that users have comfort in use. In addition, user accounts will also be recorded and always registered in the data in the application system. This application has been able to meet specific needs both in accessing information and providing information or reporting.

The Effect of Multilingual Option on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.513 is greater than the conditional value of 0.05 with a t-statistic value of 0.655 less than the t-table value of 1.96 and a path coefficient value of 0.026 which means that hypothesis is rejected. Therefore the Multilingual Option has no significant effect on the Adoption of e-Gov.

The use of this application still does not have several choices of several local or regional languages because it only focuses on users who are residents of DKI. The language used is the National Language, namely Indonesian. This is because it makes it easier for users to access and find out the information available in this application.

The Influence of Perceived Trust with the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.029 is lower than the conditional value of 0.05 with a t-statistic value of 2.187 greater than the t-table value of 1.96 and a path coefficient value of 0.245 which means that hypothesis accepted. Therefore, Perceived Trust has a significant effect on the Adoption of e-Gov.

User safety and comfort are important factors that are always prioritized by the JAKI application. User accounts even up to reporting have guaranteed identity confidentiality because they are anonymous. In addition, a report hiding feature is also provided for reports that are personal or whistleblower.

The Effect of Perceived Uncertainty on Adoption of e-Gov through Perceived Trust

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.016 is lower than the conditional value of 0.05 with a t-statistic value of 2.419 greater than the t-table value of 1.96 and a path coefficient value of 0.124 which means that hypothesis accepted. Therefore, Perceived Uncertainty has a significant effect on the Adoption of e-Gov through Perceived Trust.

The JAKI application is a public service created by the provincial government of DKI Jakarta, specifically the Information and Statistics Communication Service, which is an innovation in information technology in Jakarta. However, this application has a shortage of JAKI application employees and is only listed as an ordinary honorary employee (Setiawan et al., 2021). This makes...
interaction with the JAKI application less and less certain. Therefore, the JAKI application must create more definite and well-managed interactions and environments.

The Influence of Perceived Security on Adoption of e-Gov through Perceived Trust

Based on the data from the Adop11 and Adop21 hypothesis testing, the P-value of 0.000 is smaller than the conditional value of 0.05 with a t-statistic value of 4.190 greater than the t-table value of 1.96 and a path coefficient value of 0.402 which means that hypothesis accepted. Therefore, Perceived Security has a significant effect on the Adoption of e-Gov through Perceived Trust.

Privacy policies made by application developers, including regional e-government, must consider all ways users interact with their services, especially in terms of collecting and using user data. These considerations must be complete, accurate, and easily understood by users. The privacy policy must fully and accurately disclose all application privacy practices. In addition, Actions and Privacy policies must comply with applicable laws and regulations, and therefore, every e-government must include additional information in accordance with applicable laws and regulations (Andriyanto et al., 2021)

The Effect of Privacy on the Adoption of e-Gov

Based on the data from the Adop11 and Adop21 hypothesis testing, a P-value of 0.000 is obtained which is less than the conditional value of 0.05 with a t-statistic value of 4.078 greater than the t-table value of 1.96 and a path coefficient value of 0.419 which means that hypothesis accepted. Therefore Privacy has a significant effect on the Adoption of e-Gov through Perceived Trust.

The level of privacy in the JAKI application affects user trust because this guarantees security when using it. Things that have been implemented such as system applications must ask permission to access user's personal data (such as contacts and SMS), as well as certain system features (such as camera and internet). This is in accordance with Article 26 of the ITE Law Paragraph 1 concerning Personal Data Protection, namely regarding consent when requesting user personal data.

CONCLUSION

The research findings underscore the pivotal role of key factors in driving e-Government adoption within the context of JAKI. Notably, Perceived Service Response, Perceived Trust, Perceived Uncertainty, Perceived Security, and Privacy collectively wield a significant and affirmative impact on the Adoption of e-Gov. However, intriguingly, factors including Perceived Awareness, Computer-self Efficacy, Availability of Resources, Perceived Ability to Use, Perceived Compatibility, Perceived Functional Benefit, Perceived Image, Perceived Information Quality, and Multilingual Option do not exert a notable influence on the Adoption of e-Gov. Based on the research results, researchers provide suggestions for the Jakarta City government and JAKI application developers to maintain and improve Perceived Service Response, Perceived Trust, Perceived Uncertainty, Perceived Security, and Privacy so that they can increase acceptance by the public. In addition, improvements are also needed in Perceived Awareness, Computer-self Efficacy, Availability of Resources, Perceived Ability to Use, Perceived Compatibility, Perceived Functional Benefits, Perceived Image, Perceived Information Quality, and Multilingual Option to be able to increase the level of public acceptance of the JAKI application.

REFERENCES


Kirani, Zahra Anadya


