# Determining the Citizen Loyalty Factor of COVID-19 Website Using the Trust Model

Azty Acbarrifha Nour[1], Lukito Edi Nugroho[2], Paulus Insap Santosa[3]

*Abstract*—One of the information technology (IT) utilization by the government is the establishment of an official website for public access, designed to disseminate information about the COVID-19. Gaining public trust in the information dissemination is getting harder due to the amount of information, while the government is striving to provide reliable information. The service quality provided on the official website will affect the public's trust and desire to use these services. Citizen loyalty is known when people intensively use the government electronic services because they believe in the government and its e-services based on perceived satisfaction and service quality. This research studied the effect of service quality, trust, and user satisfaction on user loyalty when using e-services by the Special Region of Yogyakarta (DIY) government. The study used a trust model developed by Alkraiji and Ameen and applied it to the official COVID-19 website. Data were collected from 100 respondents in the DIY who were in the productive age range. The experiment was carried out using explanatory and inferential techniques with multiple linear regression methods. The results of the study indicate that all model hypotheses are accepted. The relationship between antecedents and citizen loyalty was more influenced by trust in government and e-government. This finding explains why Yogyakarta citizen trust the government and its electronic services and will be loyal to use these services during the COVID-19 pandemic, as well as other facilities in the future.

*Keywords*—E-Government Services, Loyalty, Trust, Citizen Satisfaction, Services Quality.

## I. INTRODUCTION

Many service facilities have temporarily closed due to the COVID-19 pandemic that has spread throughout the world. The government has imposed a lockdown in an attempt to contain the virus's spread throughout the country. For this reason, people are expected to carry out their tasks from home.

One of the government's solutions for disseminating information, communicating, and regulating society is the use of information technology (IT). The Special Region of Yogyakarta (DIY) is one of the provinces in Indonesia that utilizes IT to disseminate the most recent COVID-19 pandemic information. The DIY provincial government, in collaboration with the provincial Ministry of Communication and Informatics, created a special website, *corona.jogjaprov.go.id*, to provide the most up-to-date information about the COVID-19 outbreak. The website is easily accessible to the general public and does not require any special information to access it.

A large amount of information discussing an issue makes it difficult to distinguish between reliable and untrustworthy information. Consequently, it is hard to make the public trust

[1,2,3] *Department of Electrical and Information Engineering, Faculty of Engineering, Universitas Gadjah Mada, Jln. Grafika No.2, Kampus UGM, Yogyakarta, 55281, INDONESIA (phone: 0274-552305; email:* [1]*aztyacbarrifha95@mail.ugm.ac.id,* [2]*lukito@ugm.ac.id,* [3]*insap@ugm.ac.id)*

the information dissemination. Reference [1] focused on the data transparency and information sharing, seeking to analyze the Indonesian government's response in providing public information and data transparency regarding the COVID-19 spread. The study concluded that the Indonesian government's official website still lacks of data and information presentation. According to the study, the government's disclosure of information has a significant impact on public trust

The user's trust and desire to use government electronic services, in the long run, will be influenced by the quality of services provided [2]. User satisfaction and trust in the services are both influenced by service quality. Trust in government electronic services will form a positive view of the government, leading to the increase of trust in the government [3]. User loyalty can be assessed when a large number of people utilize government e-services because they trust the government and its electronic services and are satisfied with the level of service they receive.

As a result, a survey or research should be conducted to determine the level of public trust in the government and electronic service facilities in the form of a website, taking into account user satisfaction and the quality of services provided. The tendency of the community regarding their loyalty to official government services will be discovered based on the community's perception of the website.

A trust model must be used to determine user loyalty to assist the government in developing electronic service facilities in the future. This study utilized the research model from prior research as it was considered capable of providing determinants of community loyalty by connecting service quality, trust in the government, trust in the e-government, and user satisfaction [4]. Previous research's objects was young people, while this study's object was those from the productive age. The productive age community was limited to high school students and working people (not retired) using the facilities of the Yogyakarta government's official website. This model was applied and adapted to the conditions of the COVID-19 pandemic in DIY, with the primary goal of determining the public's loyalty to the government's official electronic services, especially the *corona.jogjaprov.go.id* website as a information provider on the COVID-19 pandemic. This study is expected to aid the government in determining the community's loyalty to the *corona.jogjaprov.go.id* website and in the development of the next official electronic service.

## II. TRUST AND CITIZEN LOYALTY

### A. E-Government Service Quality

Service quality is defined as the user's perception of expectations versus actual service performance [5]. The government sector dealing with public services need to be aware of the various aspects of service quality. The servqual instrument is one of the most commonly used service quality

measurement scales based on user perceptions [6]. There are five service quality dimensions: tangible, reliability, responsiveness, assurance, and empathy [5].

### B. Trust Concept

Trust is defined as an individual's condition of what is believed in a psychological sense; whereas, trust is defined as a relationship between the trustor and the trustee in a sociological sense [7]. The trustor is the trusted party, while the trustee is the party who decides to trust the trustor.

The use of government electronic services can help users form positive government perceptions [3]. It can boost public trust in the government. The use of government electronic services can increase public participation in establishing a two-way communication between the government and the community, thereby increasing trust in the government [8].

The willingness of people to rely on the e-government in various aspects of services and technology is described as a disposition to trust [4]. People believe in the government's ability to carry out their interests properly, while trust in e-government refers to public trust in the ability of government electronic services to operate properly and correctly.

### C. Citizen Satisfaction

The use of electronic services, particularly in government services, necessitates a review by the users, i.e. the public. Evaluating user experience or feedback can improve the quality of electronic services. User satisfaction, in this case is the community satisfaction with government electronic services, is defined as a positive or negative user experience with service quality [9]. User satisfaction is influenced by service effectiveness, quality and quantity of information, ease of access, and interactive communication, in addition to the use of electronic services in the form of websites [10].

In the information system research, user satisfaction is a critical metric for determining whether or not a technology is successful [11]. This study investigated the direct relationship between service quality and user satisfaction, and the effect of satisfaction on user loyalty to government e-services.

### D. Citizen Loyalty

The degree to which people are willing to use government electronic services is referred to as loyalty to these services [12]. Loyalty is defined as an attitude that supports government electronic services, resulting in commitment and reliance on these services, a willingness to recommend, and a positive attitude toward engagement with service providers [4].

User loyalty is important in the development of IT because it not only retains but also satisfies loyal users [13]. For a long time, previous research [11], [12] has shown that the loyalty construct can explain the overall experience of users of e-government services. Based on the knowledge of user loyalty that has been obtained, the government can improve service quality by maintaining the trust and loyalty of its users.

### E. Trust Model

The development of the service quality model and the theory of trust formed the loyalty model is proposed by Alkraiji and Ameen. This model integrates several factors that affect user loyalty to electronic services. The model establishes the relationship between several factors, namely service quality, trust, and satisfaction. These factors influence the loyalty of users to the electronic services they research. Based on these results, the model was applied to this study, which used community loyalty on the COVID-19 official website as the case, since it can determine user loyalty based on factors that influence it.

### III. HYPOTHESIS AND RESEARCH MODEL

According to the findings of previous studies, there is a direct link between service quality, user trust (trust), and user satisfaction (citizen satisfaction), and user loyalty.

The following hypotheses are derived from the model used in this study [4].

H1. Disposition to trust positively affects trust in government.

H2. Disposition to trust positively affects trust in e-government services.

Research [14] and [15] which found that the disposition to trust and e-government services have a linear relationship support hypotheses H1 and H2.

H3. Trust in government positively affects trust in e-government services.

Research [16] and [17] supports hypothesis H3. When the government develops online services, people are more satisfied because the government has sufficient safeguards in place to ensure that service transactions are secure [16], [17]. According to [4], compliance and trust in government e-services will increase as people have more faith in the government.

H4. Service quality positively affects public trust in the government.

H5. Service quality positively affects public trust in e-government services.

Research [2] validates hypotheses H4 and H5, which state that service quality is a major indicator of a trust. E-commerce research has proven that trust has a mediating effect on the relationship between service quality and loyalty [18], [19].

H6. Service quality positively affects people's satisfaction with e-government services.

Previous e-government study has found a high correlation between service quality and satisfaction [10]. High service quality boosts e-government performance, which in turn builds public trust and satisfaction with the services [9], [15].

H7. Trust in government positively affects people's satisfaction with e-government services.

According to previous studies [9], [14], [15], the public must be able to believe that the government has the intelligence and technological resources to deploy and safeguard a system. This statement supports the notion that public trust in government is linked to people's satisfaction with e-government services.

H8. Trust in e-government services positively affects people's satisfaction with e-government services.

Reference [20] supports hypothesis H8. Decreased interaction with e-government portals and poorer satisfaction with their services were discovered as a result of lower trust in
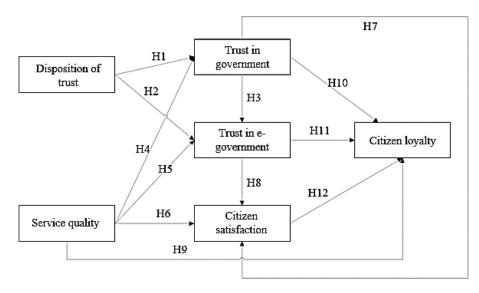
Fig. 1 Research model of loyalty based on Alkraiji and Ameen's model.

e-government services. Meanwhile, [21] indicates that there is a correlation between people's pleasure and their trust in e-government.

H9. Service quality positively affects people's loyalty to e-government services.

Research [22] supports hypothesis H9. The service quality has an important influence on consumer loyalty [22]. In research on e-government, the direct influence of service quality on public loyalty has been supported [2], [23].

H10. Trust in government positively affects people's loyalty to e-government services.

Hypothesis H10 asserts that public trust in government changes over time as a result of social context or encounters with government programs and services [10]. Reference [4] proposed a hypothesis based on the assumption that loyalty is based on public trust in the government, the community's attitude toward e-government services.

H11. Trust in e-government positively affects user loyalty to government services.

Previous e-commerce studies have discovered that trust have a direct influence on trust intentions to utilize commercial internet services and suggest them to others [10], [18], and [21]. According to [24], public trust in e-government is critical for developing long-term relationships in the provision of electronic services. Previous research supports hypothesis H11.

H12. Community satisfaction positively affects people's loyalty to e-government services.

According to research on electronic loyalty [25], satisfaction impacts a characteristic that is a sign of consumer loyalty or orientation toward long-term relationships with service providers, lending support to the H12 theory. According to research [2], satisfaction is also important for maintaining loyalty to government e-services in long-term relationships with the community.

Fig. 1 shows the proposed research model based on the model development by Alkraiji and Ameen.

The questionnaire was arranged based on the research model's hypothesis and adjusted to the COVID-19 pandemic conditions. The scoring of each questionnaire item uses a Likert scale, which ranges from one to five. Table I shows the questionnaire items based on model indicators.

This study sample data consisted of 100 respondents. In this study, the total population was unknown because the object of research was productive citizens in the DIY province. The data sample in this study was determined using the rules in the Lemeshow formula [26].

## IV. RESULT AND DISCUSSION

This study employed explanatory and inferential techniques as well as multiple linear regression methods to analyze the collected data. The hypothesis testing used inferential data analysis. This article presents the findings of descriptive analysis and hypothesis testing.

### A. Descriptive Analysis

In this study, the descriptive analysis provides a table displaying the community's responses to the research variables, which are trusted disposition, service quality, trust in government, trust in e-government, citizen satisfaction, and citizen loyalty. Each of the six variables has four responses: strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The descriptive statistics in this study are shown in Table II.

Table II shows that most of the variables receives a Likert scale rating response with an average of four, mening that the respondent has agreed or given a high rating. The lowest rating is on the variable disposition to trust, with an average of 3.75, and the highest assessment is on the variable trust in e-government, with an average of 4.14. The very low standard deviation value, which is below one, indicates that the fluctuation of the 100 respondents' answers shows a very low deviation, indicating that the respondents' answers are homogeneous.

It is considered bad if the Cronbach's Alpha coefficient value is less than 0.60. It is considered acceptable if the average is 0.70. If the Cronbach's Alpha coefficient value is greater than

TABLE I
QUESTIONNAIRE

| Code | Questionnaire Items |
|---|---|
| **Disposition to Trust** | |
| DOT1 | I have a high level of trust in other people's information [4], [17] |
| DOT2 | Others seem trustworthy to me [4], [17] |
| DOT3 | I believe in the worth of humanity and community service [4], [17] |
| DOT4 | I can trust other people for reasonable reasons [4], [17] |
| **Trust in Government** | |
| TG1 | I believe in the DIY provincial government [4], [17] |
| TG2 | I believe that the Provincial Government of DIY can handle the COVID-19 case [4], [17] |
| TG3 | The DIY Provincial Government can be relied on in handling COVID-19 cases [4], [17] |
| TG4 | The DIY Provincial Government can manage the official website as a facility for providing information on the COVID-19 pandemic [4], [17] |
| **Trust in E-government** | |
| TEG1 | I believe that the *corona.jogjaprov.go.id* website provides valid information [4], [17] |
| TEG2 | I believe the information presented by the *corona.jogjaprov.go.id* website is reliable information [4], [17] |
| TEG3 | I believe the data presented on the *corona.jogjaprov.go.id* is accurate and not manipulated [4], [17] |
| **Service Quality (Tangibles)** | |
| SQT1 | The website *corona.jogjaprov.go.id* always provides up to date information [4], [22], [27] |
| SQT2 | The *corona.jogjaprov.go.id* website has a user-friendly interface [4], [22], [27] |
| SQT3 | The *corona.jogjaprov.go.id* website offers reliable services [4], [22], [27] |
| **Service Quality (Reliability)** | |
| SQR1 | The website *corona.jogjaprov.go.id* can be relied on for information on COVID-19 [4], [22], [27] |
| SQR2 | The *corona.jogjaprov.go.id* website is regularly updated with new information [4], [22], [27] |
| SQR3 | The website *corona.jogjaprov.go.id* provides detailed information on the spread of cases [4], [22], [27] |
| **Service Quality (Responsiveness)** | |
| SQP1 | The website *corona.jogjaprov.go.id* has a hotline service that responds to users' inquiries [4], [22], [27] |
| SQP2 | The website *corona.jogjaprov.go.id* includes links for reporting complaints about government online services [4], [22], [27] |
| SQP3 | The *corona.jogjaprov.go.id* website includes a link for determining the number of hospital rooms available [4], [22], [27] |
| **Service Quality (Assurance)** | |
| SQA1 | Staff who understand the data presented on the *corona.jogjaprov.go.id* website [4], [22], [27] |
| SQA2 | The *corona.jogjaprov.go.id* website provides services that do not require personal information to use [4], [22], [27] |
| **Service Quality (Empathy)** | |
| SQE1 | The *corona.jogjaprov.go.id* website provides up-to-date real-time information [4], [22], [27] |
| SQE2 | The website *corona.jogjaprov.go.id* has friendly customer service representatives [4], [22], [27] |
| **Citizen Satisfaction** | |
| CS1 | The use of the *corona.jogjaprov.go.id* website benefits the citizen [4], [28] |
| CS2 | The use of the *corona.jogjaprov.go.id* website has a good impression [4], [28] |
| CS3 | The Citizen benefits from the use of the *corona.jogjaprov.go.id* website [4], [28] |
| **Citizen Loyalty** | |
| CL1 | I will recommend the provincial government's electronic service to others [4], [11], [22] |
| CL2 | I intend to use government electronic services similar to those available on the *corona.jogjaprov.go.id* website [4], [11], [22] |
| CL3 | I will be a loyal user of government e-services [4], [11], [22] |

0.80, the variable is considered good. All variables in this study were deemed acceptable because they had a value of greater than 0.80, implying that this questionnaire was quite reliable.

Table III displays the correlation coefficient results from this study. The findings of the correlation study showed that the association between each variable was significant at the 5% level. This result implies that there is a positive and substantial association between the independent and dependent variables. With a correlation coefficient of 0.662, the trust between e-government and citizen loyalty has the strongest relationship. With a correlation coefficient of 0.227, the smallest relationship occurs in the disposition to trust with service quality.

### B. Hypothesis Testing

Based on the results of data processing using SPSS with the multiple linear regression method, the path, namely the influence of disposition to trust, service quality on trust in government, trust in e-government, and citizen satisfaction, and its effect on citizen loyalty, are shown in Table IV.

According to the testing results of the relationship between variables, all hypotheses are significant, with a probability value (P value) of less than 5% and $t > 1.98$. The relationship between these variables is linear, suggesting that the higher a variable, the more influence it has. The tested hypothesis is

TABLE II
DESCRIPTIVE STATISTICS

| Variable | Mean | Std. Deviation | Cronbach's Alpha's Coefficient |
|---|---|---|---|
| Disposition to trust | 3.75 | 0.75 | 0.856 |
| Service quality | 4.02 | 0.65 | 0.958 |
| Trust in government | 4.07 | 0.72 | 0.919 |
| Trust in e-government | 4.14 | 0.78 | 0.957 |
| Citizen satisfaction | 4.16 | 0.69 | 0.899 |
| Citizen loyalty | 4.00 | 0.76 | 0.938 |

TABLE III
CORRELATION COEFFICIENT

| Variable | Correlation Coefficient | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Disposition to Trust (1) | 1 | | | | | |
| Service Quality (2) | 0.227* | 1 | | | | |
| Trust in Government (3) | 0.525* | 0.567* | 1 | | | |
| Trust in E-Government (4) | 0.458* | 0.529* | 0.625* | 1 | | |
| Citizen Satisfaction (5) | 0.395* | 0.603* | 0.578* | 0.592* | 1 | |
| Citizen Loyalty (6) | 0.375* | 0.660* | 0.662* | 0.648* | 0.641* | 1 |

TABLE IV
HYPOTHESIS TESTING

| Hypothesis | Relationship between Variables | Estimate Standard Coefficient | t | P value | Description |
|---|---|---|---|---|---|
| H1 | DOT → TG | 0.418 | 5.605* | 0.000 | Significant |
| H2 | DOT → TEG | 0.206 | 2.337* | 0.022 | Significant |
| H3 | TG → TEG | 0.359 | 3.444* | 0.001 | Significant |
| H4 | SQ → TG | 0.473 | 6.334* | 0.000 | Significant |
| H5 | SQ → TEG | 0.279 | 3.066* | 0.003 | Significant |
| H6 | SQ → CS | 0.332 | 3.609* | 0.000 | Significant |
| H7 | TG → CS | 0.214 | 2.137* | 0.035 | Significant |
| H8 | TEG → CS | 0.283 | 2.914* | 0.004 | Significant |
| H9 | SQ → CL | 0.282 | 3.333* | 0.001 | Significant |
| H10 | TG → CL | 0.246 | 2.784* | 0.006 | Significant |
| H11 | TEG → CL | 0.232 | 2.646* | 0.010 | Significant |
| H12 | CS → CL | 0.192 | 2.169* | 0.033 | Significant |

proven significant and can be applied to people of productive age with conditions requiring official information related to COVID-19.

The relationship between trust disposition and trust in government demonstrates that the public regards the government of the DIY as a trustworthy institution in managing the official website for providing information on the COVID-19 pandemic. These findings are supported by research [4], which revealed that confidence in the government, trust in enabling technology, and privacy and security have a major influence.

The relationship between trust disposition and trust in e-government demonstrates that as the tendency of public trust increases, people will more easily trust information from others, feel that others can be relied on, believe in human values, and trust the provincial government of the DIY. Therefore, public trust in the e-government system will increase as well.

People are more confident in the government's ability to provide certainty about online service transactions when they believe the government is developing electronic services to improve the efficacy, transparency, and fairness of government services. People's trust in e-government grows when they believe the *corona.jogjaprov.go.id* website provides valid and reliable information. In addition, the DIY government can manage the official website, serve as information provider on the COVID-19 pandemic, be accountable, have accurate data, and canot be manipulated.

According to research, service quality has a beneficial impact on trust in government. The higher the level of trust in the government, the better the quality of services given by the government of the DIY; this result supports the H4. Research [4] and [29], which shows that trust in services has a positive effect on trust in e-government, support this findings. This study found that service quality had a beneficial influence on

trust in e-government. The greater the trust in e-government, the higher the quality of services offered.

Service quality has a positive effect on citizen satisfaction; the better the service quality, the more satisfied the public is with e-government services. The concept of quality and customer satisfaction are on one dimension in a linear line, implying that something of high quality will satisfy its users. This study's outcomes are comparable to those of previous studies [4], [30], which discovered a considerable influence on citizen satisfaction.

Trust in government has a positive effect on citizen satisfaction; the more people trust the government, the more satisfied they are with e-government services. It lends support to the H7. Previous research has shown that when the public trusts the government, satisfaction with e-government services increases [14], [31]. Citizen satisfaction is also linked to trust in e-government. The public's trust in the DIY's electronic services to provide consistent information about COVID-19 is critical to the service's success. Previous research [32] has discovered that prior reliance on e-government could lead to increased satisfaction and involvement with newly introduced services. According to another study [20], a lack of trust in e-government services has resulted in fewer interactions with e-government websites and a lower level of satisfaction with e-government services.

The quality of services provided by the government will affect people's loyalty to use these services. The better the quality of the government's services, the more loyal the people are to use them. The findings of this study support H9. According to research [2], superior service quality builds user loyalty. Community loyalty is also influenced by trust in the government. Therefore, the higher the degree of community loyalty, the higher the amount of trust in the provincial government. In the context of this study, if the public trusts the provincial government to manage the official website, then community loyalty will increase as the service is used. People will easily believe in e-government services if they already believe in the government. Trust in e-government has a positive effect on citizen loyalty, indicating that the more trust people have in e-government services, the more likely the community is to use them. According to previous research [24], the level of public trust in e-government is critical in developing long-term relationships in the electronic service provision. In the context of this study, the public has complete faith in the *corona.jogjaprov.go.id* website as a reliable source of information.

When the community is satisfied with the services provided, the loyalty of the community will easily increase. The results of this study are supported by previous research which states that there is a relationship between satisfaction and a long-term relationship with e-government services [33], [34].

This study proves that the trust model used can be proven and applied to the object of research. People will be loyal when they believe in the government and the services provided by considering the quality of service and perceived satisfaction. Loyalty in this study refers to the government and e-government services in the form of an official website, the *corona.jogjaprov.go.id*.

## V. IMPLICATION OF THE RESULT

The implications of the study's findings are aimed at the provincial government of the DIY in general, as well as policymakers who want to develop loyalty to e-government on the *corona.jogjaprov.go.id* website. The value of community building loyalty must be implemented in the context of e-government services since it inspires citizens to use electronic services rather than traditional methods. As a result, this study focuses on factors that can increase public loyalty to the provincial government's COVID-19 information services. The provincial government must prioritize the quality of electronic services so that all people, particularly in DIY, can access the *corona.jogjaprov.co.id* website as the sole source of information about the development of COVID-19 in DIY and globally. Improving the quality of services is expected to increase public confidence in the government and e-government, which will increase satisfaction and, ultimately, loyalty to this service, causing people to use it repeatedly. The quality of e-government services may be enhanced by keeping information on the service website up-to-date, uploading well structured and easy-to-use information, and having a dependable workforce to address problems efficiently and on time.

Furthermore, developing community satisfaction and loyalty in the DIY province requires building trust in the government. When people believe that the government can manage COVID-19 cases reliably, they create feelings of loyalty and satisfaction. Hence, when there is a large spike in cases, the government can anticipate with its programs so that it can reduce COVID-19 cases in DIY. As a result, policymakers and government officials can aim to boost public confidence in e-government services by putting in place suitable protections to ensure users during the application process that *corona.jogjaprov.co.id* can offer accurate information and that no data is corrupted.

## VI. CONCLUSION

The disposition to trust affects trust in government and e-government. As the trust in the government increased, people's satisfaction with the government's performance will also increase. Service quality affects trust in government and trust in e-government. When the community considers the quality of service on the government's website good, the community will be satisfied and willing to be loyal in using the facility. In this case, the public feels that the service quality on the *corona.jogjaprov.go.id* website is good, and the public has more confidence in e-government services.

All hypotheses of the proposed model are accepted, and the antecedents of trust, community satisfaction, and service quality have a positive and significant influence on community loyalty. Of the several influential antecedents, trust in government and e-government has more influence on the relationship between antecedents and citizen loyalty. It explains why the people of DIY trust the government and its e-services Moreover, they will be loyal to use these services during the COVID-19 pandemic, as well as other facilities in the future.

The limitation of this study was the use of a data sample of 100, which was too small to represent the population. It is because the data collection is still in a pandemic condition so it has limitations in distributing questionnaires. Some regression models still have a low coefficient of determination below 50%, so further studies are needed to add research variables. Researchers can develop this research model by adding sample data, especially for people who still have a low level of education and are elderly, because these two segments of society tend to adopt weak information systems.

## REFERENCES

[1] S. Al Farizi and B.N. Harmawan, "Data Transparency and Information Sharing: Coronavirus Prevention Problems in Indonesia," *Indonesian Journal of Health Administration*, Vol. 8, No. 1 Special Issue, pp. 35–50, Jun. 2020.

[2] Y. Li and H. Shang, "Service Quality, Perceived Value, and Citizens' Continuous-Use Intention Regarding E-Government: Empirical Evidence from China," *Information and Management*, Vol. 57, No. 3, pp. 369–374, Apr. 2020.

[3] S.-J. Eom and J.H. Kim, "The Adoption of Public Smartphone Applications in Korea: Empirical Analysis on Maturity Level and Influential Factors," *Government Information Quarterly*, Vol. 31, Suppl. 1, pp. 1–11, Jun. 2014.

[4] A. Alkraiji and N. Ameen, "The Impact of Service Quality, Trust and Satisfaction on Young Citizen Loyalty towards Government E-Services," *Information Technology & People*, to be published.

[5] A. Parasuraman, V.A. Zeithaml, and L.L. Berry, "A Conceptual Model of Service Quality and Its Implications for Future Research," *The Journal of Marketing*, Vol. 49, No. 4, pp. 41–50, 1985.

[6] A. Parasuraman, V.A. Zeithaml, and L.L. Berry, "Reassessment of Expectations as A Comparison Standard in Measuring Service Quality: Implications for Further Research," *Journal of Marketing*, Vol. 58, No. 1, pp. 111–124, Jan. 1994.

[7] B. Blöbaum, "Key Factors in the Process of Trust. On the Analysis of Trust under Digital Conditions," in *Trust and Communication in a Digitized World: Models and Concepts of Trust Research*, B. Blöbaum, Ed., Cham, Switzerland: Springer International Publishing, 2016, pp. 3–25.

[8] Z. Jia, M. Liu, and G. Shao, "Linking Government Social Media Usage to Public Perceptions of Government Performance: An Empirical Study from China," *Chinese Journal of Communication*, Vol. 12, No. 1, pp. 84–101, Dec. 2018.

[9] R. Kumar, R. Kumar, A. Sachan, and P. Gupta, "An Examination of the E-Government Service Value Chain," *Information Technology & People*, Vol. 34, No. 3, pp. 1–23, May. 2020.

[10] E.W. Welch, C.C. Hinnant, and M.J. Moon, "Linking Citizen Satisfaction with E-Government and Trust in Government," *Journal of Public Administration Research and Theory*, Vol. 15, No. 3, pp. 371–391, Jul. 2005.

[11] H.-H. Lin and Y.-S. Wang, "An Examination of the Determinants of Customer Loyalty in Mobile Commerce Contexts," *Information and Management*, Vol. 43, No. 3, pp. 271–282, Apr. 2006.

[12] H.-S. Doong, H.-C. Wang, and G.R. Foxall, "Psychological Traits and Loyalty Intentions towards E-Government Services," *International Journal of Information Management: The Journal for Information Professionals*, Vol. 30, No. 5, pp. 457–464, Oct. 2010.

[13] N. Choi, "Information Systems Satisfaction, Loyalty and Attachment: Conceptual And Empirical Differentiation," *Behaviour & Information Technology*, Vol. 34, No. 3, pp. 261–272, 2015.

[14] M. Janssen, N.P. Rana, E.L. Slade, and Y.K. Dwivedi, "Trustworthiness of Digital Government Services: Deriving a Comprehensive Theory through Interpretive Structural Modelling," *Public Management Review*, Vol. 20, No. 5, pp. 647–671, 2018.

[15] L. Alzahrani, W. Al-Karaghouli, and V. Weerakkody, "Investigating the Impact of Citizens' Trust Toward the Successful Adoption of E-Government: A Multigroup Analysis of Gender, Age, and Internet Experience," *Information Systems Management*, Vol. 35, No. 2, pp. 124–146, 2018.

[16] R. Pérez-Morote, C. Pontones-Rosa, and M. Núñez-Chicharro, "The Effects of E-Government Evaluation, Trust and the Digital Divide in the Levels of E-Government Use in European Countries," *Technological Forecasting & Social Change*, Vol. 154, pp. 1–14, May 2020.

[17] F. Bélanger and L. Carter, "Trust and Risk in E-Government Adoption," *The Journal of Strategic Information Systems*, Vol. 17, No. 2, pp. 165–176, Jun. 2008.

[18] A. Pearson, S. Tadisina, and C. Griffin, "The Role of E-Service Quality and Information Quality in Creating Perceived Value: Antecedents to Web Site Loyalty," *Information Systems Management*, Vol. 29, No. 3, pp. 201–215, 2012.

[19] D. Cyr, "Modeling Web Site Design across Cultures: Relationships to Trust, Satisfaction, and E-Loyalty," *Journal of Management Information Systems*, Vol. 24, No. 4, pp. 47–72, 2008.

[20] E. Abu-Shanab, "Antecedents of Trust in E-Government Services: An Empirical Test in Jordan," *Transforming Government: People, Process and Policy*, Vol. 8, No. 4, Oct. 2014.

[21] T.S. Teo, S.C. Srivastava, and L.I. Jiang, "Trust and Electronic Government Success: An Empirical Study," *Journal of Management Information Systems*, Vol. 25, No. 3, pp. 99–132, 2008.

[22] D. Gefen, "Customer Loyalty in E-Commerce," *Journal of the Association for Information Systems*, Vol. 3, No. 1, pp. 27–51, 2002.

[23] R. Connolly, F. Bannister, and A. Kearney, "Government Website Service Quality: A Study of the Irish Revenue Online Service," *European Journal of Information Systems*, Vol. 19, No. 6, pp. 649–667, 2010.

[24] T.M. Tegethoff, R. Santa, D.F.M. Granobles, and J.C.V. Hoyos, "Does Trust Have an Impact on System and Operational Effectiveness? The Implementation of E-Government in Colombia," *Electronic Government an International Journal*, Vol. 15, No. 3, pp. 241–260, 2019.

[25] R. Liang, W. Guo, and L. Zhang, "Exploring Oppositional Loyalty and Satisfaction in Firm-Hosted Communities in China: Effects of Social Capital and E-Quality," *Internet Research*, Vol. 30, No. 2, pp. 487–510, Jan. 2019.

[26] S. Lemeshow, D.W. Hosmer, J. Klar, and S.K. Lwanga, *Besar Sampel Dalam Penelitian Kesehatan*. Sleman, Indonesia: Gadjah Mada University Press, 1997.

[27] L.F. Pitt, R.T. Watson, and C.B. Kavan, "Service Quality: A Measure of Information Systems Effectiveness," *MIS Quarterly*, Vol. 19, No. 2, pp. 173–187, Jun. 1995.

[28] F.K. Chan, J.Y. Thong, V. Venkatesh, S.A. Brown, P.J. Hu, and K.Y. Tam, "Modeling Citizen Satisfaction with Mandatory Adoption of an E-Government Technology," *Journal of the Association for Information Systems*, Vol. 11, No. 10, pp. 519–549, Jan. 2010.

[29] M. Warkentin, D. Gefen, P.A. Pavlou, and G.M. Rose, "Encouraging Citizen Adoption of E-Government by Building Trust," *Electronic Markets*, Vol. 12, No. 3, pp. 157–162, 2002.

[30] H. Yulianto and S.D. Yahya, "Pengaruh Servqual terhadap Citizen Satisfaction (Studi pada Pengguna Trans Mamminasata)," *AkMen Jurnal Ilmiah*, Vol. 15, No. 3, 2018.

[31] L. Carter and F. Bélanger, "The Utilization of E-Government Services: Citizen Trust, Innovation and Acceptance Factors," *Information Systems Journal*, Vol. 15, No. 1, pp. 5–25, 2005.

[32] H. Lee and C. Kim, "Benchmarking of Service Quality with Data Envelopment Analysis," *Expert Systems with Applications*, Vol. 41, No. 8, pp. 3761–3768, Jun. 2014.

[33] V. Weerakkody, Z. Irani, H. Lee, N. Hindi, and I. Osman, "Are UK Citizens Satisfied with E-Government Services? Identifying and Testing Antecedents of Satisfaction," *Information Systems Management*, Vol. 33, No. 4, pp. 331–343, 2016.

[34] W.H. DeLone and E. R. McLean, "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update," *Journal of Management Information Systems*, Vol. 19, No. 4, pp. 9–30, 2003.