

The effect of e-service quality on user satisfaction and loyalty in accessing e-government information**Munawar Noor^{a*}**^a*Universitas 17 Agustus 1945 (UNTAG) Semarang, Indonesia***CHRONICLE****ABSTRACT***Article history:*

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Digitization has had a profound impact on changing consumer behavior and the reorientation of online services by service providers in both the public and private sectors. This includes the use of information and communication technology and the internet adopted in the public sector largely known as e-government, which intensifies the use of websites to bridge the relationship between public institutions and users. The purpose of the study was to analyze the effect of e-service quality on user loyalty through user satisfaction of public service websites. The study was conducted on 250 users of public service websites in Indonesia. The analytical tool used is Structural Equation Modeling with the help of AMOS software. The study found that the quality of e-service has a significant effect on user satisfaction and user loyalty, user satisfaction has a significant effect on user loyalty, and user satisfaction partially mediates the effect of e-service quality on user loyalty. The results of the study underscore the importance of improving the quality of e-government through e-quality services, especially in government organizations to provide opportunities for the public and the private sector to access government services with integrated services efficiently through the use of the internet and online channels.

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1. Introduction

Governments around the world are currently facing pressure from various parties to improve the quality of public services and increase active participation in providing information to the public and are required to be more effective (Forman, 2005). This causes e-government or electronic-based government or e-government to play an increasingly important role for all decision makers. Traditional services which are synonymous with paper-based administration are starting to be abandoned (Suprawoto, 2005). The transformation of traditional government into electronic government is one of the hotly discussed public policy issues today (Indrajit, 2002). In Indonesia, e-government has only started with an initiative launched a few years ago. In addition, public services have often led to irregularities and maladministration of services in the public sector which can result in high economic costs (Hadjon et al., 2011). Previously, the process of providing services to the public was carried out through direct contact between service providers and community members (Norris, 2007). This practice has an impact on other service users which in turn will also have an impact on the quality of public services in general (Avery & Graham, 2013). To improve the quality of public services, various public sector institutions compete to create websites and applications to make it easier for the public to access information and use services. Several survey results from international survey institutions show that public services in Indonesia are still the worst in Asia in terms of public services (Graham & Avery, 2013). Similarly, various studies that have been carried out by observers of public services, almost all of them conclude that public services through direct contact are vulnerable to various maladministration practices, which distance themselves from achieving administrative goals (Yusuf, 2007). Along with the widespread use of the website as a means of information by

* Corresponding author.

E-mail address: munawarnoor.untag@gmail.com (M. Noor)

public institutions, website users are also increasing rapidly to obtain credible information about public services. This of course must be supported by adequate infrastructure, and reliable service quality, which can affect user satisfaction and loyalty to the use of public websites. Therefore, in this study, an analysis of user perceptions of the quality of electronic services on public service websites was conducted. Practically this is useful for identifying what services need to be reviewed and improved by public institutions as service providers. In general, this research can provide an overview and evaluation of how to improve the quality of electronic services from websites and in the end, improve the quality of electronic services to increase public satisfaction and loyalty to use public service websites as an alternative to face-to-face services.

2. Literature Review and Hypotheses

2.1. *The effect of e-service quality on customer satisfaction*

According to Cronin Jr and Taylor (1994) states that the e-service quality model is the most comprehensive and integrative online service quality model, because its dimensions are relevant and comprehensively meet the need to evaluate the quality of electronic services. Santos (2003) defines e-service quality as the extent to which a website facilitates efficient and effective transactions and services. Likewise, Gounaris et al. (2010) emphasize the entire buying cycle, including post-purchase behavior as an important driving factor for e-service quality. E-service quality is defined as an extension of a company's ability to facilitate service activities and transactions effectively and efficiently (Gurău, 2003). Based on Kotler et al. (2016), there are 5 dimensions of measuring e-service quality, namely: information quality, security, website functionality, customer relationship, and responsiveness and fulfillment. Previous studies highlighted that service quality significantly affects satisfaction (Setó-Pamies, 2012). From a customer relations perspective, the quality of e-services plays a crucial role in increasing service user satisfaction. The convenience provided by the organization as well as the informativeness displayed in the quality of electronic services will encourage an increase in the degree of use (Al-Nuaimi et al., 2013). Therefore, organizations are encouraged to improve the quality of electronic services which are not only limited to the quality of information and systems, but also the responsiveness and reliability of services (Ming et al., 2018). Furthermore, Ming et al. (2018) states that electronic system services cannot instantly replace face-to-face services. Previous findings also confirmed a significant relationship between the quality of electronic services and online service user satisfaction (Goh et al., 2012; Chang, 2007). Hence, the first hypothesis was proposed:

H₁: *There is a positive and significant effect of e-service quality on user satisfaction*

2.2. *The relationship between e-service quality on customer loyalty*

According to Yang (2001) states that service quality or service quality is a critical element of user perceptions of the service products they receive. Especially in a product that is purely a service, service quality will be the dominant element in user ratings. According to Zeithaml (1988) states that service quality is how far the difference between reality and user expectations for the services they receive. According to Al-Nasser et al. (2013) service quality is the totality of the characteristics of goods and services that show their ability to satisfy user needs is an absolute thing that must be done if the company wants to achieve success. As one of the main elements of e-service quality, website functionality and navigation relates to how easy it is for users to find information on a website. This is considered as the main element in establishing service quality (Bostanji, 2013). Without reliable interaction with users, online users need to find information on the product/service being sought compared to face-to-face service. The design and presentation of a website involves navigation mechanisms that can affect the relevance and efficiency of search results (Anshari, 2017). In this context, Al-Nuaimi et al. (2013) stated that e-service quality has a vital role in the success of online-based organizations in achieving their goals, which in turn can increase the organization's competitive advantage. Tan et al. (2017) revealed a positive effect of user experience on electronic services on user satisfaction. Chang et al. (2009) found that customer satisfaction is closely influenced by the quality of e-service. This is ultimately empirically proven to increase customer loyalty. Similarly, Siddiqi (2011) estimates empirically the positive influence of online service quality attributes on customer satisfaction. In the context of electronic services, the level of satisfaction determines user loyalty (Setó-Pamies, 2012). Accordingly, this study proposed the following hypothesis:

H₂: *E-service quality has a positive and significant influence on user loyalty*

2.3. *The effect of user satisfaction on customer loyalty*

According to Kotler et al. (2016), consumer satisfaction is a person's feeling of pleasure or disappointment that arises after comparing the performance (results) of the product/service that is thought to the expected performance. According to Griffin & Herres (2002). In the online context, User satisfaction is conceptualized as consumers' assessment of their internet experience compared to their experience of conventional services (Gronroos, 1990). User satisfaction is largely defined as user satisfaction with respect to the experience after transacting something on public service. In relation to online services, Kotler & Gery (2008) states that consumer behavior in online services is a form of online transaction behavior. The point is that user loyalty leads to repeat transactions on the web. User loyalty refers to the consumer's intention to transact from a website or to return to a particular website (Sunyoto, 2012). According to Tjiptono (2014), user loyalty is a very strong

assessment for users to re-transact or subscribe to a preferred product or service consistently in the future, causing repeated transactions, despite situational influences and efforts that have the potential to cause switching. Griffin (2005) stated that this seems to apply in both offline and online contexts. Tan et al. (2017) found a close relationship between electronic service user satisfaction and user loyalty. Hence, the third hypothesis was proposed as follows:

H₃: *There is a positive and significant effect of user satisfaction on user loyalty*

2.4. The mediating effect of customer satisfaction

Satisfaction is summarized as a state when the emotions surrounding unclear expectations are combined with the user's previous feelings about the user experience. User satisfaction, in the same vein, according to Engel et al. (1995), respects to the service experience previously provided by the organization. Dissatisfied users usually seek alternative information from other users. Previous research confirmed the effect of customer satisfaction in bridging the relationship between electronic service quality and user loyalty (Siddiqi, 2011). In the analysis of the use of e-banking, Oni et al. (2016) found that e-service quality has a strong effect on customer satisfaction, which has the potential to intensify user loyalty. Tan et al. (2017) demonstrated the positive influence of e-service user experience on user satisfaction and loyalty. In a study on travel agencies, Setó-Pamies (2012) empirically presented that the extent of loyalty in the context of e-services is more likely to depend on the level of user satisfaction and trust. Xu and Du (2018) found a significant effect of perceived benefits on user satisfaction which in turn affects the loyalty of electronic service users. Twum et al. (2020) revealed a significant positive relationship between user satisfaction and user loyalty. In addition, Chang (2007) found that the more intensive the quality of electronic services perceived by users can increase user satisfaction, which has a positive effect on increasing the organization's competitive advantage. Cristobal et al. (2007) found that the quality of electronic services affects satisfaction and user satisfaction in turn affects loyalty. Accordingly, this study proposed the following hypothesis:

H₄: *User satisfaction mediates the relationship between e-service quality and user loyalty*

Furthermore, the framework is structured to explain which variables will act as exogenous and endogenous latent variables. Based on the relevant literature review, a structural model was built that explains the position of the two variables. This model is structured to obtain how many hypotheses must be developed and how the causal relationship between the variables. Thus, a research framework is presented (Fig. 1).

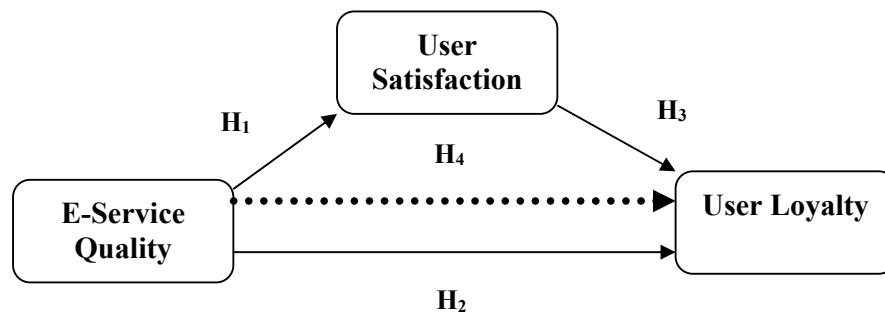


Fig. 1. Research Framework

3. Research Methods

This study uses the SEM data analysis method with the help of the Amos device. This research uses quantitative research with primary data sources. The data collection technique used a questionnaire with a Likert scale of 1-5. The objects in this study are all users who access the public service website. For the determination of the sample in the Structural Equation Modeling model, according to Hair Jr. et al. (2021), there are 5-10 of the total indicators. In this study, there are 16 indicators with 250 respondents and just in case there are data outliers. Sample selection was done by probability sampling method with accidental sampling technique. As operational definition, e-service quality is how far a website is able to facilitate transactions effectively and efficiently. The indicators used to measure e-service quality according to Tjiptono (2014) consist of indicators of efficiency, reliability, fulfillment, privacy, responsiveness, compensation and contact. Moreover, some items were also used. Dabas & Bajaj (2019) details the electronic service quality factors which include reliability, responsiveness, competence, product portfolio, security, feedback management, web applications on online banking service user satisfaction. Furthermore, Cristobal et al. (2007) describe the elements of service quality which include web design, customer service, assurance and order management. Furthermore, user satisfaction is defined as the level of conformity of expectations with the reality obtained by users from previous online service experiences. Several instruments for measuring user satisfaction according to Sheng & Liu (2010), include feeling satisfied transacting on the site, feeling that they made a wise choice, making an accurate decision to choose the site and the site fulfilling user desires. User loyalty is defined as a user-friendly attitude that results in

the behavior of reusing public service websites. The indicators used to measure user loyalty consist of a commitment to reuse the application, subscribe/use the automatic mechanism of the application service, perform the application consistently, not affected by environmental conditions and not easily affected by other conditions (Giovanis & Athanasopoulou, 2014).

4. Results

The model suitability test is carried out through a flow chart in the full model equation. The full model test was conducted to find out how far the model formed met the criteria for Goodness of Fit (Table 1).

Table 1

Goodness of Fit

Goodness of Fit Index	Cut of Value	Results	Evaluation
Chi-square (df)	≤ 124.342	102.171	Fit
p-value	≥ 0.05	0.129	Fit
GFI	≥ 0.90	0.93	Fit
AGFI	≥ 0.90	0.79	Marginal
TLI	≥ 0.95	0.89	Marginal
CFI	≥ 0.95	0.91	Marginal
RMSEA	≤ 0.08	0.041	Fit

The results of Goodness of Fit as shown in Table 2 showed that all the constructs used to form the research model have met the GOF criteria. Such as the chi-square, GFI, TLI, CFI, RMSEA, CMIN/DF values that have met the required criteria and are further emphasized with a p-value of 0.129 >0.05 indicating that overall, the model formed is significant. Furthermore, statistical tests were carried out by observing the significance level of the relationship between variables indicated by the C.R (Critical Ratio) value which was identical to the t-test in the regression and the probability value (P). A significant relationship is indicated by the C.R value greater than 2.58 and the *p*-value less than 0.05 (Ferdinand, 2014). To see how much influence the independent variable has on the dependent variable, it is shown in Table 2.

Table 2

Hypothesis Testing Results

Variable	Std. Estimate	Estimate	S.E.	C.R.	p-value
ECS ← ESQ	0.789	0.674	0.079	7.683	0.000
ECL ← ECS	0.618	0.643	0.158	3.137	0.000
ECL ← ESQ	0.631	0.562	0.146	3.171	0.000

*ESQ= e-service quality; ECS= e-customer satisfaction; ECL= e-customer loyalty

The analysis obtained that e-service quality has a significant effect on user satisfaction of public service websites with a standardized regression weight estimate value of 0.789 (78.9%), C.R of 7.683 and *p*-value of 0.000. Furthermore, e-service quality has a significant effect on user loyalty of public service websites with a standardized regression weight estimate value of 0.618 (61.8%), C.R value of 3.137 and *p*-value of 0.000.

The statistical results also revealed that user satisfaction has a significant effect on user loyalty of public service websites with a standardized regression weight estimate value of 0.631 (63.1%), C.R value of 3.171 and *p*-value of 0.000 which means it is very significant. Lastly, based on the calculation results, it is found that the significance of the -a (0.000) and -c (0.000) paths is found, while the -b (0.000) and -c' (0.0031) paths are significant. So it can be concluded that User satisfaction partially mediates the effect of e-service quality on user loyalty of public service websites. This means that user satisfaction does not only have a direct effect but can also have an indirect effect on increasing the e-customer loyalty of public service websites. In testing the mediating effect of e-service quality on e user loyalty, to find out whether user satisfaction mediates the effect of e-service quality on user loyalty of public service websites, it can be seen in the image of the results of the Sobel test as shown in Table 3.

Table 3

Sobel Test Results

	Sobel Statistic	Std. Error	p-value
Sobel Test	2.935	0.143	0.0031
Aroian Test	2.922	0.144	0.0032
Goodman Test	2.948	0.142	0.0030

The calculation results found that the significance of the -a (0.000) and -c (0.000) paths is found, while the -b (0.000) and -c' (0.0031) paths are significant. It means that user satisfaction partially mediates the effect of e-service quality on user loyalty of public service websites. This means that user satisfaction does not only have a direct effect but can also have an indirect effect on increasing the user loyalty of public service websites.

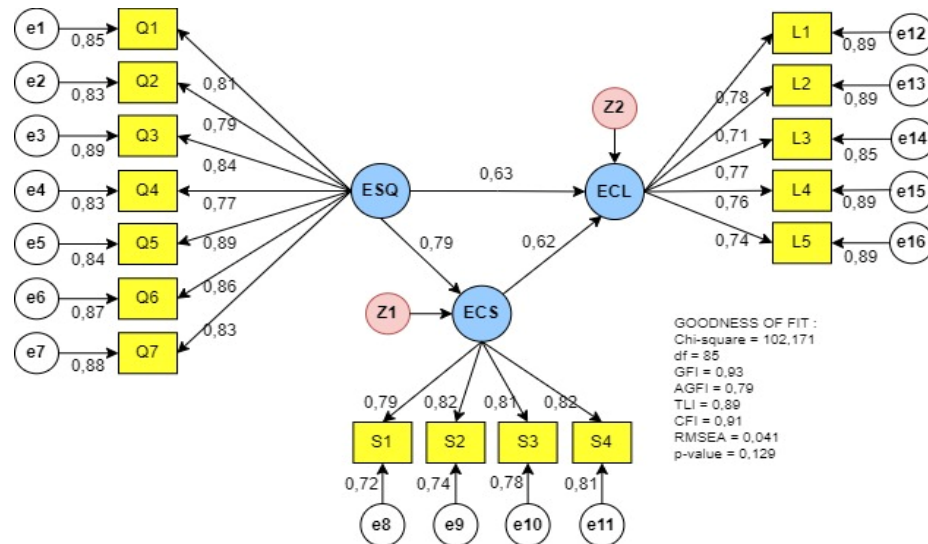


Fig. 2. Structural Model

5. Discussion

Regarding the effect of e-service quality on user satisfaction, the results showed the standardized regression weight estimate value is 0.789, the critical ratio value is 7.683, >2.58 and p -value of 0.000, which means it is very significant. According to Fatihudin & Firmansyah (2019), information quality is the information available on the website which is the main component of perceived service quality. Security relates to how a website proves to be trustworthy for its users. Online services that are done well and smoothly can build trust and confidence in users (Rusydi, 2017). This is important, because of the lack of interpersonal contact with users when buying online, users especially need to pay attention to transaction security. Security also refers to user privacy (Alma, 2005). This is important in an online transaction because users may be concerned that their personal and transactional information may be accessed or used over the Internet by third parties. Security has been considered as an important dimension in terms of service quality and satisfaction (Akbar et al., 2010). It can be concluded that security is an important component of quality when users make transactions online.

In testing the second hypothesis of the effect of user satisfaction on user loyalty, the standardized regression weight estimate value is 0.618 (61.8%), the Critical Ratio value is 3.137 > 2.58 and p -value of 0.000 which means it is very significant. The output also showed that in the effect of e-service quality on user loyalty, the standardized regression weight estimate value is 0.631 (63.1%), Critical Ratio of 3.171 > 2.58 and p -value of 0.000. It can be concluded that e-service quality has a significant effect on user loyalty of websites of public service users. The results show that navigation plays a dominant role in providing satisfactory service. The second aspect, website access, refers to a user's ability to access resources (including travel-related information and service features) on the website and it relates to ease of connection and download speed (Chiou & Droge, 2006). The existence of support for website access is one of the important components related to service performance. The third part of this dimension describes transactional functions that allow users to feel that the website is simple and user-friendly to complete a transaction and service. Several components, including easy ordering, easy payment, and easy cancellation, indicate the extent to which users believe that using the website will involve little or no effort (Chinomona et al., 2014). In the customer relationship dimension, a virtual community developed in a website can be considered as an online social organization to provide users and customers with the opportunity to share opinions and exchange information among their communities. The service features provided by the website provide opportunities for users to interact with other users (Jonathan, 2013). This two-way communication makes it easier for users to find information, make buying decisions, and provide feedback or input to the website. These relationships can be developed through interactions with online communities that allow users to participate, learn and interact online.

Responsiveness and fulfillment dimensions are measured based on the timeliness of a website that responds to customers in an online environment, such as how to answer questions from customers quickly and efficiently or how customer needs and complaints can be responded to via email politely (Kundu & Datta, 2015). These problems are conceptually a component of the responsiveness dimension. The fulfillment dimension refers to the success of the website in delivering its products or services and its ability to correct errors that occur during the transaction process (Melinda, 2017). Websites that seek to minimize dissatisfaction with the services provided will achieve a higher level of quality evaluation provided by their users. Finally, the findings are in agreement with Chang et al. (2009) which estimates the strong influence between customer satisfaction and loyalty. These results are consistent with Carlson and O'Cass (2010) who found that a positive level of consumer satisfaction is influenced by a positive evaluation of the quality of electronic services that can affect consumer attitudes. With

respect to the relationship between that of service quality and customer satisfaction, the results are in accordance with Afthanorhan et al. (2019) which found a significant impact of service quality on customer satisfaction.

6. Conclusion

This study found that the quality of e-service has a significant effect on user satisfaction and user loyalty, user satisfaction has a significant effect on user loyalty, and user satisfaction partially mediates the effect of e-service quality on user loyalty. The results confirm that the e-quality of public service websites is able to provide satisfaction to users, especially for online transactions. E-service quality is a service that is committed to high efficiency, reliability, compliance that can meet user expectations, guaranteed privacy, fast response from customer service, appropriate compensation and contact provided and easy to contact, especially to handle user complaints. Furthermore, user satisfaction has a significant effect on the loyalty of users of public service websites. This requires conformity of the advertised service with what the user receives as the key to user satisfaction of the public service site. The number of public services that conduct online transactions today causes users to be very critical and always compare the services provided by each service provider. Therefore, the quality of e-service must receive serious attention from public service websites to ensure user satisfaction and loyalty.

The results of the study underscore the importance of improving the quality of e-government through e-quality services, especially in government organizations to provide opportunities for the public and the private sector to access e-government services with integrated services efficiently through the use of the internet and online channels. Theoretically, the findings emphasize customer value as the ultimate value in customer relationship management through improving e-service quality. In addition, the findings underscore the importance of estimating the factors that influence loyalty with an emphasis on the importance of website user trust. Practically speaking, these results recommend service providers and website owners to place more emphasis on customer value while improving the quality of electronic services. Managerially, these findings encourage an increase in capacity of service portfolio, system availability and the competence of supporting staff. In addition, to promote the effectiveness of customer relations from electronic services, service providers need to improve service responsiveness and reliability as a basis for evaluating the quality of electronic services.

Furthermore, the limitations of this study are related to the characteristics of the sample and the test model. To assess the degree of website service quality, the sample in this study came from various users of public websites. With its trademark domain, public websites are not used sustainably by individual users. Therefore, further studies are expected to focus the analysis on the use of one website that is used continuously by users within a certain time span. In addition, future research is expected to be able to analyze the determinants of the quality of electronic services and use more variables in the model.

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