

## Improving the Quality of the Mobile Tax Service Apps in Indonesia: A Delphi Study

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### Abstract

*This research aims providing recommendations to improve the service quality of M-Pajak, a mobile-based application developed by the Directorate General of Tax (DGT). M-Pajak was officially launched in June 2021 to simplify and modernize the pre-existing traditional tax services. Eight selected experts participated as persons in this research and exchanged their ideas through a three-round Delphi study carried out from November 2021 to January 2022. The initial release of the application only provides a minimal number of services. Due to limited human resources, the DGT needs a selective development improvement plan for public service apps. This research found that data and information security should be prioritized for future M-Pajak updates.*

### Keywords

delphi; public service; service quality; tax service apps



## I. Introduction

Holzer and Schwester (2019) stated that the government must provide quality goods and services to the citizens. The Indonesian government is trying to support and fill the citizens' needs. In the context of tax service in Indonesia, the Directorate General of Taxes (DGT) has been trying to keep up with the Information, Communication, and Technology (ICT) to provide better service and build better public engagement. These service quality service delivery by using ICT is a part of e-government.

E-government aims to perform efficient service delivery from the government to citizens (Manoharan, 2014; Venkatesh et al., 2016; Waheduzzaman & Miah, 2015). Additionally, Ntaliani and Costopoulou (2018) proved that e-government services decrease the burden on private sectors as service users. Although the service is delivered mainly using the internet, it works as long as the users are interconnected under the same communication network (Manoharan, 2014). Thus, using a wireless network using a mobile device that is interconnected with the internet to run government services is part of e-government (Stiakakis & Georgiadis, 2014). Al-Nidawi et al. (2018) emphasized that the e-service quality determines e-government success.

Following the popularity of smartphones or mobile devices to make transactions over the internet, the DGT offers a relatively new mobile-based application called M-Pajak. The DGT released it in June 2021 on Google Playstore and Apple App Store. M-Pajak provides limited tax services than the DGT's website. The services offered are tax billing creation, viewing taxpayers' profiles, finding tax offices location, viewing tax return deadlines, and accessing information such as tax news, tax announcement, press conference, tax regulation, and exchange rates. Thus, it makes the M-Pajak currently and presumably inferior to the

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DGT's website in the context of the number of services offered. Moreover, according to the result of the user satisfaction survey published on 10 November 2021, M-Pajak's user rating was mediocre, as indicated by a 3.3 rating out of 5 point scale. During the investigation, the application was already installed by more than a hundred thousand users. Several users commented that various problem arises when using the application, and several others hoped that the M-Pajak would be helpful to fulfill their tax obligations and rights.

As a mobile tax service app, M-Pajak has a large room for improvements to offer better service quality to the citizens, especially the taxpayers. However, considering a relatively limited human resources capacity, arguably, it would be tough for the DGT to improve all aspects of the online tax service and to solve all the problems simultaneously at the same time. Based on the employee data per September 2021 obtained from the DGT and the staff size requirement for Functional IT Officials in the Directorate of ICT as stated in Director General of Taxes Decree Number KEP-212/PJ/2021, the application developer is currently running at 68.63% capacity. Therefore, As an alternative, a selective improvement strategy should be developed and implemented gradually. This research aims to identify key improvement aspects that the DGT should prioritize against all of the limitations.

Several researchers have studied tax service quality in the past years. According to the result of previous studies, tax service quality is proven to be a determinant factor, among others, for tax compliance (Joni & Handryno, 2021; Oktaviani et al., 2019; Sadress & Juma, 2019; Sania & Yudianto, 2018; Sukesu & Yunaidah, 2020; Susuawu et al., 2020), and technology succession (Chan et al., 2021; Chen et al., 2015). Furthermore, Wicaksono et al. (2021) highlighted several problems and suggested several solutions to improve online tax filing service in Indonesia by using quality service dimensions. They found that several taxpayers demanded that the DGT provide an online filing service in the form of a mobile application. In a broader scope, Dinoroy Marganda (2017) suggested that the Indonesian government should improve its electronic public service quality.

Aspects of M-Pajak quality improvement can be approached by the items or dimensions related to service quality. Parasuraman et al. (2005) proposed that the service quality that is electronically delivered is affected by the efficiency, system availability, fulfillment, privacy, responsiveness, compensation, and contact perceived by the users. Later, Connolly et al. (2010) adopted those variables to adapt the condition for online service quality provided by the government. Due to similarity, they removed responsiveness, modified, and combined the remaining variables. Huang et al. (2015) proposed the modified Parasuraman et al. (2005) model to adapt to a mobile-based online transaction environment by adding a billing dimension. That modified model was adapted for the transaction involving the payment. Still, the current research about the online tax service in Indonesia does not include the tax payment to the DGT directly. As a result, the billing dimension of that model is irrelevant to the current research. The compensation dimension is dropped in this research due to the nature of taxes and the regulation. Income Tax is a type of subjective tax whose tax obligations are attached to the relevant The taxpayers would not get direct compensation or benefits from paying taxes (Maganya, 2020).

## **II. Research Methods**

This research employed a qualitative approach by using the Delphi method. Crawford and Wright (2016) explained that Delphi is best suited to take a benefit from collective, subjective judgment or decision. Additionally, they stated that Delphi takes advantage when the panel group cannot perform effective communication, such as time difference, distance, or personality conflict. The researcher conductor an additional text-based communication to

clarify the unclear answers. Thangaratinam and Redman (2005) stated that Delphi requires the researcher to calculate the mean and standard deviation from each questionnaire stage.

The primary data is collected through multi-round questionnaires to representatives. The questionnaires used a 9-point Likert scale, with one means that an improvement aspect is not prioritized, and nine means the improvement aspect is very prioritized. Additionally, an open field for each question is provided, allowing the representatives to express why they give a particular score for each improvement aspect. The secondary data sources are from the DGT and information publicly available such as the Ministry of Finance (MoF) reports, the DGT reports, application users review on Google Play, and various sources related to the online tax service quality provided by the DGT. In addition, as secondary data, the researcher also observed the M-Pajak application.

Crawford and Wright (2016) explained that Delphi requires expert opinions from different domains or backgrounds, not homogenous. They suggested that the representatives range from 5 to 20. Thangaratinam and Redman (2005) stated that the expert could be anyone with relevant experience and knowledge of the topic. Eight people were selected as the key resource persons using the following criteria: 1) Considered as an expert in a particular field of expertise relevant to the research topic; 2) Not an employees of the DGT to avoid any conflict of interest; and 3) Should be accustomed to mobile-based applications. An overview of the eight selected resource persons can be summarized under the Table 1 below:

**Table 1.** The Delphi representatives

No.	Expert Representative	Number of Persons
1	IT Professional/Auditor	1
2	Academician/Head of A Software Engineering Laboratory in an Indonesian university	1
3	Lawyer	1
4	Taxpayer located in high digital divide area	1
5	Taxpayer located in medium digital divide area	1
6	Taxpayer located in low digital divide area	1
7	Taxpayer with simple needs	1
8	Taxpayer with complex needs	1

Source: Processed by the authors

Regarding the digital divide in Indonesia, The data from Ariyanti (2015) and Badan Pusat Statistik (2021) determined which location of taxpayers was selected. Lastly, the simple taxation needs mean taxpayers only have annual income tax returns as their responsibility. On the contrary, the complex ones are the taxpayers who have broader responsibilities, such as Value Added Tax (VAT), Income Tax Article 21, Income Tax Article 22, Stamp Duty, and others. Tax Subject (Hendayana, 2021). Tax is a requirement that has been established by the state as a civic duty (Marpaung, 2020). Tax is a compulsory levy paid by the people to the state and will be used for the benefit of the government and the general public (Siregar, 2019).

### III. Discussion

The overall research was conducted between November 2021 and January 2022. Under the Delphi method, this research first looks into the values for each questionnaire stage. The highest mean value means the more priorities that the improvement aspect evaluated. Additionally, the smaller standard deviation value means that the opinion converges more.

Thus, the researcher requires reducing, displaying, and verifying the questionnaire's written feedback.

During the first round, or brainstorming phase, a questionnaire exploring the ten following aspects were evaluated by the representatives: 1) navigation, 2) page access speed, 3) simplicity, 4) organization of information, 5) online availability, 6) application error mitigation, 7) content, 8) data and information security, 9) tax features, and 10) contact. Question 1-4 represents the efficiency factor, defined as how easy and fast access the system is (Connolly et al., 2010; Huang et al., 2015; Parasuraman et al., 2005). The fifth and sixth one is related to the system availability. It checks whether the system is working correctly, and in the case of electronically delivered services, the system availability includes online availability and errors-free (Connolly et al., 2010; Huang et al., 2015; Parasuraman et al., 2005). The next question, content, means that the information provided by the system is appropriate and correct (Huang et al., 2015). The eighth one is related to the privacy dimension. It is essential to investigate whether the system can protect the user's data while using it (Connolly et al., 2010; Huang et al., 2015; Parasuraman et al., 2005). The tax features question refers to how the system can fulfill taxpayers' obligations and rights. Under Connolly et al. (2010)'s measurement, system quality considers whether the users can complete their tax obligation with ease or not. Huang et al. (2015) explained that fulfillment is whether the system can deliver what the service provider promised. Finally, the last question in the first-round questionnaire, contact, refers to whether the system provides support assistance from live representatives (Connolly et al., 2010; Huang et al., 2015; Parasuraman et al., 2005).

After the representatives submitted their feedback, the researchers calculated the mean and standard deviation for each aspect. The initial result shows that navigation, error mitigation of application, and data and information security shared the highest mean value of 8.0. Several representatives suggested adding 'system integration' in the next questionnaire. They explained that system integration checks whether the system can communicate with other systems, which is an essential aspect of the interconnected world. As a result, the next rounds included system integration as a part of the improvement aspect that needs to be assessed.

In the second round, the questionnaire consisted of 11 questions with the addition of 'system integration' aspect. The second questionnaire also provided the mean, standard deviation, and the last chosen Likert value by the representative for each question, except for 'system integration'. In the Delphi method, showing the results from the earlier round is intended for input information for each representative. In other words, these data act as calibration tools for reaching a consensus between representatives. The second questionnaire result indicates that the decision is starting to converge to the data and information security aspect, with the highest mean value at 8.50.

The third and the subsequent round checks whether the answers are stabilized or not. In the same manner as the second questionnaire, the third questionnaire also provided the mean, standard deviation, and previous Likert values from the second round answers for each question. The third round result shows that the data and information security aspect keeps the top position with the mean value at 8.50. At this point, the researchers stopped the questionnaire distribution and concluded that the representatives had reached a consensus. The following Table 1 shows the result of the Delphi method in the current research.

**Table 1.** The Delphi Results

No	Improvement Aspect	First Round		Second Round		Third Round	
		Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation

1	Navigation	8.00	1.77	7.75	2.05	6.75	2.05
2	Page access speed	7.25	2.49	7.50	1.60	7.25	1.60
3	Simplicity	7.38	2.72	7.25	2.66	6.50	2.66
4	Organization of information	7.00	2.39	8.13	1.13	6.50	1.13
5	Online availability	7.38	2.33	7.13	2.80	7.88	2.80
6	Error mitigation of application	8.00	2.07	8.25	1.04	7.63	1.04
7	Content	6.50	2.98	7.38	1.41	7.25	1.41
8	Data and information security	8.00	2.45	8.50	1.07	8.50	1.07
9	Tax features	7.25	2.49	7.63	1.30	7.50	1.30
10	Contact	7.38	2.20	7.75	1.04	7.63	1.04
11	System integration			7.25	1.67	7.00	1.67

Source: Processed by the authors

The explanation for each improvement aspect, from the most prioritized to the least prioritized, is as follows.

### 3.1 Data and Information Security

Table 1 shows that data and information security is the only aspect with a mean value above eight and the lowest standard deviation value. According to the representatives, improving the security is not necessary solely based on whether the current M-Pajak already has a good security or not. Instead, taxpayers' data and information safety are the most important thing. As a result, continuous system security improvement will always be needed from time to time. It is also mentioned that taxpayers, or citizens in general, currently may have a concern with the data leakage cases from various government institutions in Indonesia. Additionally, if the DGT implements integration with other parties, the DGT should be aware that the more the system is connected, the more opportunities for security breaches arise.

Currently, the M-Pajak uses multi-factor authentication (MFA), or specifically 2-factor authentication (2FA). There are several models of 2FA, which include the usage of token or one-time passwords (Nath & Mondal, 2016; Yin et al., 2020). To gain access to M-Pajak, the user needs to authenticate themselves through registered email by inputting a specific code after they input their credential (taxpayer identification number and password) on the M-Pajak login page. The representatives agreed that the authentication process the M-Pajak implemented is considered enough, at least at present, to secure taxpayers' data and information on M-Pajak.

### 3.2 Online Availability

The online availability of M-Pajak is essential, whether the taxpayers can access the service or not. Two representatives reported that they had unsuccessful application installation, stuck at 99% on the first try. One of those representatives is forced to install the application from external sites by downloading the M-Pajak APK file instead of installing directly from Google Playstore. That report explains that the first step of gaining access to the application needs to be improved. To a certain degree, it would be rendered useless for some taxpayers while the M-Pajak is available on Google Playstore, but it cannot be installed properly.

Another concern related to online availability is access to the internet, as M-Pajak strictly requires an internet connection to access the services. Most representatives agreed



that ICT infrastructure and internet availability are not the same in one region to other regions in Indonesia. They further explained that in remote locations or hinterland, the citizen even only receives 2G internet connection, which is significantly slower than broadband, 3G, 3.5G, or 4G internet connection.

### **3.3 Error Mitigation of Application**

Most representatives agreed that error mitigation is one way to make people comfortable, especially when inputting tax data on M-Pajak. It should be beneficial for taxpayers who encounter application errors, crashes, or freeze, so they do not need to input tax data from the start. Most of them suggested that the M-Pajak should be at least provide autosaving progress or checkpoint. The M-Pajak application does not come with an autosave or checkpoint feature. One of the representatives pointed out that the current version application might only a few cases of application error, freeze, or crashes arise as the current version still has minimal features. However, when more features are added, any application is prone to error. Another representative reported that the application crashed when he connected to the internet through Wi-Fi. That explanation shows that the current application has a problem with the ‘handshake’ process when the internet connection is switched from one provider to another. Fu et al. (2013) found that connectivity, which includes errors and crashes, is the top complaint reviewed in mobile-based financial applications.

### **3.4 Contact**

Most representatives explained that the existence of contact is an important aspect of mobile applications nowadays. The users of M-Pajak, the taxpayers, might encounter problems when operating the application. For instance, in the current version of M-Pajak, several taxpayers might have difficulties selecting the payment account on the e-billing service. Additionally, the taxpayers need a guide representative to use M-Pajak on some occasions. Some representatives explained that contact center assistance is necessary for the elderly, who are mainly not accustomed to the technology.

Some representatives suggested that the future M-Pajak should be embedded with live chat or live call as part of the ‘Kring Pajak’ contact service, if possible, ready 24/7. Another representative provided an idea to develop a chatbot to help taxpayers who encounter problems or difficulties when using M-Pajak. A chatbot is not a farfetched idea, and few countries have been studying and developing a chatbot specifically for tax. In South Korea, a promising development of chatbots for replacing the Q&A system (Jang & Lee, 2019) or assisting foreign small-medium enterprises with tax (Thai & Huh, 2021). In Chile, the government developed a chatbot to help citizens understand the Chilean tax system (Rafael et al., 2019).

### **3.5 Tax Features**

The full feature of the Indonesian tax system administration supposedly covers the overall service, at least including core business services. The core business service includes self-assessment services and official assessment services. Self-assessment services are taxpayer registration, tax calculation, tax withholding, tax reporting. Tax reporting is not only limited to submitting tax returns but also includes reporting or declaring specific data or information such as tax amnesty, tax incentive usage, tax facilities usage, etc. Thus, the official assessment services include tax audit, tax investigation, tax collection, or any processes initiated by the DGT. Additionally, tax services may provide information services such as regulation repository, news, or public information page.

Inside M-Pajak, the only core service available on the application is the e-billing service. On the other side, the information services include finding information about specific

tax return deadlines, taxpayer's profile, tax regulations, currency rates for tax purposes, or the location of nearby tax offices employing GPS. The contact service is currently not available yet on the application.

A few representatives explained that the current services provided by M-Pajak are already good enough to meet taxpayers' needs. However, more representatives explained that taxpayers want all tax services in their hands in one application most of the time. That statement aligns with one of Wicaksono et al. (2021) findings that several taxpayers in Indonesia hope they can access e-filing through a mobile application. A representative pointed out that the feature itself depends on the taxpayers' needs. More complex taxpayers may need a broader range of services, and, on the other side, some taxpayers only need to submit annual tax returns and nothing else. Other representatives also have a concern regarding feature additions. More features may be added or implemented later if they do not make the application response notably slow or heavy.

### 3.6 Page Access Speed

In the case of mobile-based applications, at least two approaches can be used to build the application, and that approaches can be mixed. First, the application acts as a web browser platform, which means that the assets required to display a page must be called from a remote location using the internet. The second approach is that the asset files needed to display a page are stored internally on the phone memory. The second approach still uses an internet connection to send data, receive data, or make a data transaction to the server. The first approach has the advantage of being more efficient in case of storage size, but the speed is varied depending on the internet connection. On the contrary, the second approach has the advantage of faster page loading. However, the application size becomes large due to the asset files which are included in the application package. In practice, a mixed approach is used to the extent that services inside an application are broken down into modules. Thus, the user may select which module they want and allow the user to download a portion of data so that the user can use the several services offline.

Currently, M-Pajak employs the combination of approaches mentioned. It acts as a web browser platform that can be seen when a taxpayer uses the GPS feature to find nearby tax office locations. In that case, the Google Maps page is embedded on the front page of M-Pajak, and the information about tax return deadlines, tax regulations, or foreign exchange rates is loaded in the same manner as to how a page is loaded in the web browser. On the other side, some assets such as the DGT logo or menu icons are included in the application package stored in internal storage. Most representatives agreed that the current version of M-Pajak is fast enough, albeit with a slowdown on some occasions. One of the representatives commented that as long as it does not take more than five seconds to load a page, it should be no problem for the user. Wang et al. (2021) supported that statement, stating that the endurance of people waiting is about five to eight seconds. However, some representatives are concerned that some taxpayers with internet connection difficulties may experience slow page loading, especially in rural or remote areas. Zhao et al. (2017) found that the longer the loading time in a mobile application, the more dissatisfaction the users.

### 3.7 Content

Özer et al. (2013) stated that content is heavily tied to how well the information is delivered to any application user. In the context of taxation, it includes general and specific information, such as text, guides, or demonstrations. Some representatives commented that the content delivered on M-Pajak is sufficient, which can be reflected by its simple language, systematic, and accuracy – especially for tax return deadlines and tax regulation. On the other

side, some other representatives also explained that some taxpayers might not understand several abbreviations. It will be better if the further update provides a page explaining abbreviations or glossaries to resolve that matter. Some representatives also pointed out that the guide or instruction is necessary for taxpayers. Proper guidance and instruction will allow taxpayers to fulfill their tax obligations and rights through the application correctly.

### **3.8 System Integration**

This area of improvement was suggested by some representatives when filling in the first round of questionnaires. The integration, in this case, to the extent that the tax system is connected to other systems outside DGT, either with public institutions, the private sector, or other parties. For instance, M-Pajak hopefully can connect with marketplace systems, regional government tax systems, law and notary systems, and various financial applications. Currently, M-Pajak is not connected with any other system outside. However, on a bigger scale, the current central tax system server is connected to a limited number of external parties, such as Tax Application Service Providers (TASPs).

From the answers to the questionnaires, the representatives agreed that integration with other systems might be necessary to a certain degree. However, it will cause a few potential problems. The first issue is related to data security and privacy. Some representatives explained that the more the DGT's system connected with the other parties, the more security issues will present. It can be illustrated when a hacker fails to steal data through M-Pajak. The hacker may get the data from the connected third-party system, as most people have no idea of the system security outside the DGT. Boiko and Shendryk (2017) and Baskerville et al. (2018) argued that system integration between different groups or parties is sensitive to data security. Lu (2017) also addressed that system security is one of the issues related to system integration in industry 4.0.

Another potential problem comes from marketplace systems, where they need to adjust their system to accommodate system integration. The marketplace owners might need to overhaul their systems which will incur extra costs for modifying. These costs, including human resource training, are barriers to implementing a new system (Kapetanopoulou & Kouroutzi, 2021). Over more, the government needs to formulate a new regulation to make the integration between the marketplace systems and M-Pajak come true.

### **3.9 Navigation**

In the first round of questionnaires, the 'navigation' aspect has the same mean value of being prioritized to be improved with the 'error mitigation of application' and 'data and information security' aspect. However, in the subsequent rounds of questionnaires, its mean value became lower. A representative commented that good navigation means that the user will not waste much time using the application, in this case, M-Pajak. Most representatives felt that current navigation is sufficient as the current M-Pajak features are still limited. However, better navigation is required if the tax feature becomes more complex.

Some representatives have written several suggestions related to the navigation inside M-Pajak. First, associated with the visual, the developer should make the icon bigger and make the background color not too flashy. Second, the sub-menu should not be hidden and should be made easy to be accessed. The next suggestion is to create a favorite menu, and it will allow taxpayers to go to where they want faster. Additionally, like the content aspect, the developer of M-Pajak should make a glossary page to explain any abbreviations or terms.

### **3.10 Simplicity**

The simplicity is related to how well M-Pajak makes fulfilling tax obligations and rights easy. Using a mobile application alone should simplify the process, cutting down the



time to visit the tax office or using another resource such as post or expedition service. Verkijika (2020) confirms that a mobile application's simplicity strongly influences user satisfaction and leads the user to continue using an application. However, this simplicity is highly related to the variety of taxpayers' needs and feature availability. Due to the limited features on the current version of M-Pajak, the simplicity got a relatively lower mean value than previous aspects. Some representatives commented that the simplicity aspect is already good. Some representatives made suggestions to increase the simplicity in future application updates. They suggest using prepopulated data from the DGT's database server, so the taxpayers do not need to input all the data manually.

### 3.11 Organization of Information

Most representatives commented that the information on M-Pajak is generally well organized. However, one of the representatives commented that information delivery in M-Pajak is not good enough. Some suggestions from representatives have been collected. One representative pointed out that using tags in tax regulation information will help taxpayers find related regulations. The category of regulation exists, but the user cannot touch it to show related regulations. Additionally, although it is more proper for the content and the tax features, a representative suggested that the M-Pajak provides the full text of regulations and allows the users to download them, rather than only providing the regulations' title and active status.

## IV. Conclusion

Using the Delphi method involving eight representatives, this research concludes that data and information security has been identified as the most prioritized aspect of M-Pajak service quality that needs to be improved by the DGT in further updates. Even though that aspect is the most prioritized, the DGT should not neglect the other elements because few problems have been addressed through this research, and the representatives have mentioned several possible solutions.

Using the Delphi method, this research has completed its purpose to suggest which area of improvement of M-Pajak should be prioritized. In general, the M-Pajak service quality measurement has not been studied extensively. As this research serves as an initial study, in the future, hopefully, more analysis can be performed with different dimensions, methods, or approaches to bring a holistic result. Furthermore, considering a limited number of taxpayer representatives involved in this study, a higher number of taxpayer representatives covering all regions in Indonesia or different classifications of taxpayers is therefore suggested for future research.

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