



Public Review of M-Paspor Application in Indonesia: Mobile Government, Digital Resilience, Cyber Security

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Abstract. Mobile government (m-government) has been widely employed by the Indonesian government to provide an excellent online public service for the past five years. On 27 January 2022, the Directorate General of Immigration Indonesia launched the M-Paspor application as an online passport service through an applicant's mobile phone. A passport applicant must fill out the digital form, lodge their documents, select the date, locate an immigration office, and payment process in the app, before their biometric data are collected at an immigration office. This netnography paper is reviewing the adoption of M-Paspor app from the user's perspective collected from 1032 sample comments in the google app review from February to August 2022. By using the N-Vivo, the data is analysed to explore user's experience, sentiment, and opinions by examining words, phrases, sentences towards the use of M-Paspor app in the context of m-government concepts. The result shows most users experienced technical issues and errors during login, registration, locating map, loading, uploading, verification, server, bugs, and data security. It recommends the M-Paspor app to be reconstructed according to stages of m-government maturity model, cyber security concerns, digital resilience, and to provide the web version.

Keywords: M-Government · M-Paspor · Passport · Cybercrime · Biometric · Digital Resilience

1 Introduction

The Indonesian government has applied the massive online public services which is accessible to everyone at anytime and anywhere. The public service in Indonesia was shifted from paper and walk-in procedure to the electronic government process based on the Presidential Instruction No. 3 of 2003 on National Policy and Strategy Development of electronic-Government [1]. Some government offices introduced the online process through an official website for a public service delivery to reduce maladministration and to promote transparency [2–4]. As the Indonesian government's innovations, the web-based online service has been transformed to an app, downloaded either in the Playstore or Appstore, using a smart phone in any aspects [5, 6]. Most government offices introduce their own official app which is accessible to public whenever people apply for

documents or permits from their offices, homes or elsewhere. These phenomena show that there is a shift from an e-government concept to a mobile government or shortly called m-government framework.

According to the Ministry of Communication and Informatics, the Indonesian government has built the digital ecosystem which consists of four strategic sectors include digital infrastructure, digital governance, digital economy, and digital society. The implementation of the Digital Economy Working Group (DEWG) at the G20 Presidency will be encouraged to create an inclusive, empowering and sustainable digital ecosystem. Currently, Indonesia focuses on strengthening the construction of digital ecosystem in the micro, small, medium enterprises in the context of dynamic capability, strategy and leadership [7, 8]. In contrast, this effort has to deal with some issues such as collaboration, security, ethics, and privacy [9, 10]. The digital ecosystem in the Indonesian government is less likely to survive the digital revolution and transformation because there are significant gaps among social partners such as government, state owned business, private sectors, and worker's unions [11]. The maturity of digital ecosystem in Indonesia has not been comprehensively designed and poor collaborative strategy among organizations.

With more technological advances in public service, the Directorate General of Immigration (DGI) Indonesia began several technical breakthroughs in issuing the travel documents or passports. In 2011, the DGI adopted the web-based passport application where applicants lodged their required documents and later, they came to collect their biometric data at an immigration office [12–14]. This web-based process was discontinued due to some technical issues as more passport applicants were increasing to use this app. Passport service returned to a walk-in process at an immigration office with a queue ticket to lodge required documents, then pay the invoice at the bank, and applicant came back to an immigration office for a biometric data collection. In the next three days, passport was issued, and an applicant collected their passport in person at an immigration office. A growing number of passport applicants with a manual process at an immigration office has raised significant complaints about the poor passport service. The uncertainty of passport manual application process at an immigration office cause wicked problems such as limited queue tickets, too many steps/processes, unclear procedures and requirements, too long waiting time and processing time, and manual payment through a teller at the bank.

In response to such issues, in 2019 the DGI introduced an online booking system of passport application in an app system called APAPO, that applicants can select the date and choose an immigration office to lodge their passport application. However, the DGI received a lot of complaints about the APAPO system which was unable to select the immigration office, date of visit, and limited numbers of applicant per day or quota [15]. In this case, there has been neither a technical evaluation nor a system development in APAPO. In December 2021, the DGI publicly presented the M-Paspor application as a trial [16]. On 27 January 2022, APAPO was replaced by the M-Paspor (Mobile Passport) application as an online passport service through an applicant's mobile phone [17]. A passport applicant must fill out the digital form, lodge their documents, select the date, locate an immigration office, and payment process in the app, before their biometric data are collected at an immigration office.

There are previous studies on the adoption of M-government in Indonesia which investigates the roles of online public service by a mobile phone application in Jakarta [18], m-government for local community [19], the effectiveness of mobile government for public participation [20], the evaluation of m-government in Halo Polisi (Hello Police) program [21], and the readiness of m-government in Indonesian public organizations [22]. To fill the gaps of m-government research in Indonesia, this paper is to review the adoption of M-Paspor by the Directorate General Immigration from the perspectives of mobile government concepts.

2 Research Methodology

Since the M-Paspor has been rolled out, yet there were no evaluations and research about the adoption of M-Paspor at immigration offices. To what extent the adoption of M-Paspor app has been widely practiced by the applicants who apply for the Indonesian passport at immigration offices. To improve the performance of online passport application and to fill the research gaps, this netnography paper [23] reviews the M-Paspor app by looking to user's experience, comments, and reviews in the Playstore. Data is analysed using the NVivo 12 Plus to explore user's experience, sentiment, and opinions by examining words, phrases, sentences towards the use of M-Paspor app in the context of m-government concepts and cyber security concerns.

3 Results and Discussion

3.1 Users' Sentiment in Using M-Paspor Application

M-Paspor app is one of the digital transformations in an online passport service in Indonesia to achieve two significant targets. This app is expected to reduce the crowds of applicants at an immigration office by providing the booking system menu (date and location) and implement the advance passport application process [24]. It explains that, at the first stage, from their homes, offices or elsewhere, an applicant can apply for an Indonesian passport by filling out the digital form, uploading required documents, selecting the date, choosing a preferred immigration office, and paying the passport fee in the app. After this step is completed, an applicant must visit an immigration office for a biometric photo and fingerprint process. In the next 3 working days after biometric data collections, when a passport is issued, an applicant will collect their passport in person at an immigration office. For more than 6 months, the DGI continues to promote this app on social media platforms and the walk-in service at an immigration office has been shut down. It shows that an applicant goes back and forth to an immigration office for two processes: biometric data and passport collection.

M-Paspor app is a one-step-ahead innovation over the old version called APAPO which was ineffective and always experienced several technical issues. In this sense, we review the performance of M-Paspor app from the perspectives of users who leave their comments in the Playstore. We collected randomly 1032 sample comments in English from February to August 2022. The result shows most users experienced technical issues

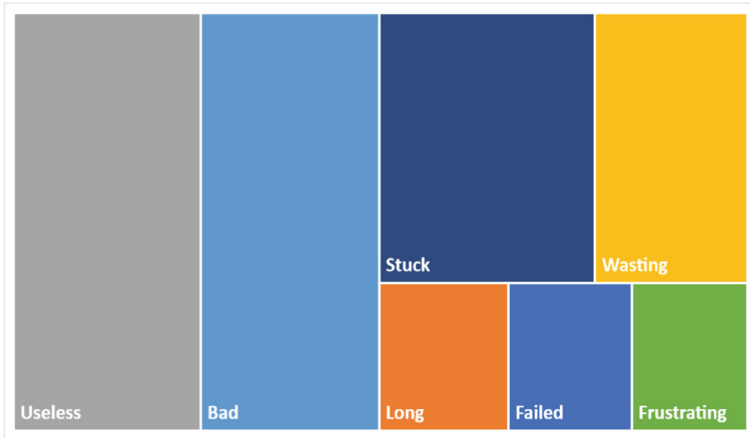


Fig. 1. Users' sentiment towards M-Paspor application.

and errors during login, registration, locating map, loading, uploading, verification, server, bugs, and data security.

The sentiment of users shows that 305 words are found negative, and 11 words indicate positive. As shown in Fig. 1, the user's sentiment shows the word "useless" dominates the user's feeling towards the M-Paspor App; only two words of "useful" are found in the comments. Also, the word "bad" is expressed by the users where they find this app is bad. Other four words, "stuck", "long", "wasting" and "failed", reflect the operation and process of this app so that they get frustrated with this app.

In the context of M-government, despite M-Paspor has allowed users to fill in their data to the system, but the long and stuck experiences could delay the process. Besides, M-Paspor is unable to increase the effectiveness of the performance of online public service delivery which should promote an interaction between the community and the government. M-Paspor may lack infrastructures which can become frequent problems in terms of system integration, insufficient bandwidth, and lack of mobile device capabilities, internet network, power, and memory limitations [25]. By looking at the users' sentiment dominated with their bad experiences, M-Paspor does not reflect attractiveness of mobile government because it is not fully aligned with other online services, and not providing clear, precise, and reliable information to users [26]. M-Paspor has not presented the best performance of mobile government services expected by users, which does not build public trust and poor information quality [27]. The user's interface of M-Paspor does not demonstrate simplicity, effectiveness, security, and responsiveness [28] which cause users feel dissatisfied with this app.

3.2 Technical Issues in M-Paspor Application

In Fig. 2, we investigate the user's reasons of commenting with extensive negative words towards the M-Paspor app. There are 1018 words expressing technical issues by users during the operation process of applying the Indonesian passport on the M-Paspor app. Overall, most users found "errors" during operating this app such as loading error and

finding location error. This app has 8 steps to complete the passport application process, but most users always experience an error in step 6 when opening maps, selecting the date, and choosing the location of immigration office. Users sometimes get stuck in step 1 when they log in uploading their ID Card (KTP), and in step 4 when they select the province.

At the first stage, email verification is also the technical issue in the registration process in which user’s email is invalid. When their email is valid, they never receive a verification code or one-time password (OTP) in their email. Server system is often error or time out, so users fail to continue their application process in each step, and they find bugs in some features. Users argue this condition takes a long time in processing the passport application via this app. The most problematic procedure is the limited quota of passport applicant per day and per month where users find that the quota is always unavailable. When they choose an immigration office for a biometric data collection process, users say the quota is always full.

M-Paspor app has demonstrated the digital innovation in the passport application process using a mobile phone without a walk-in process and promoted a paperless public service. It reflects the adoption of m-government interoperability modes [29, 30]: mobile Government to Citizen (mG2C), mobile Government to Government (mG2G), mobile Government to Business (mG2B), and mobile Government to Employee (mG2E). Despite a one-way communication, this app has a key instrument of interaction between mobile government and citizen or mG2C. However, it has not built an interoperability system in the context of mG2G because an ID card (KTP) of users is often unable to be verified in the database system of the civil registry office. This app is not verifying other required documents which should be interconnected with other relevant agencies. After completing the application process in this app, applicants must visit an immigration

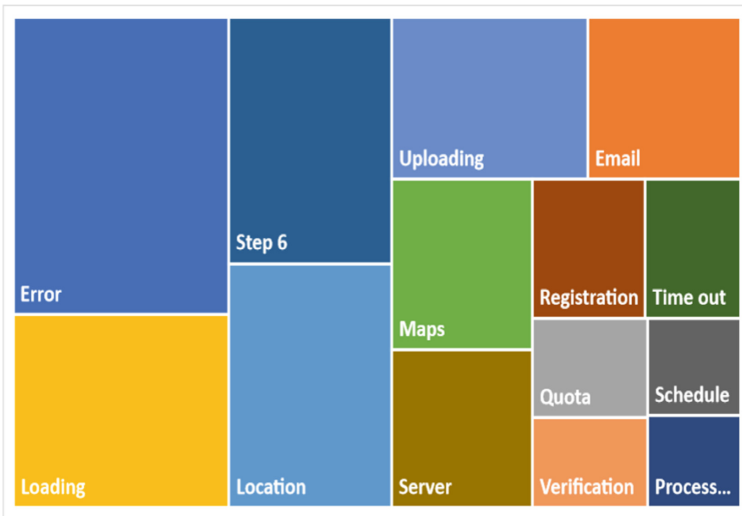


Fig. 2. Technical issues experienced by users.

office and bring the original documents for the validation and verification process by a front-line officer.

Since the review of the M-Paspor app has shown the poor satisfaction from users, this app is less likely to present continuance intentions which may cause public distrust. Model of m-government continuance intentions are built upon satisfaction, resulting in “trust”, where this satisfaction is constructed from five variables of conceptual model of m-government [31]. In the context of the maturity model of m-government [32, 33], this app has indicated the presence and disseminating information to public, interaction, and transaction steps. However, by looking at the technical issues, it has not reflected a vertical and horizontal integration, elementary phase, and involvement phase because this app does not provide the web version.

Despite poor satisfaction from users, there are benefits of this app as a mobile government innovation: transparency, less corruption, convenience, an increase of avenue easy and low cost [29]. Unfortunately, other than technical issues, this app has not considered cyber security concerns in terms of prevention of data breach, malware, virus, hackers attack because it lacks an internet security, network security and data privacy protection. Cyber security challenges in m-government practices consist of personalization, authentication and validity of mobile, data security laws and security of mobile government services [33–35]. Series of data breach, hacker attacks, security violation in Indonesia is increasing and public is worried about their data privacy. Currently, it is reported that data leakage of 17 million Indonesian Electricity Company (PLN) customers emerged around mid-August 2022. Besides, there are 1.3 billion SIM card registration data that have leaked, including the citizen identification number (NIK), telephone number, name of the provider, up to the date of registration [36]. It shows that the online public service in Indonesia is not equipped with strong internet security and network security to protect the system information and database.

Digital resilience is one of the sensible responses to prevent the enterprise’s information system and technology from cyber-attacks. The notion of digital resilience is much more involving with an interconnection with environments which focuses on a business strategy [37]. Also, as a survival, an organization require back-up systems and digital recovery plan for continuity of the system information. As the first stage, digital knowledge is the most fundamental aspect which leaders must comprehend the network so that they can secure the data. In this case, other than weak internet security and network security such as firewalls and antimalware software, digital resilience has not been designed for the M-Paspor app, including the interoperability system. It is believed that the data breach and cyber-attack will happen with the M-Paspor app because it is not proving the interconnected system with others.

4 Conclusion

The global digital innovation and public demands have triggered government institutions to provide public service delivery with wireless and mobile technologies. The adoption of M-Paspor app in Indonesia enables public to apply for an Indonesian passport by an online system through their mobile phones, at any time and everywhere. However, users feel dissatisfied with the M-Paspor app by using the word “useless” which dominates

the user's feeling towards the M-Paspor App. The result of this study shows most users experienced technical issues and errors during login, registration, locating map, loading, uploading, verification, server, bugs, and data security.

In this study, we recommend the M-Paspor app to be reconstructed according to stages of m-government maturity model, and to consider cyber security concerns by an internet security, network security and data privacy protection. The DGI Indonesia should provide the web version of passport application process with an interoperability system to support a vertical and horizontal integration among organizations. As well, to create a digital cultural organization, digital resilience should be constructed in the adoption of M-Paspor app with the back-up systems and interconnection environments in which public managers must understand first the network.

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