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Towards Identifying Factors Influencing Mobile Government Adoption: An Exploratory Literature Review

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Abstract: Mobile government enhances public sector activities by using mobile technologies, such as handheld devices, smartphones, and laptops that promise anytime, anywhere services. Mobile government solutions are successful if many users adopt them. For this reason, the determinant factors of adoption are extremely important. Despite many studies conducted by various researchers in the field of mobile government adoption, most have focused on technology or e-government adoption models as their basis. To fill this gap, the paper collects possible driving factors, grouped into key factors, for mobile government adoption. The systematic literature review, which included 54 journal articles, led to the identification of 12 key factors affecting mobile government adoption, comprising 87 components. Some of these replicate previously identified factors in technology and e-government adoption models, yet the literature presented us with new specifics in mobile and government, such as the benefits that mobility brings and the influence of trust on adoption.

Keywords: M-Government, mobile government, adoption, factor, citizen

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1. Introduction

Digitalization and the associated digital transformation cycles have already left their mark on our societies and technology, and as a daily driver of our activities, had its coming-of-age years ago. Having said that, it is exactly this continuous influence on the existing, tangible and intangible infrastructure of our societies, that will challenge us in the years to come. This is especially true considering the intersection of personal life-situations, business activities, and public service provision (Bhattarai et al., 2019). Citizens and businesses alike, are more and more engaged across borders, e.g., via job-related commuting of citizens, or the creation of new subsidiaries by companies in the other Member States. This and many more examples are reflected within the European Commission's Digital Single Market, which should provide the means of fair competition, business, and market access, as well as, privacy protection of all citizens within the EU. The implementation of the described initiatives is challenging (Lampoltshammer et al., 2019), but there is one more important aspect, which should not be neglected, adoption by citizens (Alzahrani et al., 2017). The services offered have to be ubiquitously available, meaning easy access, anywhere and anytime. One way of achieving this is by providing governmental services and interaction with citizens via smartphones. These devices have an unrivalled level of penetration within society and people use them as a means to communicate and interact in a plethora of ways via apps and internet-based services. However, mapping existing services to mobile variants is not enough. The complex endeavour of mobile government solutions needs to take into consideration a large variety of factors, which positively or negatively affect its adoption by citizens. It is thus the aim of this paper to shed light on these factors to provide an overview of crucial aspects when designing such services.

The rest of this paper is organized as follows: section 2 positions the paper considering the relevant literature. Then, the research methodology is presented in section 3, followed by an overview of the results of the analytical process in section 4. These results are further elaborated in more detail in section 5. The paper concludes with our final remarks and outlook.

2. Background

This chapter describes the key concepts of mobile government and adoption models, embedding our main research question for this study, "What are the key factors driving mobile government adoption?", with the following sub-question, "Which driving components could be grouped to which key factor?"

2.1. M-government

M-Government is a subset of e-Government. e-Government is the use of information and communication technologies (ICTs) to improve the activities of public sector organisations. In the case of m-government, those ICTs are limited to mobile and/or wireless technologies like cellular/mobile phones, and laptops (Kumar & Sinha, 2007). The question of whether e-government as we know it will now be replaced by m-government as the dominant mode or whether m-government will be just another access channel to public administration was already posed by an OECD report in 2011 (OECD & International Telecommunication Union, 2011).

M-Government encompasses the features of mobility, personalization, and location, and enables time-critical, location-based, and personalized services to be offered to citizens. Consequently, M-Government has significant advantages over e-government approaches (Wang, 2014). By translating e-government services to m-government services, these services could become mobile-friendly, accessible anywhere, and flexible in use for citizens, businesses, officials, and government employees (Tseng et al., 2008). In addition, it promises the provision of location-based government services, time-savings, on-time information and service delivery, and ease of use (Ntaliani et al., 2008). As a result, there is increased investment in m-government systems, that enable government agencies to provide public services to citizens, through multiple channels (Wang & Teo, 2020). M-Government reflects the various applications of mobile devices, in the context of public administration. The advent of smartphones and related technologies (global positioning system, messaging, facial recognition, voice messaging, sensors, etc.) is a foundation for specific public services, such as public location-based services like emergency alerts or user identification via fingerprints or near-field communication technologies (Wirtz et al., 2019). Various governments are reforming public administration to improve government services to citizens through the adoption of m-Government, where information has primarily real-time value, such as terror alerts, traffic information, road conditions, severe weather forecasts, and the like (Blackman, 2006).

2.2. M-government adoption models

Developing new mobile services, that are not accepted by users, increases the dropout rate and the design and implementation effort may go to waste (Kaasinen, 2009). To avoid this, acceptance of new services and technologies should be a major concern of government institutions and mobile system developers worldwide and must be considered upfront (Alqaralleh et al., 2020).

Many studies have proposed and examined various models to determine the primary determinants of adoption and implementation of information technology (IT). One of the most commonly used models in the IT acceptance literature is the Technology Acceptance Model (TAM) (Davis, 1989), which was adapted from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and was originally developed to examine technology adoption and use behaviour in the workplace context. A case study in Jordan, surveying 500 citizens using mobile government services, demonstrated the appropriateness of the basic elements of the technology acceptance model in the Jordanian m-government context. Higher levels of satisfaction lead to higher use and acceptance of enhanced mobile services (Alqaralleh et al., 2020). In order to harmonize the literature associated with the acceptance of new technologies, a unified model has been proposed, namely the Unified Theory of Acceptance and Use of Technology (UTAUT). The model assumes that four core constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of behavioural intention and that these constructs are moderated by gender, age, experience, and voluntariness of use (Venkatesh et al., 2012).

A more specific model, looking at the e-government adoption context is the GAM model (Shareef et al., 2011), which identifies the critical factors that influence the adoption of e-government in different levels of service maturity. This model served as a basis for a mobile government adoption model by combining it with UTAUT (M. A. Almaiah et al., 2020).

Results of a survey of 286 mobile government users in China show that information quality and online service quality, but not system quality, are positively related to citizen satisfaction, which in turn is positively related to perceived value. The survey was based on the transformation of the information systems success model into an m-government success model (Wang & Teo, 2020). In Tanzania, a conceptual framework that extends the mobile services acceptance model (MSAM) was proposed. The results show that security, ease of use, access, cost, infrastructure, and personal initiatives and attributes have the strongest impact on the adoption of m-government services (Ishengoma et al., 2019). Despite many studies conducted by various researchers in the field of mobile-government adoption, the results of the existing literature review show that many are based on more general models like UTAUT and TAM models to investigate the adoption of mobile-government services. The models incorporate different factors each, in different combinations. In fact, the existing literature on mobile government has not provided a comprehensive model of mobile government adoption (M. A. Almaiah et al., 2020). There is not yet a complete understanding of m-government adoption in the research literature. To close this research gap, the paper provides an overview, through a meta-analysis of the current research literature and identifies the full scope of factors mentioned in the literature in the specific area of mobile government adoption, by applying a grounded theory approach. Starting from this foundation, further empirical research in the field of m-government adoption is needed (Sultana et al., 2016).

3. Method

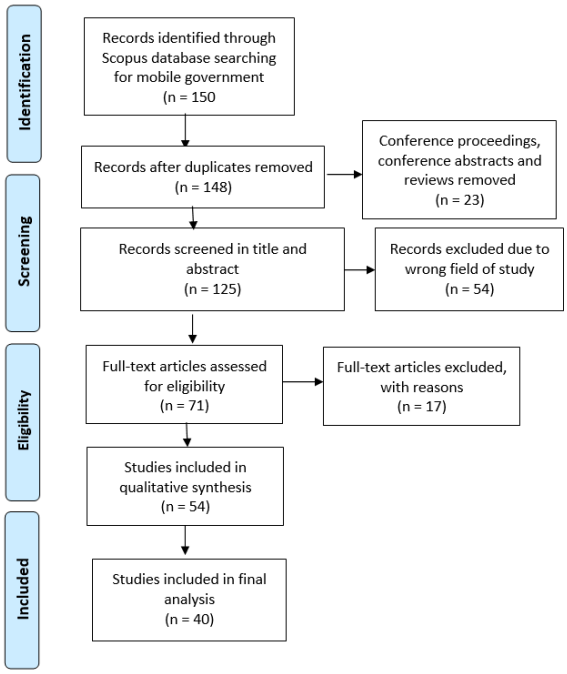
To address the previously mentioned research questions, a rigorous literature review was conducted. This allows for significant contribution to knowledge development, by understanding the existing publications on a specific topic and adds value, by being more than a simple sum of parts (Boell & Cecez-Kecmanovic, 2014; Webster & Watson, 2002). The five-stage grounded theory method was used as a guide for conducting the literature review as proposed by Wolfswinkel, Fortmueller, and Wilderom (Wolfswinkel et al., 2013). As suggested by grounded theory, the key concepts emerged inductively from the literature and were not deductively derived beforehand. The factors and grouping emerged during the analytical process of examining the content, as described in Phase 4 and Phase 5 below.

The first step was to define the criteria for the literature search. The focus was on mobile government solutions. The timeframe determined was the last 5 years (2016-2020), seeking only the most relevant and current publications. Since e-Government is a transdisciplinary concept, there was no initial discrimination of fields.

The second step in the Grounded Theory method is to conduct the search; this was carried out in February 2021 using the Scopus database. The following search string was used containing the different analogous concepts for mobile government in article title, TITLE (((mgov*) OR (m-gov*) OR (mobile AND gov*))) AND (LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016)): resulting in 150 sources.

The third step required selecting the sample of literature, where duplicates were removed. Next, conference proceedings, reviews, and conference abstracts were removed, with a total of 125 papers remaining: peer-reviewed articles and relevant journals. All these article titles and abstracts were screened, and those out of scope, due to belonging to a different field of study, for example, medical or anthropological studies, or not being available in English, were removed. This resulted in 71 eligible articles; only 54 papers were available, therefore downloaded, and analysed. Figure 1 details the literature search and screening process using the PRISMA flowchart (Moher et al., 2009).

Fig. 1. Literature search and screening process using PRISMA flowchart (Moher et al., 2009)



The fourth step was to identify, according to the literature, what were the factors affecting mobile government adoption. An open manual qualitative coding system of labelling and extracting factors affecting the adoption of mobile government took place and 87 concepts were identified. Fourteen studies did not show any relevant factors, these were not included in the final analysis.

Finally, the fifth step grouped these concepts into the identified key factors: quality, trust, awareness, security, mobile strengths, user experience, demographic aspects as moderating factors, service provision, image, available infrastructure, attitude, and perceived value of the service. The findings are synthesized in Table 1.

4. Results

The twelve key factors grouped 87 components, which were mentioned 154 times in the 54 papers analysed. User experience, mobile strengths, trust, quality, and security were mentioned most often across all papers. Mobile strengths and user experiences are the key factors that group most subcomponents (see Table 1). All key factors with their components are listed in the supplementary material (Eibl et al., 2021).

Table1: Key factors and their components

	# of mentioned components	# of References these are Present in
Quality	7	16
Trust	7	21
Awareness	2	7
Security	3	15
Mobile Strengths	17	22
User Experience	16	26
Demographics	8	8
Provision	4	5
Image	5	6
Infrastructure	5	11
Attitude	3	4
Perceived Value	9	13

5. Analysis/Discussion

All components were clustered into twelve key factors, which are described and defined in the following sub-chapters. Every key factor and its components will have an impact on mobile government adoption, either directly or by affecting other factors first. The relationship between the factors was not analysed, as the main objective was to first, create an overview of all possible components and second, to cluster them into possible categories to identify key factors that need to be considered in future mobile government adoption frameworks. Although the factors were derived from the existing literature on m-government adoption, many of them can also be found in more general technology adoption models, such as the TAM (Davis, 1989). Nevertheless, the factors are described from a mobile-government perspective, when mobile-government specifics have been mentioned. The research contributes to the existing literature by identifying the range of possible influencing components mentioned in the research literature on mobile government adoption, that are more diverse than the factors considered in existing models of mobile government adoption. The components and factors are not unique, in that they have already been identified in the literature, but

demonstrate the full range of possible determinants. Many of the identified determinants could also be determinants of e-government adoption in general, although, each factor in this paper has been described from an m-government perspective.

5.1. Quality

Service quality can be perceived, not as a single-dimensional factor, but as a multi-faceted factor (Al-Hubaishi et al., 2018). The main components aggregated here are interaction, environment, information, system, network, and outcome-oriented quality aspects. We can go one step further and split the factor into different service quality parameters, for example, protection of personal information, ease of use of the application, security of financial transactions, or transparency within the actions of the application (Chanana et al., 2016). In this context, information quality has shown not to increase the perceived usefulness of services, however, it increases the perceived ease of use (Al-Bar & A., 2018).

When it comes to the stability of the service, factors such as service recovery have demonstrated a positive influence on the overall loyalty of the users towards the service (Almarashdeh, 2020) and within the same context, reliability strongly influences the gratification of users (Alharbi et al., 2020). As well as these two aspects, the ubiquity of the service also plays an important role for the citizens to access the service virtually everywhere and anytime (Camilleri, 2019).

Finally, there is also the accuracy of information. Studies have shown, that the accuracy can be increased by the inclusion of multimedia content, such as video or supplementary audio, and thus can greatly support the understanding of the information conveyed, and in this way, contribute to overall user satisfaction (Chen et al., 2016).

The following components were linked to the key factor quality: service quality, outcome quality, information quality, service recovery, reliability, service ubiquity, and information accuracy.

5.2. Trust

Perceived trust represents a strong influential factor when it comes to influencing user intention concerning the usage of a given service (Almarashdeh & Alsmadi, 2017). This holds especially true concerning trust towards mobile government solutions, as users are exposed to potential privacy and security risks during data transmission (S. Z. Ahmad & Khalid, 2017); the use of these solutions might not always be voluntary but demanded by law, for example. Thus, an increased level of trust does not only lead to a higher user acceptance (Alqaralleh et al., 2020) but also contributes to the overall loyalty of citizens towards governmental services (Almarashdeh, 2020). Hence, one factor to foster trust is transparency, for instance, informing of access to information (e.g., in form of documents) about actions and decisions taken by the government (Mishra & Singh, 2019) concerning affected stakeholders (Chen et al., 2016). In this context, the information itself, that is distributed through the government service should also be current and reliable (Chen et al., 2016).

As the level of perceived quality goes up, the level of perceived risk goes down (Almarashdeh, 2020). The authors also show that perceived risk is heavily based on behavioural and environmental

influences: for example, malicious actions of service providers, e.g., concerning the provided user data, or limited-service availability due to limited or negatively affected internet/infrastructure accessibility.

Considering the impact of perceived reliability, (Shareef et al., 2016) demonstrated the importance of the overall trustworthiness of governmental applications, especially towards proper functionality and assured outcomes as announced by the service provider. What is particularly interesting, is that the authors found a strong indication of the varying strength of this impact, depending on the cultural background of the users.

Another facet of trust can be found in procedural fairness, i.e., fairness in the context of transactions (e.g., an online transaction in mobile government services). Perceived fairness overall increases the level of user satisfaction (Chen et al., 2016). In addition, timely (time-critical) responses, as well as increased precision of services via, e.g., positional data, support procedural fairness. In addition, the possibility of users providing their input (e.g., citizens) can further increase the overall level of procedural fairness.

The following components were linked to the key factor trust: trust in technology, trust in government, transparency, perceived risk, perceived reliability, and procedural fairness.

5.3. Awareness

The factor of awareness has been identified as a fundamental pre-condition, alongside other factors, that need to be in place for any mobile service to succeed (Al-dalahmeh et al., 2018). A significant positive relationship between the awareness of citizens towards existing mobile government solutions and the intention to use them could be observed (Shahzad et al., 2020). The authors further stress the importance of the information provided concerning the actual use-case and implementation of the mobile government service, paired with its transformational impact. Thus, strategic awareness campaigns should be considered as accompanying actions for mobile government service provisions (Mandari et al., 2017).

5.4. Security

The factor of security, like in other application domains as well, is one of the fundamental aspects to be considered during the development of services. Security and privacy can be seen as critical success factors for mobile government applications (Saeb Al-Sherideh et al., 2018). This point is further endorsed by (Onashoga et al., 2016), who argue towards the need for GDPR (or equivalent) awareness and training of government employees, as well as, the adoption of privacy-by-design for mobile implementations. In addition, the authors reflect on the situation of proper policy options, which need to be present as an embedding condition.

Security impacts the overall acceptance of a government-provided mobile service (Eid et al., 2020). In addition, the aspect of perceived security, i.e., the security "feeling" users have, when using the service, is not to be neglected. In this context, (Ishengoma et al., 2019) also discuss the relation towards trust, as the belief of non-existing or insufficient security and privacy coverage impacts the

relationship between public authorities and citizens. A positive effect on individual usefulness, based on the perceived security level or state of the offered service, could be confirmed (AlBar & A., 2018).

Security, privacy, and confidentiality have been subsumed in the factor security.

5.5. Infrastructure

Venkatesh et al. (2003) suggested that their construct "facilitating conditions" measures the degree to which individuals believe that the organizational and technical infrastructures exist to support them in using a technology system (Venkatesh et al., 2003). Existing literature has emphasized that ICT infrastructure should be stable to provide the foundations for e-government services (Ndou, 2004). Others have shown that the most common technical barriers to the development and diffusion of m-government are the lack of reliable telecommunications and cellular infrastructure (Sareen et al., 2013).

Specifically, in the case of developing countries such as India, a well-developed ICT infrastructure is required for the successful adoption and execution of m-government (Saxena, 2018). Many developing countries have the will, but not the necessary infrastructure to immediately roll out m-Government services across the country (Onashoga et al., 2016). It is argued that one of the biggest challenges to e-voting adoption in many developing countries is poor ICT infrastructure (S. Ahmad et al., 2015).

The key factor consists of the components: interoperability, smartphone penetration, facilitating conditions, and availability of resources.

5.6. Attitude

Attitude plays a significant role in predicting an individual's behavioural intention to use and adopt any information system or technology in voluntary situations like mobile government and e-government (Saxena, 2018). Attitude describes a person's positive or negative feeling about performing the target behaviour (Davis, 1989). Typically, individuals with strong positive initiatives and characteristics are more likely to try new technologies and are expected to have positive intentions to use mobile services (Ishengoma et al., 2019).

The key factor attitude included the components of behavioural intention as well as personal characteristics.

5.7. Perceived value

Perceived value is the overall assessment of a user's utility, based on losses and benefits that a rational decision-maker in the field of economics tends to maximize. This cost-benefit paradigm originated in the behavioural decision theory to explain individual choice decisions (Wang et al., 2020).

Perceived value is one of the antecedents of citizen loyalty because it decreases the need to search for different providers. Low perceived values increase the likelihood of a citizen switching vendors.

It is not only money, which is valued in terms of costs, but investments like time and effort (Almarashdeh, 2020).

Compared to e-government, m-government appears to be a more cost-effective choice for users, because access to mobile devices is easier, network coverage is greater, and user fees are relatively low (Trimi & Sheng, 2008). To ensure user acceptance of the price of services offered by mobile administration compared to normal office services, their value must be at reasonable prices (El-Kiki & Lawrence, 2006) and the cost of services must reflect the value of the specific services (Almarashdeh & Alsmadi, 2017).

Some technology adoption models acknowledge financial and other costs associated with using technology. The price-benefit construct has been defined in such models as the perceived trade-off between the monetary cost of the technology and the expected or experienced benefits of the technology (Venkatesh et al., 2003). However, since smartphone users can usually download and use m-government or city service apps at no financial cost, it appears to make more sense to focus on less tangible aspects of the cost-benefit analysis for potential users, like storage space, and privacy costs (Hou et al., 2020).

Based on the benefit/cost paradigm, users need to consider the perception of value at both the initial adoption and post-adoption stages (Wang et al., 2020).

The key factor is linked to the following components: citizen expectations, increased channels for interaction, enhanced civic engagement, cost, voice opportunities, beliefs of benefits, demand for government applications, and citizen participation.

5.8. Image

The image plays an important role in m-government adoption. This relates to aspects such as the relative advantage of using mobile government over other more traditional options (Mandari et al., 2017). Furthermore, this relative advantage has a positive effect on the intention of using these systems, as citizens are interested in the benefits they perceive, such as information available anywhere and anytime (Mandari et al., 2017). This image perception is tied to the idea that using m-government services somehow enhances one's status and prestige in society (Mandari et al., 2017). In addition, as these benefits become more visible, citizens increased awareness promotes the adoption of this technology. Therefore, governments should provide information and make citizens aware of the existing services, not only to increase transparency (Alharbi et al., 2020) but also because visibility is key, especially in rural areas (Mandari et al., 2017). Nevertheless, this visibility does not only respond to government promotion of the service, but also, because of citizens reporting on their use to others, and the consequences of doing so, as the results are perceived to be tangible (Mandari et al., 2017).

Social Influence, as mentioned in the UTAUT model, influences citizens' desire to use a service, as it relates to the perception of the opinion and beliefs that important others have on one's actions (S. Z. Ahmad & Khalid, 2017; Venkatesh et al., 2003). This is a key factor to consider, especially in small communities (Hou et al., 2020).

The key factor incorporates the following components: relative advantage, visibility, result demonstrability, and social influence.

5.9. Demographics

Demographic variables, such as age, gender, and income have been shown to have a moderating effect regarding mobile government adoption. Some studies have shown that males have a greater tendency to adopt these services than females (Saxena, 2018). Furthermore, Saxena found that in India the age group of 31 to 40 years of age are more inclined to adopt these mobile services (Saxena, 2018).

Cities with higher poverty levels and lower levels of education have a lower mobile capacity (Mossey et al., 2019). This goes hand in hand with the need for governments to address all of their population, including the most vulnerable, making sure they are more inclusive, leaving no one behind; the progress must be felt by all segments of society (Camilleri, 2019): this includes technology-savvy users, minorities and the elderly (Mossey et al., 2019). Governments should seek ways to address the digital divide and appeal to all citizens, regardless of age, income, education, and gender.

The key factor demographics contains the components gender, age, household income, poverty, human skills, education, minorities, and digital skills.

5.10. Provision

This key factor includes those aspects that must be present for governments to be able to offer mobile services., like a supportive legal and policy framework (Onashoga et al., 2016; Ryu et al., 2020; Saxena, 2018) or government support, especially in developing countries (Mandari et al., 2017). M-government services must be launched with a tight legal infrastructure and regulatory norms to back their implementation, citizens' awareness regarding surveillance and privacy should be addressed (Saxena, 2018). Moreover, governments must shift to mobile government, and laws and regulations should be updated to recognize and include digital transactions and electronic documents (Onashoga et al., 2016). Studies have shown that citizens respond to fair and equal treatment, thus, governments implementing m-Government solutions must address both distributive and interactional justice (Almarashdeh, 2020).

The key factor provision enclosed the components of the legal framework, policies, justice, and government support.

5.11. Mobile Strengths

Mobile government, as its name entails, differentiates itself from other forms of government service due to its mobility: the opportunity to access this service at any- time, anyplace, and from one's personal, portable device (Iyamu, 2020). Mobile devices are widespread and allow for governments to innovate in new ways to reach their citizens, offering new forms of delivering services, and the

demand for improved government services is increasing (Almarashdeh & Alsmadi, 2017). This mobile strength allows citizens and stakeholders to have access anywhere and at any moment, without wasting time visiting government offices, also, governments can flexibly deliver public services without a fixed location (Mishra & Singh, 2019).

The portability of this government service delivery is a convenient option for citizens (Glood et al., 2016), providing high accessibility (Ishengoma et al., 2019; Styrin & Kostyrko, 2016) and reachability. Moreover, the speed at which users can access the services has been key also for Government use, as citizens may provide emergency information, real-time information, as well as be informed of urgent situations [25, 43]. The increased penetration of mobile devices over computers is also visible in developing countries; the government can reach more citizens through the mobile provision of services than through traditional e-government (Chanana et al., 2016). Although there are many positive aspects regarding mobile government, some authors highlight the limited computational capacity of portable devices (Iyamu, 2020; Saxena, 2018).

The key factor encompasses the components: flexibility, immediacy, real-time information, portability, any location, speed, convenience, access, active control, multimedia services, reachability, limited computational capacity, emergency management, tangible services, service ubiquity, and timeliness.

5.12. User Experience

User experience reveals those components that promote m-government adoption from the user or citizen perspective. Some of these components include the responsiveness of the system (Alharbi et al., 2020), user satisfaction, which has a high impact, especially in developing countries with low IT development (Van et al., 2016), and the convenience of using this system over another (Shahzad et al., 2020).

Technology adoption models previously described, such as TAM and UTAUT, have grasped the importance of user experience: a system's success depends greatly on the user's perspective of the benefits and ease of use. This naturally extends to the adoption of m-government services; many authors have empirically tested the importance of these aspects for citizens. Some of these are applying the perceived usefulness, catering to the user's needs (Saeb Al-Sherideh et al., 2018) and perceived ease of use (Eid et al., 2020), how easy a user determines the system to be (Chen et al., 2016). Also, effort expectancy (Talukder et al., 2019), how much effort using the mobile government service will require, and performance expectancy, the extent to which the user benefits in performing a certain task (M. Almaiah et al., 2020), will impact their intention to use a service.

Perceived compatibility defined by Rogers (Rogers, 1995), is the degree to which an IS/IT innovation is perceived to match the needs and perceptions of potential users.

The key factor user experience groups following components: personalization, user-centricity, information overload, simplicity, responsiveness, citizen satisfaction, perceived effectiveness, overall effectiveness, performance expectancy, effort expectancy, self-efficacy, convenience, perceived ease of use, perceived usefulness, trialability, perceived compatibility, and user acceptance.

6. Conclusion and Outlook

The literature review presented allows for an analysis of possible factors determining citizens' adoption of mobile e-government services. Ninety-one components are clustered in twelve different factors, which will influence the adoption of m-government. Most research focuses on the extension or combination of technology adoption models, consisting of a few interconnected factors, while this paper highlights the variety of possible determinants. This meta-analysis of possible components, clustered in 12 key factors, to provide a comprehensive overview of the variables that impact mobile government adoption, is considered the first contribution of this work. Furthermore, by identifying factors and components guided by the grounded theory approach, it was possible to find a factor that had previously been underrepresented. The key factor was summarised under the term "mobile-strengths", which includes as components the strengths of mobile devices (mobility, real-time, location-awareness...), which will lead to higher adoption rates when addressed. Any future m-government adoption model could benefit from the inclusion of this factor, especially compared to other, more generic technology adoption models that do not take mobile strengths into account. The identification of this factor could be considered as the second contribution of this work. This study allows for the formulation of a conceptual framework exploring the factors for m-government success and how these factors influence the adoption of m-government services. The limitation of this study is that it is based on the secondary analysis of research papers on m-government adoption. Thus, the results are only complete after the proposed framework is supported by the collection and analysis of primary empirical data, best carried out in countries with different developing stages. Factors like infrastructure might be more important in developing countries compared to countries where mobile penetration rates are highest. Only journal papers were considered, which were identified by the search string "mobile government", but future research could explore conference papers and other combinations of keywords.

A comprehensive mobile government adoption model, one that considers both a broader number of influencing factors and the characteristics of mobile devices, might offer a promising next step in advancing the current research on mobile government adoption. Another research possibility is the creation of a publication network analysis, via the analysis of references as proposed by the valuable feedback from one of our reviewers. This could be supplemented by a keyword analysis, an analysis of research areas, or an analysis of the type of publication, e.g. based on (Flensburg & Lomborg, 2021).

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