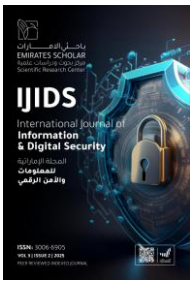

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Investigating the impact of technology readiness on citizens' behavior intention towards potential m-government Solutions

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ABSTRACT

Purpose - This study aims to investigate the factors influencing citizens' intentions to use mobile government (m-government) services. The specific objectives include proposing a framework for evaluating m-government acceptance, identifying factors affecting citizen motivation to use m-government applications, and examining the model's applicability in Egypt to determine significant factors impacting consumers' intentions to use m-government application services. Design/methodology/approach - This research adopts a quantitative approach with a descriptive and positivistic stance to establish objective truths. A fact-finding technique is utilized for a cross-sectional analysis of the current condition from March to May 2023, with individuals serving as the analytical unit. Primary data is collected through questionnaires distributed to respondents, who complete a standard questionnaire with closed-ended questions. The research model is constructed based on existing literature, and hypothesis testing is conducted to analyze the data. Findings - The analysis reveals that optimism and discomfort significantly influence adoption intentions towards m-government services. However, personal innovativeness and insecurity are deemed insignificant in this context. Notably, a strong correlation is observed between behavioral intention and actual m-government usage behavior. Originality/value - This study contributes to the existing literature by proposing a comprehensive framework for evaluating m-government acceptance, which incorporates both technological and individual factors. The examination of the model's applicability in the Egyptian context provides valuable insights into the specific factors that drive citizens' intentions to use m-government services. The findings can inform policymakers and government agencies in developing strategies to enhance m-government adoption and improve public service delivery.

Keywords: *Adoption, M-government, Behavior intention, Usage behavior, Technology acceptance.*

1. Introduction

People who use mobile phones and mobile internet services are multiplying quickly. Governments will need to modify operations to meet the need for convenience and contact efficiency for all parties as mobile access has become a standard component of daily life (Kushchu and Kuscu, 2003; Elbatanouny et al., 2023). Advances in e-government-oriented technology are taking place at a significant rate worldwide (Isagah, and Wimmer, 2017). E-government initiatives leverage cutting-edge information technology, particularly web-based Internet applications, to improve basic governmental operations (Chiu *et al.*, 2017). These features now expand the usage of wireless and mobile technologies and open up a new route: mobile administration (m-government) (Wang and Teo, 2020).

To supply innovative and value-added technology for delivering high-quality governmental services to citizens and companies, the Egyptian e-government initiative was formally established in 2001 (Abdelghaffar and Magdy, 2012). There are already more than a hundred transactional services available to Egyptians. The e-government platform's structure is created to accommodate this wide range of services in dual languages (English and Arabic), to expand in the future to reach up to 700 services (ICT. 2022). Through phones and tablets, the e-government offered a very small number of functions, such as providing SMS voting information (Abdelghaffar and Magdy, 2012; Elbatanouny et al., 2023).

To successfully deploy e-Government, public organizations must comprehend the relevance of the integration and transformation across all e-Government building elements, including IT strategy, procedures, technology, and people (Azab *et al.*, 2009). People believe that public acceptance, favor, and use of the service are essential for the country's technological progressivism (Gerger, 2021). This investigation has practical ramifications. There is a gap in our knowledge of the factors affecting people's use of mobile government services in developing countries, according to a review of the literature (Alyoubi, 2015). Numerous studies have examined e-government adoption, but not the services offered by mobile governments. This study intends to investigate what are the critical elements that influence citizens' behavior intentions toward m-government services to fill this gap. This study aims to accomplish the following research goals: Assessing the significant factors that influence consumers' intentions to use m-government application services includes (RO1) identifying factors that influence citizen motivation to use m-government applications, (RO2) proposing a framework for evaluating m-government acceptance, and (RO3) looking into whether the model is appropriate for Egypt.

2.Literature review

According to research, E-government is an increasingly prevalent phenomenon that has captured the interest of several governments (including policymakers, legislators, and citizens) across the world (Mandari and Koloseni, 2021; Elbatanouny et al., 2023). It presents itself as a very useful endeavor. Several governments have been inspired to establish e-government as a viable means of enhancing the services nation-states offer to their citizens, businesses, and other governments both inside and outside of their borders. These governments have made and will continue to make significant financial and political commitments to this goal (Liang et al., 2021). The following sections seek to shed light on how citizens get encouraged to use technology, specifically to acknowledge automating citizens' governmental services. The body of research examines earlier investigations into the uptake of mobile government services in underdeveloped countries as well as the technology readiness index (TRI).

2.1 Adoption of mobile government services in developing countries

The main elements affecting the shift from e-government to m-government are the proliferation of mobile devices, the growth of mobile internet, and the creation of mobile net apps and services. In comparison to traditional

wired PCs and internet penetration rates, the penetration rates of internet-enabled mobile devices are gradually increasing. This extraordinary increase has altered how people view the functioning of mobile phones. It now serves as a convenient way to connect to the internet for data transfers, email exchanges, and conducting business in addition to voice communication (Kurunananda and Weerakkody, 2006; Heeks, 2002; Busolo, 2021).

Mobile technology is enabling governments to provide citizens with better, quicker, and timelier information as well as transactional services as demands for better public services rise. M-government enables governments to offer services to citizens wherever and at any time. The use of mobility in e-government services benefits underdeveloped countries more than industrialized ones in comparison (Desta et al., 2009). By using wireless internet technologies, developing nations may avoid investing in the costly infrastructure needed for regular internet access. This saves them money and time. Therefore, m-government projects help to overcome e-government obstacles such as a lack of technological infrastructure and a low degree of citizen preparedness (Kurunananda and Weerakkody, 2006).

Even if m-government offers a variety of advantages, this does not mean that the difficulties should be overlooked. When it comes to creating and executing m-government, a lot of problems do occur. Because it is different from the e-government development infrastructure, the infrastructure for mobile government must be properly developed. M-government is severely constrained by privacy concerns and the limitations of mobile devices' screens (Isagah, and Wimmer, 2017).

2.2 Technology acceptance

A review of the research conducted by (Flavian et al., 2022), an individual's psychological state plays a crucial role in determining their intention towards adopting and utilizing new technology in their daily lives. A person's behavioural intention is the backbone of the majority of studies on technology adoption. Theories claim that understanding of the technology and full usage of it are the primary steps in an individual's process of increasing adoption (Ahmed et al., 2021). Researchers have extensively studied the adoption process, which demonstrates that it is a process that develops gradually and requires a series of works rather than one that happens all at once (Rogers, 2003; Flavian et al., 2022). Electronic commerce (e-commerce) has changed the way private and multinational companies do business. This is because of the growth of technology and the Internet's importance (Homburg et al., 2017; Gerger, 2021). Many governments across the world have begun to embrace mobile government (m-government) as the next step in improving their relationships with citizens and the quality and delivery of their services (Fei, 2021).

The adoption of technology and innovations is examined using a variety of models and theories (Venkatesh et al., 2012; Belanche et al., 2020), especially when it comes to M-government (Mandari and Koloseni, 2021). Many factors are recognized in accordance with previous theories, including the theory of reasoned actions (TRA), technology acceptance model (TAM), diffusion of innovation (DOI), and unified theory of acceptance and usage of technology (UTAUT) (Flavian et al., 2022). However, research suggests that the mental readiness of the user is more important than any characteristics of the technology itself when it comes to successful technology adoption (Wong, 2016). According to (Kaplan and Haenlein, 2020), individuals who have the mental readiness to deal with any situation have a greater ability to take control of their own learning and develop the confidence required to effectively engage with technology, regardless of its features, usability, or functionalities. According to studies, individuals who are mentally ready to utilize technology are likelier to do so (Parasuraman, 2000). Therefore, the purpose of this study is to evaluate the technological readiness index (TRI) to other existing theories in order to analyze citizens' acceptance of m-government services.

2.3 Technology readiness index (TRI)

According to the Technology Readiness Index (TRI), "people's propensity to embrace and use new technologies to accomplish goals in home life and at work" (Parasuraman, 2000). It combines both optimistic and pessimistic beliefs on technology. It is assumed that individuals ' beliefs varies. The interacting beliefs of an individual collectively determine their inclination to engage with new technologies (Parasuraman and Colby, 2001). Additionally, research demonstrates that these beliefs may be divided into four categories: innovation, optimism, discomfort, and insecurity (Parasuraman, 2000).

Optimism is explained as "a positive view of technology and a belief that it [technology] offers people increased control, flexibility, and efficiency in their lives" (Parasuraman and Colby, 2001). It usually expresses positivity about technology. Optimists, According to (Kaplan and Haenlein, 2020), people are prepared to accept new technologies if they find them entertaining, useful, and reliable. ***Innovativeness*** is explained as "a tendency to be a technology pioneer and thought leader" (Parasuraman and Colby, 2001). This factor measures how much people think they are at forefront of technology adoption. According to (Flavian et al., 2022), innovators exhibit a readiness to employ technology. ***Discomfort*** is explained as "a perceived lack of control over technology and a feeling of being overwhelmed by it" (Parasuraman and Colby, 2001). This factor often assesses people's feelings of anxiety and worry when faced with technology. As stated by (Al-Emran et al., 2020), people who experience anxiety, tension, or embarrassment when using technologies will not accept using them on a regular basis since they feel averse to them. ***Insecurity*** is explained as a "distrust of technology and skepticism about its ability to work properly" (Parasuraman and Colby, 2001). Regarding technology-based transactions, this factor focuses on potential issues that individuals may have. According to (Kaplan and Haenlein, 2020), people who are doubters tend to reject new items, while people who are highly insecure about technology tend to avoid using it.

3. Research design

Based on the review of the literature, Figure 1 shows the proposed research model, which is based on five hypotheses. The objective of this study was to evaluate technology readiness (TRI) on citizens' acceptance of m government services, assessing technology readiness index theory (TRI) is valid in the context m-government. The research question was: "What factors influence or inhibit the intention of citizens to adopt m-government services in Egypt?"

The objective of this research was to assess the impact of technology readiness index (TRI) on the acceptance of m government services by citizens.

The research aims to investigate the factors (1) optimism (2) innovativeness (3) discomfort (4) insecurity. The behavioral intention to adopt m-government in Egypt is thought to be influenced by these factors. Figure 1 shows the suggested research model that will be put to the test. According to the model, several hypotheses emerged, which are: (H1) There is a significant relationship between optimism and Attitude; (H2) There is a significant relationship between innovativeness and behavioral intention; (H3) There is a significant relationship between discomfort and behavioral intention; (H4) There is a significant relationship between insecurity and behavioral intention; (H5) There is a significant relationship between behavioral intention and m-government usage behavior.

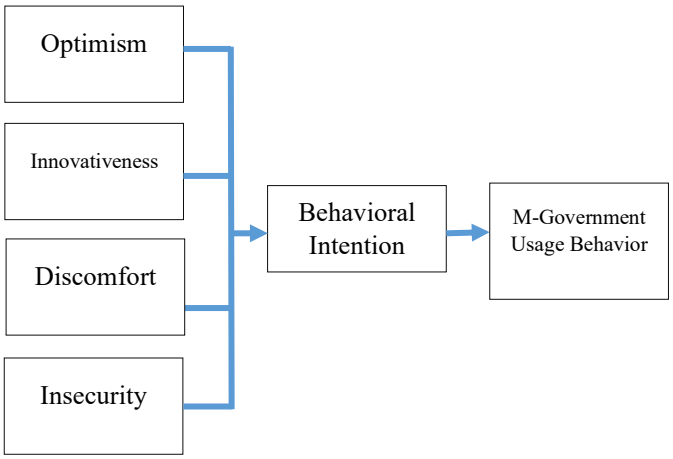

Figure 1: Research Model

A quantitative descriptive method was adopted in this study. Following a cross-sectional study, the

data were collected at a specific point in time during the months of March, April, and May 2023. The primary objectives of this study were to demonstrate the managerial and theoretical implications of citizens' perceptions of m-government and their intention to adopt it. The study aimed to gather empirical data using a positivist approach that involves creating law-like generalizations equivalent to those observed in the fields of natural and physical sciences (Saunders et al., 2009).

It uses a quantitative research strategy. This study is descriptive and has a positivistic outlook. To arrive at accurate facts, this study uses a fact-finding approach to generalize the results of a cross-sectional analysis of the current situation through March, April, and May 2023. The managerial and theoretical objectives of this study were to explicate the perceptions of citizens towards their m-government and their intention to adopt it. Individuals are the unit of analysis in this study. To perform statistical analysis, the researchers **administered** questionnaires to collect primary data. The respondents record their responses to a standardized questionnaire, which consists of a series of closed-ended questions.

The introduction of the questionnaire provides information on the study's objectives. The elements that promote m-government behavior intentions are discussed in the next section. The measures used to evaluate these issues are adapted from earlier research to fit the circumstances of the current investigation. Each variable is rated on a 5-point Likert scale (the number of the items varied on each scale). The next section assesses citizens' m-government attitudes and behavioural intentions. The past studies that are used for the scale measurement are: ***Optimism*** (Lin and Hsieh, 2006), ***Innovativeness*** (Jackson et al., 2014), ***Discomfort*** (Parasuraman, 2000), ***Insecurity*** (Chen et al., 2014), this study used the adoption Intention scale developed by (Park and Pobil, 2013), and the Usage behavior scale was taken from (Park and Pobil, 2013).

The pilot study has fifty participants. The aim is to guarantee that the questionnaire's questions are clear and logically arranged. The population of this research is made up of young, technologically literate Egyptian adults. The sampling method is not statistically likely. The researchers uploaded a link to the questionnaire online, where it was distributed. According to (Krejcie and Morgan,1970), this sample size is adequate for populations bigger than 10,000, hence 384 samples are required. Data collected through structured questionnaires were analyzed by the researchers using statistical software called SPSS 22. To evaluate their hypotheses and gain insight into the respondents' behaviors', perspectives, and intentions about social media advertising, they ran several analyses.

4. Research results

Based on the results, 400 questionnaires were completed out of the 500 that were distributed, which will provide us with sufficient data for further analysis. This means that this study has a response rate of 80%. This study conducts various analyses to investigate the research problem and test the hypotheses. Such analysis includes validity, reliability, correlation, and structural equation modeling. In this study, the participants come from different socio-demographic backgrounds as shown in table 1.

Table 1: Descriptive Statistics for Mobile Application Development

Item	Category	Frequency (N=400)	Percent %
Age	Under 20	32	8.0
	20 - less than 35	227	56.8
	35 - less than 50	87	21.8
	50 - less than 65	44	11.0
	65 and above	10	2.5
Education	Elementary School	1	.3
	High School	64	15.8
	College Degree	104	26.0
	Graduate Degree	101	25.4
	Postgraduate Degree	108	26.7

Item	Category	Frequency (N=400)	Percent %
	Other	22	5.9
City	Cairo	86	21.5
	Alexandria	294	73.5
	Other	20	5.0
Gender	Female	173	43.25
	Male	227	56.75
Marital	Single	239	59.8
	Married	145	36.3
	Divorced or Separated	13	3.3
	Widowed	3	.8
Children	None	243	60.8
	One	36	9.0
	Two	79	19.8
	More than two children	42	10.5
Job	Manager/Executives	67	16.8
	Clerks	37	9.3
	Professionals	18	4.5
	Academics	102	25.5
	Self Employed	20	5.0
	Technician	2	.5
	Other	154	38.5

In this study, the research conducted the reliability and validity analysis to assess the suitability of utilizing scales from previous studies for the purpose of measuring variables. Based on the factoring analysis and the Cronbach alpha, the results showed that the scales are free from error and they assess what they are supposed to assess. Table 2 illustrates the outcome of both analyses.

Table 2: Validity and Reliability Test

Variables	KMO	AVE %	Cronbach's Alpha	Items	Factor Loading
Optimism towards technology	0.820	64.049	0.858	OTT1	0.570
				OTT2	0.643
				OTT3	0.674
				OTT4	0.674
				OTT5	0.641
Personal innovativeness	0.700	72.520	0.804	PIN1	0.747
				PIN2	0.660
				PIN3	0.769
Discomfort	0.823	65.059	0.856	DIS1	0.846
				DIS2	0.844
				DIS3	0.825
				DIS4	0.877
				DIS5	0.861
				DIS6	0.757
				DIS7	0.757
				DIS8	0.788
				DIS9	0.857
				DIS10	0.853
Insecurity	0.830	76.070	0.895	INS1	0.791
				INS2	0.802
				INS3	0.704
				INS4	0.746
Behavioral Intention	0.700	72.720	0.810	BIN1	0.745
				BIN2	0.774
				BIN3	0.662
Attitude	0.729	78.216	0.861	ATT1	0.746
				ATT2	0.792
				ATT3	0.809

Based on the responses to the questionnaires, the individuals agreed with the studied variables and their impact on their intentions to use m-governmental mobile applications. Table 3 illustrates the variables and the descriptive statics regarding the responses.

Table 3: Descriptive Analysis for the Research Variables

Research Variable	N	Mean	Std. Deviation	Frequency 1	2	3	4	5
Optimism towards technology	400	4.0250	.73193	3	13	45	249	90
Personal innovativeness	400	3.9150	.76762	3	19	61	243	74
Discomfort	400	3.453	1.121	27	111	139	109	14
Insecurity	400	3.4825	1.01601	10	60	123	141	66
Behavioral Intention	400	3.8050	.74388	3	16	91	236	54
Attitude	400	3.8200	.80885	3	20	95	210	72

Before conducting further data analysis to test the hypotheses, the research checked for normality to confirm that the data that is to be used is free from error. It verifies and determines if a data set is normal. The Kolmogorov-Smirnov test of normality, which assesses the normality assumption for samples with more than 50 observations, is one of the most often used techniques for verifying the normality of a data collection. According to this analysis, the data in this study that is to be analyzed is accurate to use for hypothesis testing. It is illustrated in table 4.

Table 4: Formal Testing of Normality

Research Variables	Kolmogorov-Smirnova		
	Statistic	df	Sig.
Optimism towards technology	.293	400	.000
Personal innovativeness	.277	400	.000
Discomfort	.316	400	.000
Insecurity	.285	400	.000
Behavioral Intention	.304	400	.000
Attitude	.260	400	.000

Another normality test used is multi-collinearity between the independent variables found in the research model. It is a crucial premise that must be accepted for the model under consideration to prevent information redundancy. Testing VIFs according to Table 5 showed that multi-collinearity between the independent variables was not an issue, as all of the study variables' VIFs were less than 5. There are no errors in the data.

Table 5: VIF values for Research Variables for Before Data

Independent Variables	VIF
Optimism towards technology	1.936
Personal innovativeness	1.561
Discomfort	2.047
Insecurity	1.256

Before beginning the structural equation modeling, confirmatory factor analysis (CFA) is essential to make sure the factor structure the researcher has created as a measuring scale for each dimension is accurate (SEM). They employed the AMOS 24. The CMIN/DF, which represents the minimum discrepancy and is obtained by dividing chi-square by the degrees of freedom, was computed through the application of the covariance method subsequent to the conduct of confirmatory factor analysis (CFA). The resulting value was determined to be 2.234.The statistical analysis revealed that the p-value, which represents the probability of obtaining a discrepancy as significant as the one observed in the current sample, was 0.000. Additionally, the comparative fit index (CFI) revealed a value of 0.932, whiles the Tucker-Lewis index (TLI), also referred to as the Bentler-Bonett non-normed fit index (TLI), and was calculated to be 0.921. Furthermore, the Bentler-Bonett normed fit index (NFI) was determined to be 0.884. The study reports that the Goodness of Fit (GFI) value was 0.842, while the Adjusted Goodness of Fit Index (AGFI), which assesses the degree of fit in relation to the number of estimated coefficients or degrees of freedom needed, was 0.808. When attempting to estimate the population, the root means square of approximation (RMSEA), a useful metric in covariance structure modeling, reveals the level of precision present and was determined to be 0.056. The value of the root mean square residual (RMR) revealed a value of 0.070; it is a measure of the model's accuracy and shows how the sample variances and covariance deviated from estimations given under that assumption.

The investigation's working hypothesis will be put to the test. (H1) There is a positive significant effect between optimism and behavioral intention with P-values less than 0.05; (H2) The effects of innovativeness on behavioral intention insignificant; (H3) There is a positive significant relationship between discomfort and behavioral intention with P-values less than 0.05 (H4) The effects of insecurity on behavioral intention insignificant; and (H5) Behavioral intention has a positive significant effect on m-government usage behavior it is illustrated in table 6.

Table 6: SEM Analysis for the Research Variables

			Estimate	P	R^2
Behavioral intention	<---	Optimism towards technology	1.281	***	
Behavioral intention	<---	Personal innovativeness	-.309	.069	.714
Behavioral intention	<---	Discomfort	0.339	***	
Behavioral intention	<---	Insecurity	-.036	.369	
M-government usage behavior	<---	Behavioral intention	.939	***	0.99

5. Conclusion

The Egyptian e-government program was officially launched in 2001 to provide creative and value-added technologies for providing high-quality public services to individuals and businesses through various usages of mobile applications (Abdelghaffar and Magdy, 2012). E-government is now widely acknowledged as a key enabler of citizen-centric, collaborative, and seamless modern governance. This implies not only a significant change in how government interacts with its citizens but also a complete overhaul of internal processes and how organizations conduct business both internally and externally while interacting with other members of the community (Azab *et al.*, 2009). To better understand the critical aspects influencing Egyptian individuals' behavior and intentions toward m-government solutions. This study aims to accomplish the following research goals: Assessing the significant factors that influence consumers' intentions to use m-government application services includes (RO1) identifying factors that influence citizen motivation to use the m-government application, (RO2) proposing a framework for evaluating m-government acceptance, and (RO3) looking into whether the model is appropriate for Egypt.

According to research objective one, the literature states that several constructs could be derived from different technology acceptance among individuals, which were coined by different scholars to help understand the dynamics that influence the introduction of new systems in new societies (Isagah, and Wimmer, 2017). Numerous academics have claimed in previous studies that several reasons may be influencing the broad adoption of m-government services, including (Abdelghaffar and Magdy, 2012; Karaiskos et al., 2009; Karunananda and Weerakkody, 2006). These elements, which can be modeled after the TRI, include performance expectations, risk, and innovation. To accomplish research, aim two, this study created a research model using these variables.

The testing of the hypotheses was guided by both the body of existing research and the literature. An analysis of the study's data revealed a significant relationship between optimism and discomfort impact the citizens' adoption intention toward m-government services. Innovativeness and insecurity are, nonetheless, regarded as being unimportant. Behavioral Intention has a positive significant effect on m-government usage behavior. The research implications that emerged explain that when it comes to using mobile applications many individuals do not worry. It has been a common practice among them by default due to the spread of digitalization. As a result, the intention to use this m-government application is not significantly influenced by insecurity. In addition, the research implies that using mobile applications is not innovative but might be the only means of getting certain services. To the adoption intention of m-government services, the role of inventiveness as a mental facilitator is insignificant. According to this conclusion, practically every market sector nowadays is undergoing a digital transition, which is a typical and essential procedure. Therefore, not just the technological pioneers and thought leaders but many others are forced to use various technologies by default. Therefore, innovativeness is not a significant factor to use this m-government application. It will become a mandatory routine in the country. Because this is a common behavior in a post-pandemic setting, Practitioners should develop new technologies for the majority of people in addition to those who are early adopters. Furthermore, the findings of this

study indicate that citizens are optimistic about m-government; they believe that m-government can make post-pandemic life more suitable, interesting, positive, pleasurable, and accessible. This study has also developed insights that imply that people see applications as a beneficial tool that improves customer service quality. According to (Kaplan and Haenlein, 2020), optimism is essential for individuals to generate motivation for the utilization of technology; it is important for individuals to believe that the utilization of new technology results in advancement and effectiveness in their daily lives. Therefore, consumers hold optimism, which impacts their intention positively to technology acceptance.

There are some limitations to this study that need to be considered. This study's research model, which evaluates citizens' perceived readiness for m-government, is based on (Parasuraman, 2000) framework. Different outcomes might be obtained by using different models or frameworks. To strengthen the reliability of findings and expand the scope of the study in this field, recommended that future research incorporates additional theories (including more variables) to evaluate the readiness of citizens. Another limitation is that this study uses a mono-research approach -a quantitative approach. As a result, rather than focusing on the "why," this study instead examined the elements that influence the intention to utilize technology. It is suggested that future studies assess the justification for the usage of mobile applications by conducting a qualitative research approach. In this study, the main population under study is youth and young adults. This population is already digitally accepting of new ideas and technological services compared to the older generations. So the limitation of this study is that it focused on the young age group, neglecting the older generations. Future studies can focus on older generations in the upcoming research. This study focused on metropolitan cities of Egypt, neglecting rural cities that might find it difficult to adapt to technology. So, further studies are needed among this group of consumers. This study is a cross-sectional study, studying consumers' opinions about the idea of the application. Future studies can do a before and after study to compare people's expectations with actual performance.

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