

Examining the mediating role of user attitudes in the relationship between social media characteristics and e-project management adoption: An empirical analysis

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ABSTRACT

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This paper explored how social media characteristics affected users' attitudes toward the utilization of Greater Amman Municipality (GAM) e-project management located in Jordan. Data were collected through online survey, involving 456 GAM e users, and analyzed using partial least squares-structural equation modelling. Results showed user attitudes and social media characteristics (reliability, security and website design) as direct significant antecedents of GAM e-project management usage. Furthermore, three direct significant relationships were shown between social media characteristics and GAM e-project management usage. Results also demonstrated three direct significant relationships between social media characteristics and users' attitudes. Next, results showed one direct significant relationship between users' attitudes and GAM e-project management usage. Three indirect significant relationships between social media characteristics and GAM e-project management usage were detected via mediation of users' attitudes. This study recommended (among others) paying attention to other social media characteristics that have impact on GAM e-project management usage, namely, responsiveness, privacy, and site content.

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1. Introduction

Over the past few years, the Internet has become a popular method of communicating within all social domains. Meanwhile, the private sector has shown success in technology use. Such success, according to Nguyen et al. (2024), has obliged the public sector to also utilize technology. Indeed, the public sector has been known to employ the most updated technology and internet in their delivery of electronic services. In fact, in recent years, government-delivered electronic services have been the subject of interest among many (Tola, 2020; Al-Zagheer et al., 2024). In fact, the Information Communications Technology (ICT) domain has undergone significant changes, and these governments delivered electronic services that have been made possible mainly because of the Internet.

Improved public service delivery and higher transparency within government are expected by the citizens, civil society, as well as other relevant parties. Hence, governments are obliged to use the correct blend of ICTs into public administration systems as an effort to fulfil these demands. In this regard, e-government entails the use of government of (ICTs) as an effort to achieve improved public services and stronger bonds with the citizens, while also making the citizens more involved in the

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decision making process (Al-Bashayreh et al., 2022; Aguerre & Bonina, 2024). It has been reported that on a weekly basis, four and a half hours would usually be spent by people visiting social networking sites, and this amount of time is longer than that spent on e-mail related activities. Based on this finding, it can be perceived that social media sites impart major impact on the various aspects of the life of people, including on their purchase intention (Almajali et al., 2023; Al-Nsour, 2024). Equally, government agencies, business organizations, non-profit organizations and academics found social media a very important source of data. Hashim et al. (2025) added that through social media analytics, government agencies could find understanding what the public feel about the new themes, and gather crucial information.

The use of smart mobile devices is increasingly common these days. Such usage has led to new behaviors in the market, new ways of interacting, as well as new experiences. With the advancements of mobile technologies, purchasers not only could share information, but they could also connect with brands, while businesses are able to reach, inform, engage, sell to, study, and support the customers using innovative ways. The past thirty years have seen major transformations of some services provided by the public sector because of the Internet – the Internet provides a fertile ground for government agencies globally, in introducing new services and applications. These e-project managements are more efficient and with lower cost (Aguerre & Bonina, 2024; Alghizzawi, 2024). For the context of Jordan, the Greater Amman Municipality or GAM is the body responsible for initiating the e-government services system. The municipality is among the important government institutions in Jordan. By March 2021, all services of the Greater Amman Municipality are provided electronically, and among the provided services include the e-payments of license renewal of professionals, traffic violations, building and roofing tax, and others (Amman, 2021). Additionally, as indicated by Ammancity (2022), the citizens of Jordan could request for other services to the municipality online, such as pruning tree request, building maintenance request, vector control service request, aside from lodging complaints.

Greater Amman Municipality, outbreak of Corona virus (COVID19), started to offer various electronic services on its website and its social media pages, and there are 134 services provided (Ammancity, 2022). Users need to register and have an account before using these services and those who opt for the traditional method cannot benefit from these provisions. Factors like security, reliability and web design plays an important role in this regard. As a result, users began to go to social media and websites to seek services electronically (Abdeljawad et al., 2021).

Accordingly, the main objective of this research was to examine the impact imparted by social media characteristics (reliability, web design and security) on the intention of users towards the use of e-project management provided by GAM. Additionally, this study examined the mediating role of user attitudes in the relations between social media characteristics and e-service adoption. Accordingly, the achieved outcomes in this study could guide the policy makers in GAM to understand the impact imparted by social media on the use of electronic services among the citizens of Jordan. By doing so, they can formulate strategies so that usage of e-project management among these citizens could be increased.

Following this introductory section is a section that depicts the proposed conceptual framework and provides a comprehensive justification for the proposed relationship among the exogenous and endogenous constructs. The methodology guiding this research is described in section 3, while the ensuing section 4 provides the elaboration on the analysis and results of the obtained data – this involves the use of both measurement and structural model. Discussion, implications to both theory and practice, limitations and further research can be viewed in section 5. This study is concluded – alongside a discussion on its major findings – in section 6.

2. Conceptual Framework

The following Fig. 1 displays the conceptual framework proposed in this study. The subsequent subsections describe each hypothesis in the proposed model.

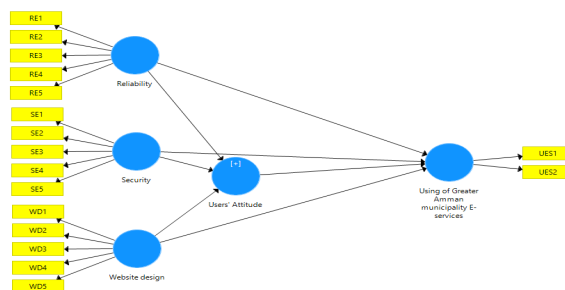


Fig. 1. The Research Model

2.1 The impact of social media reliability on the attitude of users

Reliability means the confidence level of social media users concerning the accurateness of the information that a given website provides (Livingston et al., 2018). In examining the effect of OSN activity on offline events, access to Online Social

Network (OSN) data would be required. Additionally, social network analysis needs trustable OSN data. The goal is to create effective social and informational networks using acquired datasets, while also ensuring their completeness. Weber et al. (2020) analyze the use of OSN data to create traditional social networks. Moreover, the authors presented a measurement case study in order to demonstrate the impacts of the dependability of OSN data on social network analysis. Indeed, the direct impact of reliability on beneficiaries' perceptions has been affirmed in studies including Chung and Koo (2015) and Weber et al. (2020). Heale and Twycross (2015) relevantly indicated that inter-rater reliability of instrument is linked to scores' consistency. High-quality studies require validated and reliable data. Ensuring validity and reliability in multi-platform social media research can be challenging due to factors such as self-selection and accessibility of data; all these factors restrict study generalizability. This is especially true when multiple platforms are involved. The following hypothesis was thus formed:

H_{1a}: *Social media reliability has positive and significant effect on user attitude towards the use of Greater Amman Municipality e-services.*

2.2 The impact of social media reliability on the use of e-services

Examining the effect of reliability on e-project management usage, Nasidi et al. (2021) mentioned the shift of business transactions into virtual business transactions from the conventional physical business transactions owing to the prevalent Internet and IT use. However, the increase in online customers has made reliability nearly risk-related. In fact, customers perceive reliability as an indicator of the trustworthiness of a given internet website. Reliability can be perceived as the extent of the confidence of customers towards the products and services provided by a given website and its related transactions (Shi & Liao, 2017). It also could be understood as the pledge to assure dependable, correct and on-time services to users (Al Balushi & Ali, 2016; Al Mansoori et al., 2023). Reliability is providing users with accurate and timely services. Dependability has a direct correlation with customer satisfaction. According to Ali (2019), reliability is the second most important aspect in influencing client happiness, following e-service quality. Al Balushi and Ali (2016) study the quality component while assessing e-government services for users and citizens. They discovered that reliability is the most essential component in determining quality. Reliability includes the accuracy of service promises (stock availability, prompt delivery, billing, and product information). The reliability component has a direct positive impact on perceived e-service quality and client satisfaction. As such, the hypothesis below was put forth:

H_{1b}: *Social media reliability has a positive and significant effect on the use of Greater Amman Municipality e-services.*

2.3 The impact of security on the attitude of users

Security has an impact on the attitudes of users. Hence, assurance of security is important, as can be exemplified in the provision of guards during parades, or the issuance of stock or bonds in the financial world. Benson et al. (2015) accordingly reported that the increase of registered users on social networks and the increase in the time spent by users on these networks have led to the increase in the business value of personal information and commercial opportunities on these networks. Additionally, there was a positive correlation of security notifications. Al-Hawary and Al-Menhaly (2016) demonstrate the impact of security on attitudes. Previous research has shown that security can have a direct impact on the views of beneficiaries (Burak & Ipek, 2021; Al-Malahmeh, 2022; Al-Amawi et al., 2024). A positive connection involving security notifications has been reported. Personal information has business value and social networks have commercial potential, and the significance of personal information and social networks to businesses increases with the increase of registered users and time that these users spend on social media. The hypothesis below was hence formed:

H_{2a}: *Social media security has positive and significant effect on user attitude towards the use of Greater Amman Municipality e-services.*

2.4 The impact of security on the use of e-services

Security means the confidence level of social media users towards preserving the confidentiality of personal information (Zhang & Gupta, 2018). Pleger et al. (2020) found in their study that their study respondents preferred digital public services to the traditional public services. Notably, the evaluation of end-users towards public services is greatly affected by factors including service qualities, pricing and data security/protection. Meanwhile, data security and protection are a pressing issue for the public sector that deals with private information such as tax statements. In this regard, the notion of security denotes trust assuring the safety and security of the information of citizens or customers from violation (Al Balushi & Ali, 2016; AlSokkar et al., 2025). Meanwhile, new applications are introduced into the market on a daily basis, and these applications gather data of users, which has led to the issue relating to openness and the handling, security, and sharing of private information. As stated by Elsantil (2020), the impressions of customers on the security of this sector are very important. Several studies have been conducted to assess e-project management involving university websites, although each only examined a subset of the websites in that area. In contrast to prior research, Shayganmehr and Montazer (2021) offered an improved approach for measuring the readiness of electronic services for Iranian university websites, which may analyze the websites' wider elements. E-project management is now a critical component of e-government adoption. Government services

are critical resources for effective inter-governmental synchronization among governments, agencies, individuals, groups, and other entities in any country. Notably, identifying the hurdles that may affect the implementation process of these services. The hypothesis below was hence formed:

H_{2b}: *Social media security has a positive and significant effect on the use of Greater Amman Municipality e-services.*

2.5 The impact of website design on the attitude of users

Website relates to the display of services on social media, whereby e-project management location's visibility on social media platforms has impact on the provided information (Moura et al., 2016). The usability and accessibility of website design have been examined using various methods, and the methods were to understand the user, focusing on the identification of design problems. Designers need to choose the method that best fits their goal because each method has different strengths and weaknesses. Among the factors to be considered in choosing the right method include the website nature and the stage of the design process. It is necessary that the design process occurs repetitively. Meanwhile, feedback from multiple usability evaluations will guide the improvements of the website. In evaluating web usability, a multi method approach was employed in this study. This approach was chosen to gain converging findings for various related design issues, in addition to achieving exceptional insights on other major factors that may affect trust and use of users of a given website, as also mentioned by Vu et al. (2021). In a related study, Ali (2019) examined the involvement of students of University of Bahrain in numerous activities, based on the need level of these students and the type of provided e-services, such as online registration, course assessment surveys, and so on. Results showed that five out of six variables examined in the study, including website design, significantly affected the level of satisfaction and attitudes of the students towards the e-project management provided. Based on this discussion, the hypothesis below was hence formed:

H_{3a}: *Social media website design has positive and significant effect on user attitude towards the use of Greater Amman Municipality e-services.*

2.6 The impact of website design on the use of e-project management

Contact with customers is initiated through a website, and a website needs to have a number of elements in order to serve its purpose effectively. Among the important elements of an effective website include readability, navigation, simplicity, graphical representation, organization, purpose, and content usefulness (Pitkänen, 2020). A study conducted by Ali (2019) looked into the impact of website design on e-project management usage, and the author found that quality assessments and satisfaction of users are greatly affected by website design which affects the interest of customers. Website design concerns the website's degree of usefulness, access, comfort, ease of use, and beauty. All of these criteria make up the quality of the system. In multimedia, interactivity entails the capability of the user of the website in interacting with the process (Izquierdo-Yusta et al., 2021). The interactive components of a website will affect its quality. Web designers need to be aware of the impact of website design and quality on the reputation of the organization, because a simple website is more favored by customers and is more likely to be used. Also, companies with simple websites are more trustable to customers, making it a necessity to provide customers with a visually appealing and high-quality website. Website quality has a positive and significant impact on the interest of customers in making a purchase. Hence, the following hypothesis was proposed:

H_{3b}: *Social media website design has positive and significant effect on the use of Greater Amman Municipality e-services.*

2.7 The impact of the attitude of users toward the use of e-project management

The impact of attitudes of users towards e-project management usage within Jordanian context, were examined by Majdalawi et al. (2015). Meanwhile, studies (e.g., Chen et al., 2018; Alabdallat, 2020; Al-Okaily et al., 2021; Mohammad et al., 2022; Al-Rawashdeh & AlHalaseh, 2025) showed direct effect of attitudes of users towards e-project management usage. Additionally, in Malaysia, Wong and Jackson (2021) examined expectations types and their impact on the perceptions of the citizens towards government e-services. Furthermore, they showed a significant association between user attitude and use of e-government services by the Department of Lands and Survey. This indicates the impact of user attitude on the use of e-project management provided by the Department of Lands and Survey. Chen et al. (2018), and Majdalawi et al. (2015) found significant connection between user attitude and e-project management usage, which implies that the attitude of user towards e-project management use will determine the actual use or non-use of users of the services. In this regard, users with a negative attitude will obtain the services the traditional way, that is, go to the municipality building for the services. On the other hand, users with a positive attitude will likely utilize the e-services. As such, the following hypothesis was proposed:

H₄: *Users' attitude has a positive and significant effect on the use of Greater Amman Municipality e-services.*

2.8 Impact of social media characteristics on the attitude of users

Past studies have discussed the link between the attitudes of users and its antecedents. Accordingly, three antecedents of the attitudes of users namely reliability, security and website design, all of which are the characteristics of social media.

Muhammad et al. (2021) discovered that the components of enjoyment, self-enhancement, fear and trust were the antecedents to the adoption behaviors of social media platforms, both positive and negative behaviors, among 46 consumers involved in the study. It is common for customers to regularly interact with innovative social media platforms, and based on their blend of cognitive and emotional attitude characteristics, these customers would be involved in either positive or negative adoption behaviors. The link between attitude and attitude toward social media advertising was examined by Ariffin et al. (2022) and the authors found that the functions of attitudes represented by the dimensions of utility, self-defense, value expression, and religiosity, positively and significantly affected the attitude towards social media advertisements. Additionally, the authors reported a significant positive effect of attitude towards social media advertising on the intent to purchase. Further, the authors reported insignificance of knowledge function.

The result in previous studies (Mou et al., 2017; Ali, 2019; Al-Gasawneh et al., 2022; Alghizzawi et al., 2024; Altwaijri, 2025) indicates that through the attitudes of users, the reliability of social media affects how customers use e-service. This means that if the social media websites that provide services through reliability are identified by improving the user attitude, the demand of users to use e-project management will increase. In addition, previous studies indicate that social media security affects the way users use e-project management through their attitudes. Mo et al. (2017), and Alghizzawi et al. (2024) also reported similar outcomes. Users' demand for using e-project management will increase if the sites are affirmed to be secure because the attitude of the user would be more positive towards a secure site. This positive attitude towards the social networking sites that provide the e-project management will make users more supportive towards using the e-project management provided by the sites. Moreover, an organized, tidy and elegant website design (of the site that provides the e-services) will increase the interest of users to use the e-project management provided by the site, as the characteristics possessed by the site (organized, tidy and elegant) increases user attitude towards it. Similarly, a user with a positive attitude towards a given site is likely to encourage other users to use e-project management provided by the site. Based on the above discussion, we propose the following hypotheses:

H₅: *User attitudes mediate the impact of social media characteristics (i.e., H5a: reliability; H5b: security; and H5c: website design) on the use of Greater Amman Municipality e-services.*

3. Methodology

3.1. Sampling and data collection

A conceptual framework was proposed in this study, while the study respondents were selected using a non-probabilistic and self-selection sampling method, specifically, this study employed the convenience sampling method, where the selected participants were those whom were available – all participants were Amman city residents with experience of using the Greater Amman Municipality e-services. Data were obtained through a survey which was circulated online to respondents using social media platforms. As reported by Ammanity (2022), there were 2,000,000 users of Greater Amman Municipality services. To ensure content validity, the survey was pre-tested with two IS domain experts. It was then pilot-tested with 30 potential participants in order to verify that the information gathered addressed the questions under investigation and offered face validity, as well as to make sure that the questionnaire items were readable and clear (Sekaran & Bougie, 2016). Two questions were modified based on the pilot study results.

It should be noted that all of the study participants willingly participated in the survey. The participants were informed on the study purpose in a cover letter attached to the survey. They were also informed on rights in participating. There were no monetary incentives or rewards provided to the participants.

3.2. Measurements

Overall, the survey questionnaire included 29 items divided in two parts. The first part of the questionnaire included four (4) close-ended questions on the demographic information of the study participants, particularly on the Gender, Age, educational level and the internet experience of the participants. Nominal scale was used for these four (4) items. The second part included the conceptual framework constructs and items. Specifically, items on Security and Website Design were adopted from the work of Pitkänen (2020); items on Use of e-project management were based on Inkinen et al. (2018); items on Attitudes were adopted from the work of Davis (1989). Finally, items on Reliability were based on Weber et al. (2020). The constructs were all measured using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

4. Data Analysis

This study employed partial least square structural equation modelling (PLS-SEM) in data analyses, with Smart-PLS statistical software version 3.0. The measurement model's relevance was determined, and the structural model was validated (Henseler et al., 2016). Specifically, the measurement model highlights the connection between constructs and their respective indicator variables, while the structural model highlights the links between latent variables (constructs).

4.1. Measurement model

The first phase in SEM-PLS is assessment of measurement models (Hair et al., 2020). The phase illustrates the individual indicator reliability, Cronbach’s alpha, composite reliability, and average variance extracted (AVE), for the purpose of ascertaining reliability, convergent validity and discriminant validity. A higher value of CR than 0.6 is desired to test reliability. To examine convergent validity, the estimates of AVEs have to be higher than 0.5 and parallelly supported by CR with values higher than the AVEs. As can be shown in Table 1, the item's loading is greater than or equal to the recommended value of 0.7. Then, the convergent validity was tested and assessed by evaluating the Cronbach’s alpha, composite reliability, and AVE, and based on the results (0.7, 0.7, and 0.5 respectively), convergent validity was affirmed.

Table 1
Convergent Validity

Constructs	Cronbach's alpha	Composite reliability	(AVE)
Using GAM E-Services	0.825	0.919	0.851
User Attitude	0.902	0.925	0.712
Reliability	0.911	0.923	0.707
Security	0.889	0.919	0.697
Website Design	0.858	0.897	0.637

Fornell-Larcker criterion was applied in discriminant validity testing for the measurement model, and the obtained values (see Table 2) were greater than the correlations with other constructs. Additionally, the Fornell-Larcker criterion, as described by Fornell and Larcker (1981), is underpinned by the notion that each construct shares more variance with its corresponding indicators than it has with any other construct.

Table 2
Discriminant Validity

Constructs	Using GAM E-Services	User Attitude	Reliability	Security	Website Design
Using GAM E-Services	0.922				
User Attitude	0.497	0.844			
Reliability	0.324	0.496	0.841		
Security	0.337	0.319	0.260	0.835	
Website Design	0.487	0.524	0.268	0.276	0.798

Generally, measurement model analysis outcomes were demonstrating the fulfilment of the measures of all construct’s reliability and validity of the specified criteria. This shows that these measures were appropriate for the proposed structural model.

4.2. Structural model assessment

Structural model evaluation involves evaluating the predictive relationship between constructs presented in the model of the study. Accordingly, the structural model of the study, the analytical results, and the path coefficient and the explained variance R square can be viewed in the following Fig. 2. As can be observed, the constructs of Reliability (RE), Security (SE), User Attitude (UA), Using GAM E-project management (UES), Website Design with an R-square of 0.34. According to the results, the structural model fulfilled the criteria proposed by Falk and Miller for variance level explained (R-squared ≥ 0.10 and predictor variable which illuminates $\geq 1.5\%$ of variance) (Falk & Miller, 1992).

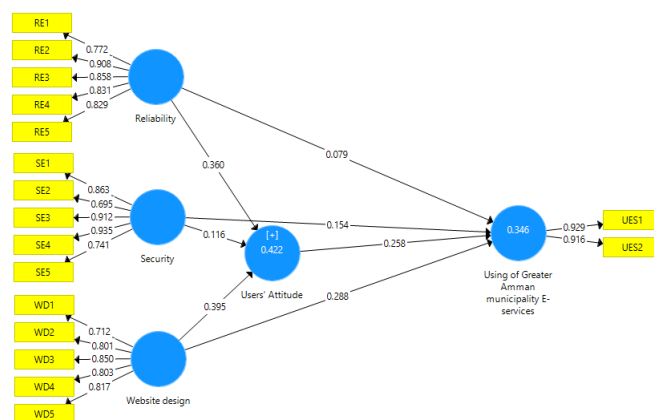


Fig. 2. The Structural Model

The evaluation of the structural model involves the testing of the proposed study hypotheses. Hair et al. (2021) accordingly recommended the use of a structural model in evaluating the effects of linear regression of the dependent variables on one

another. Additionally, this study employed PLS bootstrapping with 5000 bootstraps involving 456 cases. This was to show results associated with paths and their significance level. As evidenced in Table 3, seven of the ten proposed hypotheses were supported.

Table 3
Results of Hypotheses Testing

Hypotheses	Path coefficients	T Value	P Value	Result
H1a: Reliability → User Attitudes	0.360	4.497	0.000	Supported
H1b: Reliability → Using E-Services	0.079	0.812	0.417	Not Supported
H2a: Security → User Attitudes	0.116	1.25	0.212	Not Supported
H2b: Security → Using E-Services	0.154	1.591	0.112	Not Supported
H3a: Website Design → User Attitudes	0.395	4.204	0.000	Supported
H3b: Website Design → Using E-Services	0.288	2.662	0.008	Supported
H4: User Attitudes → Using E-Services	0.258	2.526	0.012	Supported
Mediation results				
H5a: Reliability → User Attitudes → Using E-Services	0.093	1.993	0.047	Supported
H5b: Security → User Attitudes → Using E-Services	0.030	1.069	0.228	Not Supported
H5c: Website Design → User Attitudes → Using E-Services	0.102	2.16	0.031	Supported

Results obtained for the structural model analyses demonstrated significant variance in e-project management usage expounded by the constructs of the study. Considering the solid connection existing between the reliability, security, website design user attitudes and using e-project management in Greater Amman Municipality. Specifically, standardized path coefficient outcomes were showing that the utilization of e-project management was influenced by Website Design and User Attitudes. Additionally, Reliability and Website Design were found to influence the User Attitudes. The results also showed that via user attitudes, the website design of social media and reliability affects e-project management usage. These results suggest that H1a, H3a, H3b, H4, H5a, H5c were supported in this study, whereas H1b, H2a, H2b and H5b were not.

5. Discussion

This section discusses the hypotheses test results, particularly on the antecedents of the usage of e-project management furnished by Greater Amman Municipality, users' attitudes, and social media characteristics represented by the dimensions of reliability, security and website design. From the results, reliability appears to be a critical factor that has an effect on user attitudes toward the services from Greater Amman Municipality. Results showed significant and positive effect of reliability on user attitude, and so, H1a was supported. Past studies by Chung and Koo (2015) and Weber et al. (2020) in different countries relevantly reported reliability as a crucial factor in nurturing desirable attitude towards the acceptance and use of e-project management among users.

The e-project management of Greater Amman Municipality can be obtained via reliable social media website, and reliable website motivates recurrent use of the services by citizens, as reliability of social media website increases positive attitude of user toward the site. Contrariwise, poor reliability will result in a negative user attitude. In other words, reliability and use of Greater Amman Municipality e-project management are significantly connected. For this reason, H1b was not supported. Contrariwise, in the use of e-project management of GAM, Alshamayleh et al. (2015), Ali (2019), Taherdoost and Madanchian (2021) reported reliability as a good significant predictor. The results were implying the need for social media to be affirmed and reliable so that users could have the confidence and trust in e-project management usage. Moreover, higher reliability means an increase in the use of the e-project management from Greater Amman Municipality.

This study found an insignificant impact of the dimension of security on the attitudes of users towards the usage of e-project management of Greater Amman Municipality, and so, H2a was not supported. Contrariwise, Burak and Ipek (2021) reported in their study, on the significant impact of security on the attitudes of users toward the use of e-project management provided by Greater Amman Municipality. The e-project management of Greater Amman Municipality is securely furnished on social media websites, and this encourages repeat usage among users. Negative attitude of users increases if a given social networking site has more security, and this may be factored by the user being in an early stage of technology usage, and therefore, the computer skills possessed by the user is still low. Furthermore, this study found an insignificant impact of the link between security and Greater Amman Municipality e-project management usage. As such, H2b was not supported. Contrariwise, Malik et al. (2017) and Elsantil (2020) reported the significant role of security in user's utilization of e-services. This means the need of having a secure social media, so that more users will be using the e-project management of Greater Amman Municipality.

Additionally, significant link between website design and attitude of user toward the use of e-project management of Greater Amman Municipality. Therefore, H3a was supported. Relevantly, Alshamayleh et al. (2015), Al-Hawary and Al-Menhaly (2016) found significant linkage between website design factor and the attitudes of users in e-project management adoption. Users will feel encouraged to use well-structured and coordinated social media websites, and so, Greater Amman Municipality's electronic services must be delivered in such social media websites. Such websites will appear more attractive to users and will encourage usage.

Furthermore, website design and the usage of e-project management of Greater Amman Municipality were found to be significantly and positively connected, lending support to H3b. Worded another way, users of Greater Amman Municipality e-project management felt that website design significantly affected their decisions to use these e-services. Similarly, Alshamayleh et al. (2015), Malik et al. (2017), and Shayganmehr and Montazer (2021) were among those who showed that the e-project management of Greater Amman Municipality delivered through social media website will be used more if the social media website that provides the services is simpler and better organized.

Results showed a significant link between users' attitudes and the use of Greater Amman Municipality e-services, and so, H4 was supported. Equally, Majdalawi et al. (2015), Chen et al. (2018) and Alabdallat (2020) reported a significant link existing between users' attitudes and e-project management usage. In this regard, the attitude of users toward the use of e-project management provided by Greater Amman Municipality will determine the potential use of users of the e-services. In this regard, a negative attitude will likely make the user prefer using the traditional services at the municipality building to the online services delivered by the social media website.

The mediation of users' attitude in the relationship between social media characteristics and the use of the e-project management offered by Greater Amman Municipality was examined through testing three hypotheses namely H5a, H5b and H5c with respectively reliability, security and website design as antecedents. The results showed support to two paths (H5a and H5c). Attitudes of users appeared to mediate the effect of reliability on the use of e-project management offered by Greater Amman Municipality, lending support to H5a. As such, reliability of social media affects the use of e-project management of Greater Amman Municipality through the attitudes of users. Similarly, Mou et al. (2017) and Ali (2019) mentioned that a reliable social media website will improve user attitude, leading to increased usage of the e-project management offered by Greater Amman Municipality in the website.

Additionally, the results showed that via user attitudes, the website design of social media imparts impact on the e-project management usage, that is, the e-project management of Greater Amman Municipality. Hence, H5c was supported. Similarly, Alassaf et al. (2020), Shayganmehr and Montazer (2021) and Alassaf and Szalay (2022) indicated that websites with organized, tidy, and elegant website design are likely to have more users utilizing the e-project management of Greater Amman Municipality because user's attitude toward the site would be improved. Positive attitude of users towards the design of social media – and the given social media delivers the e-project management of Greater Amman Municipality – will increase the support of users towards the services usage, and users are also likely to encourage others to do the same.

Moreover, results were demonstrating insignificant mediation of the attitudes of users towards the security in the utilization of the e-project management offered by Greater Amman Municipality, and so, H5b was not supported. In other words, social media security affects how the e-project management provided by GM were used, without the mediation of the attitudes of users. Contrariwise, Pleger et al. (2020) and Alassaf and Szalay (2022) reported a different finding. Hence, security directly affects citizens in e-service usage. User demand towards Greater Amman Municipality e-project management use did not increase if the sites delivering the service are characterized by security by increasing user's positive attitude. Notably, the positive attitude of users towards the security of social media that provides the e-project management of Greater Amman Municipality does not make users support the idea of utilizing the e-project management by Greater Amman Municipality.

5.1 Theoretical implications

The present study's findings are an important addition to the knowledge reservoir. Social media characteristics represented by reliability, security and website design, were examined in the present study as the main study variables. In theory, this study presents how social media characteristics (reliability, security and website design) are crucial in Jordan, while increasing the knowledge of e-project management usage in Jordanian context particularly. Furthermore, studies examining the effect of social media characteristics, specifically reliability, website site design and security, on the attitudes of users on the use of e-project management offered by Greater Amman Municipality were still too few.

5.2 Practical implications

In practice, the present study's findings could be useful not only to the academic world but to real-world applications as well. Through the fast development of technology and the advancement of the Internet, citizens could easily and effectively execute their everyday affairs, like communicating with the government, unbound by time and place. Greater Amman Municipality, which is a major municipal organization in Jordans' capital city (Amman), became the focus of this study, with a specific emphasis on the e-project management that this municipality provides. Social media affects the demand of users of the e-project management offered by GAM, through its characteristics and usage. This study demonstrates the significance of all the scrutinized variables; these variables became antecedents of Greater Amman Municipality e-project management usage. Hence, decision makers in municipalities could more effectively devise relevant strategies and policies by using the outcomes of this study as referral.

5.3 Limitations and avenues for future research

Several limitations are highlighted in this section. The first limitation of this study concerns the samples used; this study only employed those who actually utilized the e-project management from Greater Amman Municipality. Hence, others, for instance, family members of the actual user, were not considered in this study. Another limitation was the characteristics used in this study as the study variable; there were three social communication characteristics used, while other characteristics may also be considered such as responsiveness, privacy, and website content. Furthermore, other intermediaries such as the satisfaction of users were not considered in this study in the use of the e-project management from Greater Amman Municipality.

For the forthcoming studies, it would be of value to look into other characteristics of social media including responsiveness, privacy, and site content, as these characteristics could affect how GAM employs e-services. Additionally, considering the lack of scrutiny on the impact of social media on the e-project management provided by GAM, future studies could examine some specific social media platforms like Facebook and TikTok. A comparative study may be performed to compare e-project management usage in Jordan and in other countries. Lastly, future studies may consider other tools for gaining data, as opposed to the use of just a survey questionnaire like in this study.

6. Conclusion

The antecedents Greater Amman Municipality e-project management usage were examined in this study. A total of seven direct significant relationships and three indirect significant relationships were identified, to achieve the research objectives. Firstly, this study concluded from the results that the affirmed direct significant antecedents of Greater Amman municipality e-project management usage were user attitudes and social media characteristics (reliability, security and website design). Next, this study concluded from the results, three direct significant relations that existed between social media characteristics (reliability, security and website design) and the use of GAM e-services. Three direct significant relations were found between social media characteristics (reliability, security and website design) and the attitudes of users. A direct significant relationship was found between the attitudes of users and the GAM e-project management usage. Three indirect significant relationships between social media characteristics (reliability, security and website design) and the use Greater Amman municipality e-project management mediated by the attitudes of users were affirmed. Overall, the results showed support to all direct relationships.

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