



Understanding firm preferences for e-government adoption: The role of trust and technology acceptance

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Abstract

This study aims to identify and understand the factors influencing firms' preferences for adopting and utilizing e-government services. It utilizes the Technology Acceptance Model (TAM) along with the concept of Trust. Data were collected through a survey involving 198 firms, and the responses were analyzed using variance-based structural equation modeling. The findings indicate that IT capability and perceived usefulness significantly affect the acceptance of e-government services. However, perceived risk and Trust were found to have no influence on a firm's decision to engage with services provided by the government system. Additionally, the study found no evidence to suggest that firm size moderates the relationship between the adoption factors and firms' intentions to utilize government services. These insights offer valuable guidance for government officials in developing targeted strategies to promote the adoption and acceptance of e-government systems among firms, potentially leading to a significant improvement in e-government service adoption among firms.

Keywords: Attitude, E-services, E-government, IT capabilities, Perceived Risk, PLS-SEM, Trust.

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1. Introduction

Organizations and governments have shown a continuous interest in adopting and implementing innovations and emerging technologies related to information and communication technology (ICT), such as e-business, e-payment systems, and e-government. The adoption of such technologies has become a vital element for companies to improve their competitive position, as they contribute to efficient information management not only within the organization but also in relations with customers, enabling lower costs, greater agility, innovation, and added value [1]. However, the literature on IT adoption often assumes that the advantages of these technologies are self-evident and that decision-makers simply need to adopt and support the implementation of these technologies in their organization to start reaping the benefits. Contrary to this assumption, the

reality is that adopting IT innovations is often a complex and challenging process, as it can encounter significant resistance from individuals within the organization.

The term 'electronic government' or 'e-government' emerged in the late 1990s as a reaction from governments and local authorities to harness the benefits of ICT. E-government initiatives leverage digital technologies and the internet to improve the quality, accessibility, and responsiveness of public services, foster greater citizen participation in governance, and enhance transparency and support accountability in public entities [2]. However, the benefits of e-government in emerging countries remain largely untapped due to various barriers and challenges.

Despite the growing use of government services, some evidence shows that governments have faced difficulties implementing e-government. For example, a survey conducted by Heeks [3] on forty e-government programs in transitional and developing countries revealed that 35 percent of these programs have suffered a complete failure, with an additional 50 percent experiencing partial failure. Accordingly, researchers and governments are starting to examine the reasons that encourage or otherwise discourage stakeholders from using online services delivered by the government [4, 5].

A brief review of the literature related to electronic government adoption and acceptance revealed that this stream of research is still emerging. Many prior studies on the adoption and acceptance of e-government systems have primarily concentrated on either the implementation and integration of e-government systems, government-related issues [6-12], organizational culture [13-19], or the measurement of e-government adoption [20-23]. However, there has been limited focus on the end-user perspective [24-26]. In terms of business adoption of electronic government services, the review also unveils a scarcity of studies addressing this specific issue [27-29].

In terms of the research models, several studies have used theory-based models including TAM and the trust theory to examine users' intention to adopt electronic government [25, 26, 30]. Some of the previous literature has integrated these two models, hypothesizing that trust indirectly impacts the adoption of government services, i.e., its impact on citizens' intention is mediated by TAM constructs [31, 32]. Nevertheless, some evidence suggests that trust overwhelmingly and directly affects users' intention to adopt new and emerging technologies. Accordingly, this study aims to examine the factors impacting firms' willingness to accept and use electronic services provided by local government. Precisely, the research attempts to address this question: What are the factors that stimulate the adoption of electronic government services by firms? What is the relative significance of these factors? To what extent do firms intend to adopt and use electronic government services in Jordan, and does the intention to use these services differ between respondents?

This paper comprises five sections as follows: firstly, the introduction and research justification. Section 2 discusses the theories and models chosen to address the study objectives and the construction of a theoretical framework for the research hypotheses. Section 3 presents a review of brief information about the methodology. In section 5, the research findings are discussed, followed by a conclusion, implications and limitations, and directions for future studies.

2. Theoretical Background

In recent years, the technology acceptance model (TAM) has surfaced as one of the most important models used in explaining and predicting individuals' behavior in adopting and using information systems. Researchers have utilized the model across different groups of users and a wide variety of end-user innovations and technology applications; it has thus been proven to be a robust theory for examining user acceptance of information systems. Mathieson, et al. [33] stress that the strength of TAM derives from several factors; for example, the model focuses on the use of and acceptance of emerging technologies and is rooted in social psychology. The significance of TAM research focuses on the fact that the model's relationships have been widely tested and validated and are considered suitable for modeling and testing user acceptance and usage of emerging technologies. Numerous studies have stressed that the model functions appropriately [34-37].

Accordingly, the model was selected as a base to develop a theoretical model for analyzing firms' intention to use services provided by the government through electronic channels. Firstly, it has a solid theoretical foundation grounded in the theory of planned behavior (TPB); thus, the model can provide superior predictions of attitudes compared to TPB. Furthermore, much of the empirical studies of TAM have proven the validity and reliability of its constructs. Thirdly, the model has been widely accepted by academics in information systems.

2.1. Technology Acceptance Model

The model was initially suggested by Davis [38] as an attempt to explain user behavior across a variety of information systems (IS) and organizational contexts. This prominence may be attributed to the model's simplicity and the substantial empirical support it has garnered [39-41]. The Theory of Reasoned Action (TRA) posits that external stimuli exert an indirect influence on an individual's attitude towards a behavior by shaping their salient beliefs about the consequences of that behavior. TRA contends that individual behavior is shaped by personal attitudes and subjective norms associated with the behavior [42]. TAM leverages TRA to define a causal relationship among two fundamental constructs: Perceived Usefulness and Perceived Ease of Use on one hand and attitude toward using, behavioral intention, and actual behavior on the other hand [43].

2.2. Behavioral Intention

Users' behavioral intention, according to TRA, is influenced by two key factors. The first is attitude, which reflects the internal psychological forces affecting the individual. The second factor is the subjective norm, representing the external social influences on the individual [44]. The TAM claims that the intention to use a system is the most reliable predictor of actual usage, a premise strongly supported by research. TAM further posits that an individual's behavioral intention is shaped by perceived usefulness. The former pertains to the internal psychological influences on the individual. The correlation

between attitudes and behavioral intention suggests that when a user holds positive attitudes toward a behavior, they are likely to engage in that behavior [33, 45]. Perceived usefulness, as noted earlier, reflects "the user's subjective probability that using a specific application system will enhance their job performance within an organizational context" [44]. Notably, while attitude influences BI, perceived usefulness exerts a more direct effect. For instance, even if an individual dislikes a particular technology, they may still choose to use it if they identify it as highly useful, independent of their overall attitude toward it [46].

2.3. Perceived Ease of Use (PEOU)

Davis, et al. [44] defined PEOU as "the degree to which an individual believes that using a particular system would be free of effort, both physical and mental." PEOU pertains to evaluating the inherent features of information technology, including ease of use, ease of learning, clarity, and flexibility of the system. The TAM suggests that PEOU has a positive impact on behavioral intention to use a system. Therefore, the more seamlessly a system can be interacted with, the more effectively a user can perform the necessary behaviors to utilize it. When an individual perceives a system as easy to use, their willingness to engage with it increases [39]. Prior research has identified PEOU as a crucial factor influencing user willingness to use new innovations and technologies and their usage behavior [47]. Despite the mixed findings in the egovernment adoption literature regarding PEOU, it can be posited that these inconsistencies arise because much of the existing research has not directly tested the influence of PEOU on intention [48]. Furthermore, the literature indicates that PEOU impacts PU, as enhanced PEOU can lead to improved job performance. Accordingly, the model theorizes that PU and PEOU are different yet interconnected concepts, with the notion that PEOU positively influences PU [49]. Consequently, we can formulate the hypothesis that:

 H_1 . The firm's intention to adopt e-government services is positively influenced by perceived ease of use. H_2 . The firm's perceived usefulness is positively influenced by perceived ease of use.

2.4. Perceived Usefulness

PU captures users' evaluation of the extrinsic characteristics of the IT system's task-oriented outcome and how it helps them achieve task-related objectives, including system effectiveness and efficiency [50]. The model posits that PU influences users' behavioral intention to use. Therefore, a user's intention to use or not to use a specific innovation or technology is controlled by his or her belief that it will help them increase efficiency in carrying out job tasks. The TAM literature further suggests that even if users perceive the system to be challenging to use, they will still use it if they believe that the benefits of doing so overshadow the work required and that PEOU also has an influence on PU to the degree that improved ease of use helps in improving performance. Accordingly, TAM suggests that PEOU and PU are different yet connected constructs, and there is a substantial amount of supporting evidence for this relation in the literature [24, 25, 35, 48, 51-53]. TAM literature further suggests that even if users perceive a system as challenging, they will still use it if the benefits outweigh the required effort. In addition, published research into e-government adoption suggests that perceived usefulness has a profound effect on users' intention to adopt [54, 55]. Consequently, we can formulate the hypothesis that:

 $H_{3:}$ "The firm's intention to adopt e-government services is positively influenced by perceived usefulness".

2.5. Trust

Numerous studies have examined various aspects of trust in e-business [56-63]. A consensus among these studies is that the success of electronic transactions hinges on individuals' ability to trust organizations and products that are intangible, as well as the unfamiliar virtual transaction channels they may encounter. Thus, the significance of trust is even more pronounced in the realm of electronic business compared to traditional commerce, where trust typically stems from interpersonal relationships established through face-to-face interactions. As noted by Alrawad, et al. [57], trust fosters users' willingness to use new technologies and innovations such as NFC mobile payment, as it creates positive expectations by converting uncertain future actions into more certain outcomes. Furthermore, Almaiah, et al. [51]contend that a technology acceptance model that incorporates more social dimensions should include trust as a fundamental predecessor to PEOU and PU. Accordingly, various studies have proposed that perceived trust affects users' intention to adopt and use technology McKnight and Chervany [64] and Alrawad, et al. [57]. Gefen, et al. [65], for instance, added the concept of perceived trust to the original framework of TAM. Their study confirms a positive connection between perceived trust and the intention to try e-commerce websites. It reveals that the perceived ease of use of the website under investigation affects the level of perceived trust in it. First, greater ease of use allows customers to locate essential information more quickly and effortlessly. Secondly, it is linked with a high level of site usability and reflects the providers' intention to invest in the client/e-vendor relationship.

*H*_{4:} "The firm's intention to adopt e-government services is positively influenced by Perceived trust".

2.6. Perceived Risk

When participating in online transactions, consumers understandably express concerns regarding the diverse types of risks involved [66]. These risks include "functional risk," "privacy risk," "security risk," "performance risk," "financial risk," and "overall risk" [57, 67]. Numerous studies indicate that perceived risk plays a significant role in shaping consumers' choices and preferences [57]. Within technology adoption literature, Jarvenpaa, et al. [66] established that consumers' perceived risks of using online stores negatively impacted their decision to buy products and services through the internet. Thus, a heightened perception of risk correlates with a decreased willingness to engage in online shopping. Likewise,

Alrawad, et al. [57] found that perceived risk has a negative influence on users' willingness to use online shopping and new technologies such as NFC payment systems.

It is challenging to measure all the risks associated with any event; therefore, scholars have tried to address the notion of risk by capturing the uncertainty through the concept of perceived risk. Accordingly, perceived risk represents all the uncertainty and negative outcomes related to an event or an action, such as buying through the Internet or using new technology [68]. Numerous studies have established that perceived risk affects customers' intention to interact with online stores Alrawad, et al. [57]. Alrawad, et al. [57]] establish that risk perception concerning online shopping was negatively correlated with customers' motivation to purchase over the internet. Similarly, Alrawad, et al. [57]findings indicate that perceived risk negatively affected consumers' intention to use NFC mobile payment. In the setting of e-government services, several scholars have tried to incorporate perceived risk as antecedents for PEOU and PU [48, 69]. Although their findings do not support any relationship between PEOU or PU and perceived risk, in the current study, the researcher argues that perceived risk should have a direct rather than indirect effect on firms' intention to adopt e-government services [48, 69]. Thus, we can hypothesize that:

 $H_{5:}$ The firm's intention to adopt e-government services is negatively influenced by Perceived risk.

2.7. IT Capability

According to Bharadwaj, et al. [70], IT capability (ITC) is the "firm's ability to acquire, deploy, and maintain its IT resources in order to support its business strategies and value chain activities." According to Riemenschneider and Mykytyn Jr [71], the role of IT has expanded within organizations in general. There are several contributory factors, including the low cost of technology, the increase in the IT knowledge of employees, and, most importantly, the necessity to manage customer satisfaction [71, 72]. Earlier investigations have revealed that IT capability is an essential requirement for engaging in online business, as noted Grewal, et al. [73]. Tornatzky and Fleischer [74] emphasize that the introduction of new technologies often necessitates changes in employee skill sets. Consequently, the skill sets of available personnel play a crucial role in constraining the adoption of emerging innovations. Organizations that employ well-trained and experienced staff typically incur lower costs related to training and equipment when implementing innovations. In older industries facing a wave of modernization, the connection between labor quality and the adoption of new technologies becomes particularly significant [74].

In e-government adoption, Thompson, et al. [75] found that firms with a good level of IT capability used government services more frequently. They suggested that these firms are more knowledgeable about using Internet resources, which makes them better equipped to interact with e-government services. Therefore, we may say that IT capability is also an essential factor in e-government adoption.

*H*₆. *Firms' IT capability positively influences firms' intention to adopt e-government services.*

H_{7:} Firms' IT capability positively influences firms' perceived ease of to adopt e-government services.

2.8. The Moderating Effect of Firm Size

Some studies have tested the effect of company size on adoption decisions. For instance, Premkumar and Roberts [76] found that company size, in terms of the number of employees, affected the company's intention to implement and use the technologies under investigation. They suggest that large firms have the resources to devote to implementing and adopting new innovations and technologies, as well as the organizational slack to experiment with them. The findings of Palvia, et al. [77] also support the effect of size on technology adoption. Similarly, some studies have reported organizational size as a major predictor of adopting microcomputers. According to Rogers [78], firm size plays an important role in innovativeness. Much of the research into technology adoption has used size as a predictor. This may be partly because size is easy to measure with high precision regarding several variables, such as the number of employees and sales revenue. In the current research, it will be measured by the number of employees to measure size offers a safe strategy that may provide a better response rate.

Much of the literature has considered size directly affecting technology usage [57, 79]. In this research, however, we hypothesize that it will affect the relationship between the adoption factors and the intention to adopt. In essence, in a large firm, where resources and expertise are not significant issues, ease of use will not affect the intention to adopt e-government services. In contrast, in small firms, perceived ease of use is expected to be an essential factor in the adoption decision. Therefore, we can formulate the hypothesis that:

H₈: Firms' size moderates the relationship between adoption factors and firms' intention to adopt e-government services.

2.9. Research Methods

A cross-sectional approach was deemed most suitable for the present research. The survey strategy has been adapted here to satisfy the study's objectives and the need for a large sample for data analysis. Measurement of a construct commences with conceptualization, operationalization, and then the application of measurement tools. To establish a good measure of construct variables, [80] recommends that researchers should validate and establish the measurement validity. Hence, the present study used measurements that have already been validated and tested by numerous studies. Accordingly, the study used measurements adapted from previous literature; more precisely, the model consists of six constructs: PU measured using six items, and PEOU measured using four items adapted from [81], perceived risk (PR) measured using six items adapted from [48, 66], trust in electronic government (Trust) measured using six items used by McKnight and Chervany [64], IT

capability (ITC) measured using five items adapted from [73, 74], and behavioral intention to adopt (BI) measured using three items adapted from [81].

Accordingly, the survey was prepared in English and was translated by two professional Arabic-English translators. The questionnaire consists of four sections. The first section contained demographic data, i.e., age, gender, firm size, and type of industry. Section 2 was split into two parts, the first comprising five questions seeking information on the firms' IT capability and the second containing items aiming to measure original TAM constructs: intention to adopt e-government services, PEOU and PU, perceived trust, and perception. In the last part, respondents were requested to provide their opinions about the questionnaire. Five hundred questionnaires were initially distributed, and 228 were returned, of which 198 were used in the analysis. Thirty were discarded because some questions were not completed. Therefore, the gross response rate was 45.6%. Table 1 shows summary information about the study sample.

Table 1.

Sample summary.

Category	Subcategory	No.	%
Gandar	Male	146	73
Gender	Female	52	27
Education	Graduated	170	86
Education	Non graduated	No. $\frac{9}{6}$ 146 73 52 27 170 86 28 14 2 1 101 51 95 48 23 45 24 47 20 40 13 25	
	18-28	2	1
Age	29-39	101	51
	Above 40	95	48
	4 or less	23	45
Managarial appariance (Vacra)	5-9	24	47
Managerial experience (Years)	10-14	20	40
	15-19	13	25
	20 or above	20	41

Table 1 presents the analysis of demographic information (age, gender, experience, and education) among the 198 respondents. Among these, 146 individuals (73.7%) identified as male, while 52 (26.3%) identified as female. The age group most prominently represented was between 29 and 39 years, comprising 101 participants (51%), followed closely by those over 40, with 95 participants (48%). Additionally, the table indicates that approximately 170 respondents (86%) held graduate-level education.

3. Results

3.1. Measurement Validity and Reliability

The assessment of validity and internal consistency, as shown in Table 2 and 3, revealed that all our model constructs demonstrate satisfactory levels of reliability based on "Cronbach's alpha" analysis, with values ranging from 0.820 for IT capabilities to 0.904 for perceived risk. Other consistency measures have also established the measurement validity and reliability, involving Composite Reliability (CR), which disclosed a high rate across all constructs, as shown in Table 2. All measured variables fluctuated from 0.861 for behavioral intention to 0.919 for perceived usefulness. With CR values higher than 0.70, it denotes that the measures within each construct show a convincing level of reliability and consistency [82]. Furthermore, since the AVE values surpass the recommended threshold value (0.50) for accepting the construct measurement, the calculated AVE for the model constructs, as shown in Table 2, ranged from 0.649 for IT capabilities to 0.781 for behavioral intention. Additionally, excluding one item for perceived risk, the analysis indicated that all tested items strongly interpreted the role of each item in their defining constructs since they exceeded 0.748. To sum up, the items are considered valid and reliable for measuring their relevant constructs.

	Measure	Factor load	CA	CR	AVE
Dala is a line of a	BI_1	0.841			
Behavioral intention	BI_1	0.881	0.859	0.861	0.781
	BI_1	0.927			
	PEU_1	0.863			
Perceived Ease of Use	PEU_2	0.856	0.884	0.902	0.741
	PEU_3	0.835		0.892	
	PEU_4	0.888			
	PU.1	0.887			
Perceived usefulness	PU.2	0.903			0.670
	PU.3	0.769	0.901	0.919	
	PU.4	0.835]		
	PU.5	0.748]		

Table 2.

	Measure	Factor load	CA	CR	AVE	
	PU.6	0.753				
	Tgov1	0.798		0.903		
	Tgov2	0.838				
Trust	Tgov3	0.815	0.895		0.707	
	Tgov4	0.805				
	Tgov5	0.940				
	Risk2	0.855		0.911	0.722	
	Risk3	0.873				
Perceived risk	Risk4	0.849	0.904			
	Risk5	0.829				
	Risk6	0.840				
	ITC1	0.792		0.881	0.649	
IT Canability	ITC3	0.829	0.020			
ПСаравних	ITC4	0.829	0.820			
	ITC5	0.772]			

Table 3.

andry assessment.								
	BI	PEOU	PU	Trust	P.Risk	ITC	Mean	S. D*
1. BI	0.884							
2. PEOU	0.161	0.861						
3. PU	0.587	0.097	0.818					
4. Trust	0.379	0.251	0.404	0.841				
5. P. Risk	-0.245	0.235	-0.228	-0.222	0.849			
6 .IT Capabilities	0.547	0.287	0.529	0.367	-0.129	0.806		

Note: * S. D: Standard Deviation.

3.2. Hypothesis Testing

As Figure 1 and Table 4 indicate, the assessment of R² values revealed that the variance proportion in firms' intention to interact with the government explained by perceived usefulness and IT capability is 45.5% (R² = 0.455). Moreover, the structural model revealed 15% of the variation in perceived usefulness (R² = 0.151). The coefficient analysis reveals a positive association between PU and the firm's intention to interact and use the government webpage ($\beta = 0.373$; t = 5.114; p = 0.000). Therefore, evidence supports the assumption of H3, suggesting that perceived usefulness positively influences firm intention. Furthermore, the path coefficient shows a positive influence of IT capability on firms' intention to interact with government services ($\beta = 0.241$; t = 3.383; p = 0.001).



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Consequently, H6 was supported. However, the path coefficient between PEOU and the behavioral intention was not supported ($\beta = 0.062$; t = 1.109; $p = 0.267 \ge 0.050$). This suggests no acceptance of H1 hypotheses. Thus, PEOU in this study has no significant influence on behavioral intention. Similarly, both Trust H4 ($\beta = 0.090$; t = 1.535; $p = 0.125 \ge 0.050$) and perceived risk H5 ($\beta = -0.103$; t = 1.734; $p = 0.083 \ge 0.050$) were found to not influence behavioral intention. Moreover, the study found a positive influence of IT capability on PEOU ($\beta = 0.288$; t = 4.843; p < 0.000), indicating that high IT capability correlates with PEOU. Consequently, this supports H7. Similarly, the study shows a positive relationship between PU and PEOU ($\beta = 0.152$; t = 2.195; $p \le 0.028$). These results support hypothesis H2, implying PEOU influences PU. Nevertheless, concerning the moderating influence that firm size could hold as proposed in hypotheses 8 ("H8.1, H8.2, H8.3, H8.4, H8.5, H8.6, H8.7"), the results unveil no moderating influence of firm size on all tested constructs.

Table 4.

PLS-SEM results of for the research hypotheses.

		Path Coef.	Mean	St Dev	Т	Р
H1	H1. PEOU> BI	0.062	0.063	0.056	1.109	0.267
H2	H2. PEOU> PU	0.152	0.151	0.069	2.195	0.028
H3	H3. PU> BI	0.373	0.374	0.073	5.114	0.000
H4	H4. Trust> BI	0.090	0.092	0.059	1.535	0.125
H5	H5. Risk> BI	-0.103	-0.113	0.060	1.734	0.083
H6	H6. IT capability> BI	0.241	0.240	0.071	3.383	0.001
H7	H7. IT capability> PEOU	0.288	0.294	0.060	4.843	0.000
	The moderating effect of firm size					
H8.1	Firm size> BI	-0.096	-0.090	0.065	1.484	0.138
H8.2	Firm size x PEOU> BI	-0.033	-0.026	0.058	0.561	0.575
H8.3	Firm size x PU> BI	-0.036	-0.036	0.084	0.430	0.667
H8.4	Firm size x PEOU> PU	-0.239	-0.239	0.070	3.437	0.001
H8.5	Firm size x Risk> BI	-0.006	-0.010	0.066	0.097	0.923
H8.6	Firm size x Trust> BI	-0.042	-0.046	0.059	0.713	0.476
H8.7	Firm size x IT cap> BI	0.064	0.063	0.073	0.875	0.382

4. Discussion and Conclusion

The research model outlines the factors influencing firms' intentions to adopt and utilize online services provided by government agencies. This model was developed through an exhaustive literature review. Six constructs were identified as expected to impact firms' intentions: PU, PEOU, trust, perceived risk (PR), and IT capability (ITC). Table 4 summarizes the research hypotheses and the results extracted from analyzing the empirical data. According to the table, four out of the seven primary study hypotheses were supported by the analysis. This section provides a detailed account of the findings and discusses the implications of these hypotheses. Below is a summary of the research outcomes.

The study's results support this hypothesis; PU appears to be the main factor strongly influencing the firm's intention to adopt. The current findings seem to be in line with previous research regarding the acceptance of new and emerging technologies in general [83-86] and the acceptance and adoption of e-government services in particular [19, 24, 25, 27, 54, 55].

Hypothesis H5 suggests that there is a relationship between firms' trust in government and their intention to adopt and use e-government services. Consequently, the adoption of these services depends on firms' belief that the Internet is a reliable medium capable of providing accurate information and securing transactions. The study's results show strong support for this hypothesis, aligning with previous research that connects trust in electronic channels to technology adoption and acceptance [57, 87].

Additionally, the study examined the relationship between firms' IT capability and their perceived ease of use. It found a significant link between IT capability and the intention to adopt and use e-government services. These findings are consistent with prior research; for instance, Thompson, et al. [75] discovered that firms with higher IT capability utilized government services more extensively. A potential explanation for this connection may lie in the strong relationship identified between IT capability and perceived ease of use in the current study. It appears that IT capability may indirectly influence firms' intention to adopt e-government services through perceived ease of use: the greater the level of IT capability, the more likely firms are to view the services as user-friendly, thereby increasing their willingness to adopt them.

Perceived risk was not found to have any influence on the firms' intentions to adopt e-government services in Jordan. Previous studies have indicated that perceived risk influences individuals' decision-making [88, 89]. However, the present study revealed no significant relationship between perceived risk and the intention to adopt these services. This finding contradicts the results of Jarvenpaa, et al. [66], who discovered that risk perception in relation to an internet store was associated negatively with customers' readiness to make purchases online. In terms of trust, the study surprisingly showed no significant relationship between trust in online environments and firms' intentions to use e-government services or perceived risk. Similar findings were reported by Bélanger and Carter [90], who concluded that higher levels of trust in electronic channels do not diminish citizens' perceptions of risk. They suggested that this might be due to citizens viewing businesses differently from government entities, with perceptions of risk in e-commerce being more pronounced than in governmental contexts.

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