

# Propose Model for Consumers' Perceptions and Acceptance of e-Health Systems and Services in Jordan

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## ABSTRACT

*E-health can improve health-care quality and reduce health costs. However, few studies have addressed the antecedent factors that influence health-care consumers' acceptance of and intentions to use e-Health systems and services, which is called health web-based systems and services (HWBSS) in this study, especially in developing countries such as Jordan. Furthermore, it has been claimed that technology acceptance theories and models do not fit equally across cultures. Therefore, the main objective of this study is to empirically investigate the factors that influence patients' perceptions and acceptance of e-Health systems and services in Jordan. It does so by extending the technology acceptance model (TAM) to include three other variables (privacy, trust and perceived empowerment) and cultural variables as a moderator, forming the basis for a future in-depth and expanded study. The proposed research model was built on the literature review presented here. A reliability analysis through a pilot study was performed to check its internal consistency using Cronbach's alpha. The instrument was reviewed by a panel of experts in order to validate its content. The results of the pilot study verified the feasibility of conducting a full-scale investigation and can be used to help refine the instrument. The outcomes demonstrate that the model is highly reliable and has a positive impact on patients' attitudes to using e-Health systems and services.*

**Keywords :** consumer perceptions, e-Health systems and services, perceived empowerment, pilot study, questionnaire validation.

## I. INTRODUCTION

The implementation of health care-related technologies has been catalysed by the development of information and communications technology (ICT). Health-care providers must keep up with its fast-paced growth and utilise technology such as the Internet to propose new health-care services. This is reflected in the impressive

escalation in the number of health-care websites and health web-based systems and services (HWBSS) as essential areas on the Internet [1].

Numerous countries and health-care providers across the globe have invested large amounts of funding in HWBSS. This is deemed a powerful tool to solve consumers' health requirements regarding issues of health care, disease prevention, treatment and the management of numerous health conditions [2]. Such expectations are in accordance with previous reviews of HWBSS that have shown positive feedbacks on how HWBSS shape patient outcomes in disease management. In addition, HWBSS have the potential to enhance health care-related matters such as quality, efficiency, outcomes and patients' safety, as well as to reduce the cost of health care itself [3], [4].

Users' acceptance of e-Health has received increased attention from professionals and academic researchers alike. According to [5], human issues involve resistance to change, user acceptance persistence and failures to recognise evolving attention to user acceptance in health-care organisations. [5] continue by highlighting a general failure to implement effective health systems owing to a lack of awareness of user acceptance, despite the perception of ICT integration that user acceptance is essential to health-care providers.

Investment in ICT can be erroneously allocated because services fail to accommodate what users or patients need [6], [7]. Similar to other information systems, acceptance of e-Health systems is contingent on both supply and demand, for instance in terms of end-user perspectives [8]. Therefore, studying the perceptions of the intended users regarding the systems prior to their implementation is essential because it will facilitate their actualisation [9], [10].

The introduction of new technologies to consumers or users can be challenging, limiting its implementation [2]. Accordingly, HWBSS have been rejected or ignored by intended users due to issues such as a poor quality of technological design, a failure to incorporate sociotechnical factors in a technology's application, and

a discrepancy between users' characteristics, tasks and technological features and the scenarios in which the technologies are utilised [11], [12]. The implication of this point is critical: the failure of a technology to be accepted means the inability of consumers to receive the full benefits of HWBSS.

Unfortunately, the majority of studies have been conducted in developed countries and have concentrated on users' attitudes towards e-Health adoption, as well as factors from providers' (i.e., physicians' and nurses') perspectives. In contrast, no studies have been undertaken in developing countries such as Jordan to investigate e-Health adoption from patients' perspectives.

Developed countries have long been aware of the importance of health care. Therefore, their vast investment in e-Health systems with the purpose of reducing costs and improving the quality of care has taken place continuously [13], [14]. Health care is also taken seriously in developing countries through the implementation of ICT to improve health and health-care systems. [15] have supported this point by stating that e-Health is the product of ICT, and its impact on improving the health-care sector in developing countries is significant. The majority of governments in developing countries expect that the implementation of e-Health systems will stimulate improvements in health-care quality, accessibility to health information and affordability for patients. It is also expected to accelerate knowledge dissemination.

#### ***A. E-health in Jordan as a developing country***

Jordan is a developing country that has implemented ICT for health care, especially to tackle issues of access, cost and quality. Although e-Health has many potential benefits, its implementation remains a challenge. Jordan is located in the Middle East and has borders with Syria, Iraq, Saudi Arabia, Israel and the West Bank, presenting a number of fascinating and contradictory concerns. Although situated near countries with ongoing conflicts, Jordan has managed to maintain its stability and peacefulness. Within Multiple Super Corridors (MSC) in Malaysia as Example, there are 7 core areas or leading applications as follows: e-business, e-government, identity card (MyKad), international student card (i-Kad), research and development group, smart school, development Technobrener, Telehealth [16, 17]. Other areas of potential include the fact that the majority (59%) of the youthful population [18], possess above-standard computer skills [19], and have the highest literacy rate in the region (91%). In addition, Jordan has been recognised as a regional ICT leader as well as ICT goods and service exporter [20].

The health-care sector in Jordan is regarded as the finest in the Middle East region. Indeed, it has become

the vanguard of medical tourism among Arab countries [21]. This respectable label is based on the fact that Jordan's medical staff are officially qualified and hospitals are supplied with the latest sophisticated medical equipment.

One of the main efforts in health care initiated by Jordan's government is a national e-Health initiative known as 'Hakeem', launched in October 2009. It aims to update the health-care sector to become a leader in national and regional systems, specifically in terms of the quality of services. Unfortunately, citizens' involvement has been disappointing, raising a number of questions regarding whether this system will be able to attain the intended objectives set by the government. Moreover, there was much interference to realize this e-health project for health care, but there is very little evidence of patients' perspectives towards the e-Health adoption process.

Furthermore, new technologies are normally the products of developed countries such as the United States of America (USA) and those of Western Europe. When such technologies are transferred to different cultural settings, a cultural gap may emerge, especially due to a technology's design. This is true of ICT (ex. HWBSS). For instance, HWBSS may be presented to non-Western societies in a format that is not culturally applicable. [22] has discovered that most previous technology acceptance studies have been conducted in developed nations, with far fewer being undertaken in developing nations.

In addition, most studies have focused on technology transfer into developed countries, with the common assumption that the technology will be suitable, without considering cultural and social values that influence acceptance. Several researchers have noted that cultural background plays an essential role in the acceptance and use of technology [23], [24].

Dimensions in cultural values have been comprehensively used to distinguish countries [25]. Moreover, it has been explained that users from different countries will have variations in culture. A distinctive national culture is expected to be able to explain differences in the adoption of technologies [23],[24]. Indeed, previous studies have revealed that technology acceptance models and theories may not be applicable to various cultures because they have generally been developed in developed countries. [26] have also observed differences in ICT adoption between developed and developing countries. Culture can thus be deemed a factor that hinders users from accepting ICT. For example, the cultural dimension scores of Middle Eastern countries generally comprise high power distance, collectivism, low uncertainty avoidance, masculine, short-term orientation and high style cultures. These scores may be similar to those of Asian countries,

specifically China, but differ from those of Western countries, especially the USA. [27] have affirmed that end users' attitudes towards new technologies may also be shaped by their different values and lifestyles, which constitute an aspect of culture. Although previous studies have demonstrated that cultural values affect system use and adoption in diverse settings, studies of technology acceptance and Internet-based application usage have failed to identify their specific effects.

In addition to users' attitudes and cultures, many previous studies in developing countries have highlighted attitudes to e-privacy and online trust as factors influencing the adoption of technology including e-Health. Trust and privacy have also represented major concerns in e-health implementation [28] – [30]. Patients or users of e-Health will excessively use and exchange health information online. This may put them at risk of other parties abusing and misusing their private information. Where misuse occurs, patients' reputation, dignity and other important issues can be seriously affected. Unfortunately, according to [31], Arabic health-care websites have poor ethical standards, especially regarding privacy, honesty and professionalism. This is a factor in patients' general lack of trust in and resistance to using Arabic e-Health web-based tools and services.

Previous studies have argued that the limitations of HWBSS adoption must be solved by studying the factors that affect patients' acceptance of HWBSS, and to include them in the development of new systems. In addition, investigations regarding users' perceptions and adoption of HWBSS should be made more frequently in order to comprehend users before the development of the actual systems.

Numerous investigations have been conducted to test and propose factors that might predict user acceptance. However, it remains necessary to explore other factors. Therefore, there is also a need to comprehend the factors that influence the acceptance of e-Health in Jordan, particularly from users' or patients' side

## II. THEORETICAL BACKGROUND

### A. TAM

Among the models that exist to predict technology acceptance, TAM is deemed as having the best predictive power. In addition, it is widely used, adopted and cited in investigations of user perception, technology acceptance and usage due to its practicality, robustness and prudence. It is known to be well-tolerated and has acceptable explanatory power, and so it can be implemented in different contexts [9], [22].

Several studies have examined consumer acceptance of HWBSS by using other ICT acceptance theories such as innovation diffusion theory (IDT), the motivational

model (MM) and the technology acceptance model (TAM). Of these, TAM has the best predictive power and is most widely used to identify the factors that affect the acceptance of information technologies in e-Health studies [32], [33]. For instance, [32] systematic review to find the factors that influence the adoption of health information technologies claims that the most widely used model is TAM. Furthermore, [34] also found that TAM can predict a significant portion of the acceptance of health ICT. Other theoretical and empirical e-Health studies testing TAM in health care have shown that it is an appropriate theory for this context [33]. However, [35] has argued that future studies on acceptance must address how other variables influence perceived ease of use (PEOU), perceived usefulness (PU) and user acceptance.

Several attempts have been made to modify and extend TAM by contextualising constructs and integrating new factors to fit particular industries. This is expected to improve the explanatory ability of the model. For instance, two important update versions TAM2 [36] and the universal theory of acceptance and use of technology (UTAUT) have been created [37], although the basic TAM consisting of PEOU and PU constructs has considerable power to predict users' acceptance of technology, including e-Health. Some studies have recommended additional explanatory variables beyond PEOU and PU, contingent on the particular technology context [36], [38] & [39]. However, TAM still presents a weakness in integrating itself to the influence of broader cultural aspects [40].

Indeed, [41] has claimed that TAM does not focus on group, social, cultural and privacy variables, all of which have a significant influence on the adoption of technology. Therefore, [42] have applied an extended TAM for the adoption of an electronic logistics information system in health information systems in the medical industry. Their study confirmed the influence of additional variables, namely trust and compatibility, on the use of health information systems.

A study by [43] has investigated factors with strong relationships with technology acceptance in a hospital IS management context. Peker added 12 external constructs to Davis' original TAM, with the modified model proving more meaningful in explaining users' intentions while using the technology in a hospital IS.

Numerous studies have tested the validity of TAM constructs. The present study will also justify the validity of TAM constructs in e-Health by extending the base model and including additional variables such as trust, privacy and perceived empowerment in the context of a developing country, Jordan.

Thus, there are some gaps that need to be solved, such as the lack of studies focusing on the human-technology interaction, and the technological, organisational and cultural factors that influence the acceptance and

adoption of e-Health technologies. In addition, very few studies have included cultural values' effects on e-Health adoption and acceptance in developing countries, and eventually there have been less empirical studies that involve the individual acceptance of e-health technologies within the context of developing countries. Therefore, this study aims to fill these gaps by developing and testing an integrated conceptual framework based on TAM and other models from social psychology, such as TRA and TAM2, which may help portray the aspects that influence user adoption and acceptance of HWBSS. This study also investigates the moderating effects of Hofstede's four cultural dimensions on the key determinants that affect behavioural intention to use e-Health

#### ***B. Privacy***

Previous studies and literature on privacy and technology have presented extensive discussions on online issues involving safety on the Internet and the World Wide Web, especially regarding personal privacy. This concern has become the focus of the health-care provider, although health-care seekers are attracted to the Internet. e-Health companies maintain and develop databases with users' profiles, including information such as health status, insurance information and purchasing patterns. Although patients need to share information with their physicians for diagnosis and treatment purposes, patients are generally reluctant to disclose their health-related information such as psychiatric behaviour, genetic information and sexual preferences because patients perceive that this may lead to societal disgrace and discrimination. Indeed, patients are often concerned that the information collected will be used for purposes other than those stated [44]. This issue is not new, but privacy concerns appear to have been exacerbated by ICT. Furthermore, for e-commerce transactions, privacy concerns have been spread to health-care web sites that are fragile to electronic computer attacks [45].

Consumer privacy remains an important issue. Consumers or users are aware of this issue and view privacy as their salient concern, even more important than speed, spam and space on Internet activities [46]. Consequently, the degree to which e-Health including HWBSS is accepted can be poor in both developed and developing countries. Privacy in the health-care sector has thus become a major barrier to its development and implementation [47]. Therefore, this study considers privacy as an important variable that will influence acceptance of HWBSS

#### ***C. Trust***

[48] have defined trust as "a willingness to rely on an exchange partner in whom one has confidence". Similar

to privacy, many studies have sought to investigate and confirm a relationship between trust and technology acceptance. Trust has been acknowledged as a barrier to the adoption of e-Health. Trust influences patients' willingness to disclose their status and medical information in health systems [47]. According to [49], trust is one of the key factors affecting a patient's decision to use e-Health websites. This is consistent with a study conducted by [50] with 2,500 participants seeking health advice online, finding that participants were more willing to trust the site where the perceived risk was low. Trust is also included in the success of e-medicine systems, with [51] claiming that e-medicine systems rely on trust and loyalty. Similarly, in a study of physicians' acceptance of electronic health care records (ECHR) systems, trust was also found to be an additional variable that affected physicians' attitudes towards the use of ECHR systems [52].

According to [53], [54] trust has also been identified by as the most significant issue in the adoption of e-Health. More specifically, [55] in their review paper on HWBSS acceptance, discovered that trust is one of the most substantial predicting factors.

Hereby, Health care providers' reliability is crucial in determining whether consumers or patients believe that health-care services provided by HWBSS are the same as what consumers would have received from medical professionals. Previous studies have thus established an important course by investigating trust between consumers and care providers.

#### ***D. Perceived Empowerment***

Empowerment is deemed a very powerful issue in many different sectors. According to [56], more than 70 per cent of organisations across the globe have sought to empower their workforces.

The concept of empowerment has been explored in various disciplines such as management, psychology, community development, economics and education. Therefore, empowerment is defined in various ways. Despite its current popularity, the word is not new, being coined in the mid-seventeenth century with the meaning "to invest with authority" [57]. The timeline started from late-1960s to early 1970s, with even deeper meaning developed in the late-1980s. Then in the 1990s and 2000s, greater attention was paid to empowerment theory. This was initiated by [58] as a motivational approach and a form of psychological enabling.

Psychological empowerment is a motivation that can encourage and control tasks and assist individuals to act in such ways in order to achieve their goals. Until now, no studies have focused on HWBSS-enabled empowerment. However, the results of previous studies suggest that psychological empowerment has a significant influence on behaviour [59], [60]. Moreover,

[59] have identified a significant relationship between psychological empowerment and system usage. If this is extended to the role of HWBSS in health management, it is expected that empowered individuals can have control in managing their health objectives and use HWBSS for these purposes.

However, empowerment in the context of the health-related literature is also very diverse [61], [62]. The concept of empowerment in the e-Health literature is not new [63], [64]. Nevertheless, the general focus of earlier studies was on patients' empowerment [65], [66]. This is deemed a vital point in motivating individual behaviour [67], [68], but studies focusing on empowerment and its effects on HWBSS usage and acceptance have remained scarce. Similarly, it has been found that a user's motivational state is crucial in the implementation of technology and job performance [69]. However, there remains a lack of understanding regarding how psychological empowerment can affect the acceptance and intention to use in the view of HWBSS in e-Health. Therefore, this study attempts to investigate the influence of perceived empowerment on users' acceptance and intention to use HWBSS.

According to [70], [71], empowerment is influential for health-care providers as it emphasises their increased perceived ability to become actively involved in health and health-care decisions. In the concept of health care, empowerment is characterised by perceptions of control on an individual's own health and health care. Moreover, it pertains to a perception of competence, because an individual is able to maintain his or her health by making decisions with physicians and interacting with health-care systems, as well as by internalising health ideas and goals [58], [64], [70].

Today, patients can only become empowered if health-care professionals provide opportunities for them to do so. Hence, the concept of empowerment needs to attend to the power imbalance between the health-care professional and the patient. In this case, health ICT tools such as HWBSS create opportunities for patients to become informed and involved by providing relevant information, enabling them to make decisions, listen and answer questions. Patients must feel empowered in order to manage their health-related problems [72].

According to [73] ICT tools may be regarded as empowering technology that can support the needs of users or patients before empowering them. If satisfactory health tools are able to fulfil patients' needs in the activities of health management and planning such as HWBSS, users will deem them compatible with their health management and control and thus choose them. Therefore, perceived empowerment is a crucial variable that will affect patients' motivation to be involved in HWBSS, in turn encouraging patients to accept and use HWBSS. It can be concluded that perceived

empowerment through the use of HWBSS is likely to influence patients' or users' willingness to accept and utilise these tools.

Empowerment has been identified as having positive results and impacts on both the attitudinal and behavioural responses of service providers. Users' perceived environment consequently influences their IS continuation intentions [60]. Furthermore, some studies have stated that perceived empowerment is related to self-efficacy and experience, as empowered users are more likely to use and reuse an online service [74], [75].

In addition, there is a logical assumption that the availability of HWBSS in health-care providers' online presence might encourage the escalation of perceived empowerment, ultimately facilitating the acceptance and use of services and systems. HWBSS in e-Health is deemed empowering because when it is available, patients can manage their own health issues and make decisions based on the services and systems. This is expected to stimulate their intention to accept and use HWBSS.

Previous studies on ICT use have noted the impact of psychological empowerment on attitude and behavioural intention [59], [76], while other research suggests that perceived usefulness and empowerment influence one another [59]. The survey carried out by [60] with 268 backpacking tourists showed that perceived empowerment and perceived usefulness are essential drivers of attitudes and intentions to use user generated content (UGC) for travel planning. This is consistent with other studies that claim that the enabling role of technologies such as HWBSS and other IS is related to perceived empowerment [76], [77].

Nevertheless, little information exists regarding the importance of empowerment and its outcomes, and empirical studies on the influence of empowerment on patient acceptance related to HWBSS are limited. Therefore, this study addresses a gap in the literature by providing an empowerment perspective that can be used to explain patients' behaviour, specifically focused on how increased access to ICT and HWBSS affects behaviour. Essentially, it can be concluded that this study attempts to investigate the impact of empowerment on the usage and acceptance of HWBSS from patients' perspectives

#### **E. Culture**

[78] was among the first researchers to investigate the cultural dimensions of users' technology acceptance in Arab countries, the findings revealed a large degree of uncertainty avoidance among Arab cultures. This implies that Arab people avoid changes in their lives, in this case the change to use new computer technology. Further studies have also attempted to ascertain how Arab cultural values might affect the general acceptance and

use of technology. For instance, [79] discovered that examining the effect of national culture on difference cultures, information systems and context yields different findings. Their review study found that current models that incorporate national cultural impact on technology acceptance remain incomplete as most of the studies only investigate acceptance overall, without focusing on any specific medium [79]. These findings underline the importance of certain factors when creating e-Health websites or services, specifically the significance of how e-Health websites and services should be designed and delivered, and what cultural settings should be considered. These questions must be taken into consideration from the beginning.

Previous studies have also proved unsuccessful at establishing the effects of culture on technology acceptance and the usage of Internet-based applications. This has created some complications. When new technology is transferred to different cultural settings, a cultural gap can be predicted, especially in terms of technology design. The majority of previous studies have assumed that technology transfer to developed countries would ensure suitable for all countries, despite clear differences in cultural and social values.

[80], [81] claim that the impact of culture on e-Health adoption is strong, but have not followed up on this proposition with detailed empirical investigation. Furthermore, [82] discovered that in Singapore, Japan, Hong Kong, South Korea, and Taiwan, the development of e-Health was affected by cultural, financial and institutional factors, although uncertainties about the impact of culture on the acceptance of technology including e-Health are still high [83]. This finding reveals that there remains a need to understand the impact of culture on e-Health adoption. Until recently, no studies related to culture as a key factor in e-Health acceptance in Jordan have been undertaken.

Although TAM has been deemed the most effective model to predict technology adoption, it lacks integration with cultural factors to the extent of work by [40]. The integration of TAM and cultural factors is crucial because researchers are increasingly interested in developing countries. Nevertheless, few studies have explored the role of cultural factors as a moderator variable in the adoption and use of e-Health in developing countries. There is an essential moderating effect of culture on technology acceptance. [84] have argued that the inclusion of moderators may significantly improve results. This has been reinforced by [37], who included the variables of gender and experience in TAM2, after which the explanatory power increased from 35% to 53%. Other studies have also suggested the need to incorporate a set of moderators, including experience [85], age [37] and cultural background [86]. It is expected that the inclusion of Hofstede's cultural

dimensions in TAM will increase the predictive validity of the model, affording it superior explanatory potential [37], [87].

Furthermore, [88] have tested the moderating effects of cultural values on the relationships between determinants of intention such as perceived usefulness, perceived ease of use, subjective norms and perceived behavioural control and intention in the context of email use. Similarly, [89], [90] have tested the moderating effects of culture on the relationships between determinants such as attitude, subjective norms and perceived behavioural control, as well as intention in contexts of protective information technology and a self-selected web retailer. In these studies, cultural values have been represented as nationality, aggregated across cultural dimensions.

Culture-related information technology adoption studies have incorporated all of Hofstede's dimensions, with Uncertainty Avoidance (UAI) being the most frequently applied dimension. It has been found that UAI has a negative relationship with acceptance of ICT. People in high UAI cultures are less interested in accepting ICT innovations.

E-health is a new form of ICT, including in Jordan. Two major concerns are privacy and trust, affecting users' willingness to use e-Health. Moreover, a lack of systematic framework integrating TAM constructs with other relevant predicting factors such as perceived empowerment and cultural values has been noted.

[55] have advocated the careful exploration and investigation of theoretically based, context-specific factors and to examine TAM with a comprehensive set of relevant cultural, technology-related, human-technology interaction, organisational and social factors in a sociotechnical system framework. The proposed model for the study is illustrated in Fig 1 below

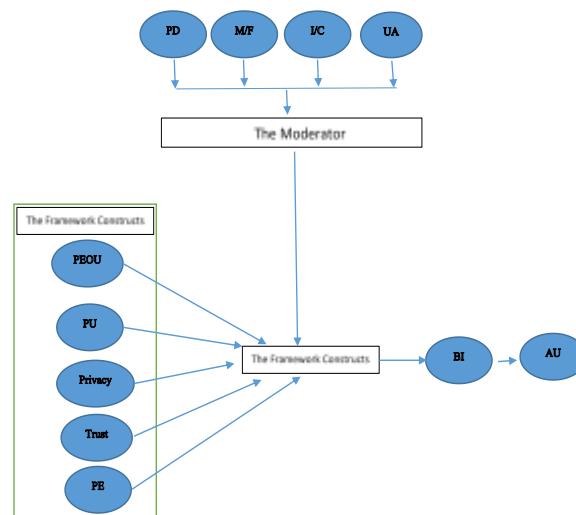


Fig 1. Proposed Model

### III. METHODOLOGY

This research used a quantitative method to examine the proposed theoretical framework's construct reliability with regard to the acceptance of HWBSS in Jordan. The research theoretical framework was developed by extending the technology acceptance model (TAM) [35] due to its robustness and significance in predicting e-Health use and acceptance [9], [22]. The research adopted external variables, namely trust, privacy and perceived empowerment in addition to the core constructs in TAM (perceived usefulness and perceived ease of use). Hofstede's cultural dimensions (MF, IC, UA and PD) were integrated in the theoretical framework as a moderator, with potential influence on the relationships between the main constructs and BI.

Based on a thorough review of literature regarding the acceptance and usage of HWBSS, the research questionnaire was developed. The questionnaire consisted of six sections: the first section included questions about the demographic backgrounds of the respondents, whereas the other sections included the determinants of the proposed framework, measured using five-point Likert scale questions. Some words were changed in order to ensure their applicability to the HWBSS context.

In order to ensure that the questions were clear and reflected the construct proposed, the questionnaire was revised by experts in the field to evaluate its validity and acceptability before it was finalized. The final version of the questionnaire was then pilot-tested to measure its reliability.

Although the discriminant and convergent validity of the adopted measurement in the proposed model has been established, it is still necessary to examine the validity of these measurements, as developing country contexts such as Jordan differ from developed counterparts. It has been argued that technology acceptance theories and models do not fit equally across cultures. According to [91], [92] 10 to 30 respondents are enough for pilot studies in survey research. The research instrument was pilot-tested with 29 citizens.

According to [93], the coefficient of determination  $R^2$  can be used to measure the regression model's explanatory power, which is the proportion of variance (%) in the dependent variable that can be explained by the predictor variable. Hence, if the  $R^2$ -squared value  $r > 0.7$ , it is generally considered a strong effect size, hence the regression model's explanatory power is good [94].

In order to ensure that the internal consistency of the measures of the proposed model were reliable and valid, we conducted a reliability analysis using Cronbach's alpha test. According to [95], [96] and [97], an  $\alpha$  value of 0.6–0.7 indicates acceptable reliability, whereas an  $\alpha$  value  $> 0.8$  is good reliability. Cronbach's alpha is affected by the number of items in the scale and is also

sensitive to the sample size

An excellent style manual and source of information for science writers is [9].

### IV. RESULTS

In this research, the regression model  $R^2$  was 0.724, which means that 72.4% of the total variance in the behavioural intention of consumers is described by the regression model. Furthermore, the regression coefficients' values as well as their significance constituted the factors included within the model.

#### A. Reliability Analysis

In general, the results showed that all the variables were reliable and that the measurement items of those variables had good internal consistency. Thus, where  $\alpha$  values were between 0.68–0.92 the variables could be used in the research, although the PD's  $\alpha$  value was 0.48, most likely affected by the sample size.

Accordingly, Table 1 presents the results generated from the Cronbach's alpha test for each variable.

**Table 1:** The results of the Cronbach's alpha test for each variable

	Cronbach's Alpha
AU	0.856669
BI	0.886820
I/C	0.812065
M/F	0.802675
PD	0.483019
PE	0.916331
PEOU	0.912563
PU	0.684183
Privacy	0.906059
Trust	0.725936
UA	0.775832

### V. DISCUSSION AND CONCLUSION

The efficiency of HWBSS is essentially dependent on consumers' usage and acceptance. Eventually, consumers' acceptance will lead to an active and continuous usage of HWBSS. On the other hand, consumers will not accept or will discontinue using the HWBSS where they fail to meet their expectation and attitudes. Therefore, it is important to explore the factors that influence consumers' attitudes towards the acceptance and usage of HWBSS, especially in developing countries, as most previous technology acceptance studies have been conducted in developed contexts [22].

Conducting this pilot study was important to confirm the feasibility of future work and the reliability of the questionnaire. In general, the reliability of the items in the questionnaire was good, except for the PD variable, obligating us to refine its related items for future

research. The pilot study suggested that numerous variables represent important factors that influence the acceptance and behavioural intention to use HWBSS in Jordan. These variables showed a positive and noteworthy correlation with the dependent variable. Given that the linear regression analysis results revealed a large R<sup>2</sup> value (0.724), it can be concluded that the tested framework model fits the data well and can be used for future research with a larger population.

Exploring consumers' attitudes and beliefs will certainly contribute to the research area and provide valuable understandings regarding the determinants that affect consumers' acceptance or abandonment of technology. Furthermore, recognition of these factors will equip governments and health-care providers to design HWBSS that comply with consumers' attitudes and beliefs in order to promote their adoption.

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