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System Service Quality Factors and Their Impact on User Satisfaction and Continuance Intention to Use M-Health: The Moderating Influence of Monetary Cost

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ABSTRACT

Mobile health (M-health) is widely recognized as a powerful technological driver for developing health systems. Service quality factors have been identified as critical indicators of user satisfaction and the intention to continue using M-health. However, the relationship between these factors varies across studies, leaving a research gap, particularly in the Middle Eastern region where limited studies have been conducted. This study aimed to investigate the impact of quality system factors on user satisfaction and the continuance intention to use M-health. A survey was conducted among 292 diabetes patients in the UAE. The results revealed that both interaction quality (ITQ) and system quality (SQ) significantly influenced user satisfaction and the intention to continue using M-health. In contrast, information quality (IFQ) had a significant impact on user satisfaction but not on continuance intention. Additionally, the study found that the relationship between user satisfaction and the intention to continue using M-health was moderated by monetary cost. These findings extend the information system model by offering new insights into the role of the IS success model in predicting M-health continuance intention.

1. INTRODUCTION

The increasing use of mobile devices like tablets and smartphones has fueled the global demand for M-health. The emergence of the M-health revolution and the rapid progress in mobile technology have empowered mobile devices to serve as versatile personal digital assistants in people's daily lives. Research suggests that the availability of various high-quality mobile services and applications (mobile apps) is a key driver of M-health advancement [1]. In comparison to traditional electronic health services, mobile apps have unique features such as usage conditions, location awareness, adaptivity, customisation, ubiquity and broadcasting, allowing consumers to utilise mobile services/applications at any time from any location. Because the present mobile service/application industry is highly demanding, company owners have focused on acquiring new consumers and maintaining existing ones However, a significant challenge remains prevalent: a considerable number of M-health users demonstrate low continuous intention to use the service, presenting a significant hurdle to the expansion of M-health initiatives and incurring costs. The unit cost of attracting a new customer is significantly higher than that of retaining an existing customer [2]. Therefore, improving continuous intention to use is critical for mobile app providers seeking cost efficiency and business growth [3]. As a result, many studies have been conducted to study important aspects impacting the desire to continue using such applications to offer corporate executives guidance for establishing beneficial long-term partnerships.

Even though, many mobile apps are available for M-health, users prefer to carefully consider which mobile application/service will best meet their unique needs before installing it. This is mainly caused by their anxiety over their mobile devices' limited storage capacity and operating capabilities [4]. Therefore, high-quality mobile app support can boost consumers' satisfaction with their mobile app's user experience, reducing their desire to move to alternative applications.

The SQ model has been widely used to understand the factors that influence users' satisfaction and continuance intention to use the technology. This model provides a comprehensive framework that identifies key elements of technology usability, reliability, and performance, enabling researchers to analyze and assess user experiences more

effectively.

However, the concept of system service quality has been defined differently from one study to another. For instance, some studies have shown that IFQ significantly influences users' satisfaction and continuance intention to use technology and M-health [5-7]. Conversely, recent research found that IFQ impacts various aspects of technology continuance intention to use and user satisfaction behavior [3, 8, 9]. However, other studies, including those by satisfaction [10-12], concluded that Information System (IS) success factors based on ITQ and SQ do not affect satisfaction or usage. Additionally, some studies even argued that SQ has a negative effect on users' satisfaction [5]. This contradiction in the literature may be attributed to several reasons. First, past studies often measured the relationship between IS success factors based on individual factors such as IFQ or SQ separately, rather than considering them in a holistic model. Second, most past studies were conducted in specific contexts, such as western countries and developed economies like China and South Korea.

Third, the utilization of technology, including M-health, varies across different contexts. Moreover, few studies have explored SQ factors affecting specific diseases such as diabetes type 2 continuance intention to use, particularly in the UAE, where no research has been conducted. This gap highlights the absence of an appropriate system service quality model that influences diabetes type 2 continuance intention to use. Additionally, while service quality variables such as IFQ, SQ, and ITQ impact users' satisfaction and intention to continue using M-health, other considerations like service pricing still influence the final choice. This creates another gap as most past studies focused on the direct relationship between IS success factors and users' continuance intention to use through satisfaction, rather than examining the moderating effect of cost on this relationship. Therefore, this study aims to further elaborate on service quality research in the IS domain by proposing the M-health service quality model derived from a combination of objective and subjective factors.

1.1 Diabetes in the UAE

In the United Arab Emirates (UAE), the escalating prevalence of Type 2 Diabetes presents considerable challenges and adds to the existing healthcare burden [13]. According to the International Diabetes Federation (IDF), the prevalence of diabetes in the UAE stands at 17.3%, significantly higher than the global average of 9.3% [14]. Recent studies conducted in the UAE indicate alarmingly high rates of diabetes, with figures reaching 25.1% among UAE nationals and 19.1% among expatriates in the Northern Emirates [15]. Addressing this critical issue demands innovative approaches, with M-health solutions emerging as promising interventions [16]. Although mHealth technologies provide scalable and accessible platforms for diabetes management, enabling monitoring, education, and behavior modification [17], utilization remains notably low in the UAE [18]. This may be because of the quality and reliability of mHealth systems, which significantly influence the continuous intention of diabetes patients to use such platforms. In addition, there remains a gap in the literature regarding studies conducted specifically on this topic in the UAE [18].

2. THEORETICAL DEVELOPMENT

Quality is a crucial factor in M-health systems, significantly influencing users' continuous intention to use. While the definition of service quality remains multifaceted and context-specific, its impact on user satisfaction in mHealth contexts is undeniable [16, 19]. Research suggests that mHealth service quality is particularly influential in shaping users' intentions to continue using such systems [9]. In the realm of mHealth, service quality dimensions such as SQ, ITQ, and IFQ have been identified as key determinants of users' continuous intention to use [1]. However, assessing service quality in mHealth systems requires careful consideration of potential biases in subjective measurements [19]. To address these challenges, scholars have proposed various measurement models tailored to the mHealth context [19].

Motivated by the importance of service quality in mHealth, this study operationalizes service SQ (SSQ) within the context of continuous intention to use mHealth systems. SSQ encompasses users' perceptions of service system superiority and incorporates dimensions aligned with existing literature [20]. Additionally, objective measurements such as service price may influence users' continuous intention to use mHealth systems [19]. By focusing on a diabetes M-health service in Abu Dhabi, this study aims to elucidate the relationship between service quality and users' continuous intention to use mHealth systems, particularly among young users.

2.1 SQ

Users' perceptions of communication technology's technical level are often seen as indicative of SQ [19, 21]. Moreover, a system's data processing capabilities, including its ability to integrate data from various sources, can significantly impact usage and enhance user satisfaction [22]. SQ encompasses several attributes such as dependability, privacy, efficiency, and flexibility, all of which contribute to its perceived quality [23]. In the realm of M-health services, users' perceptions of the technological level of communication are reflected in SQ [24]. SQ is recognized as a key driver of technology sustainability, with its ease of use, flexibility, and functionality improving users' satisfaction and continuous intention to use [1]. Research has shown that SQ positively influences users' satisfaction with M-payment in China [25] and customers' satisfaction with knowledge sharing platforms in Korea [7]. However, findings regarding the relationship between SQ and users' satisfaction and continuous intention to use are mixed. While some studies indicate a positive impact of SQ on user satisfaction [26], others report no significant relationship [11]. Additionally, negative relationships between SQ and user satisfaction have been observed in contexts such as internet banking [5]. M-health SQ is influenced by innovative organization of platform information, aiming to add new value for customers [27]. Continuation behavior in M-health systems is crucial for healthcare sustainability, extending beyond initial acceptance. Studies examining the quality of M-health apps have found mixed results regarding their impact on users' satisfaction and continuous usage intention [8]. Hence, it is essential to understand the nuanced relationships between SQ, user satisfaction, and continuous intention to use M-health systems. To address this, we propose the following hypotheses:

H1: *SQ positively influences the continuous intention to use M-health systems.*
H2: *SQ positively influences the satisfaction of M-health users.*

2.2 ITQ

Quality interaction plays a pivotal role in healthcare services, where human connection profoundly influences client satisfaction [28]. It denotes the duration of direct engagement between a customer and a service provider and significantly shapes the customer's overall perception of service quality [29]. Frontline personnel's interpersonal skills have been found to significantly impact service quality [30]. Studies on M-health users reveal that SQ services, driven by system, information, and ITQ, positively influence users' satisfaction and intention to continuously use M-health [9]. However, ITQ was measured under SSQ as a hierarchical second-order construct with a single hypothesis, potentially underestimating its correlations with other constructs [31]. Another study reported that ITQ has a positive effect on users' satisfaction and their intention to continue using M-health, though it was limited to maternal healthcare among women in rural areas in Ghana, potentially affecting M-health usage levels [1]. Despite several studies confirming the positive relationship between ITQ and user satisfaction with continuous intention to use [14, 26, 32, 33], some found no impact on continuous usage intention [10]. The use of technology varies according to the type of users and diseases. For example, in healthcare, interaction through care, cooperation, and confidence is crucial for reaching patients' satisfaction and loyalty, especially for diseases like type 2 diabetes that require consistent consultations. Considering these contradictions, further investigation is warranted, especially among diabetes users in the UAE, where no studies have been conducted.

H3: *ITQ positively influences continuous intention to use M-health.*
H4: *ITQ positively influences the satisfaction of M-health users.*

2.3 IFQ

IFQ is a critical aspect of technology usage, defining the usefulness and timeliness of information delivered during communication processes [34]. The quality of ISs is determined by the software and hardware utilized in the system [35]. IFQ can be categorized into hedonic and utilitarian ISs, where the former provides self-realizable benefits to users, while the latter focuses on achieving task-related objectives [36]. Research indicates the pivotal role of IFQ in enhancing technology user satisfaction, a crucial factor in sustaining competitiveness [35]. Users make calculated judgments based on functional advantages and sacrifices, emphasizing both utilitarian and hedonic aspects in encouraging behavioral intention to use and adopt ISs [37]. In the healthcare context, such as M-health, the delivery of valuable, relevant, and secure information is essential for user satisfaction [19]. Studies among WeChat users in China and users of the National Health Information Portal in South Korea demonstrate a positive relationship between IFQ and user satisfaction [6]. However, findings regarding the association between IFQ and long-term intention to use vary, possibly due to differing measurement perspectives [38]. Studies from Ghana and Bangladesh reveal a positive relationship between IFQ, driven by hedonic and utilitarian benefits, and M-health user satisfaction and continuous intention to use [9]. Similarly, research on location-based applications suggests that IFQ positively influences continuous intention to use [39]. To fill existing gaps, especially in the healthcare context, where self-realizable value from information delivery is paramount, further research is necessary [40]. Evaluating existing features and their effects on user behavior and intentions can provide valuable insights for M-health providers [41].

H5: *IFQ positively influences the continuous intention to use M-health.*
H6: *IFQ positively influences the satisfaction of M-health users.*

2.4 User satisfaction

User satisfaction is a critical component in ensuring long-term usage [42]. Satisfaction is the biggest indicator of consumers' desire to continue using mobile banking in Malaysia [43]. Several studies from various disciplines such as fintech [44], e-government [45] or Chatbot [46] confirm the relationship between users satisfaction and users continuous intention to use. Another study found a positive relationship between users' satisfaction (US) and continuous usage of e-government [47].

Moreover, previous study revealed that if users are not satisfied with the mobile payment service, they may not continue [48]. However, those studies have been widely conducted in China and Korea and somehow Malaysian context. Meanwhile, the literature in the Arab region countries still lacks sufficient studies. The main construct for M-health services may be termed as customer intention to use. The literature suggests that the use of mobile technology in health services has been rapidly growing, attracting academic and healthcare policymakers' attention. Previous researches have focused on finding the variables that influence either adoption [49, 50] or intention to use [51, 52]. Past studies tend to identify and examine the key drivers for customers' continuous intention to use M-health. For example, In China [3], patient's satisfaction had a favourable impact on their continued desire to utilise M-health. The research on the continuation of M-health technology services found that users' satisfaction substantially influences users' continued intention to use [1, 9]. However, these studies lack generalisation because M-health has been investigated for general purposes, and the targeted sample is specific either in Bangladesh or rural women in Ghana. This may affect the outcome of the analysis since the use of M-health varies from one patient to another according to their needs for healthcare and their experience. For example, patients suffering from diabetes 2 are more likely to need further care compared to diabetes 1. To bridge these gaps, these research hypotheses that:

H7: *Satisfaction has a positive relationship with intention to use M-health.*
H8: *The relationship between SQ and the continuous intention to use M-health is mediated by the satisfaction of M-health users.*
H9: *The relationship between ITQ and the continuous intention to use M-health is mediated by the satisfaction of M-health users.*
H10: *The relationship between IFQ and the continuous*

intention to use M-health is mediated by the satisfaction of M-health users.

2.5 Monetary cost

Consumer satisfaction has been linked to monetary costs [53, 54]. and continuous usage [54, 55]. Previous research focused on the functional and non-functional value of M-health (for example, IFQ, ITQ and SQ) [44, 56], while other research focused on the related financial cost as a barrier to utilising M-health [57]. The cost or utility of utilising M-health was not adequately addressed in the literature. The degree to which the price of an M-health service has realisable value might be described as monetary cost in this situation [58]. Cost concerns were shown to be crucial and received significant attention from consumers when they were considering whether or not to embrace or reject innovations [59].

Furthermore, buyers appear to be weighing the benefits obtained as well as the financial cost of adopting new technologies [60]. Past studies introduced monetary cost as an external variable in linking customer satisfaction and customer loyalty [61]. Customers are less inclined to embrace mobile banking technology if they perceive a greater efficient cost in contrast to other classical channels, according to research [60]. According to Lee et al. [60], the monetary cost of mobile phone service moderates the relationship between customer's satisfaction and loyalty. In other words, if the monetary cost is high, the relationship between customers' satisfaction and their loyalty is low. In a similar vein, the study [62] found that switching costs (MC) significantly moderates the relationship between customer satisfaction and customer loyalty in retail banking. Besides, the perception of M-health users about monetary cost moderates the relationship between their satisfaction and continue to use M-health [1].

To summarise, numerous research looked at the link between SSQ and user satisfaction, which directly impacted consumers' continued desire to utilise technology. However, most of the past studies, generally and in M-health, particularly neglected the role of monetary cost [8, 9, 39]. This includes how the interaction of monetary cost influence users satisfaction and intention to continue to use M-health. This may be applicable with public services such as e-government or services with no big charge, such as e-banking and ulearn. However, providing unique services of M-health with high quality is often associated with cost, which varies from one country to another. Note that neglecting the cost leaves a gap in which M-health users may be satisfied with the quality of M-health application and services. Still, they can't continue using the service because of the cost. Thus, the users' perception about the cost may influence the stability of using M-health, especially when the service is provided with high quality and associated with high cost. Users tend to use M-health frequency such as M-health that targets the users of diabetes type 2. Since UAE is one of the countries with a high ratio of people who are suffering from diabetes type 2, this study aims to close the gap by addressing the following hypotheses:

H11: *The relationship between US and continuous intention to use M-health is moderated by the monetary cost of the services.*

3. METHODOLOGY

This study aims to look at the impact of a high-quality service system on diabetic patients' continued desire to utilise M-health in the UAE. For this purpose, a survey involving 292 respondents was adopted. In this research, there are three exogenous variables, which are the quality system, quality interaction and quality information; one mediator, which is the M-health US; one moderator, which is the monetary cost; and one endogenous variable, which is the continuous intention to use M-health.

3.1 Sampling and data collection

Data were gathered from the UAE patients who have diabetes type 2. To ensure the validity of our data, we used objective measurements during data collection to limit the bias that may arise from heterogeneous measurements. Although using M-health can be influenced by the type of diabetes, the patients with diabetes T2D are mainly young adults. Hence, the scope of this study is young adults who suffer from T2D. United Health Group reported that the adult population (age 20-79) of the UAE is approximately 32%, amongst the world's highest. The use of M-health technology is influenced by the age of the users [63]. Therefore, we targeted young adult patients aged 20 to 30 because they form the majority of the patients suffering from diabetes T2D. Imperial College London Diabetes Center, Abu Dhabi, provides M-health to about 7325 patients approximately. Systematic random sampling was adopted to select the respondents. In February 2020, a survey was distributed to 459 diabetes patients who used M-health in Abu Dhabi. We used three main social network websites, namely WhatsApp, Facebook, and Instagram. After two months, 309 of the disseminated questionnaires had been collected, giving a response rate of 67%. However, 17 of the 309 surveys were incomplete, with missing values greater than 10%, and were thus removed from being analysed. For this purpose, 292 were found valid for statistical data analysis, distributed between 169 females and 113 males.

4. DATA ANALYSIS AND RESULT

This research utilises a component-based SEM or the PLS to analyse data because it is an appropriate tool to examine and establish the indirect effects of the variables with moderating and mediating constructs [64]. Unlike other software applications, PLS does not need any assumptions about the distribution of variables. Therefore, the method is suited for lower sample sizes [65]. In this research, service quality is deemed as a higher-order construct, comprising three dimensions of the first order and nine dimensions of the second order. The research uses a replicated indicator method to concurrently estimate all constructs instead of a single lower-order and higher-order dimension estimate. The study used PLS path modelling to analyse the model since it ensures parsimony, which is more theoretical and reduces model complexity. The study utilises PLS in particular because, first, it is consistent with the study's goal of developing and evaluating a theoretical model by predicting and describing it. Second, PLS can successfully address different limitations in hierarchical modelling in terms of distributional characteristics (multivariate normality), sample size, measurement level, model complexity, factor indeterminacy, and recognition. PLS is particularly well suited for complex constructs and when the phenomena of focus are new or scalable.

SmartPLS 3.0 was utilised to assess the high-order, reflective-formative model with frequent usage of specified variables in this study. For the inside estimation, we utilise a path weighting scheme in this situation [66]. The standard errors of the estimations were calculated using nonparametric bootstrapping [67], with 5000 repetitions [68]. The repeated indicator technique for reflective-formative models with a path weighting scheme gives the optimal parameters, as per Becker et al. [69].

4.1 Internal consistency reliability

The scales' convergent reliability, validity, and discriminant validity were investigated in this study. If item loadings are 0.60 or greater, convergent validity can be demonstrated [70]. System efficiency, system dependability, system privacy, care, responsiveness, assurance, utilitarian, hedonic information, current information, satisfaction, switching price, and continuous intention to use are the 12 components that constitute this first-order model. Originally, all item loadings that surpassed the 0.7 cut-off value and were significant at p. 0.001 were computed. To confirm the reliability of all the measurement scales, the researchers estimated average variance extracted (AVE) and composite reliability (CR) Fornell et al. [71]. These test results reveal the degree to which a concept and its indications are associated. All scales of CR and AVE are either equal to or surpass the 0.56 and 0.50 cut-off values, respectively [72]. Table 1 shows that the minimum AVE for IFQ is 0.651 and the minimum CR for collaboration is 0.791, both of which are beyond the required standards. As a result, the study found that all item loadings, CRs, and AVEs are more than their corresponding cut-off values, ensuring sufficient reliability and convergent validity [72]. Finally, the construct's AVE must be larger than the variance shared by the construct and other components in the model for discriminant validity. Discriminant validity is demonstrated when these values surpass the interconstruct correlations. The AVEs' square root in the correlation matrix diagonal is computed. This test signifies that the constructs do not share the same type of items and are conceptually distinct [73]. Overall, the measurement model was deemed satisfactory with the evidence of sufficient reliability (AVE > 0.5, CR > 70), convergent validity (loadings > 0.5), and discriminant validity ($\sqrt{AVE}$ > correlations), as shown in Table 2.

Table 1. Path coefficients

Path	Path Coefficient	S.E	t-Value	p-Value
ITQ → US	0.216	0.085	2.527	**0.012**
ITQ → CU	0.394	0.071	5.537	**0.000**
SQ → CU	0.167	0.073	2.280	**0.023**
SQ → US	0.183	0.083	2.215	**0.027**
IFQ → CU	**0.007**	**0.091**	**0.075**	**0.940**
IFQ → US	0.153	0.072	2.140	**0.032**
US → CU	0.304	0.064	4.769	**0.000**

Table 2. Discriminant validity based on Fornell-Larcker criterion

	CU	IQ	SC	QI	SQ	US
CU	0.824					
IQ	0.453	0.723				
MC	0.467	0.367	0.806			
QI	0.592	0.533	0.520	0.669		
SQ	0.489	0.657	0.354	0.496	0.712	
US	0.509	0.418	0.398	0.359	0.401	0.795

The variance of inflation factors (VIF) values were evaluated to determine whether there was any possibility of multicollinearity amongst the study variables. The VIF values show the presence of collinearity level among independent variables [68].

They are predicated on VIF values of tolerance between 0.20 or lower and 5 or higher. The VIF of all items ranges between 1.133 and 2.391, considerably below the usual cut-off value of 5-10, indicating that the data are genuine, according to a collinearity test.

4.2 Structural model path assessment

The connection between the independent variables of the SSQ, including (SQ, ITQ, and IFQ) and the dependent variable of Continuous intention to Use (CU), was evaluated in this study. In Figure 1 and Table 2, the results of a standardised beta of 0.394 (ITQ → CU), 0.167 and (SQ → CU) and 0.007 (IFQ → CU) are significant. Thus, the results confirmed that the SSQ of M-health through ITQ and SQ has a positive effect on continuous intention to use M-health, supporting H1 and H3. However, IFQ was not significantly associated with the continuous intention to use M-health, which rejects H5. The study estimated the relationship between the independent variables of SSQ, including (SQ, IFQ and ITQ), and mediating variable of Users satisfaction (US). In Figure 1, the findings yield a standardised beta of 183 (SQ → US), 0.216 (ITQ → CU), and 0.153 (IFQ → US) are significant and supporting H2, H4 and H6. Finally, the standardised beta of 0.304 (US→ CU) shows a positive significant relationship between the US and users' continuous intention to use M-health, which supports H7.

4.3 Mediation effect

This paper also measures indirect effect or mediating effect value on (SQ →US →UC), (ITQ →US →UC) and (ITF →US →UC). The findings align with the firm mediating effects of US in (SQ →UC), (ITQ →UC) and (ITF →UC) link as the *z*-value exceeds 1.96 (p 0.05) [71]. These findings support H8, H9 and H10.

The VAF (Variance Accounted For) value is used in this research to examine the magnitude of the indirect impact, which is the ratio of the indirect effect to the overall effect. According to the findings, US accounts for roughly 21% of the entire influence SQ have towards UC. The US also describes about 38% of the total effect of ITQ on UC. In addition, the US explains 21% of the total effect of QI on UC. As a result, the US has been identified as important mediator in assessing the impacts of overall service quality on consumers' continued intention to use M-health. In addition, the model's overall explanatory power is captured by the R2R^2R2 values, which are 0.3230.3230.323 for US and 0.5340.5340.534 for UC. These values meet the criteria for medium to large effect sizes. further confirming the robustness of the model. These findings support the influence of total SSQ on perceived satisfaction and continued intentions, guaranteeing the study model's homological validity.

4.4 Moderate effect

The moderating effect of MCs on the relationship between US and their intention to continue using M-health services (CU) was assessed using a two-stage approach in SmartPLS.

Specifically, an interaction term was created by multiplying the standardized scores of MC and US, as per established procedures to test moderation. This interaction term was then included in the structural equation model to estimate its effect on CU. As shown in Table 3, the interaction term's path coefficient of 0.0860 suggests that MC positively strengthen the relationship between US and CU. This indicates that for every one-unit standard deviation increase in MC, the positive relationship between US and CU improves by 0.086 (or 8.6%). Furthermore, the significance of this moderating effect was confirmed using SmartPLS's bootstrapping tool, which yielded a t-value of 2.0112 and a p-value of 0.044, establishing significance at the 0.05 level of confidence.

The results are further illustrated in Figure 1, which depicts the interaction effects through slope analysis. When users perceive MC as low, both US and CU values are relatively lower. Conversely, as perceptions of MC increase from low to high, the strength of the relationship between US and CU also increases. This visualization underscores that higher MC amplify the positive association between US and CU. In practical terms, this indicates that when users perceive the cost of switching away from M-health services as higher, they are more likely to maintain continuous use of the service, even if satisfaction levels remain unchanged. These findings confirm that MC serve as a significant moderator in this relationship, aligning with the hypothesis (H11) proposed in the study. Finally, the demographic characteristics of the sample predominantly non-working young individuals in the UAE who are financially dependent on others offer insight into these findings. For this group, MC significantly influence behavior, making them more likely to continue using M-health services, despite their level of satisfaction. This highlights the critical role of perceived MC in shaping user behavior in this context (Figure 2).

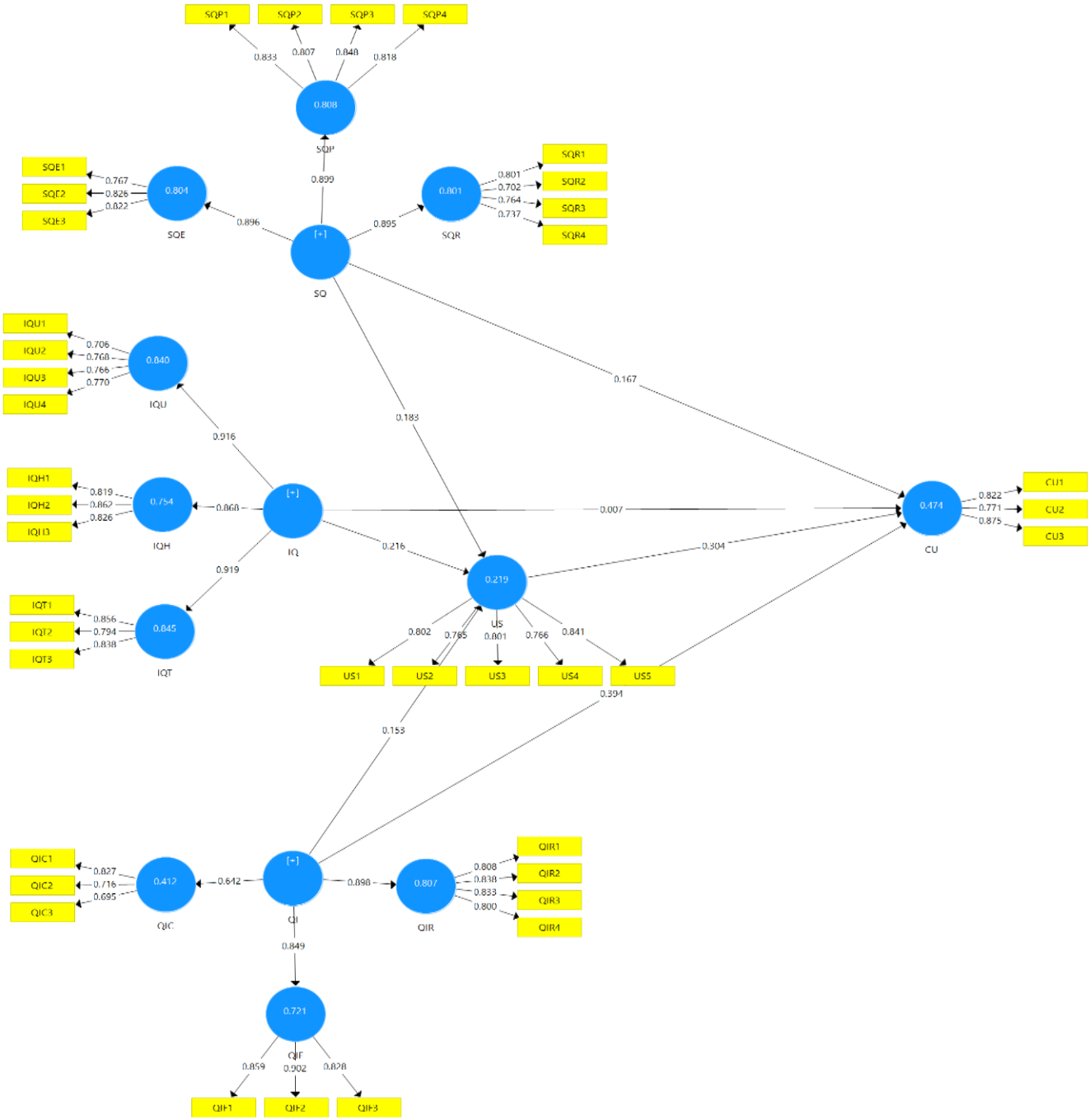

Figure 1. Measurement model results after elimination

Table 3. Significance of moderating effect of MC over US & CU

Path	Path Coefficient	t-Value	p-Value
Moderating Effect→ CU	0.086	2.011	**0.044**
US → CU	0.251	3.748	**0.000**
MC → CU	0.141	2.293	**0.022**

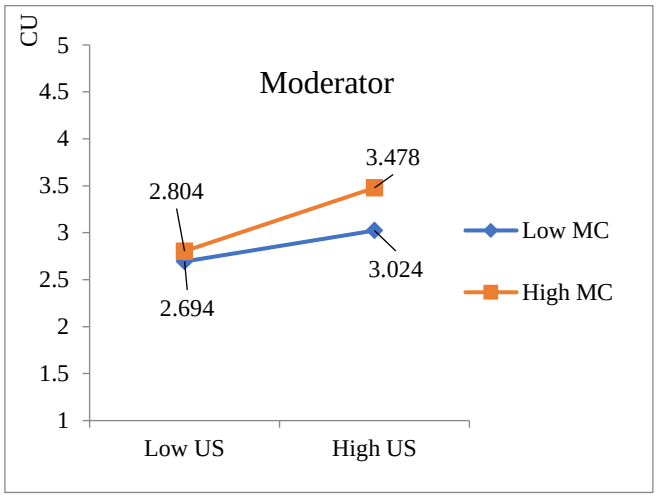

Figure 2. Two-way interaction term

5. DISCUSSION

In this paper, SSQ was constructed, consisting of three main constructs and nine sub-constructs. The finding of this paper emphasises that quality is the departure point to solving the challenges of system service [9, 74] in diabetes M-health. This study also posed a perception of how to create a system's quality of service to overcome usage problems that encounter diabetes among young patients, affecting their satisfaction. SSQ was positively associated with all the primary dimensions. The 'quality interaction' was the most significant factor influencing users' continuous intention to use M-health and their satisfaction with 0.394 and 0.216, respectively. This result proposes that higher gains in total SSQ may be accomplished by improving the quality interaction between M-health doctors, staff, and patients. This can be achieved by cooperating with patients to reach their personal needs and solve the problems with confidence and care. Second, 'SQ' was signified as a significant predictor of the M-health service system, emphasising the system's availability and accessibility, allowing everyone to obtain health services at any time and from any location. This accessibility is essential in allowing the patient outcomes of M-health delivery systems in low-resource environments. However, the quality information was revealed to have no significant effect on the intention to use M-health. Perhaps the patients are more likely to use interaction to gain the needed information, which explains why ITQ is a crucial factor that affects CU. However, there is a significant relationship between quality information and US. This indicates that the information provided by M-health should meet US by ensuring the currency of the information and improving the utilitarian and hedonic benefits. While the study prioritised the significance of overall SSQ dimensions in terms of the variance clarified, the study advises that all dimensions should be given equal consideration to properly embrace consistency in research into service systems.

5.1 Theoretical contribution

This study provided insights on the effect of information success factors on user satisfaction and continuance [19] intention to use M-health in the UAE. This research contributed to the body of knowledge by examining the mediating role of user satisfaction as well as the moderating effects of monetary cost in these relationships. Significant contributions of this study have been considered, and these are categorised into theoretical, methodological and practice.

This study's conclusions have a variety of theoretical implications. This study tested the modified IS success model with some adjustments to determine its applicability to the M-healthcare system in the UAE. This was done by expanding IS success into the quality of M-health services by investigating device quality factors. While M-health researchers are increasingly interested in this research area, many deficits remained, such as providing a solution for the low rate of patients who continuously use M-health. Most of the literature paid attention to the drivers of M-health adoption guided by several theories, for example, the Technology Acceptance Model (TAM) and UTAUT.

However, attending the continuance intention to use M-health has not been assessed adequately. This left a literature gap on improving the continuance intention to use M-health and the factors that influence it.

This study model was positioned on system service quality, contributing to the knowledge and bridging the gap that exists in the literature. It combined both technical competencies of the M-health and quality of practice along with the system features such as the service cost. This research also contributed to IS by validating and verifying a consistent M-health service model relying on three key frameworks, namely SQ, ITQ and IFQ and the nine sub-constructs (system efficiency, system reliability, system privacy, responsiveness, care, assurance, utilitarian benefit, hedonic benefit and current). Even though an increasing body of literature highlights the significance of quality dimensions on continuous usage, very few studies have actually been conducted on the topic. This study advances the literature on service quality systems in M-health by adopting IS success factors. Framed within the IS success factors [75], which include SQ, IFQ, continuous intention to use and US, this study conceptualises quality into three dimensions, namely ITQ, service quality and IFQ as the determinants for user satisfaction and continuous intention to use.

In the healthcare sector, the generic service quality models were adopted by a majority of past studies to understand the perceived service quality attributes. The literature argued that there are differences between healthcare quality and M-health quality because M-health services have unique features, for example, mobility, ubiquity, immediacy, virtual consultation accessibility, and personalised nature interactivity. The findings proved that quality dimensions positively correlate with user satisfaction and continuance intention to use M-health. In addition, user satisfaction was a strong predictor of the continuance intention to use the M-health system. Because satisfaction is a consequence of satisfying customers' expectations on the service, usefulness and ease of use of M-health applications, it is critical to guarantee that customer experiences are uniform to enhance their continuation.

The monetary cost's moderating effect on user satisfaction and continued intention to use M-health was investigated in this study, which added valuable knowledge to the literature. By including monetary cost as one of the constructs of SQ, this

study considered both consumers/users and product perspectives to operationalise quality, hence providing a richer understanding of the concept of quality. In addition, M-health is recognised as an economical product rather than a public product, considering the users need to bear the cost of maintaining the mobile gadgets and realising the value of money when using M-health.

Thus, this study empirically supported the findings that monetary cost should be considered to operationalise the quality construct and analyse its effects on user satisfaction and continuance intention to use.

M-health technology has been recognised as an effective development devise that improves healthcare service quality by extending health service to everyone. The UAE has a long experience with delivering mobile healthcare services. In addition, UAE has more usage of mobile IS in the gulf region. The majority of past studies in M-health through IS success model are suffering due to the generalizability of this model to other forms of technology. This forms a challenge because it is limited to specific contexts. As a result, this research contributed to the existing information about new technology continuation intentions in Arab and Gulf countries in general and the UAE in particular.

5.2 Methodological contribution

This study operationalised the SSQ from both the subjective and objective measurements approach. From the subjective view, SSQ is defined based on users' judgment and perception of the superiority of a service system, which aligns with the general concepts in the literature. The objective measurement of quality is represented by the targeted users and service price, which can be more sensitive to some users, especially those who are jobless or from a low-income category. This study used methodological gestalt of PLS hierarchical modelling. This hierarchical model was developed and validated by PLS in the context of M-health quality service.

The study has reported sufficient measurement and structural results for the research model to estimate the latent variable at higher order. PLS allows the theoretical contribution of the study to be expanded by designing and evaluating a realistic third-order model of service quality. This study confirmed that higher-order systems could be presented in a structural model to show the methodological validity of the entire research model. This condition is where PLS exceeds SEM, which depends on covariance in the higher-order model calculation (CBSEM). A complex model is generally referred to as a wide range of latent variables with realised variables, such as a model for the standard of third-order service.

This study also demonstrated how mediating and moderating effects can be quantified in a hierarchical model. Mediation effects and moderating effects are essential to ensure accurate correlations between latent variables since complex conations are subject to contingencies. PLS path modelling is ideal for predicting mediating and moderating effects for complex models, including hierarchical models (with a full disintegration approach). The analysis provided a step-by-step demonstration of how the mediating and moderating effects can be integrated into the PLS model. The findings indicated that PLS measures the true results of mediation in a nomological network by taking into account measuring error that mitigates the estimated relationships and strengthens the theory's validity.

Power analyses may be utilised to estimate the probability of the structural model's latent variables being discovered in relationships with significant interrelations. The study demonstrated the robustness and applicability of PLS for real-world models complex applications. The study also confirmed that Smart PLS path modelling could be the "silver bullet" for estimating causal models in various empirical and theoretical data situations.

5.3 Practical contribution

Various stakeholders will benefit from this study's practical contributions. The outcomes of this study can assist service providers in increasing M-health app acceptance and usage in healthcare facilities. It's critical that consumers be happy with their recent experience since this encourages them to utilise the system again. Efforts must be made to increase and improve the device's utility because users would only be satisfied if they find the device useful to meet their needs and requirements. Service providers must also provide quality information on the relevant and useful device to the users and access to information whenever users need it.

In addition, the quality of interaction can be improved by providing customers with sincere answers, sufficient confidence and good empathy. This is because the findings on the functional (utilitarian) and emotional (hedonic) services (for example, comfort, efficiency, positive support and so on) of the M-health platform help improve customer satisfaction. This study also found that the only way to achieve the desired level of service quality is to provide a good technical infrastructure (for example, a good IS and a stable wireless network). Therefore, service providers need to discuss the consistency of their network and the nature of the relationship between them and their customers. The research methodology facilitates service providers and healthcare management to understand how specific service quality dimensions and overall service quality interact with users' satisfaction and desire to utilise the M-health system in the future. By keeping track of changes in choices, expectations, demand, and marketplace competition, service providers can captivate new consumers and maintain existing ones.

They must be mindful that their expectations and feelings may shift as a result of frequent usage of the medical gadget. Thus, they have to evaluate the existing features of the M-health apps and the kind of service quality preferred by the existing customers and identify ones that can attract new customers. In terms of cost savings and business growth, service providers should be familiar with knowing that the cost of attracting new customers is much higher than the cost of retaining an existing customer. Moreover, increasing customer demands and continuance intention to use is crucial to mobile application providers.

Both public and private healthcare institutions in the UAE should benefit from the current business opportunities provided by the M-healthcare system. This is performed by upgrading the quality of their services in terms of service efficiency and effectiveness since IS is now becoming the norm for any hospital that aspires to provide world-class healthcare. One of the particular importance is user satisfaction with the current M-health service experience. How far the service quality provided by the M-health care service gave satisfaction to the customers? If strategies can be developed to make the existing M-health attractive to more customers, the M-health service could be used continuously in

all healthcare institutions in the UAE.

If a substantial number of users continue to use the M-health system after the early stages, it will be a great accomplishment. According to the findings, user satisfaction has a major mediating effect in forecasting the intention to use the M-health system in the future. These results indicate that "service quality" and "US" should be regarded by the management of healthcare institutions as strategic priorities. This ensures healthcare quality improvement that meets patients' loyalty and continuous usage of the M-health facilities.

The M-health service quality model suggested in this study allows M-health service providers to achieve customers' loyalty, as well as improve patients' and community's health.

Diabetes is a major issue worldwide, including in the UAE. Therefore, the model of this study is useful for policymakers and M-health platform developers because it assists them in improving their services, increasing US and users' continuance intention to use M-health through the development of a quality M-health service system. Since many young adults in the UAE are suffering from diabetes, this model provides a solution on how to persistently improve their health and respond to the needs of many patients effectively and efficiently. This model was tested from the users' perspective, which may help the M-health developers to bridge the knowledge gap between services provided and customers' real demand.

This model may help health institutions improve their outreach by customising M-health services and features according to users' preferences. For example, SQ perceptions can be enhanced by humanising technology functions. System efficiency, system reliability, system availability, and system privacy can easily be handled and recognised by users. Similarly, by improving customer understanding with honest and heartfelt responses, compassionate attitude, and satisfactory assurance, the quality of interaction can be improved. IFQ can also be improved through upgrading the current IS to meet users' preferences and solve their problems.

5.4 Limitations of study

This research, however, has multiple limitations. First, it was performed only among young T2D diabetic patients from the Imperial College London Diabetes Center in Abu Dhabi. There are other patients suffering from other health conditions that use similar M-health platforms. As such, the study's findings may not apply to other patients or healthcare institutions in other parts of the UAE. Other patients or respondents may provide different results. Therefore, this study needs to be replicated in other types of patients and health establishments in the UAE before general conclusions are drawn.

Second, this research was limited to a single nation, the UAE, limiting the findings' generalisation. Although service quality research is context-specific, replications in different settings will strengthen the study model's credibility. Service quality in different countries can increase model validations by creating a clear, replicated sample representing the real population. Therefore, future studies should be conducted in other Gulf countries or even in other parts of the world, which may provide the researchers with interesting and valuable insights.

Third, participants in this study personally reported their use of the M-health system. Due to numerous negative variables such as dishonest replies or respondents responding in a socially acceptable manner, or respondents may have their motive for participating in the study, self-reported studies are prone to bias. This method also gives no opportunity for the respondents to understand certain vague points in the questionnaire. Therefore, there is no assurance that respondents will provide accurate data.

Fourth, the use of an online survey may have prevented those patients with inadequate computer access or experience from participating in the survey. This online method can also lend itself to participants' honest responses without the researcher's presence and monitoring. However, since this study focuses on technology usage, an online survey enhances the sample's representativeness since only the qualified patients who use the technology would complete the survey questionnaire. However, there may be a problem of generalisability.

Fifth, there is a scarcity of long-term research that must be addressed. The data for this research was collected using a cross-sectional method, and the information gained depends on respondents' perceptions at the time. This method does not allow for the consideration of user's perception changes during and after use of the system. This can result in a lagged effect in some of the relationships among the study constructs. Furthermore, M-health is a technological application that witnesses rapid changes. Therefore, seeing the impact of changes over a longer period of time would likely provide further insights regarding probable outcomes.

Finally, this study's limitation may be due to employing a seven-point Likert scale, where the respondents measured the degree of agreement and disagreement on the statements related to SQ, ITQ, IFQ, user satisfaction, monetary cost, and continuance intention to use. Respondents sometimes may use the Likert scale to measure their perceptions on the questions automatically without careful attention and understanding the statements. In addition, the use of the mid-point scale provides the possibility of respondents making an easy choice in answering the questions. It would be difficult to assume that all the questions have been completely understood and answered correctly by the respondents.

5.5 Suggestions for future research

Despite these shortcomings, this research has offered valuable suggestions for creating and implementing a M-health system in the UAE. Based on the results, it is proposed that this study can be replicated in various healthcare institutions in the UAE to determine its predictive validity. In addition, the study can also be replicated to more Gulf nations to examine whether this model would be more effective in measuring IS success and continuance intention to use simultaneously. It would be of great interest to see how well the study results fit into other healthcare institutions in different settings and contexts.

The cross-sectional research design does not provide further insight into perception changes during and after using the M-health devices. Perhaps adopting a longitudinal study would allow the researcher to gain insights into how users of M-health and the relationships among constructs amend over time. The constructs in this study, SQ, ITQ, IFQ, user satisfaction and monetary cost, are dynamic and tend to change over time. Hence, examining their association with continuance intention to use M-health on data collected over a period of time may provide further insights regarding probable outcomes. The online questionnaire was the only tool used to

gather data in this study by employing quantitative research methodologies. Perhaps qualitative approaches, such as extensive interviews to obtain verbal descriptions of features, instances, and the context, should be used in future studies. Compared to quantitative research, qualitative research generally involves a smaller number of instances explored in more depth. It would also give a better grasp of the interacting and complicated interactions between factors in certain settings. As a result, this technique may provide further insights into using the M-health system in the UAE and the desire to utilise it in the future. Furthermore, the limitations in using a quantitative survey questionnaire can be overcome by adopting a qualitative research design in future studies.

6. CONCLUSIONS

This study investigated the impact of system service quality factors on user satisfaction and continuance intention to use M-health services, with a particular focus on the moderating role of monetary cost. The research was conducted among 292 diabetes patients in the UAE, and the findings provide valuable insights into the factors that influence the sustained use of M-health applications.

The results revealed that SQ and ITQ significantly influence both user satisfaction and continuance intention to use M-health services. Specifically, ITQ emerged as the most critical factor, highlighting the importance of effective communication and engagement between healthcare providers and patients. SQ, which includes attributes such as reliability, privacy, and efficiency, also played a significant role in enhancing user satisfaction and encouraging continued use of M-health applications.

However, IFQ was found to have a significant impact on user satisfaction but not on continuance intention. This suggests that while the quality of information provided by M-health applications is essential for user satisfaction, it may not be a decisive factor in whether users continue to use the service over time. This finding underscores the need for M-health providers to focus on improving the quality of interactions and system performance to ensure long-term user engagement.

The study also identified monetary cost as a significant moderating factor in the relationship between user satisfaction and continuance intention. When users perceive the cost of switching to alternative services as high, they are more likely to continue using the M-health service, even if their satisfaction levels are moderate. This highlights the importance of pricing strategies in retaining users, particularly in regions where financial considerations play a crucial role in decision-making.

REFERENCES

[1] Oppong, E., Hinson, R.E., Adeola, O., Muritala, O., Kosiba, J.P. (2021). The effect of mobile health service quality on user satisfaction and continual usage. Total Quality Management & Business Excellence, 32(1-2): 177-198. https://doi.org/10.1080/14783363.2018.1541734

[2] Lorente-Martínez, J., Navío-Marco, J., Rodrigo-Moya, B. (2020). Analysis of the adoption of customer facing InStore technologies in retail SMEs. Journal of Retailing and Consumer Services, 57(2): 102225. https://doi.org/10.1016/j.jretconser.2020.102225

[3] Guo, X., Chen, S., Zhang, X., Ju, X., Wang, X. (2020). Exploring patients' intentions for continuous usage of mHealth services: Elaboration-likelihood perspective study. JMIR mHealth and uHealth, 8(4): e17258. https://doi.org/10.2196/17258

[4] Ming, L.C., Untong, N., Aliudin, N.A., Osili, N., Kifli, N., Tan, C.S., Goh, K.W., Ng, P.W., Al-Worafi, Y.M., Lee, K.S., Goh, H.P. (2020). Mobile health apps on COVID-19 launched in the early days of the pandemic: Content analysis and review. JMIR mHealth and uHealth, 8(9): e19796. https://doi.org/10.2196/19796

[5] Rahi, S., Abd. Ghani, M. (2019). Integration of DeLone and McLean and self-determination theory in internet banking continuance intention context. International Journal of Accounting & Information Management, 27(3): 512-528. https://doi.org/10.1108/IJAIM-07-2018-0077

[6] Yang, X. (2021). Determinants of consumers' continuance intention to use social recommender systems: A self-regulation perspective. Technology in Society, 64: 101464. https://doi.org/10.1016/j.techsoc.2020.101464

[7] Pang, S., Bao, P., Hao, W., Kim, J., Gu, W. (2020). Knowledge sharing platforms: An empirical study of the factors affecting continued use intention. Sustainability, 12(6): 2341. https://doi.org/10.3390/su12062341

[8] Shim, M., Jo, H.S. (2020). What quality factors matter in enhancing the perceived benefits of online health information sites? Application of the updated DeLone and McLean information systems success model. International Journal of Medical Informatics, 137: 104093. https://doi.org/10.1016/j.ijmedinf.2020.104093

[9] Akter, S., Wamba, S.F., D'Ambra, J. (2019). Enabling a transformative service system by modeling quality dynamics. International Journal of Production Economics, 207: 210-226. https://doi.org/10.1016/j.ijpe.2016.08.025

[10] Lien, C.H., Cao, Y., Zhou, X. (2017). Service quality, satisfaction, stickiness, and usage intentions: An exploratory evaluation in the context of WeChat services. Computers in Human Behavior, 68: 403-410. https://doi.org/10.1016/j.chb.2016.11.061

[11] Zhanyou, W., Dongmei, H., Yaopei, Z. (2020). How to improve users' intentions to continued usage of shared bicycles: A mixed method approach. PLoS ONE, 15(2): e0229458. https://doi.org/10.1371/journal.pone.0229458

[12] Kim, K.H., Kim, K.J., Lee, D.H., Kim, M.G. (2019). Identification of critical quality dimensions for continuance intention in mHealth services: Case study of OneCare service. International Journal of Information Management, 46: 187-197. https://doi.org/10.1016/j.ijinfomgt.2018.12.008

[13] Al Awadi, F., Hassanein, M., Hussain, H.Y., Mohammed, H., Ibrahim, G., Khater, A., Suliman, E. (2021). Prevalence of diabetes and associated health risk factors among adults in Dubai, United Arab Emirates: Results from Dubai household survey 2019. Dubai Diabetes and Endocrinology Journal, 26(4): 164-173. https://doi.org/10.1159/000512428

[14] Van Riel, A.C., Henseler, J., Kemény, I., Sasovova, Z. (2017). Estimating hierarchical constructs using consistent partial least squares: The case of second-order composites of common factors. Industrial Management & Data Systems, 117(3): 459-477.

[15] Shieb, M., Koruturk, S., Srivastava, A., Mussa, B.M. (2020). Growth of diabetes research in united Arab Emirates: Current and future perspectives. Current Diabetes Reviews, 16(4): 395-401. https://doi.org/10.2174/1573399815666190201114408
[16] Al-Blooshi, H., Al-Shami, S.A., Sidek, S. (2020). Mobile health and users demographic characteristics and preferences. A case study from the UAE. Systematic Reviews in Pharmacy, 11(12): 143-149.
[17] Shan, R., Sarkar, S., Martin, S.S. (2019). Digital health technology and mobile devices for the management of diabetes mellitus: State of the art. Diabetologia, 62(6): 877-887. https://doi.org/10.1007/s00125-019-4864-7
[18] Jung, C., Awad, J. (2021). The improvement of indoor air quality in residential buildings in Dubai, UAE. Buildings, 11(6): 250. https://doi.org/10.3390/buildings11060250
[19] Deniz-Garcia A, Fabelo H, Rodriguez-Almeida AJ, Zamora-Zamorano G, Castro-Fernandez M, Alberiche Ruano MDP, Solvoll T, Granja C, Schopf TR, Callico GM, Soguero-Ruiz C, Wägner AM, WARIFA Consortium. (2023). Quality, usability, and effectiveness of mhealth apps and the role of artificial intelligence: Current scenario and challenges. Journal of Medical Internet Research, 25: e44030. https://doi.org/10.2196/44030
[20] DeLone, W.H., McLean, E.R. (2003). The DeLone and McLean model of information systems success: A ten-year update. Journal of Management Information Systems, 19(4): 9-30. https://doi.org/10.1080/07421222.2003.11045748
[21] Byrne, M.J., Tickle, M., Glenny, A.M., Campbell, S., Goodwin, T., O'Malley, L. (2019). A systematic review of quality measures used in primary care dentistry. International Dental Journal, 69(4): 252-264. https://doi.org/10.1111/idj.12453
[22] Boakye, K.G. (2015). Factors influencing mobile data service (MDS) continuance intention: An empirical study. Computers in Human Behavior, 50: 125-131. https://doi.org/10.1016/j.chb.2015.04.008
[23] Alshurideh, M.T., Al Kurdi, B., Alzoubi, H.M., Akour, I.A., Hamadneh, S., Alhamad, A., Joghee, S. (2023). Factors affecting customer-supplier electronic relationship (ER): A customers' perspective. International Journal of Engineering Business Management, 15: 1-11. https://doi.org/10.1177/18479790231188242
[24] Calbimonte, J.P., Aidonopoulos, O., Dubosson, F., Pocklington, B., Kebets, I., Legris, P.M., Schumacher, M. (2023). Decentralized semantic provision of personal health streams. Journal of Web Semantics, 76: 100774. https://doi.org/10.1016/j.websem.2023.100774
[25] Yu, D.X., Parmanto, B., Dicianno, B.E., Watzlaf, V.J., Seelman, K.D. (2017). Accessibility needs and challenges of a mHealth system for patients with dexterity impairments. Disability and Rehabilitation: Assistive Technology, 12(1): 56-64. https://doi.org/10.3109/17483107.2015.1063171
[26] Chen, T., Peng, L., Yin, X., Rong, J., Yang, J., Cong, G. (2020). Analysis of user satisfaction with online education platforms in China during the COVID-19 pandemic. Healthcare, 8(3): 200. https://doi.org/10.3390/healthcare8030200
[27] Aranha, M., Shemie, J., James, K., Deasy, C., Heavin, C. (2024). Behavioural intention of mobile health adoption: A study of older adults presenting to the emergency department. Smart Health, 31: 100435. https://doi.org/10.1016/j.smhl.2023.100435
[28] Yuan, S., Liu, L., Su, B., Zhang, H. (2020). Determining the antecedents of mobile payment loyalty: Cognitive and affective perspectives. Electronic Commerce Research and Applications, 41: 100971. https://doi.org/10.1016/j.elerap.2020.100971
[29] Rahi, S. (2022). Assessing individual behavior towards adoption of telemedicine application during COVID-19 pandemic: Evidence from emerging market. Library Hi Tech, 40(2): 394-420. https://doi.org/10.1108/LHT-01-2021-0030
[30] Iglesias, O., Markovic, S., Rialp, J. (2019). How does sensory brand experience influence brand equity? Considering the roles of customer satisfaction, customer affective commitment, and employee empathy. Journal of Business Research, 96: 343-354. https://doi.org/10.1016/j.jbusres.2018.05.043
[31] Roy Chowdhury, I., Patro, S., Venugopal, P., Israel, D. (2014). A study on consumer adoption of technology-facilitated services. Journal of Services Marketing, 28(6): 471-483. https://doi.org/10.1108/JSM-04-2013-0095
[32] Kabha, R., Salameh, F., Kamel, A., Elbahi, M., Mustafa, H. (2019). M-Health applications use amongst mobile users in Dubai-UAE. International Journal of Innovative Technology and Exploring Engineering, 9(2): 5100-5110. https://doi.org/10.35940/ijitee.B6477.129219
[33] Wang, W.T., Ou, W.M., Chen, W.Y. (2019). The impact of inertia and user satisfaction on the continuance intentions to use mobile communication applications: A mobile service quality perspective. International Journal of Information Management, 44: 178-193. https://doi.org/10.1016/j.ijinfomgt.2018.10.011
[34] Hossain, M.A., Kim, M. (2018). Does multidimensional service quality generate sustainable use intention for Facebook? Sustainability, 10(7): 2283. https://doi.org/10.3390/su10072283
[35] Salam, M., Farooq, M.S. (2020). Does sociability quality of web-based collaborative learning information system influence students' satisfaction and system usage? International Journal of Educational Technology in Higher Education, 17(1): 26. https://doi.org/10.1186/s41239-020-00189-z
[36] Lee, S., Shin, B., Lee, H.G. (2009). Understanding post-adoption usage of mobile data services: The role of supplier-side variables. Journal of the Association for Information Systems, 10(12): 2. https://doi.org/10.17705/1jais.00217
[37] Almaiah, M.A., Alismaiel, O.A. (2019). Examination of factors influencing the use of mobile learning system: An empirical study. Education and Information Technologies, 24: 885-909. https://doi.org/10.1007/s10639-018-9810-7
[38] Ramírez-Correa, P., Grandón, E.E., Ramírez-Santana, M., Belmar Órdenes, L. (2019). Explaining the use of social network sites as seen by older adults: The enjoyment component of a hedonic information system. International Journal of Environmental Research and Public Health, 16(10): 1673. https://doi.org/10.3390/ijerph16101673
[39] Akbar, S., Coiera, E., Magrabi, F. (2020). Safety

concerns with consumer-facing mobile health applications and their consequences: A scoping review. Journal of the American Medical Informatics Association, 27(2): 330-340. https://doi.org/10.1093/jamia/ocz175
[40] Kim, D., Jung, Y., Toh, K.A., Son, B., Kim, J. (2016). An empirical study on iris recognition in a mobile phone. Expert Systems with Applications, 54: 328-339. https://doi.org/10.1016/j.eswa.2016.01.050
[41] Akel, G., Armağan, E. (2021). Hedonic and utilitarian benefits as determinants of the application continuance intention in location-based applications: The mediating role of satisfaction. Multimedia Tools and Applications, 80(5): 7103-7124. https://doi.org/10.1007/s11042-020-10094-2
[42] Kim, B., Han, I. (2011). The role of utilitarian and hedonic values and their antecedents in a mobile data service environment. Expert Systems with Applications, 38(3): 2311-2318. https://doi.org/10.1016/j.eswa.2010.08.019
[43] Karjaluoto, H., Shaikh, A.A., Saarijärvi, H., Saraniemi, S. (2019). How perceived value drives the use of mobile financial services apps. International Journal of Information Management, 47: 252-261. https://doi.org/10.1016/j.ijinfomgt.2018.08.014
[44] Alawneh, A., Al-Refai, H., Batiha, K. (2013). Measuring user satisfaction from e-government services: Lessons from Jordan. Government Information Quarterly, 30(3): 277-288.
[45] Foroughi, B., Iranmanesh, M., Hyun, S.S. (2019). Understanding the determinants of mobile banking continuance usage intention. Journal of Enterprise Information Management, 32(6): 1015-1033. https://doi.org/10.1108/JEIM-10-2018-0237
[46] Lim, S.H., Kim, D.J., Hur, Y., Park, K. (2019). An empirical study of the impacts of perceived security and knowledge on continuous intention to use mobile fintech payment services. International Journal of Human–Computer Interaction, 35(10): 886-898. https://doi.org/10.1080/10447318.2018.1507132
[47] Li, Y., Shang, H. (2020). Service quality, perceived value, and citizens' continuous-use intention regarding e-government: Empirical evidence from China. Information & Management, 57(3): 103197. https://doi.org/10.1016/j.im.2019.103197
[48] Ashfaq, M., Yun, J., Yu, S., Loureiro, S.M.C. (2020). I, Chatbot: Modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents. Telematics and Informatics, 54: 101473. https://doi.org/10.1016/j.tele.2020.101473
[49] Hossain, M.N., Talukder, M.S., Khayer, A., Bao, Y. (2021). Investigating the factors driving adult learners' continuous intention to use M-learning application: A fuzzy-set analysis. Journal of Research in Innovative Teaching & Learning, 14(2): 245-270. https://doi.org/10.1108/JRIT-09-2019-0071
[50] Zhou, T. (2013). An empirical examination of continuance intention of mobile payment services. Decision Support Systems, 54(2): 1085-1091. https://doi.org/10.1016/j.dss.2012.10.034
[51] Deng, Z., Hong, Z., Ren, C., Zhang, W., Xiang, F. (2018). What predicts patients' adoption intention toward mHealth services in China: Empirical study. JMIR mHealth and uHealth, 6(8): e9316. https://doi.org/10.2196/mhealth.9316
[52] Deng, Z., Mo, X., Liu, S. (2014). Comparison of the middle-aged and older users' adoption of mobile health services in China. International Journal of Medical Informatics, 83(3): 210-224. https://doi.org/10.1016/j.ijmedinf.2013.12.002
[53] Dwivedi, Y.K., Shareef, M.A., Simintiras, A.C., Lal, B., Weerakkody, V. (2016). A generalised adoption model for services: A cross-country comparison of mobile health (m-health). Government Information Quarterly, 33(1): 174-187. https://doi.org/10.1016/j.giq.2015.06.003
[54] Huang, C.Y., Yang, M.C. (2020). Empirical investigation of factors influencing consumer intention to use an artificial intelligence-powered mobile application for weight loss and health management. Telemedicine and e-Health, 26(10): 1240-1251. https://doi.org/10.1089/tmj.2019.0182
[55] Boadi, R.A., Boateng, R., Hinson, R., Opoku, R.A. (2007). Preliminary insights into m-commerce adoption in Ghana. Information Development, 23(4): 253-265. https://doi.org/10.1177/0266666907084761
[56] Zhou, T. (2011). An empirical examination of users' post-adoption behaviour of mobile services. Behaviour & Information Technology, 30(2): 241-250. https://doi.org/10.1080/0144929X.2010.543702
[57] Deng, Z., Lu, Y., Wei, K.K., Zhang, J. (2010). Understanding customer satisfaction and loyalty: An empirical study of mobile instant messages in China. International Journal of Information Management, 30(4): 289-300. https://doi.org/10.1016/j.ijinfomgt.2009.10.001
[58] Andargoli, A.E., Scheepers, H., Rajendran, D., Sohal, A. (2017). Health information systems evaluation frameworks: A systematic review. International Journal of Medical Informatics, 97: 195-209. https://doi.org/10.1016/j.ijmedinf.2016.10.008
[59] Zhou, L., Bao, J., Watzlaf, V., Parmanto, B. (2019). Barriers to and facilitators of the use of mobile health apps from a security perspective: Mixed-methods study. JMIR mHealth and uHealth, 7(4): e11223. https://doi.org/10.2196/11223
[60] Lee, J., Lee, J., Feick, L. (2001). The impact of switching costs on the customer satisfaction-loyalty link: Mobile phone service in France. Journal of Services Marketing, 15(1): 35-48. https://doi.org/10.1108/08876040110381463
[61] Venkatesh, V., Thong, J.Y., Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. MIS Quarterly, 36(1): 157-178. https://doi.org/10.2307/41410412
[62] Alalwan, A.A., Dwivedi, Y.K., Rana, N.P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. International Journal of Information Management, 37(3): 99-110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002
[63] Hadi, N.U., Aslam, N., Gulzar, A. (2019). Sustainable service quality and customer loyalty: The role of customer satisfaction and switching costs in the Pakistan cellphone industry. Sustainability, 11(8): 2408. https://doi.org/10.3390/su11082408
[64] Ngo, M.V., Pavelková, D. (2017). Moderating and

mediating effects of switching costs on the relationship between service value, customer satisfaction and customer loyalty: Investigation of retail banking in Vietnam. Journal of International Studies, 10(1): 9-33. https://doi.org/10.14254/2071-8330.2017/10-1/1

[65] Zhao, J., Freeman, B., Li, M. (2016). Can mobile phone apps influence people's health behavior change? An evidence review. Journal of medical Internet research, 18(11): e287. https://doi.org/10.2196/jmir.5692

[66] Hair Jr, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M. (2016). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Sage Publications.

[67] Gefen, D., Rigdon, E.E. (2011). An update and extension to SEM guidelines for administrative and social science research. MIS Quarterly, 35(2): iii-xiv. http://doi.org/10.2307/23044042

[68] Markovic, S., Raspor Jankovic, S., Dorcic, J. (2011). What are the key dimensions of restaurant service quality? An empirical study in the city restaurant settings. An Empirical Study in the City Restaurant Settings (May 03, 2011). Sustainable Tourism: Socio-Cultural, Environmental and Economics Impact, 235-249.

[69] Fosso Wamba, S., Akter, S., de Bourmont, M. (2019). Quality dominant logic in big data analytics and firm performance. Business Process Management Journal, 25(3): 512-532. https://doi.org/10.1108/BPMJ-08-2017-0218

[70] Smith, D., Hair Jr, J.F., Ferguson, K. (2014). An investigation of the effect of family influence on commitment–trust in retailer–vendor strategic partnerships. Journal of Family Business Strategy, 5(3): 252-263. https://doi.org/10.1016/j.jfbs.2013.11.005

[71] Fornell, C., Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1): 39-50. https://doi.org/10.1177/002224378101800104

[72] Mahmud, S., Shah, N.M., Becker, S. (2012). Measurement of women's empowerment in rural Bangladesh. World Development, 40(3): 610-619. https://doi.org/10.1016/j.worlddev.2011.08.003

[73] Becker, J.M., Klein, K., Wetzels, M. (2012). Hierarchical latent variable models in PLS-SEM: Guidelines for using reflective-formative type models. Long Range Planning, 45(5-6): 359-394. https://doi.org/10.1016/j.lrp.2012.10.001

[74] Chin, W.W. (2010). How to write up and report PLS analyses. In Handbook of Partial Least Squares. Springer Handbooks of Computational Statistics. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-32827-8_29

[75] MacKinnon, D.P. (2008). Introduction to Statistical Mediation Analysis. Routledge.