TPM Vol. 32, No. 4, 2025
ISSN: 1972-6325
https://www.tpmap.org/

AN INTEGRATED MODEL OF CONSUMER READINESS AND E-TRUST FOR E-HEALTH ADOPTION: A TAM BASED EMPIRICAL EVIDENCE USING PLS-SEM APPROACH

OSSAM CHOHAN[1], SITI FALINDAH PADLEE[2]*, SYAHIDA ABDULLAH[3], LAILA BIBI[4], ASIF RAFIQUE[5]

[1.] FACULTY OF BUSINESS, ECONOMICS AND SOCIAL DEVELOPMENT, UNIVERSITI MALAYSIA TERENGGANU, MALAYSIA; ossam@cuiatd.edu.pk
[2.] FACULTY OF BUSINESS, ECONOMICS AND SOCIAL DEVELOPMENT UNIVERSITI MALAYSIA TERENGGANU, MALAYSIA; siti.falindah@umt.edu.my
[3.] SENIOR LECTURER, CENTRE FOR FUNDAMENTAL AND CONTINUING EDUCATION, UNIVERSITI MALAYSIA TERENGGANU, MALAYSIA; syahida.abdullah@umt.edu.my
[4.] FACULTY OF STATISTICS, DEPARTMENT OF MATHEMATICS, COMSATS UNIVERSITY ISLAMABAD, ABBOTTABAD CAMPUS PAKISTAN; laila@cuiatd.edu.pk
[5.] FACULTY OF STATISTICS, DEPARTMENT OF MATHEMATICS, COMSATS UNIVERSITY ISLAMABAD, ABBOTTABAD CAMPUS PAKISTAN; asif01@cuiatd.edu.pk

Submission Date: 29- Mar- 2025 **Acceptance Date:** 1- Sep- 2025 **Publishing Date:** 29- Oct- 2025

ABSTRACT
The exponential increase in digitization in every field of life in general and in the field of healthcare in developing countries has emerged a need to examine how consumers' readiness and trust in e-health systems impact adoption intentions. This study examines the Technology Acceptance Model (TAM) by introducing consumer readiness as a higher-order formative construct which is based upon ICT infrastructure readiness, digital literacy, and organizational readiness for change, and by introducing e-trust as an independent variable. Sample data were collected from 386 healthcare consumers from public hospitals in major cities across Pakistan including Islamabad, Lahore, Peshawar and Karachi. Structural Equation Modeling (SEM) using SmartPLS 4 tested predefined hypotheses by investigating both direct and mediated relationships. The findings provided strong and significant results in a way that consumer readiness does not directly predict behavioral intention ($\beta = 0.08$, $p > 0.05$), whereas its significant impact is mediated by perceived usefulness (PU) and perceived ease of use (PEOU). ICT infrastructure readiness and digital literacy significantly influence both PU and PEOU, while organizational readiness for change (ORC) influences usefulness but not ease of use. E-trust showed positive impact on both PU and PEOU and directly affects behavioral intention towards e-health services in Pakistan. The overall model explains approximately 60% of the variance in attitude and 55% in behavioral intention. The results provides strong foundation to assert that readiness alone is insufficient; but positive attitude in perceptions and trust are vital to observe behavioral intentions. Practical implications puts high emphasis on ICT infrastructure developments, improved digital literacy and skills, by providing users friendly interface, and implementing trust and confidence with respect to information security-building measures.

KEYWORDS: e-health adoption; consumer readiness; ICT infrastructure readiness; digital literacy; organizational readiness for change; e-trust; perceived usefulness; perceived ease of use; behavioral intentions, TAM

1. INTRODUCTION

Digital healthcare or E-health including diverse domains like telemedicine platforms, mobile health applications, healthcare portals, and electronic record systems (ERS) plays significant role in improved healthcare, by reducing costs, and enhancing consumers' engagement, particularly in developing countries (Bleakley, 2010; Lamiraud, Booysen, & Scheil-Adlung, 2005). Pakistan's' healthcare services, although showed significant developments in respect of digital infrastructure, still faces numerous barriers to conceptualize these potentials in its public healthcare systems. These barriers mainly based upon poor or no connectivity, inaccessibility to sufficient devices, lacking in

digital literacy among journal public groups, limited organizational support for change, and serious consumers reservations on data privacy and system reliability. Empirical evidence shows that although many consumers have awareness about e-health services, e-health adoption remains low as compared to other developing countries which reflects a huge gap between resources capacity and behavioral intention towards e-health services adoption (Awan, Nisar, & Chaudry, 2021).

The Technology Acceptance Model (TAM) has been widely used to study behavioral adoption through well-defined and proven constructs that is perceived usefulness (PU) and perceived ease of use (PEOU) (Holden & Karsh, 2010). Many prior studies with specific emphasis readiness factors worked on isolated determinants like ICT infrastructure or digital literacy, no integration into composite readiness to have combined impact on behavioral intentions towards e-health services in healthcare consumer industry (Da Fonseca, Kovaleski, Picinin, Pedroso, & Rubbo, 2021; Gelacio, 2020; Walle et al., 2023). As far as trust is concerned, it has been proved an important indicator in different capacities like predictor, mediator and moderator in different studies, but not studies along with the defined structural constructs and impact on mediators to study the behavioral studies in terms of e-health services adoption as composite one (Rahimi, Jetter, Weber, & Wild, 2018). In case of public healthcare systems, the organizational environment as an external context where it refers to how consumers perceive it in terms of building their behavioral intentions towards e-health services adoption.

This study examines the role of composite construct that is consumer readiness and e-trust and how these constructs combine impacts the attitudes, perceived usefulness, perceived ease of use, and finally behavioral intention toward e-health services adoption among consumers of public sector healthcare facilities in four major Pakistani cities (Kruszyńska-Fischbach, Sysko-Romańczuk, Napiórkowski, Napiórkowska, & Kozakiewicz, 2022). In this study, the readiness which is composite higher order construct is tested with mediation of perception using PU and PEOU which aims to address the research gaps in evaluating these constructs individually and in composite form with trust and perception to influence behavioral intentions towards e-health services adoption in Pakistan (Bangert & Doktor, 2000; Qureshi, Ahmad, & Nawaz, 2012).

1.1 Purpose of Study

The objective of this study is to examine the influence of consumer readiness and e-trust on consumers' behavioral intentions towards e-health services adoption in public sector healthcare facilities. Consumer readiness is formed as a higher-order formative construct which consists upon ICT infrastructure readiness, digital literacy, and organizational readiness for change. This study investigates how these novel readiness dimensions, along with e-trust, impacts consumers' usage perceptions in terms of (PU) and (PEOU), which subsequently builds attitudes and behavioral intentions toward e-health services adoption. By forming higher order construct that is consumer readiness in the Technology Acceptance Model (TAM) framework, this study examines comprehensive understanding of the mediating roles of PU and PEOU in predicting consumer readiness and trust in technology adoption intentions (Davis, 1989a Elsafty, 2020 #2442).

2. LITERATURE REVIEW

The Technology Acceptance Model (TAM), introduced by Davis in 1989, proposes that perceived usefulness (PU) and perceived ease of use (PEOU) are primary mediators to examine consumers' attitudes toward novel technology, which ultimately influence behavioral intentions towards technological services (Liao, Wu, Le, & Phung, 2022; Venkatesh & Davis, 2000). Many studies in digital healthcare have validated these defined sequence of relationships but have also brought some additional factors like facilitating conditions provided by state or organizations, digital literacy and its impact on transformed, trust, socio-economic status of consumers and most dominating is system reliability which plays significant role in defining behavioral intentions towards e-health services (Arfeen, Shah, & Sarantis, 2022). A study conducted in Bangladesh discovered the significant impact of trust and facilitating conditions in enhancement of e-health adoption with mediated by perceived usefulness (Hossain, Yokota, Sultana, & Ahmed, 2019). Whereas another study conducted in Pakistan showed that despite the existence of ICT infrastructure to some extent, lack of digital literacy among consumers and lack of organizational support hinders the consumers' adoption towards e-health services (Qureshi et al., 2012).

There are different aspects of consumer readiness on the basis of which it can be defined like on the basis of ICT infrastructure readiness which deals with ICT infrastructure and devices, consumers skill readiness that is digital literacy, and the support expected from organizational readiness which emphasizes on change management and support- both internal ORC context and external context (Parasuraman & Colby, 2015). In mostly developing countries including Pakistan, technical and consumers' digital skills readiness mostly dominate. Organizational readiness for change is usually considered least impacted determinants or shown least significant with perception especially perceived ease of use (PEOU). Whereas trust has been proven influential to both usability and usefulness particularly in case of sensitive consumers' data involved and their privacy is major concerns for consumers and that is the case with digital healthcare as well. In consumers' e-health studies, trust has been shown direct and significant

influence to behavioral adoption directly and also through consumers' perception through mediation of other factors such as system reliability and consumers experience (Arfeen et al., 2022).

Multiple gaps were identified by reviewing the literature. There is an extensive literature available on the dedicated impact of ICT infrastructure readiness, digital literacy and organizational readiness for change on e-health services adoption, but the joint impact in the form of higher order construct that is consumers readiness, impacts the users perceptions (Karahoca, Karahoca, & Aksöz, 2018). Some of the studies have empirically emphasized on how the readiness influence the behavioral intention through PU and PEOU as mediator, whereas many studies have examined the direct effect with taking mediation in considerations. Whereas a significant construct that is trust is mostly takin with different context and measurement scales directly or with mediation effect which makes comparison hard to understand (Bondzie-Micah et al., 2022). Finally, very few studies have reported evidence of consumers behavior from public sector healthcare facilities in Pakistan and no particular studies have been reported the joint impact of consumer readiness (with impact of tedious bureaucratic processes, internet accessibility and connectivity, smart devices and power issues in mostly developing countries) through mediation of consumers perceptions on e-health services behavioral intentions (Kruszyńska-Fischbach et al., 2022). The current study proposes a novel consumer readiness framework by incorporating significant indicators along with e-trust and provide foundation for explicit testing perceptions as mediator and its impact on behavioral intentions on e-health services in Pakistan, by getting data from major public sector healthcare facilities across major cities like Islamabad, Lahore, Peshawar, Abbottabad and Karachi.

2.1 Hypothesis Development

On the basis of reviewed literature, this study proposes a novel and extended version of the TAM to evaluate determinants and their impact on consumers' behavioral intentions towards e-health services adoption in public sector healthcare facilities. The proposed theoretical framework presents consumer readiness as a higher order formative constructs consists upon ICT infrastructure readiness, digital literacy and organizational readiness for change. Moreover, e-trust is introduced as an independent variable influencing both perceived usefulness and behavioral intentions. The traditional constructs of TAM approach that is PU, PEOU and attitude serves as mediators between consumer readiness, e-trust and behavioral intentions.

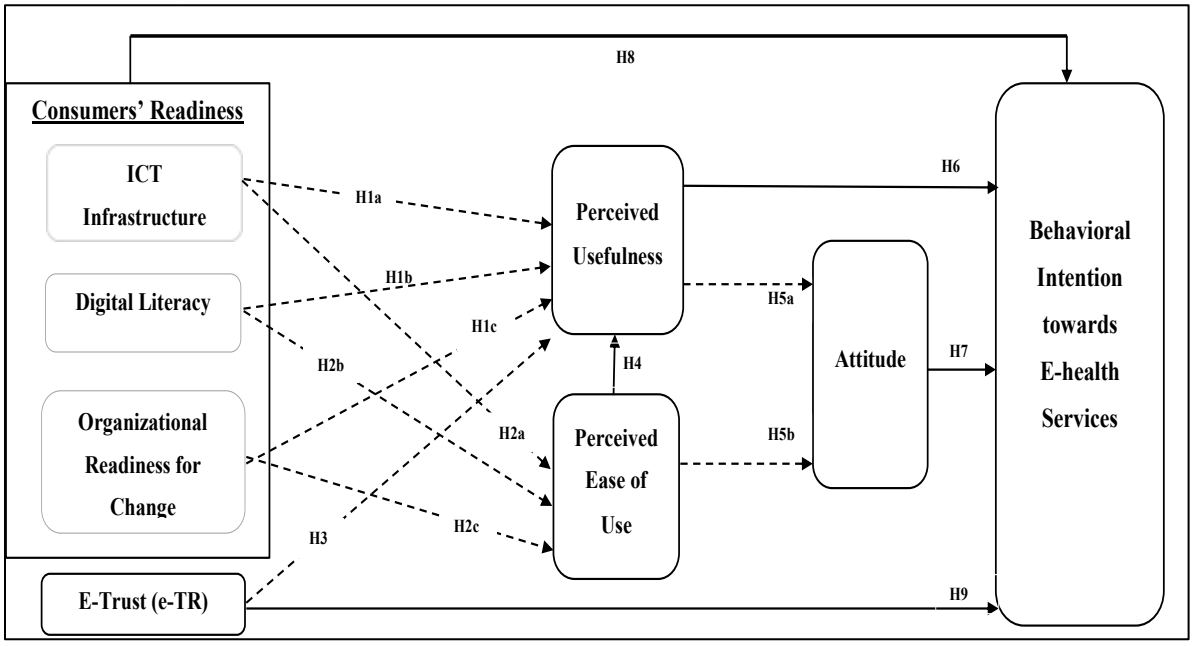

Figure-1: Theoretical Framework (Proposed TAM Extension)

Figure-1 presents the proposed theoretical framework adopted in this study, which extends the Technology Acceptance Model by introducing composite consumer readiness and e trust, where consumer readiness is modeled as a formative second-order construct that consists upon of ICT infrastructure readiness, digital literacy, and organizational readiness for change. The proposed theoretical framework also includes PU and PEOU as mediators, and behavioral intention as the final outcome variable. For testing purposes of proposed framework, the following hypotheses are derived among these constructs.

H1a: The ICT infrastructure readiness have strong influence on PU of e-health services.

The ICT infrastructure composed of connectivity and access to electronic tools, plays crucial role in enhancement of the perceived utility of digital healthcare in terms of e-health systems. Lack of such developed and organized infrastructures always impacts on system functionality by reducing consumers' trust and adoption belief in its usefulness (Ifinedo, 2018; Mauco, Scott, & Mars, 2020).

H1b: Digital literacy strongly influences PU of e-health services

Consumers with better digital literacy performs better in understanding and engaging with e-health systems which ultimately enhances their perceptions of ease in dealing with their healthcare needs (Ifinedo, 2018; Norman & Skinner, 2006).

H1c: ORC strongly influence PU of e-health services.

This hypothesis deals with the consumers perception about readiness of healthcare organizations and supportiveness towards e-health initiatives by adopting visible institutional backing, easy to handle communication and smooth and parallel procedural shifts, then consumers are more perceive e-health services useful and trustworthy which impacts their intentions positively (Ifinedo, 2018; Mauco et al., 2020).

H2a: The ICT infrastructure have strong influence on PEOU of e-health services

The strong yet reliable and easy to access ICT infrastructure builds strong ease of use perception in terms of reduced barriers, which gives motivation to consumers towards e-health services (Davis, 1989b; Mauco et al., 2020).

H2b: Digital literary strongly influence PEOU of e-health services.

Digitally literate consumers finds it convenient to deal with digital healthcare platforms, which enhanced perceived ease of use and helps to shape their attitude towards e-health services adoption (Davis, 1989b; Norman & Skinner, 2006).

H2c: ORC strongly influence PEOU of e-health services

The consumers' perception about the healthcare organizations readiness and preparedness towards digital transformation shapes their experiences as less difficult and easy to use (Mauco et al., 2020; Yunis, Markarian, & El-Kassar, 2020).

H3: E-trust on the e-health strongly influences the PU of e-health services.

The trust of consumers like security, confidentiality and reliability of digital healthcare systems plays crucial role in shaping their perception towards usefulness of systems and they feel more inclined towards services provided by respective system (Gefen, Karahanna, & Straub, 2003).

H4: The PEOU strongly influence on the PU of e-health services.

The generalized theory of Technology Acceptance Model (TAM) demonstrates that system ease of use ensure the usefulness of the system as consumers feel it more useful with less efforts to handle it (Davis, 1989b; Ifinedo, 2018).

H5a: The PEOU strongly influence the attitude towards e-health services.

The attitude which depends upon many indicators but here in digital healthcare adoption, perceived ease of use strongly contributes in shaping consumers' attitude towards e-health services (Davis, 1989b; Davis, Granić, & Marangunić, 2024; Ifinedo, 2018).

H5b: The PU strongly influence attitude towards e-health services.

Consumers with strong perception of usefulness in terms of benefits and effectiveness are more likely to develop positive attitude towards e-health services adoption which contributes in their behavioral intentions towards e-health services (Davis, 1989b; Davis et al., 2024; Ifinedo, 2018).

H6: The PU strongly influence the behavioral intention of e-health services

The consumers' perception of usefulness is strong determinant to define the behavioral intentions and that usefulness is a belief that transformed healthcare services will improve their healthcare experience and overall beneficial towards their healthcare needs, and this perception makes them more likely to intend to adopt e-health services (Davis, 1989b; Davis et al., 2024; Ifinedo, 2018).

H7: Attitude strongly influence behavioral intention towards e-health services.

According to TAM, attitude which is shaped by positive perceptions of usage (PU and PEOU) strongly impacts the consumers' intentions towards e-health services adoption and engagement. Attitude plays a crucial role of psychological determinant which bridges the perceptions of usage and behavioral intentions towards e-health services (Davis, 1989b; Davis et al., 2024; Ifinedo, 2018).

H8: Consumers readiness strongly influences behavior intention towards e-health services.

According to TAM, the consumers on the basis of their accessibility to infrastructure, their digital literacy level and awareness of organization support level, are more likely to adopt e-health services. Although the consumer readiness which is formed on the basis of above mentioned determinants, mostly mediation by perception of usefulness in the form of PU and PEOU (Ifinedo, 2018; Mauco et al., 2020).

H9: E-trust strongly influence the behavior intention towards e-health services.

The critical factors e-trust in digital healthcare which primarily deals with data security, privacy and systems reliability shapes consumers' willingness to get involved with digital healthcare technology. It is hypothesized that high level of e-trust impacts perceived risks and related uncertainties and strengthen their intentions towards e-health services adoption. This phenomenon where sensitive healthcare information are involved (Alshahrani, Stewart, & MacLure, 2019; Gefen et al., 2003).

3. METHODOLOGY

This study is conducted among healthcare consumers from major public hospitals in Islamabad, Lahore, Peshawar, Abbottabad and Karachi using quantitative cross-sectional survey (Goertzen, 2017). The selected healthcare facilities in major cities are having at least basic potential exposure of digital health like online appointment and electronic health records (EHRs). Structural questionnaire are designed and data were collected using physical and online google docs approach over the period of three months (September-November 2024) after getting ethical approval from respective healthcare administration offices and informed consents were obtained from all the participants.

The required sample size was 385 calculated by using sample size calculator Raosoft with 95% confidence and for large population and to improve the response rate, a total sample of 400 is selected and 385 samples were retained for final study after screening for completeness and consistency (Kotrlik & Higgins, 2001; Krejcie & Morgan, 1970). The data collection instrument that is questionnaires included are designed from established literature for all included constructs that is for consumer readiness which consists upon ICT infrastructure readiness, digital literacy and organizational readiness for change), for e-trust, perceived usefulness, perceived ease of use, attitude toward using e-health services, and behavioral intention. All measures adopted Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree), whereas control variables included were demographic characteristics (age, gender, education level) and prior experience with e-health services.

Smart PLS4 is used for data analysis in a way that first measurement model for reflective constructs were examined for reliability (Cronbach's alpha, composite reliability), convergent validity (average variance extracted), and discriminant validity (Fornell-Larcker criterion, HTMT). The formative approach was used for readiness constructs and its dimensions were examined for Multicollinearity using variance inflation factor (VIF) and for indicator significance. The structural model is estimated to test hypothesis paths by examining direct effect of readiness and e-trust on behavioral intentions, mediating roles of perceptions (PU and PEOU) and standard TAM paths. Bootstrapping with 5000 resampling is used to test significance. Effect Size (R^2) and f^2 were computed for endogenous variables.

4. RESULTS

4.1 Consumers' Profile

Table-1: Sample Characteristics

	Items	Frequency	%
Age	15-20	28	7.3
	21-35	278	72.2
	36-50	35	9.1
	50+	44	11.4
	Total	385	100%
Gender	Male	194	50.4
	Female	191	49.6
	Total	385	100%
Education level	Under SSC	30	7.8
	College Education	252	65.5
	University Education	103	26.8
	Total	385	100
Health facility in nearby area	Yes	358	93
	No	27	7
	Total	385	100
Family member need medical care	1	30	7.8
	2	355	92.2
	Total	385	100
Health facility satisfaction level	Not Satisfied	111	28.8
	Sometimes satisfied	191	49.6
	Satisfied	49	12.7
	Mostly Satisfied	34	8.8
	Total	385	100
Major issues faced in hospital	No Doctor	30	7.8
	Staff is not professional	47	12.2
	Careless attitude	248	64.4
	Risk of mistreatment	60	15.6

	Total	385	100
Hospital visit frequency	Once a week	33	8.6
	Once a month	235	61
	Quarterly	53	13.8
	Semi Annually	64	16.6
	Total	385	100
Record keeping by hospital	Yes	63	16.4
	No	322	83.6
	Total	385	
Smart phone or digital devices	Yes	324	84.2
	No	61	15.8
	Total	385	100
Public hospital	ATH Abbottabad	47	12.2
	LRH Peshawar	89	23.1
	Lahore General Hospital	75	19.5
	Jinnah Hospital Karachi	55	14.3
	PIMS Islamabad	119	30.9
	Total	385	100

4.2 Measurement Model Assessment

All the reflective constructs meet with the acceptable threshold for reliability and validity that greater than 0.70, composite reliability indices were above 0.80, the AVE exceeds 0.50 and Fornell-Larcker and HTMT criteria confirms the discriminant validity (Reinartz, Haenlein, & Henseler, 2009). The readiness composite's indicators demonstrated VIF below acceptable threshold which is <3 and significant weight for all dimension. It confirms that ICT infrastructure, digital literacy and organizational readiness for change each have significant contribution to overall readiness.

Table-2: Measurement Model Results (Reflective Constructs)

Construct	**Number of Items**	**Cronbach's Alpha**	**rho_A**	**Composite Reliability**	**AVE**
ATT	4	0.910	0.912	0.937	0.789
BI	6	0.900	0.920	0.923	0.668
DL	5	0.816	0.836	0.868	0.569
ICT	9	0.943	0.946	0.952	0.689
ORC	6	0.924	0.927	0.943	0.768
PEOU	6	0.901	0.904	0.924	0.669
PU	5	0.855	0.856	0.896	0.633
e-TR	6	0.923	0.933	0.940	0.724

The Fornell-Larcker's Criterion to measure the discriminant validity works on the principal of comparing the square root of AVE of the construct with the correlation of all other constructs present in the model (Hair, Gabriel, & Patel, 2014). The conceptual understanding is that any latent construct should explain its own variance better than the variance of other latent constructs of the model. The result of discriminant validity (Fornell Larcker) are provided in table 3 below:

Table-3: Discriminant validity (Fornell Larcker)

	ATT	**BI**	**DL**	**ICT**	**ORC**	**PEOU**	**PU**	**e-TR**
ATT	**0.888**							
BI	0.733	**0.817**						
DL	0.782	0.718	**0.865**					
ICT	0.731	0.534	0.670	**0.830**				
ORC	0.622	0.494	0.558	0.468	**0.876**			
PEOU	0.639	0.711	0.754	0.731	0.632	**0.910**		
PU	0.846	0.643	0.802	0.694	0.634	0.818	**0.795**	

e-TR	0.704	0.765	0.713	0.574	0.478	0.681	0.614	**0.851**

The third most popular measure for discriminant validity is the HTMT ratio of correlations. The values range from 0 to 1, but closer to 1 value are considered a lack of discriminant validity. However, some authors have suggested an upper threshold of 0.85 as well as a value of 0.9. Table-4, below shows that HTMT values are well below the prescribed threshold and are in the acceptable range (Henseler, Ringle, & Sarstedt, 2015).

Table-4: Heterotrait-Monotrait Ratio (HTMT) Ratio

	ATT	**BI**	**DL**	**ICT**	**ORC**	**PEOU**	**PU**	**e-TR**
ATT								
BI	0.794							
DL	0.780	0.691						
ICT	0.775	0.697	0.743					
ORC	0.677	0.533	0.615	0.493				
PEOU	0.626	0.778	0.766	0.775	0.689			
PU	0.710	0.727	0.614	0.754	0.709	0.639		
e-TR	0.757	0.826	0.823	0.597	0.511	0.737	0.683	

4.3 Structural Model and Hypotheses Testing

Table-5: Path Coefficients

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
Att -> BI	0.338	0.338	0.065	5.178	0.000
DL -> PEOU	0.600	0.599	0.033	18.068	0.000
DL -> PU	0.184	0.184	0.028	6.647	0.000
ICT -> PEOU	0.243	0.243	0.036	6.647	0.000
ICT -> PU	0.175	0.175	0.062	2.821	0.005
ORC -> PEOU	0.065	0.065	0.041	1.575	0.116
ORC -> PU	0.099	0.100	0.033	3.021	0.003
PEOU -> Att	0.958	0.961	0.083	11.596	0.000
PEOU -> PU	0.775	0.775	0.063	12.226	0.000
PU -> Att	0.789	0.790	0.060	13.087	0.000
PU -> BI	-0.246	-0.245	0.051	4.791	0.000
e-TR -> BI	0.495	0.496	0.065	7.606	0.000
e-TR -> PU	0.126	0.121	0.040	3.118	0.002

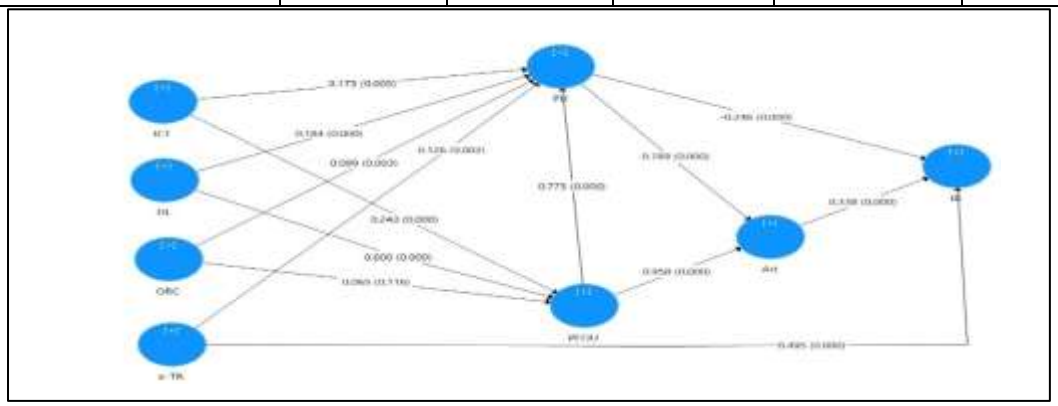

Figure-2: Structural Model

The results in table-5 shows that ICT infrastructure readiness and digital literacy both significantly and positively influence PU and PEOU, whereas ORC has significant effect only on PU but not on PEOU. E-trust demonstrate positive impact on perception (PU) and directly behavioral intentions of e-health services. Another conformance of positive relations between PEOU and PU; it is also clear from results in table-2 that both PU and PEOU determines and shape the attitude and in turn, attitude significantly explains behavioral intentions. Interestingly, the readiness composite that is CR to behavioral intentions is non-significant and it supports the mediation role proposed in model where it shows PU and PEOU fully mediate the effect of consumer readiness on behavioral intentions towards e-health services. The results demonstrates approximately 60% of the variance in attitude and 55% of the variance in behavioral intention.

4.4: Mediation Results

Mediation in research is defined as the process or intervention of examining the underlying theory or pathways through which latent constructs are related. The effect of independent variable on dependent variables is studied with the occurrences of the intervening variable(s) and influences are studied by comparing direct and indirect relationships in the path model. Hence, the mediator is a governing variable by nature in the relationship between two sets of variables (Baron & Kenny, 1986). A mediator variable is the one that is affected by independent variable(s), affects the dependent variable and exhibits the relationship between the two types that is independent and dependent variables. The mediation analysis helps to identify the process, understand the role of intervention and their work mechanism and ultimately provides strong grounds to improve the existing theories and testing procedures for particular environment under certain constraints like this study focusing the impact of e-health services adoption in Pakistan.

The indirect effects are obtained by using the bootstrapping procedure in Smart-PLS from 5000 samples that resulted with T-statistics and level of significance by following the recommendations of (Hayes, 2017; Preacher & Hayes, 2008). Strength of the mediator with other variables allows the substantiating of the mechanisms of cause-and-effect relationships as supported by previous studies (Hair et al., 2014; Nitzl, Roldan, & Cepeda, 2016).

Figure-3 explains the concept of mediation and mediator model, where direct effect is reflected by path P3, and indirect effects are presented by paths P1 and P2 shows the example of a mediator model, where the direct effect is P3, the total effect is obviously equals to the direct effect P3 + indirect effects P1 and P2:

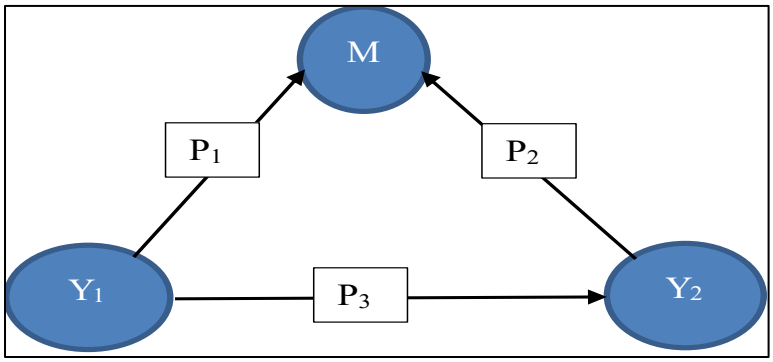

Figure-3 Mediation Effect Explanation

To assess the mediation in this study, the model was reshaped by introducing a new Variable-Consumer Readiness (CR), which is based upon the initial four construct that is ICT infrastructure readiness, digital literacy, organizational readiness for change and e-trust. Therefore, the figure for mediation analysis took following shape as presented in following figure

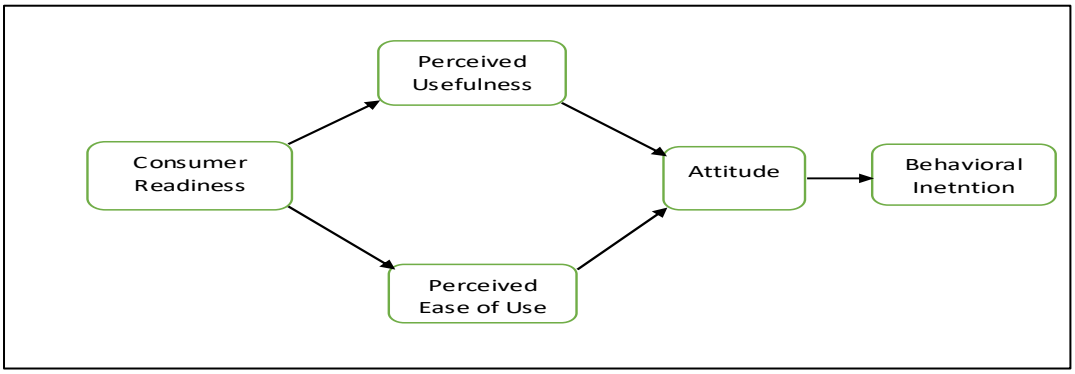

Figure-4 Mediation Model

The Figure-4 reflects that initial four variables are consolidated to form a new variable that is "Consumer Readiness" to ensure the separate paths to evaluate direct and indirect paths effects. The mediation analysis is carried out by testing the significance of the indirect effect by following bootstrapping approach from 5000 samples and shown in the following figure 5:

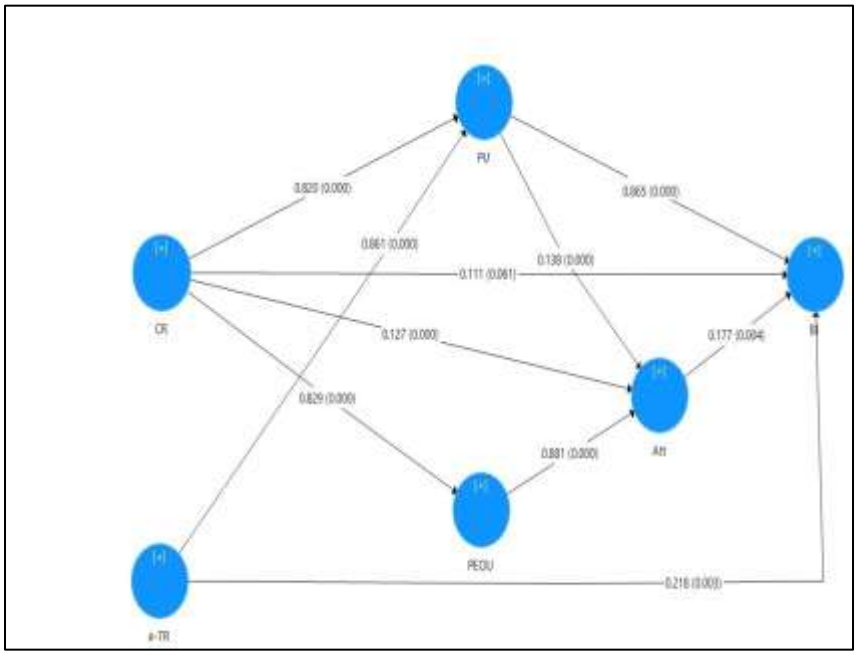

Figure-5 Diagram for Mediation Structural Model Type

The mediation hypotheses were tested by the process of Bootstrapping due to its rigorous nature as it uses full information in SEM to address indirect effects in contrast of Maximum Likelihood Technique (MLT), where regression-based mediation like Sobel PROCESS tests do not take full information while analyzing mediation in model (Bollen & Stine, 1990; Yim, Chu, & Sauer, 2017). The results of the Bootstrapping are given in the following Table-6.

Table-6: Specific Indirect Effect of all Constructs

	Path Coefficients	**T Statistics (>1.96)**	**P Values (< 0.05)**
CR -> PEOU -> Att	0.731	10.354	0.000
CR->PEOU->Att->BI	0.129	2.694	0.007
PEOU->Att->BI	0.156	2.727	0.007
e-TR->PU->Att	0.716	10.297	0.000
e-TR->PU->Att->BI	0.024	2.389	0.017
CR->Att->BI	0.022	2.263	0.024
CR->PU->Att	0.127	2.902	0.004
CR->PU->Att->BI	0.153	2.917	0.004
PU->Att->BI	0.713	14.802	0.000
CR->PU->BI	0.651	10.148	0.000
e-TR->PU->BI	0.224	3.198	0.001

The findings from Table-6 provide the directions to draw conclusion between consumer readiness and mediators PU and PEOU upon Behavioral intentions to e-health services to support the last hypothesis of this study that is H8. These findings are in line with recommendations by (Hair Jr, Matthews, Matthews, & Sarstedt, 2017) reported the indirect effect and direct effect to address the mediation type along with the regression coefficients for path to allow substantive interpretation of results respectively. The results presented in table-6 showed that direct effect of consumer readiness towards ATT and BI respectively (β= 0.817 and 0.111, t-value 42.788 and 1.878) are significant and insignificant respectively showing that the direct relationship between CR and Attitude is significant and CR and Bi is insignificant. Whereas the CR-> PEOU-Att (β=0.731 with p=0.000 which is < 0.05) is significant, CR -> PEOU -> Att -> BI (β=

0.129 with p=0.007 which is < 0.05) is also significant, CR -> PU-> Att (β= 0.127 with p=0.004 which is < 0.05) is significant too along with CR -> PU ->Att -> BI (β=0.153 with p=0.004 which is < 0.05) proved significant which shows strong mediation between CR -> BI through mediators PU and PEOU.
The mediation strength is examined using variance accounted for (VAF), as suggested by Hair et al (2014). The rule of thumb to measure VAF to determine mediation type:
If VAF > 80%, it leads to full mediation
Else If 20% <VAF < 80%, it leads to partial mediation
Else if VAF <20%, it leads to weak, minor or no mediation
In the following table-7, indirect effects (IE), direct effects (DE), total effect (TE) and VAF (IE/TE) % calculations and mediation types are provided:

Table-7: VAF Method for Mediation Analysis

Mediation Path	Indirect Effect (P1*P2)	Direct Effect (IV→DV)	Total Effect (DE+IE)	VAF (%) (IE/TE)	Mediation Type
CR → Att → BI	0.1446	0.111	0.2556	56.6%	Partial Mediation
CR → PU → BI	0.7093	0.111	0.8203	86.45%	Full Mediation
CR → PEOU → Att → BI	0.129	0.111	0.240	53.7%	Partial Mediation
e-TR → PU → BI	0.744	0.224	0.968	76.9%	Partial Mediation
e-TR → PU → Att → BI	0.021	0.224	0.245	8.57%	No Mediation (minor)

The table-7 explains that PU and PEOU partially mediate the relationship between the Consumer readiness and the behavioral intentions towards e-health services.

5. DISCUSSION

The results in this study confirms the theoretical foundations that structural and digital skills readiness are core determinants in forming acceptable perceptions of usefulness and usability ease, in a way that without considering these, readiness cannot be able to explain behavioral intentions. The result of this study in which the strong relationships between ICT infrastructure readiness and digital literacy with both perceived usefulness and perceived ease of use are consistent with prior studies in similar developing country environment where lack of modern digital devices, internet accessibility and connectivity with low digital literacy among consumers have been proven to be strong factor to hinder in technology adoption. The insignificant relationship between organizational readiness for change and perceived ease of use describes that while organizational support may guide consumers perceive value in e-health outcomes, it does not necessarily impacts consumers perception in terms of perceived complexity or consumer impact when systems are implemented, an is confirmed by previous studies on ORC as well.
In this study e-trust with its dual nature of relationship, one as a strong predictor of perceptions (PU and POEU) and direct significant determinant of behavioral intentions towards e-health services. This relationships demonstrates the critical role of e-trust in technology adoption in healthcare environment. Trust plays a crucial role in developing economies where data privacy, system reliability and healthcare providers credibility are grave concerns of consumers, trust bridges the gaps between consumers and healthcare providers both organizational and individual level and shape the consumers behaviors towards their willingness to adopt e-health services. The established TAM relationships in this study (perceived ease of use → perceived usefulness → attitude → behavioral intention) not reconfirms the TAM's validity in the context of Pakistani public healthcare infrastructure, but also proves that consumers' readiness and e-trust strengthen these relationships.
From an organizational external perspective where the focus of the variable is how the consumers perceive the organizational readiness towards promised or assumed services, the results in this study healthcare providers either hospitals administration or policymakers should realize the fact that only investing huge capital at system will not assure the improvement in technology adoption but strong interventions will be required to ensure consumers perceptions and trust building like users friendly and intuitive interfaces, making data privacy and system reliability visible to consumers and ensuring institutional processes simplified and accessible will shape consumers perceptions towards technology adoption. Additionally, it is required to understand the readiness at holistic level and consider dimensions beyond only focusing infrastructure.

The study is based upon few limitations including the significant limitation is its cross-sectional design which hinders in examining the true picture of casual inference; the self-reported data may face some bias; the public sectors healthcare facilities reducing generalizability to private sector healthcare facilities and finally no considerations of few important moderating determinants like socioeconomic status of consumers and technology anxiety. Future studies may adopt longitudinal frameworks, inclusion of additional determinant like financial impact as moderating variable to make it more robust findings of e-health readiness assessment.

6. CONCLUSION

This study presents the strong evidence that in public sector healthcare facilities in developing countries in general and Pakistan in particular, consumer readiness as composite constructs strong influence the technology adoption in case of healthcare towards consumers' behavioral intentions only when mediated through perceptions of usefulness and ease of use. Moreover, e-trust or trust on digital technologies plays critical direct and indirect on consumers behavioral intentions towards e-health services. The most significant indicators for composite construct that is consumer readiness are ICT infrastructure readiness and digital literacy, whereas organizational readiness for change influences perceived usefulness but not perceived ease of use. This supports the practical implication towards the policy makers to guide them not only to focus on infrastructure as key focus area for progressive technology adoption but the usability of services, consumers training, measures to improve consumers trust on system and organizational change are also key contributors towards successful and expected consumers' technology adoption. The study findings theoretically contribute in usage of TAM approach in examining technology adoption and also empirically by providing large scale multi-cities consumers of public healthcare facilities. It is expected that future studies will use these guidelines to extend this work in rural environments with longitudinal study and by including additional factors as moderators with trust as key construct to determine the technology adoption in developing countries.

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