



USING TECHNOLOGY ACCEPTANCE MODEL. ANALYZING THE ROLE OF TELEHEALTH SERVICES IN THE HEALTHCARE INDUSTRY DURING COVID-19

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ABSTRACT

The emergence of COVID-19 has brought a demographic shift in the usage of health services. Patients used to physically visit healthcare facilities but today many of them utilize technology to get advice from doctors. As a result, technology is becoming more widely used and accepted in the healthcare industry.

Using the technological acceptance model as a base, this study aims to identify the critical factors that impact patients' adoption of telehealth services. This study found that the intention to adopt technology is dependent on reliability, social norms, schemes, offers, hedonic motivation, convenience, and affordability. These factors comprise 67% of the total variance. Analysis using structural equation modelling revealed that reliability, convenience, and affordability at (β =0.22, p=***), ($\beta = 0.31$, p=***), ($\beta = 0.33$, p=***) shows positive intention by consumers to adopt telehealth services.

As a result, the hypotheses H1 (Reliability has a positive influence on the adoption intention of telehealth services), H5 (Convenience has a positive influence on the adoption intention of telehealth services), and H6 (Affordability has a positive influence on the adoption intention of telehealth services) are accepted. The path coefficient for social norms, hedonic motivation, schemes, and offers was negative and non-significant. Therefore, hypotheses H2 (Social Norms have a positive influence on the adoption intention of telehealth services), H3 (Social Norms have a positive influence on the adoption intention of telehealth services), and H4 (Hedonic Motivation has a positive influence on the adoption intention of telehealth services) were rejected. The findings also demonstrated that telehealth service adoption intentions positively impacted usage behavior.

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KEYWORDS

Telehealth Services, Technology acceptance model, COVID-19, Reliability, Affordability, Convenience

INTRODUCTION

India's health care facilities before COVID-19 had been under immense strain due to the unmanageable load of patients in hospitals and clinics. According to the World Health Organization (WHO) data, the ratio of physicians and patients in India is 0.7 to 1000 as against the world average of 2.5 doctors for 1000 patients [28]. After the outbreak of COVID-19 and the rush of patients to hospitals and healthcare centres, most service providers launched telehealth services to help stop the spread of the virus by promoting telemedicine services and reducing the extra load mounting on healthcare institutions. This was done to safeguard and prevent the patients and physicians from infections [3]. During a pandemic, telehealth functions as a bridge between physicians and patients. Patients may make appointments, call doctors, and receiv e consultations from a specialist by utilizing information and communication technology [1]. It also helps patients from remote locations without mobility, transportation, and little budget to interact and seek specialized advice at an inexpensive price [11]. Due to the shutdown in India, most people started utilizing telemedicine and telehealth services to restrict the spread of the virus, and most patients changed from physical consultations to online health services.

Based on the Technological Acceptance Model (TAM) the present study aimed to analyse the effect of telehealth services on the consumers, patients intending to use online medical services and its influence on user behavior.

THE RATIONALE OF THE STUDY

The continuing COVID-19 has placed great pressure on the healthcare industry. Numerous health care facilities and

clinics have begun tele-health services to reduce and prevent the infection from lessening the influx and stress. Many individuals utilize information and communication technology to connect and consult with doctors, and many still are sceptical regarding the acceptance of telehealth services. Thus, the present circumstance presents the need to understand the level of acceptance of technology by the people in the health care industry and to identify the factors that influence the adoption and utilization of technology. This would allow the industry to establish better patient management strategies and methods.

OBJECTIVES OF THE STUDY

The current study aims to comprehend the factors which fundamentally influence the adoption of telehealth services given by the medical clinics and hospitals and to understand the level of fulfillment the patients have from the telehealth services.

LITERATURE REVIEW

To accomplish the objectives of our study, key appropriate articles and research papers pertaining to technology adoption in relation to telehealth services were selected. This literature review included 19articles that formed the basis of informing our study. These articles supported an analysis to understand the acceptance, benefits, consequences, aspects, prominent characteristics, and downsides of adopting telehealth services in the healthcare business. The details of the findings are listed in Table1.

Authors	Description of the findings
[2]	In their study, the authors discovered that affordability is the most important factor influencing customers' or patients' willingness to embrace and adapt technology quickly and frequently.
[3]	The authors observed that patients or customers are more likely to utilize and embrace technology if they like the experience of using it and can extract and seek the information they require
[4]	According to the authors, customers and patients will not adopt new technologies unless they see an advantage from using the services. As a result, numerous health care providers entice clients with discounts, plans, deals, cash back, and free delivery.

TABLE 1: TELEHEALTH SERVICES – DESCRIPTION AND FINDINGS OF PREVIOUS RESEARCH

[5]	The authors discovered that the service provider's e-services must be of high quality, especially
	when patients wish to research doctors or facilities. As a result, the consumer should be able to
	explore the website easily.
[6] [7]	The author discovered that people's willingness to employ an invention or service is influenced
	by reliability. When consumers understand that telehealth services are neither legitimate nor
	trustworthy regarding real-time information, they are less likely to adopt new technologies.
[8] [9]	The author looked at how individuals in developed countries adopt new technologies when
	they value other people's opinions and when they are affected by people in society and close
	friends who give them advice. The pressure that a group puts on an individual to modify their
	attitude, opinion, perception, and conduct is known as social norms.
[10] [11]	The authors discovered that customer acceptance of online services is based on the
	technology's perceived simplicity of use, convenience, and utility. As a result, it is a critical
	factor in adopting new systems and technologies.
[12][13]	The authors claimed that individuals in undeveloped nations are unaffected by the simplicity
	of use and convenience. As a result, simplicity of use, usefulness, or convenience has little
	impact on the adoption of online purchase intent.
[14][15][16][17]	In their study, the authors discovered that customer trust is a crucial component influencing
	their desire to utilize online services. It primarily concerns the new system's risk, security,
	dependability, and belief.
[18]	The authors discovered that customers' intentions to adopt new technologies positively
	impacted their usage behavior. In the same way, internal and external factors influence the
	desire to accept new technologies.
[19]	The writers of the article emphasized the advantages of using telehealth services. The
	advantages of these services include ease and simple access to clinics and doctors, the ability
	to conduct a full examination remotely, bridge gaps in medical treatment, and the analysis of
	psychosocial and motivational aspects. Patient involvement concerns, restricted capacity to
	do physical exams, financial ramifications, and psychological and social obstacles are some
	disadvantages of telehealth services.

Source: Authors Compilation of findings

Based on the literature research findings, it is clear that telehealth services are influenced by several factors. The factors considered relevant for our study are reliability, social norms, schemes and offers, hedonic motivation, convenience, and affordability which affect the intention and usage of technology.

METHOD

The present study used a survey method to establish a link between the factors considered and the intention to adapt telehealth services.

The Head of Commerce has advised that clearance by the Chandigarh University, India Ethical Committee has been waived for this study. **1.Sampling Unit-** A large part of the population is represented by the sample. Respondents from Delhi-NCR were the population that was taken into consideration for our study (India). Respondents who have at least used and experienced telehealth services make up the sample unit. With the assistance of senior physicians and management working in telehealth services, a systematic questionnaire was created for this purpose. A pilot study was conducted involving 25 responses to this draft questionnaire to better understand the challenges respondents had when filling out and comprehending the questionnaire.

2. Sampling Procedure – Given the enormous population of Delhi-NCR, we used a practical sample technique to choose respondents by asking friends and family members who had difficulty leaving their homes during COVID-19. To

ensure the universal applicability and validity of the results, sample selection was carried out.

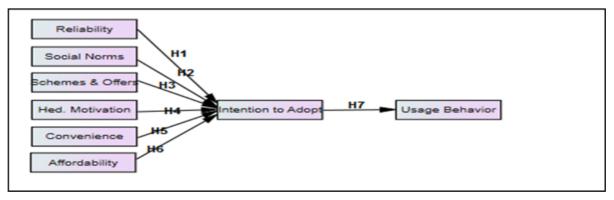
3. Data Collection Method- The descriptive research design is the foundation of the current investigation. By consulting literature and through personal meetings with senior doctors and administrators from health care departments, a well-structured questionnaire was created to gather data. A total of 300 questionnaires were sent using personal contacts and google forms to the residents of Delhi-NCR, and 252 of them were returned and were legitimate and fully completed, representing an 84% response rate.

4. Measurement Scale employed- To investigate the factors that influence patients' intentions and utilization of telehealth services, a questionnaire containing closed-ended questions was being used, which were analyzed on a 5-point Likert scale with the following options: 1-Strongly disagree, 2-Disagree, 3-Neither agree nor disagree, 4-Agree, and 5-Strongly agree.

5. Research and Statistical tools used- For this study, we employed descriptive analysis, confirmatory factor analysis using a measurement model, and regression analysis with structural equation modelling (SEM) to test the hypothesis and explore the major factors influencing patients' willingness to use telehealth services. The research findings will aid in the provision of critical services to an extrapolated population.

According to the literature study, Shih [5], Kamal [7], Bokolo [6], Zhu et al [10] and Vijayasarathy [11] set out a number of factors like quality, reliability, easy to use, convenience and usefulness of technologies as factors that influences consumers to use telehealth services. The adoption of technology is one characteristic that stands out the most. In order to determine how customers or patients in the health care industry are influenced and what factors influence them to utilise technology, the current research employs TAM as the actual system. Consequently, a conceptual framework is developed based on the literature. Figure 1 depicts the conceptual framework used to test the following hypothesis.

FIGURE 1: CONCEPTUAL FRAMEWORK OF THE STUDY



Source: Authors Compilation

HYPOTHESIS OF THIS STUDY

H1. Reliability has a positive influence on the adoption intention of telehealth services (THS).

H2: Social Norms have a positive influence on the adoption intention of telehealth services.

H3: Schemes and Offers have a positive influence on the adoption intention of telehealth services.

H4: Hedonic Motivation has a positive influence on the adoption intention of telehealth services.

H5: Convenience has a positive influence on the adoption intention of telehealth services

H6: Affordability has a positive influence on the adoption intention of telehealth services

H7: Intention to adopt telehealth services has an impact on usage behavior

DATA ANALYSIS AND INTERPRETATION

1. DEMOGRAPHIC ANALYSIS

According to demographics of our present research, most respondents who utilize telehealth services are between the ages of 31 and 60. This demography is appropriate for determining adoption intent based on the factors studied and the impact of adoption intention on user behavior. Males made up 58% of the responders, while females made up 41.67%.74.21% of respondents were graduates and

almost 80% of the respondents had used telehealth services at some point during pandemic. More than 90% of those polled have used telehealth services in recent years.

TABLE 2: DEMOGRAPHIC CHARACTERISTICS

Demographic Characteristics	Group	Frequency	Percentage	
	<30	103	40.87	
Age	31-45	94	37.30	
	45-60	55	21.83	
Gender	Male	147	58.33	
Gender	Female	105	41.67	
Education	Graduate	187	74.21	
	Postgraduate	65	25.79	
	<6 months	68	26.98	
Timeframe of people using	6months-1year	85	33.73	
telehealth services	1-2 years	73	28.97	
	>2 years	26	10.32	

Source: Authors Compilation

2. RELIABILITY ANALYSIS

and reliability of the data. All the results were larger than the indicating that the variables tested were related and threshold limit of 0.7 [22]. In addition, all the endogenous adequate constructs had CR values greater than 0.7, as suggested by [23].

Cronbach alpha was used to assess the internal consistency The factor loading values were determined to be 0.5-0.89,

TABLE 3: DESCRIPTION OF INDICATORS

Construct	Items	Description of Indicators	Factor Loading	Cronbach alpha	CR	AVE
Reliability	REL1	Organization renders promised services	0.78	0.85	0.88	0.66
,	REL2	Doctors attend to patients properly and give quality time	0.84			
	REL3	Willingness to help patients promptly	0.89			
	REL4	Patients can rely on the service provider	0.75			
Social Norms	SNM1	During COVID-19, my friends and relatives want me to use telehealth services	0.82	0.86	0.79	0.56
	SNM2	Family members influence me to use telehealth services	0.74			
	SNM3	Most people who are close to me influence me to use THS	0.69			
Schemes and Offers	SCO1	Schemes and offers by THS provides affect my intention	0.79	0.79	0.85	0.65
	SCO2	Promotion affects my intention to use THS	0.81			
	SCO3	Few expensive tests can be done with schemes provided by service providers	0.83			
	IMT1	Personal issues can easily be shared	0.71	0.82	0.76	0.52

Hedonic	IMT2	I use THS based on my desire and need	0.72			
Motivation	IMT3	l intend to use THS due to care and courteous	0.74			
		behavior				
Convenience	CNV1	Easy to take appointment as per need	0.68	0.75	0.87	0.64
	CNV2	can make an appointment anytime	0.73			
	CNV3	the time slot can be fixed at my convenience	0.88	_		
	CNV4	Can cancel and reschedule the	0.89			
		appointment as per my convenience				
Affordability	AFD1	I prefer telehealth services due to price	0.85	0.76	0.87	0.7
	AFD2	I intend to use THS due to no hidden charges	0.84			
	AFD3	I prefer THS due to the refund and return	0.83			
		policy				
Intention to	ITA 1	l intend to use THS due to schemes, discounts,	0.75	0.87	0.83	0.63
Adopt online		and offers				
medical	ITA2	I will prefer using THS, specially during covid	0.82			
services		period				
	ITA3	l intend to use THS as it saves time and money	0.81			
Usage-	UB 1	I will deliberately use it for safety	0.74	0.89	0.79	0.56
Behavior	UB2	Choosing THS happens automatically	0.76			
		whenever there is any problem				
	UB3	Whenever I have an option, I will prefer THS	0.75			

Source: Authors Compilation

TABLE 4: DISCRIMINANT VALIDITY

Discriminant Validity	REL	SN	so	IM	CONV	AFFD	ITA	UB
Reliability (REL)	0.81							
Social norms (SN)	0.32	0.74						
Schemes and Offers (SO)	0.12	0.23	0.801					
Hedonic Motivation (IM)	0.11	0.31	0.32	0.721				
Convenience (CONV)	0.13	0.32	0.21	0.13	0.8			
Affordability (AFFD	0.07	0.33	0.34	0.29	0.27	0.83		
Intention to Adopt (ITA)	0.32	0.23	0.41	0.31	0.32	0.33	0.79	
Usage Behavior (UB)	0.25	0.3	0.35	0.33	0.29	0.35	0.51	0.74

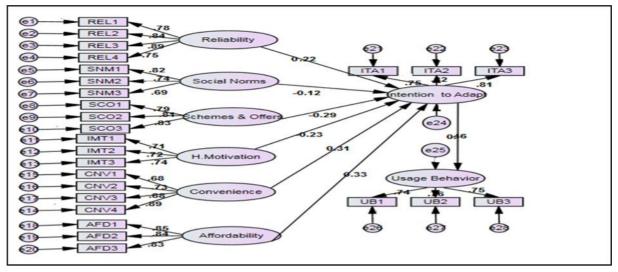
Source: Authors Compilation

discriminant validity are checked using a measurement of 0.912, and an RMSEA of 0.045 [25]. As a result, testing the model [24]. Tables 3 and 4 show the results of the validity influence of endogenous construct on the exogenous analysis.

4.STRUCTURAL MODEL AND HYPOTHESIS TESTING, AMONG OTHERS.

SEM was utilized to create a link between the endogenous and exogenous variables in order to obtain model fit. The

Internal consistency is validated, convergent and final model had an AGFI of 0.901, a CMIN/df of 2.82, a GFI construct is critical to evaluate the hypothesis. Figure 2 illustrates the path coefficient and table4 the hypothesis results.



Source: Authors Analysis

on customers' willingness and adoption intentions to use telehealth services. As a result, the hypotheses H1, H5, and

According to the path coefficient analysis, reliability H6 are accepted. In addition, the intention to use telehealth $(\beta=0.22, P=***)$, convenience $(\beta=0.31, P=***)$, and services has a beneficial influence on customer usage affordability ($\beta = 0.33$, P = ***) all had a favorable influence behavior ($\beta = 0.46$, P=***). Therefore, hypothesis H7 has been accepted.

Hypothesis	Proposed Relationship	Effect Type	Path coefficient	Result
H1	Reliability>ITA	Direct	0.22***	Accepted
H2	Social Norms>ITA	Direct	-0.12 NS	Rejected
H3	Schemes and Offers→ITA	Direct	-0.29 NS	Rejected
H4	Int. Motivation>ITA	Direct	-0.23 NS	Rejected
H5	Convenience>ITA	Direct	0.31***	Accepted
Н6	Affordability>ITA	Direct	0.33 ***	Accepted
H7	ITA>UB	Direct	0.46***	Accepted

Source: Authors Compilation

However, social norms ($\beta = -0.12$, P>0.05) Schemes and Offers (β = - 0.291, P >0.05), and hedonic motivation ((β = -0.23, p=>0.05), do not have any effect on consumer intention to adopt telehealth services. As a result hypothesis H2, H3, and H4 are rejected.

CONCLUSION

Due to the pandemic, telehealth services have proven their capacity to grow and penetrate in a rather short amount of time. Everyone has been compelled to use telehealth services at least once because of the present pandemic. Though people's expectations for technology usage intentions differ, most individuals think that

dependability, affordability, and convenience are the three criteria that have the most impact on people's usage intentions. Therefore, H1, H5, and H6 are accepted and agree with the findings of [26], but social norms, hedonic incentives, and offers and schemes do not persuade individuals to adopt technology for health care. Patients seem to be less concerned with plans and deals, preferring to speak with a specialist to calmly address their own problems. These elements so have no impact on people's usage intentions. Therefore, the findings will have significance for the opportunities, applications, and aspects that telehealth service providers may utilize to align strategy in terms of boosting services for drawing in an increasing number of clients.

In terms of enhancing health and offering services to those who reside in rural areas and cannot afford to travel to hospitals, the usage of telehealth services would be advantageous. Although the technology is widely used, only time will tell if it represents an advancement in both information and communication technology (ICT) and good health.

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