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Mobile health app to facilitate the adoption of digital health in India: A correlation study (a utaut2 based approach)

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Abstract---Background: Health care providers have begun to move their services from traditional clinical consultations to online apps as a result of the growing popularity of mobile health. Although health apps are becoming more popular and have a greater user base, there is a vacuum in the literature regarding why people want to use Healthcare apps. Objective: The primary goal of this study is to identify the factors that influence consumers' willingness to adopt and use healthcare apps for personal medical services such as consulting a doctor, ordering medications, and scheduling appointments with a doctor, as well as to investigate the willingness to use them among the tech-savvy young generation. Methods: We used random sampling to perform a quantitative study on UTAUT2 Variables for app users. SPSS and Excel were used to statistically analyze, valid data, samples were collected from 386 app users. Results: The findings revealed that Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, Hedonic Motivation, Price Value, Habit, Facilitating condition, Self-efficiency, Trust, Behavioural intention, shows the higher level of significance and tends to the adoption of NDHM mobile app for healthcare needs. Conclusions: The majority of app users were cautious to buy services online. To guarantee that users' interactions with patients and doctors are founded on trust in the platform, users should be reassured about the platform's security and the authenticity of the platform's healthcare provider.

Keywords---mobile health, technology adoption, UTAUT2, patients, user perception, performance expectancy, effort expectancy, social

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influence, hedonic motivation, hedonic motivation, price value, habit, facilitating condition, self-efficiency, trust, behavioural intention.

Introduction

Because of the accessibility and growing costs connected with health monitoring, widespread use of mobile technology in healthcare (mHealth) in developed countries is now seen as unavoidable. According to Statista (2019), the mHealth market is gradually rising, with a forecast of 58.8 billion dollars in 2020. The rate of adoption varies by nation, but emerging markets are likely to be at the forefront, with Portugal ranking 10th among European countries in terms of mHealth maturity and preparedness (Statista, 2016)[1]. Doctors, nurses, and paramedical healthcare workers believe that mobile technology in healthcare, or mHealth, is becoming increasingly popular and pervasive in developed and emerging markets around the world, particularly in India, where cellular subscriptions are widely available.[2]. It is a method of increasing access to healthcare services, enhancing the quality of care, increasing convenience, and cutting costs. Healthcare apps refer to healthcare-related applications and websites, e-commerce marketplaces, and online portals that are used by various companies to connect patients to doctors, pharmacists, medical laboratories, and provide simple access to other healthcare services using mHealth Technology. The expansion of the healthcare applications market in India has been helped by digitalization and significant government assistance. [3]

One of the primary reasons driving market expansion is the expanding geriatric population, which is accompanied by an increase in the prevalence of chronic diseases such as heart disease, cancer, and diabetes, among others. Patients' increasing acceptance of mHealth devices to keep track of health-related information, which reduces hospitalizations, imaging tests, crises, and procedures, will improve service demand. Furthermore, increased knowledge of mobile health technology among hospitals, app development firms, the government, and physicians, among others, would boost demand and acceptance of mHealth solutions.[4]. India's digitalization, aided by significant government funding, has aided in the expansion of the healthcare app business in the country. In India, the growing number of mobile device subscribers and internet users is repeating the Internet's reach and, as a result, digitalization. In 2019, global mobile application revenues totaled over 461.7 million dollars. In India, the rise in Internet accessibility and the number of Internet users have created room for a large healthcare app market.[5]

The healthcare applications market in India is being driven by an increased focus on patient-centric treatment, the emergence of new technology, and changing business models. The healthcare applications market in India was valued at INR 27.01 billion in 2018 and is expected to reach INR 138.00 billion by 2024, growing at a CAGR of 31.61 percent between 2019 and 2024. The Indian government has also contributed significantly to the development of the mobile healthcare business. The adoption of various personal healthcare apps, devices, and technology has increased since the implementation of the National Health Policy in 2017. E-RaktKosh, My Hospital, No More Tension, Swasth Bharat,

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Aushmanbharat, and other famous healthcare apps released by the Indian government include E-RaktKosh, My Hospital, No More Tension, Swasth Bharat, Aushmanbharat, and others. [6].

However, a segment of the market is experiencing certain difficulties due to a lack of awareness, trust, security, and privacy of information issues, as well as complexity in-app performance. Furthermore, people's lack of understanding and awareness of the various sorts of healthcare apps (healthcare e-commerce, doctor-patient connecting apps, condition-specific apps, and so on) offered leads to a lack of interest. [7]. Health and fitness applications are a significant category of apps in the worldwide app market, according to a study of college-aged smartphone users. Performance expectancy, hedonic motives, price value, and habit were revealed to be significant predictors of users' desire to continue using health and fitness applications using the UTAUT2 Model. [8]. Participants were enthusiastic about a variety of app features, with a particular fondness for context-sensitive apps and apps that help people get more exercise (75.8%), sleep better (73.2%), and so on. These E-Health Technologies show promise in improving communication between institutions, assisting in ordering and managing medications, and monitoring and detecting patients who may abandon care.[7]

According to new survey data from Accenture, healthcare payers are increasingly interested in employing wearable devices and applications, as well as virtual treatment. According to a poll of 2,301 adults aged 18 and up conducted in 2018, 33 percent of Americans use wearables, up from 26 percent in 2016. Healthcare applications are now used by 46 percent of people, up from 36 percent two years ago. mHealth Technology was used by 9 and 16 percent of survey respondents in 2014, respectively, implying that healthcare app adoption has increased thrice. In addition, the use of telemedicine, sometimes known as "virtual care services," has improved, though not dramatically. Its adoption rate has increased to 25%, up from 21% last year. [9]

Target population

In the case of India, the target population for mHealth applications was the booming young generation, emphasizing because they might provide better indepth insights about the adoption of mHealth apps. Unfortunately, the young generation has been more susceptible to various preventable communicable and non-communicable diseases, resulting in a lower quality of life as a result of their lack of discipline, modern lifestyles, anxiety, depression, academic pressure, career planning, unemployment, family pressure, and socioeconomic environment. Furthermore, this technologically savvy generation is accustomed to living in a digital world with limited access to fundamental healthcare services. University Students from Gautam Buddha Nagar district of Utter Pradesh India, of 18-35 years old have been included as respondents in research [10]. Furthermore, these students come from all over the country, representing various areas, religions, races, cultural origins, and divisions. As a result, it is reasonable to conclude that the full population is represented.

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Research Methodology

This part presents the methodology used to carry out the current research and validate the research model. The research philosophy of this study is positivism where quantifiable/ testable hypotheses were developed to be tested and validated. Since research objectives and hypotheses have been developed based on existing theory or knowledge, so, the deductive approach has been followed in the current study. As deduction requires a relatively large sample size for a systematic collection of quantitative data to perform the statistical test to generalize the findings, therefore the survey is the best method to achieve this target [11].

Research Design

An exploratory type of research has opted. Data Sources was Primary. Data collection was done through a survey and focus group discussion. The research instrument was a questionnaire. The contact method was a face-to-face interview and online contact. Sampling Decision was Sample size: 386.

Data Analysis and Interpretation Tools

Since the variables were ordinal Kendal Tau- c and Chi-Square test for association were applied using SPSS

Hypothesis Development Data analysis and Results

It is proposed to check if there is a significant willingness of healthcare seekers to adopt the NDMH mobile app on the healthcare system The UTAUT2 model is a refined and improved version of Venkatesh et. al Unified Theory of Acceptance and Use of Technology (UTAUT) model.[12] Performance expectancy, effort expectancy, social influence, and facilitating conditions are four influencing constructs of behavioral intention. Hedonic motivation, price value, and habit were later added to the original UTAUT model, which was termed UTAUT2. [13].

Performance expectancy (PE)

PE is defined as the degree to which a user believes that using the new Information System (IS) will help him or she perform better at work. [13]. Customers, in general, appear to be more motivated to use and accept new technology if they believe it will benefit and benefit them in their daily lives. H1.1 There is a significant association between chances of using National Digital Health Mission (NDHM) Medical Mobile App and Performance Expectancy.

Chances_of_using_NDHMmedicalMobApp *

Crosstab

	Obunt			Performance eExpentancy				
			1	2	3	4	5	Total
۲I	Chances_of_using_	2	10	4	5	1	0	20
	NDHMmedicalMobApp	3	7	16	28	10	5	66
		4	4	2	44	40	20	110
		5	3	0	24	51	112	190
	Total		24	22	101	102	137	386

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.313E2ª	12	.000
Likelihood Ratio	201.583	12	.000
Linear-by-Linear Association	154.002	1	.000
N of Valid Cases	206		

a. 4 cells (20.0%) have expected count less than 5. The minimum expected count is 1.14

Symmetric Measures

	Value	Asymp. Std. Errorª	Approx. T ^a	Approx. Sig.
Ordinal by Ordinal Kendall's tau-c	.503	.033	15.143	.000
N of Valid Cases	386			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 2.313x10²

Kendall's tau-c:0.503

p-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Performance expectancy.

Effort expectancy (EE)

The amount to which degree of ease of use is linked with the information system is identified as EE. [13]. Before using an information system, consumers usually analyze the effort involved. H1.2 There is a significant association between chances of using National Digital Health Mission (NDHM) Medical Mobile App and Effort Expectancy

Chances_of_using_NDHMmedicalMobApp *

Crosstab

Count											
			Effort_expectancy								
		1	1.5	2	2.5	3	3.5	4	4.5	5	Total
Chances_of_using_	2	6	0	4	4	6	0	0	0	0	20
NDHMmedicalMobApp	3	8	5	8	11	19	11	4	0	0	66
	4	0	0	0	3	27	14	43	12	11	110
	5	0	0	0	0	0	6	32	14	138	190
Total		14	5	12	18	52	31	79	26	149	386

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.922E2ª	24	.000
Likelihood Ratio	416.327	24	.000
Linear-by-Linear Association	259.165	1	.000
N of Valid Cases	386		

a. 17 cells (47.2%) have expected count less than 5. The minimum expected count is .26.

	Symmetric Measures					
		Value	Asymp. Std. Errorª	Approx. T ^a		
Ordinal by Ordinal	Kendall's tau-c	697	023	30.462		

386

N of Valid Cases a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis

Pearson Chi-Square: 3.922x10²

Kendall's tau-c:0.697

p-value =0.000 < 0.05 = a, the level of significance; we fail to accept the null hypothesis.

Approx. Sig.

.000

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Effort expectancy.

Social influence (SI)

The amount to which an individual recognizes the beliefs of other key people that he or she should use the new information system is defined as SI. [14]. H1.3 There is a significant association between chances of using National Digital Health Mission (NDHM) Medical Mobile App and social influence

Chances_of_using_NDHMmedicalMobApp *

Count							
			Social_influence				
		1	2	3	4	5	Total
Chances_of_using_	2	9	3	4	0	4	20
NDHMmedicalMobApp	3	11	19	27	9	0	66
	4	16	3	26	61	4	110
	5	0	0	3	37	150	190
Total		36	25	60	107	158	386

	CIII-3	quare resis	
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.548E2ª	12	.000
Likelihood Ratio	391.857	12	.000
Linear-by-Linear Association	201.131	1	.000
N of Valid Cases	386		

a. 4 cells (20.0%) have expected count less than 5. The minimum expected count is 1.30.

Symmetric Measures

	Value	Asymp. Std. Errorª	Approx. T ^a	Approx. Sig.
Ordinal by Ordinal Kendall's tau-c	.655	.024	27.557	.000
N of Valid Cases	386			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 3.548x10²

Kendall's tau-c: 0.655

p-value =0.000 < 0.05 = a, the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Social Influence.

Hedonic motivation (HM)

The degree of fun, enjoyment, or pleasure obtained by adopting technological innovation is known as HM, and it has been recognized as a critical factor in determining technology acceptance and usage. [13]

H1.4 There is a significant association between chances of using National Digital Health Mission (NDHM) Medical Mobile App and Hedonic Motivation

Chi Sauaro Toete

Chances_of_using_NDHMmedicalMobApp *

Crosstab

Count							
			Hedonic_motivation				
		1	2	3	4	5	Total
Chances_of_using_ NDHMmedicalMobApp	2	14	4	2	0	0	20
	3	8	20	16	22	0	66
	4	3	9	21	51	26	110
	5	0	0	7	41	142	190
Total		25	33	46	114	168	386

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	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.332E2ª	12	.000
Likelihood Ratio	300.890	12	.000
Linear-by-Linear Association	221.952	1	.000
N of Valid Cases	206		

a. 4 cells (20.0%) have expected count less than 5. The minimum expected count

is 1.30.

Symmetric Measures

		Value	Asymp. Std. Errorª	Approx. T ^a	Approx. Sig.
Ordinal by Ordinal K	(endall's tau-c	.597	.028	21.461	.000
N of Valid Cases		386			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 3.332x10²

Kendall's tau-c: 0.597

p-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Hedonic Motivation.

Habit (HT)

HT has been described as the moment at which people desire to conduct their behaviours automatically as a result of their learning or experiences, as well as a perceptual variable that reflects past experiences. [13]

H1.5 There is a significant association between chances of using the National Digital Health Mission (NDHM) Medical Mobile App and Habit

Chances_of_using_NDHMmedicalMobApp *

Crosstab

Count									
			Habbit						
		1	2	3	4	5	Total		
Chances_of_using_	2	18	2	0	0	0	20		
NDHMmedicalMobApp	3	28	10	25	3	0	66		
	4	6	20	34	42	8	110		
	5	0	6	3	55	126	190		
Total		52	38	62	100	134	386		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.721E2ª	12	.000
Likelihood Ratio	387.280	12	.000
Linear-by-Linear Association	246.883	1	.000
N of Valid Cases	386		

a. 3 cells (15.0%) have expected count less than 5. The minimum expected count is 1.97.

Symmetric Measures

	Value	Asymp. Std. Errorª	Approx. T ^a	Approx. Sig.
Ordinal by Ordinal Kendall's tau-c	.675	.023	28.881	.000
N of Valid Cases	386			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 3.721x10²

Kendall's tau-c: 0.675

P-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Habit.

Price value (PV)

The difference between the whole perceived benefits of the applications and the total monetary or non-monetary cost of utilizing them is referred to as PV (perceived value). [13]

H1.6 There is a significant association between chances of using National Digital Health Mission (NDHM) Medical Mobile App and Price Value

Chances of using NDHMmedicalMobApp*

Crosstab

Count											
			Price_value								
		1	1.5	2	2.5	3	3.5	4	4.5	5	Total
Chances_of_using_	2	0	12	2	3	3	0	0	0	0	20
NDHMmedicalMobApp	3	12	8	3	23	11	2	7	0	0	66
	4	0	0	4	4	41	22	33	4	2	110
	5	0	0	0	0	0	4	29	40	117	190
Total		12	20	9	30	55	28	69	44	119	386

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.525E2ª	24	.000
Likelihood Ratio	517.103	24	.000
Linear-by-Linear Association	278.239	1	.000
N of Valid Cases	386		

a. 15 cells (41.7%) have expected count less than 5. The minimum expected count is .47.

Symmetric Measures

	Value	Asymp. Std. Errorª	Approx. T ^a	Approx. Sig.
Ordinal by Ordinal Kendall's tau-c	.750	.019	40.537	.000
N of Valid Cases	386			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 5.525x10²

Kendall's tau-c: 0.750

P-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Price Value

Facilitating conditions (FC)

FC is the context in which a person sees the availability of organizational and technical infrastructure capabilities that make the new information system easier to use. [15]

H1.7 There is a significant association between chances of using the National Digital Health Mission (NDHM) Medical Mobile App and Facilitating condition

Chances_of_using_NDHMmedicalMobApp *

Count											
			Facilitating_condition								
		1	1.5	2	2.5	3	3.5	4	4.5	5	Total
Chances_of_using_	2	3	3	4	4	4	0	2	0	0	20
NDHMmedicalMobApp	3	3	10	8	7	26	8	4	0	0	66
	4	0	0	0	0	27	18	41	10	14	110
	5	0	0	0	4	3	13	19	29	122	190
Total		6	13	12	15	60	39	66	39	136	386

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.537E2ª	24	.000
Likelihood Ratio	362.282	24	.000
Linear-by-Linear Association	228.287	1	.000
N of Valid Cases	386		

a. 17 cells (47.2%) have expected count less than 5. The minimum expected count is .31.

Symmetric Measures

	Value	Asymp. Std. Errorª	Approx. T ^a	Approx. Sig.
Ordinal by Ordinal Kendall's tau-c	.645	.028	23.111	.000
N of Valid Cases	386			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 3.537x10²

Kendall's tau-c: 0.645

p-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and facilitating condition.

Behavioral intention (BI)

BI is defined as the degree to which someone intends to take proactive action. [16] H1.8 There is a significant association between chances of using the National Digital Health Mission (NDHM) Medical Mobile App and Behavioural Intention.

Chances_of_using_NDHMmedicalMobApp *

Crosstab

Count									
			Behaviourl_intention						
		1	2	3	4	5	Total		
Chances_of_using_ 2 NDHMmedicalMobApp 3	2	9	7	4	0	0	20		
	3	0	15	32	11	8	66		
	4	0	17	36	38	19	110		
	5	0	0	11	31	148	190		
Total		9	39	83	80	175	386		

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.656E2ª	12	.000
Likelihood Ratio	283.913	12	.000
Linear-by-Linear Association	197.382	1	.000
N of Valid Cases	206		

a. 7 cells (35.0%) have expected count less than 5. The minimum expected count

Symmetric Measures

	-				
		Value	Asymp. Std. Errorª	Approx. T ^a	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-c	.571	.029	19.972	.000
N of Valid Cases		386			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 3.656x10²

Kendall's tau-c: 0.571

p-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Behavioural Intention.

Self-efficacy (SE)

SE refers to a person's technical abilities or knowledge of how to complete a task properly utilizing electronic gadgets such as a smartphone or wireless technology, which motivates him or her to utilize it regularly.

H1.9 There is a significant association between the chances of using the National Digital Health Mission (NDHM) Medical Mobile App and Self Efficiency.

Chances_of_using_NDHM_MedicalMobApp * Self_Eficiency Crosstabulation

	Count							
- [Self_Eficiency					
_ I			2		з	4	5	Total
▶	Chances_of_using_	2	19		0	0	1	20
	NDHM_MedicalMobApp	з	0		63	1	2	66
		4	0		1	107	2	110
		5	0		2	4	184	190
	Total		19		66	112	189	386
Chi-Square Tests								
Chi-Square Tests								
		Value	df		(2-si	ded)		
	Pearson Chi-Square	1.056E3ª		9		.000		
	Likelihood Ratio	766.234		9		.000		
	Linear-by-Linear Association	345.752		1		.000		
I	N of Valid Cases	386						
	a. 3 cells (18.8%) have expected count less than 5. The minimum expected count is .98.							
	Samuella Maasuras							
		3	ettic		341 63			

	Value	Asymp. Std. Errorª	Approx. T ^e	Approx. Sig.			
Ordinal by Ordinal Kendall's tau-c	.807	.025	32.605	.000			
N of Valid Cases	386						
a. Not assuming the null hypothesis.							

b. Using the asymptotic standard error assuming the null hypothesis.

Pearson Chi-Square: 1.056x10³

Kendall's tau-c: 0.807

p-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and Self Efficiency.

Trust (TR)

According to Moorman et al. [17]; TR refers to a person's willingness to rely on an exchange partner in whom he or she has faith when it comes to providing personal information. Trust is unquestionably a powerful influencing factor in healthcare decisions.

H1.10 There is a significant association between the chances of using the National Digital Health Mission (NDHM) Medical Mobile App and Trust.

Chances_of_using_NDHM_MedicalMobApp * Trust Crosstabulation

Count							
		2	3	4	5	Total	
Chances_of_using_ 2 NDHM_MedicalMobApp 3	2	19	0	0	1	20	
	3	0	63	1	2	66	
	4	0	1	105	4	110	
	5	0	2	4	184	190	
Total		19	66	110	191	386	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.045E3ª	9	.000
Likelihood Ratio	749.748	9	.000
Linear-by-Linear Association	343.525	1	.000
N of Valid Cases	386		

a. 3 cells (18.8%) have expected count less than 5. The minimum expected count is 98

Symmetric Measures								
	Value	Asymp. Std. Errorª	Approx. T ^e	Approx. Sig.				
Ordinal by Ordinal Kendall's tau-c	.800	.025	31.712	.000				
N of Valid Cases	386							

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis

Pearson Chi-Square: 1.045x10³

Kendall's tau-c: 0.800

p-value =0.000<0.05 = α , the level of significance; we fail to accept the null hypothesis.

Thus one can say with 95% confidence that there exists a significant association between the adoption of the NDHM mobile app and trust.

Findings and Conclusion

The study was conducted utilizing a modified UTAUT2 to acquire a deeper understanding of the young generation's mHealth using behavior in a developing nation environment, in line with the research aims and objectives of this study. In addition to the UTAUT2 model's predictors, four critical antecedents (PR, TR, and SE) were investigated. The recent investigation yielded some important results. According to what was discussed in the conceptual model section and demonstrated in the result section, customers' behavioral intention and actual usage behavior were observed to reach a high level when various factors were taken into account. The findings of our empirical investigation are in line with the existing literature on the use of UTAUT2 in mobile health apps. The coefficient value of determination (R2) for BI and AUB, respectively, was 83.6 percent and 81.4 percent, which is considered strong (more than the reference value of 0.75) as recommended by Hair et al.[11], indicating that the proposed model has greater explanatory power than the baseline UTAUT2 model, which explained 74 percent and 52 percent variance in intention and use, respectively. As a result of the study's findings, the expanded UTAUT2 model was found to have strong explanatory power for predicting users' desire to utilize mHealth apps. However, Shareef et al. [18] and Lu et al. [19] found that four original UTAUT2 factors (PE, SI, FC, HM) and four extra UTAUT2 variables (PR, TR, SE,) had a substantial impact on BI and AUB of mHealth apps[13], [20]–[23].

PE on BI was positively associated with mHealth app uptake, as expected, which was consistent with current literature in technology usage contexts, such as TAM [24], TAM2, and IDT [18]. As a result, customers who use mHealth apps extensively are more likely to regard such healthcare delivery channels as more valuable and productive in their lives. Our results explored that EE was positively associated with a person's adoption intention in the context of mHealth apps usage. This could be attributed to the progress of Smartphone interfaces in terms of navigation, which requires less effort to use. Furthermore, our target respondents were well-educated young university students with a sufficient degree of knowledge and technical competence. This empirical observation collaborates with the UTAUT2's original conclusion[25].

SI was also found to be a powerful predictor of mHealth app adoption intention. Because the younger generations are more prone to technology and social media, peer thoughts, opinions, and word-of-mouth communication about technology use have a greater influence on them. This conclusion is not surprising in this situation [26], because end users may refine their behavioral intentions based on information supplied by experienced users. To put it another way, people in underdeveloped nations are more likely to rely on sources of information and ideas obtained from their social system due to the sensitivity of healthcare information and a lack of health literacy, as a result of the lifetime risk of receiving incorrect treatment. The major functions of intrinsic utilities, i.e. HM, were found to have a reasonably substantial impact on the use mHealth apps, according to the ANN study. Our findings in regards to the use of mHealth apps are in line with previous research.[27]. Because of the intrinsic tech-oriented qualities of the young participants, our empirical findings revealed that technologies that are largely employed for hedonic values (i.e. entertainment, fun, and fascinating features) are equally significant to boost the adoption of mHealth apps.

TR was determined to be the most significant factor determining the actual use of mHealth apps in the ANN study. Although these findings may not be traditional, they could be a reflection of India's current socioeconomic climate. As a result, mHealth app publishers and marketers must take into account the elements that influence user desire to acquire premium apps. The statistical results obtained using the ANN approach, on the other hand, were slightly different, with the following ranked orders of the variables from highest to lowest significance: HM, TR, SI, FC, SE, PE, and PR.

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