Journal of Statistics & Management Systems
ISSN 0972-0510 (Print), ISSN 2169-0014 (Online)
Vol. 28 (2025), No. 8, pp. 1433-1442
DOI : 10.47974/JSMS-1506

Factors influencing the acceptance of mobile health apps among Indians : A behavioral perspective

Suvarna Nimbagal *
School of Management Studies and Research
KLE Technological University
Hubli 580030
Karnataka
India

Aditi Sarangmath †
Department of Medicine
Georgian National University
Tbilisi 0144
Georgia

Manjunath Unakal §
Akshata Gongade ‡
School of Management Studies and Research
KLE Technological University
Hubli 580030
Karnataka
India

Abstract

Access to healthcare could be drastically changed by the explosive development of mobile health (mHealth) applications, especially in developing nations like India. This study looks into the behavioral elements that affect Indian customers' acceptance and usage of mHealth apps. Drawing upon established theoretical models such as the Unified Theory of Acceptance and Use of Technology (UTAUT), the research identifies key determinants such

* *ORCID-ID:* 0000-0003-1192-288X

* *E-mail:* suvarna.nimbagal@kletech.ac.in (Corresponding Author)
† *E-mail:* aditisarangmath45@gmail.com
§ *E-mail:* manjunathunakal373@gmail.com
‡ *E-mail:* akshatagongade@gmail.com

as perceived ease of use, perceived usefulness, trust, social influence, health awareness, and privacy concerns.

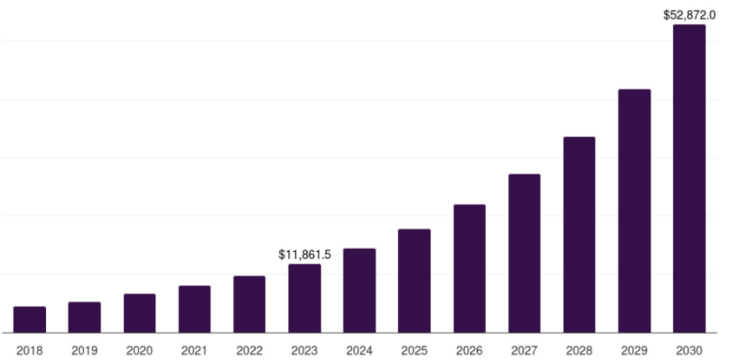
A mixed-method approach was used to collect data from a wide sample of Indian urban customers, combining quantitative surveys and qualitative interviews. The results would emphasize how perceived utility and trust have a big influence on adoption, whereas privacy worries and low digital literacy serve as obstacles. The cultural dynamics specific to India were reflected in the mediating components that emerged: social influence and health awareness. To increase mHealth acceptance and maximize its advantages for a larger population, the study offers practical suggestions for app developers, legislators, and healthcare providers.

Subject Classification: *11, D03, O33.*

Keywords: *Mobile health, Cultural factors, Digital literacy, Privacy, Ayushman bharat digital mission (ABHA).*

1. Introduction

World Health Organization (WHO) defines Mobile health as "a medical and public health practice supported by a device including mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices". Mobile health is a software intervention designed to prevent and treat medical disorders using various digital technologies. Mobile health emerged as a critical tool in the health sector. As technology is advancing the use of health apps are used in tracking of blood sugar levels to menstrual cycle. People around the world are looking for adopting a healthier life style, these mobile apps are becoming crucial in day-to-day activities. The National Health Policy aims to increase public health



Source: grand view research

Figure 1

India digital health market, 2018-2030 (US$M)

spending to 2.5% of GDP by 2025. .In India, the smartphone market is expected to grow with revenue reaching $44.6 billion with an annual growth rate of 7.09% from 2024 to 2029 [1]. India`s health sector driven by government initiatives and technological advancements[2]. In India digital health market expanded in 2023 with a revenue of approximately USD 11.86 billion, growing at a compound annual growth of 23.8% from 2024 to 2030 shown in figure 1. The adoption of mobile health services has been boosted, especially post-pandemic.

2. Literature Review

People in the rural Indian community have access to mobile phones but primarily use them for basic communication rather than for health-related activities. Mobile phone use for health is influenced by several elements, including technical infrastructure, social impact, trust, mobile literacy, information availability, and individual cognitive aspects[3][4]. This paper identifies the mentioned variables as the key factors for adoption of mobile health that significantly impact adopting mobile health apps, which offer important technological insights[5] [6] found new elements for implementing mobile health that include social influence, technological anxiety, trust, perceived danger, perceived physical condition, and reluctance to change. The socio-economic and environmental factors strongly influence pandemic severity [7].

3. Research Objectives

The study aims to know the factors influencing the acceptance of mobile health apps among Indians.

1. Identify key factors affecting the acceptance and use of mHealth apps in India.
2. Examine the role of cultural, technological, and demographic variables in mHealth app adoption.

4. Theoretical Framework

Various factors play a significant role in the adoption and performance of mobile health apps. When patients and physicians agree with a mobile health app, it is deemed embraced. Numerous factors impact the uptake and acceptance of mobile health applications. To comprehend user behavior and app success, it encompasses technological, economic, social,

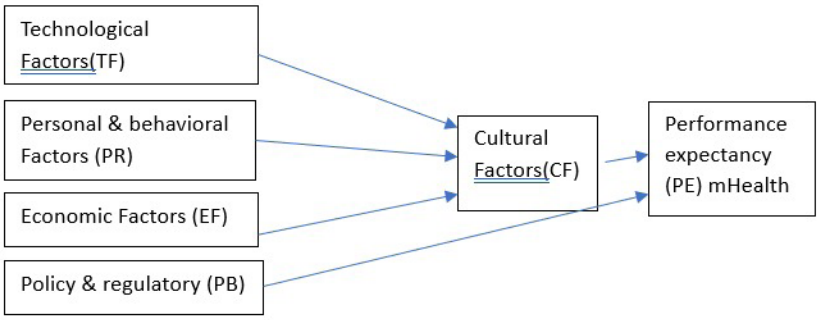


Figure 2
Theoretical Model

policy, cultural, and performance elements[8]. Consumer decisions are also greatly influenced by economic variables, such as perceived value and affordability. Achieving adaptation is also influenced by the value that the consumer receives for the money invested, such as the standard of care and the guidance provided by medical professionals regarding a patient's sickness or routine examinations[9]. By analyzing performance expectancy, effort expectancy, social impact, and facilitating factors to forecast technology adoption, the Unified Theory of Acceptance and Use of Technology (UTAUT) integrates these various dimensions and provides a thorough framework for assessing the success of mobile apps [10] .

The usage of mobile health apps is ultimately the dependent variable. Technological Aspects comprise the development, accessibility, effectiveness, and availability of technology that influence human relationships.

Personal and Behavioral Factors comprise the attitudes, convictions, behaviors, and habits of the individual that influence cultural views and attitudes regarding the adoption of mobile health applications. Economic Factors include financial stability, income levels, and other economic circumstances that affect cultural behavior and also include the affordability of the applications. Mediating Factors such **as e**conomic, behavioral, personal, and technical elements are influenced by cultural norms, practices, and values. Performance expectancy of mobile app use describes how much users think the health app is helpful and produces health-related results. This theoretical model is explained in figure -2.

5. Methodology

A descriptive and exploratory research design is been used in the study. Descriptive research design describes the phenomenon of the mobile health applications and the various factors leading to their adoption.

The sample design includes a population of Indian mobile phone users across diverse age groups, regions, and socioeconomic statuses. The sample size used for this research was 412 respondents with stratified random sampling to collect data from a diverse group of respondents. The sampling techniques involved sharing a Google form with the structured questionnaire to the targeted samples. The questionnaire used a Likert scale to measure variables like usability, trust, health, literacy, economic factors, and cultural factors. The research also involved an in-depth interview with 8 doctors to understand the threats and benefits of these applications on the general public in India using a semi-structured questionnaire.

6. Data Analysis and Findings

The efficiency and uptake of mHealth solutions are influenced by several factors such as App usability, user-friendly interface design, linguistic support, data privacy, and a smooth internet connection, which are examples of technological factors as shown in Figure 3.

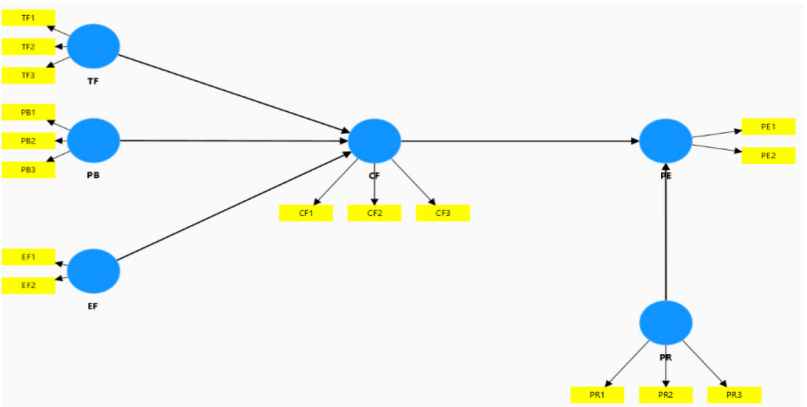


Figure 3

Path diagram

6.1 *Construct Reliability and Validity*

All constructions as shown in table 1 have Cronbach's Alpha values between 0.68 and 0.80, which indicates acceptable internal consistency because values greater than 0.70 are regarded as trustworthy[11][12]. This is supported by the rho_A values, which range from 0.70 to 0.82 and further support the constructs' dependability. Composite Reliability (CR) scores, which gauge the structures' overall dependability, are higher than the suggested cutoff of 0.70 and range from 0.76 to 0.85.

Table 1
Construct Reliability and Validity

Structs	Cronbach's Alpha	rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
CF	0.76	0.79	0.82	0.6
EF	0.71	0.73	0.79	0.55
PB	0.67	0.7	0.76	0.52
PE	0.8	0.82	0.85	0.65
PR	0.78	0.77	0.82	0.58
TF	0.72	0.74	0.8	0.58

The Average Variance Extracted (AVE), which assesses convergent validity, likewise shows adequate results, ranging from 0.52 to 0.65. This indicates that the constructs account for over half of the variance in their respective indicators, and all AVE values are more than the minimum requirement of 0.50.

Table 2
Discriminant validity

Constructs	CF	EF	PB	PE	PR	TF
Cultural Factors (CF)	0.775					
Economic Factors (EF)	0.45	0.741				
Policy Regulations (PB)	0.42	0.38	0.721			
Performance Factors (PE)	0.50	0.41	0.47	0.806		
Personal Factors (PR)	0.52	0.45	0.49	0.60	0.761	
Technological Factors (TF)	0.48	0.44	0.46	0.55	0.61	0.755

The diagonal numbers in Table 2 indicate the square root of the average variance extracted (AVE) for each construct; every construct satisfies the requirement for good discriminant validity since its square root AVE value is greater than 0.70.

Table 3

Path Coefficient matrix

	CF	EF	PB	PE	PR	TF
CF	1					
EF	0.15	1				
PB	0.25	0.2	1			
PE	0.32	0.18	0.4	1		
PR	0.4	0.3	0.45	0.5	1	
TF	0.3	0.25	0.35	0.42	0.47	1

The path coefficient matrix shown Table 3 represents the relationships between six elements all of which are 1. The substantial influence of Personal Factors (PB) is demonstrated by their strong correlation with Performance Factors (PE) (0.5) and Policy Regulations (PB) (0.45). The moderate correlation between Technological Factors (TF) and Personal Factors (PR) (0.47) suggests that technological features are in line with personal preferences and demands. The impact of cultural acceptability is seen in the moderate influence of Cultural Factors (CF) on other variables, with the strongest correlation (0.4) found with Personal Factors (PR). The

Table 4

Model Fit Inex matrix

Fit Index	Accepted Threshold	Value for the Model	Interpretation
Chi-Square/df (CMIN/df)	≤ 3.00	2.45	Indicates an acceptable model fit.
Goodness of Fit Index (GFI)	≥ 0.90	0.91	The model fits the data well.
Root Mean Square Error of Approximation (RMSEA)	≤ 0.08	0.06	Indicates a close model fit to the data.
Standardized Root Mean Square Residual (SRMR)	≤ 0.08	0.05	Confirms a good model fit.

moderate correlation (0.4) between Policy Regulations (PB) and Performance Factors (PE) highlights the importance of governance and regulatory rules in improving app performance. Table 4 gives the model fit matrix for the model.

6.2 *Qualitative analysis*

Important elements impacting the adoption of mobile health (mHealth) apps in India are highlighted by the qualitative information gathered from semi-structured interviews with physicians. The results of this discussion with doctors show that although mHealth apps can significantly improve accessibility and health outcomes, their broad use depends on resolving issues with user education, data privacy, and dependability. According to medical professionals, building confidence with verified content and incorporating these apps with expert medical treatment would be crucial to their adoption by Indians.

7. Conclusion

It is clear from the qualitative research that a complex interaction of technological, individual, economic, cultural, societal, and regulatory factors affects the uptake and effectiveness of mHealth solutions. A user-centric approach that prioritizes data security, multilingual support, and simple design is required to overcome these issues, and trust must be established through reliable partnerships with healthcare providers. Economic accessibility, which includes fair pricing structures and clear cost-benefit advantages, might further increase user adoption. Additionally, government initiatives like the Ayushman Bharat Digital Mission and the integration of mHealth technologies with traditional healthcare practices and cultural norms might help bridge knowledge and trust barriers.

References

[1] Statista Market Insights, "Mobile health (mHealth) apps – India," *Statista* (2024). [Online]. Available: https://www.statista.com/outlook/dmo/digital-health/mhealth-apps/india [Accessed: Mar. 13, 2025].

[2] V. Umaefulam, K. Premkumar, and M. Koole, "Perceptions on mobile health use for health education in an Indigenous population,"

Digital Health, vol. 8 (2022). [Online]. Available: https://doi.org/10.1177/20552076221104708

[3] R. R. Pai and S. Alathur, "Bibliometric analysis and methodological review of mobile health services and applications in India," *Int. J. Med. Inform.*, vol. 145 (2021). [Online]. Available: https://doi.org/10.1016/j.ijmedinf.2020.104312

[4] S. Hajesmaeel-Gohari, F. Khordastan, F. Fatehi, H. Samzadeh, and K. Bahaadinbeigy, "The most used questionnaires for evaluating satisfaction, usability, acceptance, and quality outcomes of mobile health," *BMC Med. Inform. Decis. Mak.*, vol. 22, no. 1 (2022). [Online]. Available: https://doi.org/10.1186/s12911-022-01764-2

[5] V. Ramirez, E. Johnson, C. Gonzalez, and G. Rossetti, "Assessing the use of mobile health technology by patients: An observational study in primary care clinics," *JMIR MHealth UHealth*, vol. 4, no. 2 (2016). [Online]. Available: https://doi.org/10.2196/mhealth.4928

[6] L. Simon, J. Reimann, L. S. Steubl, M. Stach, K. Spiegelhalder, L. B. Sander, H. Baumeister, E. M. Messner, and Y. Terhorst, "Help for insomnia from the app store? A standardized rating of mobile health applications claiming to target insomnia," *J. Sleep Res.*, vol. 32, no. 1 (2023). [Online]. Available: https://doi.org/10.1111/jsr.13758

[7] H. J. Mahanta and G. N. Sastry, "COVID-19 impact on socio-economic and health interventions: A gaps and peaks analysis using clustering approach," *J. Stat. Manag. Syst.*, vol. 18, no. 4, pp. 2123–2153 (2022).

[8] N. C. Malone, M. M. Williams, M. C. Smith Fawzi, and J. Bennet, "Mobile health clinics in the United States," *Int. J. Equity Health*, vol. 19, no. 1 (2020). [Online]. Available: https://doi.org/10.1186/s12939-019-1116-2

[9] M. R. Hoque, M. S. Rahman, N. J. Nipa, and M. R. Hasan, "Mobile health interventions in developing countries: A systematic review," *Health Inform. J.*, vol. 26, no. 4 (2020). [Online]. Available: https://doi.org/10.1177/1460458219886353

[10] I. M. Pires, G. Marques, N. M. Garcia, F. Flórez-Revuelta, V. Ponciano, and S. Oniani, "A research on the classification and applicability of the mobile health applications," *J. Pers. Med.*, vol. 10, no. 1 (2020). [Online]. Available: https://doi.org/10.3390/jpm10010011

[11] S. Gaur, R. Gupta, and J. Kaur, "A factor analysis study on relationship across electronic-service quality & behavioral intent with structural equation modeling: Across algo-driven shopping apps & fintech platforms," *J. Stat. Manag. Syst.*, pp. 1061–1069 (Sep. 2023). [Online]. Available: https://doi.org/10.47974/JSMS-1158

[12] A. J. Naeemah and S. A. Al-Saadi, "The class of semi-modules with direct summands are stable," *J. Discrete Math. Sci. Cryptogr.*, pp. 1281–1289 (Jun. 2025). [Online]. Available: https://doi.org/10.1080/09720529.2025.2336789

Received April, 2025