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Role of mHealth Apps in Accelerating the Health Care Services in Indian Scenario- A Study of Citizen Perspective

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A B S T R A C T

Technology advancement in the field of healthcare is taking place at an alarming pace particularly in the recent past. One such advancement is in the area of health care industry in the form of "Mobile Health Applications or m-Health Apps". Mobile penetration into every nook and corner of villages in India has given scope for individual empowerment in the area of one's own health management in an efficient way. Increasing use of smart phones and easier access to internet connective ty have become the boon for usage of ubiquitous health care solutions. In this context, the current study analyzes the preparedness of Indian citizens for adopting the mobile health care apps (mHealth Apps) for efficient management of health. Based on few selected parameters such as service awareness level about these apps, perceived usefulness, perceived ease of use, perceived risk, self-efficacy; and judging their association with certain demographic features, the study scientifically tests whether the chosen demographic factors have any influence on the preparedness for accessing the health care solutions through mHealth Apps. The study concludes that low preparedness in general is due to low awareness level regarding the usage of these apps, among the users of smart phones. The study suggests that with the introduction of new technological services such as mHealth apps simultaneous launching of measures to increase the awareness level about the utility and effectiveness of the Apps will make the purpose of such introducing such services fruitful.

Introduction

The Healthcare sector has undergone drastic transformation in the recent times. Mobile Technology is an extension of the electronic healthcare which promises to deliver high quality care at the convenience of the consumer at lower cost. M-health is defined as medical and public health practice supported by mobile devices, such as mobile phones, tablets, personal digital assistants (PDA's) and other wireless devices. It offers

providers a platform to access patient's clinical data and medical offering at any time and place. While on consumer end healthcare is shifting towards 'Personalized Care". The better understanding of human genome along with personalized technologies will enable users to be in charge of their health in a more efficient and effective manner. mHealth will be a major factor in providing personal toolkits that will ultimately help those manage predicted vulnerabilities, chronic illness, and episodic acute conditions. Enabled by technology, connectivity and data, mass customisation is helping mHealth solutions to flourish.

The ubiquitous nature of mobile phones has proved successful in reaching wide range of public. It has helped evolving the on-the-go trend among users who seek services ranging from information seeking to personal assistance. After changing the way people live, work, play and communicate, mobile applications are now transforming healthcare. Mobile apps and related technologies promise to alter the way that healthcare is delivered and paid for, to empower patients to take patients to take responsibility for their health, to make the delivery of healthcare more efficient, and to potentially lower costs and improve outcomes.

Wellness, Prevention, Diagnosis, Treatment and monitoring are the categories in which mobile applications are available. The wellness apps are most popular among users like fitness app, Diet apps etc. Remote monitoring and Diagnosis are empowering practitioners to connect to patients and offer services in a more efficient and effective way.

The mobile healthcare has shifted from its initial trial phase to commercialization phase of the market. (Jahns & Houck, 2013) In such phase players need to understand the barriers and opportunities to develop new models, reform regulations and privacy policies. The key players of the system are Payors, Healthcare providers, Regulators and consumers.

Healthcare mobile applications will make healthcare more efficient and effective, bringing dramatic benefits to providers and payers alike. In addition, mHealth offers tremendous opportunities for developers who can reap significant revenue by providing timely, useful apps powered by reliable and proven content.

Government thrust, Regulatory support, Physician acceptance, user adoption are the key scaling factor which will shape the mobile application market and growth. New mHealth opportunities emerge every day: personalized health care, population health, diagnostics, and management of infectious diseases and global epidemics. The platform necessary to deliver mHealth already exists, and resides in users' hands. What remains to be firmly established is proven evidence of mobile's sustainable value to the health care industry. Combined with technology advancements, lessons learned as research findings and clinical experiences accumulate are expected to propel mHealth towards maturity. mHealth strategies are not "one-size-fits-all" and will likely take time to develop and refine. Understanding and leveraging the four dimensions of effective mHealth – people, places, payment, and purpose – is a good place to start.

Reflecting upon these factors this study aims to examine if Indian urban consumers are open to the use of mobile health applications to manage their personal health. The findings and suggestion of the study will add to the emerging area of mHealth and mHealth applications. In addition, this

research could also be considered for designing mobile health applications based on consumer insights.

Review of Literature

(Lunde, 2013) mHealth holds the potential to transform Indian Healthcare system by enabling enhanced access to rural consumers and providing better personal care to the urban market. Convenience and quality are the driving factors in urban care which makes the consumers willing to pay for these services. Consultation via phone or Video calling helps consumers to access quality care. Services developed with the partnership of renowned Healthcare providers and technology supported organisations add to the customers perceived value.

Consumers are looking at Smartphone as an aid to access their health related needs and information on a regular basis at their convenience. Healthcare providers being a trusted source of information can act as crucial player in the mobile app market. Services like scheduling appointments, emergency rooms, checking wait times, filling prescription helps in better connectedness among patients and Healthcare organization. Consumers show willingness to buy back their own time (Konschak & Davaloor, 2011).

M-Health apps promise benefits to payers, providers and developers. By offering valuable apps developers can reap maximum benefits. (ElsevierClinical Solutions, 2015)

Benefits worth 7 – 11 per cent net economic value of healthcare spending is expected by employing technologies like patient self-services, digital channels and patient self-management solutions. (Aue, Biesdorf, & Henke, 2016)

Mhealth solutions promises to benefit for the stakeholders (Research2Guidsnce, 2012) shows 68 percent believe that it provides enhanced interaction between patients and doctors; 64 percent respondent finds it as tool for remotely accessing services. Increase in compliance by patient, improved hospital efficiency and reduction in cost of medical solutions are few other benefits.

Adoption of mhealth technology isn't an easy road and posses its own barriers. (Research2Guidsnce, 2012) The report identifies Lack of business models and regulation equally challenging barrier with 42 percent response closely followed by Lack of standardization both in terms of hardware and software, resistance from healthcare providers and Security concerns related to patient information.

Consumer demand for mobile healthcare demand is strongest among younger people as compared to other age groups. Mobile solutions should be created based on interests of the target audience (Biesdorf & Niedermann, 2014).

(Jain & Anthony, 2016) The study conducted among 50 management students found low awareness and very poor utilization of m-Health apps among management students. Further study also revealed that lack of information and training along with limited practices being the reason behind such poor utilization of m-health apps.

(Modi & Mohanty, 2015)70 percent of the worldwide population showing interest in accessing at least one M-health application shows a growing market for M-health application. The set of major challenges posed by M-health solutions are confidentiality of data, market volatility, innovation and integration with existing IT

systems. Overall m-health is a win –win situation for all its key players' i.e. consumers, providers and payers.

The Technology acceptance model (TAM) was proposed by Davis in 1989. It models how a user accepts and uses technology. It consists of two factors:

- Perceived Usefulness : The belief of an individual that using a particular system would benefit his or her job performance

- Perceived Ease of use: The degree to which an individual believes that a particular system would be free of effort.

The theory aims to provide a valid measurement for predicting user acceptance of technology or information system.

Self-efficacy concept was coined by Bandura as" people's judgement of their capabilities to organize, execute courses of action required to attain designed types of performance." Perceived Risk is the risk perception about a particular technology by the consumer's and how it affects acceptance.

The study of mHealth application holds immense potential in understanding the consumer insights and designing and developing mHealth applications to benefit the consumers by providing them with the tools to manage their own health in a more efficient and effective manner. In this context the current study assesses the preparedness of the citizens in using the mHealth Apps for efficient management of their health.

Need and Significance of the study

The need for the study is reflected in the fact that the Indian mobile health market is expecting a growth of USD 0.6 billion in the APAC region by 2017 at CAGR of approximately 70%.

In such a high potential and emerging market like India, it is essential to understand the consumer needs and the industry scenario to meet customer expectations, reaching a wider audience and developing a sustainable business model around it.

The current study is significant in the light of the limited work done in this area in the Indian context, where the mHealth care adoption is still in its nascent stage. This study will provide valuable insights into the changing consumer / citizen behaviour with regards to mHealth care applications. The increasing penetration of smart phones in the market, proliferation of mobile broadband network and the use of digital services in both rural and urban India are providing the e-market a great opportunity to innovate.

The main objectives of this study includes, the basic purpose of the current study is to understand the role of mobile health care services. From the view point of a consumers / citizens the study will help in realising the untapped potential of "healthcare apps". A healthcare app would not only improve management of personal care of health but will also be of socially beneficial as it will connect the users throughout the country. The specific objectives of the present research are:

To assess the preparedness of the citizens / customers to use the newly introduced mHealth care Apps. To achieve this objective few relevant demographic factors such as age, education, income levels of consumers are chosen and judged for their interrelationship with few parameters such as service awareness level, perceived

usefulness, perceived ease of use, perceived risk and self – efficacy towards adoption of mHealth applications. To give necessary suggestions for speedy promotion of mHealth care App services.

Data Sources

The study is fundamentally based on primary data. For collection of primary day a customised and pre-tested questionnaire has been administered using online technology to get responses from the smart phone users who are eligible to use the mHealth care App.

Methodology

A survey research is one of the most used tools aimed at collecting data from individuals and it usually samples from large population. Using survey research coupled with convenience sampling technique the study depended on collection of the first-hand data from the consumers of mHealth Apps. It allows the participants to self-select into the sample.

For fulfilment of the first objective, an online survey questionnaire method was adopted for the current study. Online survey i.e. Google forms was used to administer the survey questionnaire. The primary data was thus collected through questionnaire from a sample of 236 consumers living in Tier-I and Tier – II cities. The words citizens and consumers are used interchangeably in the current study.

As the study is pertaining to analysis of the relationship between various chosen attributes, a most commonly used and a powerful non-parametric statistical tool "Chi-Square test" was used to determine whether the attributes under consideration are related to each other and thus impact a change in each other or not. This test was applied between Null hypothesis (Ho) and Alternate hypothesis (H1), where Ho was set with assumption that the two attributes are independent and under H1 it is assumed that the two attributes are dependent. Different hypotheses were framed for comparing two attributes, analysis was conducted and conclusions were drawn based on the interpretation arrived at from Chi-square output tables. For the purpose of conclusion, the Chi square calculated value is compared with the alpha value. Accordingly if the table Chi-square value is greater than the table value, we accept HO, or else HO is rejected and H1 is accepted.

SPSS 21 software is used for performing analysis of the data. Since the data collected was in the form of Likert scale kind, all the responses under one parameter are grouped to get one overall response for one parameter. Accordingly for the first parameter relating to service awareness levels, responses for two different yet similar statements are collected and thus combined which multiplied the responses to 236 x 2 making it 472 for the first parameter. Similarly depending on the number of statements used for each parameter represents under same variable the frequency of responses are grouped together, while the respondents are the same.

1. For assessing the effect of age of the consumers with respect to the Service Awareness level, Perceived Usefulness, Perceived Ease of use, Perceived Risk and Self Efficacy towards the adoption of mHealth applications the following hypothesis was set.

HO: Service awareness level, Perceived Usefulness, Perceived Ease of Use, Perceived Risk and Self Efficacy do not depend on Age.

H1: Service awareness level, Perceived Usefulness, Perceived Ease of Use, Perceived Risk and Self Efficacy depend on Age.

2. Gender influence with respect to the Service Awareness level, Perceived Usefulness, Perceived Ease of use, Perceived Risk and Self Efficacy towards the adoption of mHealth applications the following hypothesis was set.

HO: Gender is not associated with Service awareness level, Perceived usefulness, Perceived Ease of Use, Perceived Risk and Self Efficacy.

H1: Gender is associated with Service awareness level, Perceived Usefulness, Perceived Ease of Use, Perceived Risk and Self Efficacy.

3. For evaluating whether their exists relationship between Educational Level of the consumers and the parameters Service Awareness level, Perceived Usefulness, Perceived Ease of use, Perceived Risk and Self Efficacy towards the adoption of mHealth applications the following hypothesis was set.

HO: Education has no relationship with Service awareness level, Perceived usefulness, Perceived Ease of Use, Perceived Risk and Self Efficacy.

H1: Education holds relationship with Service awareness level, Perceived usefulness, Perceived Ease of Use, Perceived Risk and Self Efficacy.

4. Occupation and the parameters Service Awareness level, Perceived Usefulness, Perceived Ease of use, Perceived Risk and Self Efficacy dependency on each other towards the adoption of mHealth applications is assessed through the following hypothesis.

HO: Occupation and Service Awareness level, Perceived Usefulness, Perceived Ease of use, Perceived Risk and Self Efficacy are Independent.

H1: Occupation and Service Awareness level, Perceived Usefulness, Perceived Ease of use, Perceived Risk and Self Efficacy are Dependent on each other.

Data Analysis and Interpretation

An analysis was made to find whether the demographic factors such as Age, Gender, Education and Occupation under consideration have any influence on the consumer perception and attitude towards accessing mHealth Apps, for efficient management of one's health. For gauging the consumer perception about use of mHealth Apps, few relevant parameters such as service awareness level, Perceived Usefulness, Perceived Ease of Use, Perceived Risk and Self-Efficacy of the consumers are selected. The procedure followed for analysing the data in the light of the above along with the hypotheses set, is described below:

Relationship between Age of the consumer and the five parameters measuring Consumer perception

Age and Service awareness level

HO: Age factor is assumed to be not dependent on the service awareness level of the consumers.

H1: Age and Service awareness level of the consumers are assumed to be dependent on each other.

Pearson Chi-Square test was conducted in SPSS. The table value of the alpha (α) is then compared with the given value and results were interpreted.

Age and Perceived Usefulness

HO: Age of the consumer and Perceived Usefulness do not depend on each other.

H1: Age of the consumer and Perceived Usefulness depend on each other.

Age and Perceived Ease of Use

HO: Perceived Ease of Use and Age do not depend on each other.

H1: Perceived Ease of Use and Age depend on each other.

Age and Perceived Risk

HO: Perceived Risk and Age of the consumer do not depend on each other.

H1: Perceived Risk and Age of the consumer depend on each other.

Age and Self-Efficacy

HO: Self-Efficacy and Age of the consumer do not depend on each other.

H1: Self-Efficacy and Age of the consumer depend on each other.

Relationship between Gender of the consumer and the five parameters measuring Consumer perception

Gender and Service awareness level

HO: There is no association between Gender of the consumer and service awareness Level.

H1: There is association between Gender of the consumer and Service Awareness Level

Gender and Perceived Usefulness

HO: There is no association between Gender of the consumer and Perceived Usefulness

H1: There is association between Gender of the consumer and Perceived Usefulness

Gender and Perceived Ease of Use

HO: There is no association between Gender and Perceived Ease of Use

H1: There is association between Gender and Perceived Ease of Use

Gender and Perceived Risk

HO: There is no association between Gender of the consumer and Perceived Risk

H1: There is association between Gender of the consumer and Perceived Risk

Gender and Self-Efficacy

HO: There is no association between Gender of the consumer and Self-Efficacy

H1: There is association between Gender of the consumer and Self-Efficacy

Relationship between Education level of the consumer and the five parameters measuring Consumer perception

Education and Service awareness level

HO: There is no relationship between Education and service awareness level of the Consumer

H1: There is relationship between Education and service awareness level of the Consumer

Education and Perceived Usefulness

HO: There is no relationship between Educational level of the consumer and Perceived Usefulness

H1: There is relationship between Educational level of the consumer and Perceived Usefulness

Education and Perceived Ease of Use

HO: There is no relationship between Education and Perceived Ease of Use

H1: There is relationship between Education and Perceived Ease of Use

Education and Perceived Risk

HO: There is no relationship between Educational level of the consumer and Perceived Risk

H1: There is relationship between Educational level of the consumer &Perceived Risk

Education and Self-Efficacy

HO: There is no relationship between Education and Self-Efficacy

H1: There is relationship between Education and Self-Efficacy

Relationship between Age of the consumer and the five parameters measuring Consumer perception

Occupation and Service awareness level

HO: Occupation of the consumer and Service awareness level are independent

H1: Occupation of the consumer and Service awareness level are dependent on each Other

Occupation and Perceived Usefulness

HO: Occupation of the consumer and Perceived Usefulness are independent

H1: Occupation of the consumer and Perceived Usefulness are dependent on each other

Occupation and Perceived Ease of Use

HO: Occupation of the consumer and Perceived Ease of Use are independent

H1: Occupation of the consumer and Perceived Ease of Use are dependent on each Other

Occupation and Perceived Risk

HO: Occupation of the consumer and Perceived Risk are independent

H1: Occupation of the consumer and Perceived Risk are dependent on each other

Occupation and Self-Efficacy

HO: Occupation of the consumer and Self-Efficacy are independent

H1: Occupation of the consumer and Self-Efficacy are dependent on each other

Suggestions

The findings of the study revealed that there exists low services awareness level with regard to mHealth applications. Consumer's showed willingness towards adoption of the technology. Following are few suggestions to promote mHealth applications:

- Create Awareness

[

The current study indicates that awareness level among consumers about mHealth

applications is very low. Hence, awareness about mHealth apps should be created using various channels like campaigns, social media, awareness programs etc.

- Recommendation from Experts i.e. Doctors, Practitioners etc.

Doctors are considered as one of the most trustworthy source of information about mHealth applications. If doctors encourage consumers or recommend such applications, more consumers will be benefited from the same. Lack of knowledge about various available applications, lack of reliability about applications and their impact on consumer health and regulation concerns are few reasons behind doctors still being hesitant in encouraging these applications.

- Patient Engagement

The android app store and iOS stores are filled with patient centred applications. Health monitoring, health information, fitness tracking, summarizing and exhibiting health information, consultation and medication remainder are few categories in which patients are engaged in managing their health. But most of these does not deliver value and are low in engaging them. Enhancing patient engagement will help in advancing overall health and also reduce healthcare cost.

- Regulations

mHealth apps must comply with FDA regulations. FDA reviews medical apps and classifies them as per regulatory standards and risk based approach as applicable to other medical devices. Developers should clarify how FDA and other agencies regulation apply to their app.

- Privacy and Security

Users are prone to major privacy breach using mHealth apps. Low encryption level exposes data to hackers thus causing privacy and security concerns among consumers. Patient data should not be shared to third party without the consent of the user and also data should be protected from unauthorized attack.

Table.1 Relationship between Age and Service awareness level

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.089[a]	2	.213
Likelihood Ratio	3.124	2	.210
N of Valid Cases	472		

Interpretation:

Since the calculated Chi-Square p value i.e. 0.213 is > 0.05 α value, it is concluded that the null hypothesis is accepted by rejecting the research hypothesis. This brings to light that age has no influence on the awareness levels that the citizens have about the launching of mHealth Apps. Service awareness level shows similar pattern across the various age groups.

Table.2 Relationship between Age and Perceived usefulness

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	55.553[a]	2	.000
Likelihood Ratio	51.323	2	.000
N of Valid Cases	708		

Interpretation

As seen from the above table p=0.000 i.e. p<=0.05, therefore we fail to accept the null hypothesis. The study reveals that the Perceived Usefulness and Age of the consumer depend on each other. There exists difference in how consumers perceive mHealth applications usefulness and their respective age group which they belong to. This may be due to exposure of technology, the younger generation is tech savvy compared to the counter parts.

Table.3 Relationship between Age and Perceived Ease of Use

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.993[a]	2	.000
Likelihood Ratio	16.468	2	.000
N of Valid Cases	708		

Interpretation

Hence, as seen p=0.000 i.e. p<=0.05, therefore we reject null hypothesis and accept the alternative hypothesis. Rejection of HO at 5% LOS indicates the dependency between consumers' Perceived Ease of Use and their Age. Consumers vary in their perception of ease of use of mHealth applications as per their age group. The more usage of mobile applications and similar service makes the consumer find it easier to use mHealth applications.

Table.4 Relationship between Age and Perceived Risk

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.235[a]	2	.000
Likelihood Ratio	27.135	2	.000
N of Valid Cases	708		

Interpretation

Thus as seen, p vale is equal to 0.000 i.e. p<=0.05, therefore we reject null hypothesis. Hence, we fail to accept the null hypothesis HO, the age of the consumer and his or her perceived risk towards use of mHealth applications do depend on each other. The perception of risk in consumer shows variation along different age group. Risk concerns arise due to security concerns. Consumers of the middle age group and above still rate low mHealh applications due to high security concerns.

Table.5 Relationship between Age and Self-Efficacy

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.707[a]	2	.000
Likelihood Ratio	16.487	2	.000
N of Valid Cases	708		

Interpretation

Hence, from the table we found p=0.000 i.e. p<=0.05, therefore we fail to accept null hypothesis. By rejecting the HO the results of the table indicated that the age of the consumer and self-Efficacy are dependent on each other. Self-Efficacy is one's belief in his/ her ability to perform a task. Age factor impacts Self-efficacy of the consumers.

Table.6 Relationship between Gender and Service awareness level

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.137[a]	1	.144		
Continuity Correction[b]	1.875	1	.171		
Likelihood Ratio	2.138	1	.144		
Fisher's Exact Test				.165	.085
N of Valid Cases	472				

Interpretation

Thus, the p value is 0.144 from the above table i.e. p>=0.05, therefore we fail to reject null hypothesis. Calculated Chi-Square value indicates that there is no association between the Gender of the consumers and their awareness level. Both male and female are on similar ground on their service awareness level of mHealth applications.

Table.7 Relationship between Gender and Perceived Usefulness

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.019[a]	1	.891		
Continuity Correction[b]	.001	1	.970		
Likelihood Ratio	.019	1	.891		
Fisher's Exact Test				.921	.484
N of Valid Cases	708				

Interpretation

Hence from the table it is found that p value is 0.891 i.e. p>=0.05, therefore we accept null hypothesis. The study reveals that the Perceived Usefulness of the consumer and their Gender are not associated. mHealth applications usefulness is perceived the consumers on same score irrespective of their gender differences.

Table.8 Relationship between Gender and Perceived Ease of Use

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	16.686[a]	1	.000		
Continuity Correction[b]	15.849	1	.000		
Likelihood Ratio	16.685	1	.000		
Fisher's Exact Test				.000	.000
N of Valid Cases	708				

Interpretation

Therefore from the given table we observe that the value of p=0.000 i.e. p<=0.05, therefore we reject null hypothesis. There is association between the gender and perceived ease of use by the consumers. This highlights behavioural factor reason behind difference in perception of effortlessness in using mHealth mobile applications.

Table.9 Relationship between Gender and Perceived Risk

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.829[a]	1	.363		
Continuity Correction[b]	.690	1	.406		
Likelihood Ratio	.830	1	.362		
Fisher's Exact Test				.382	.203
N of Valid Cases	708				

Interpretation

Hence, as seen in the table the value of p is found to be 0.363 i.e. p>=0.05, therefore we accept null hypothesis. The results shown in table highlight that Gender and perceived risk are not associated. Risk perception among the gender category is same in the case of mHealth applications.

Table.10 Relationship between Gender and Self-Efficacy

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.109[a]	1	.292		
Continuity Correction[b]	.932	1	.334		
Likelihood Ratio	1.113	1	.291		
Fisher's Exact Test				.333	.167
N of Valid Cases	708				

Interpretation

Therefore, the value of p is 0.891 from the given table i.e. p>=0.05, therefore we accept null hypothesis. By accepting the HO, the results of the table indicate that there is no association between Gender and self-efficacy. Consumers both men and women consider themselves equally efficient using the mHealth applications.

Table.11 Relationship between Education and Service Awareness level

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.663[a]	2	.160
Likelihood Ratio	3.674	2	.159
N of Valid Cases	472		

Interpretation

Hence, the value of p is found to be 0.160 from the above table i.e. p>0.05, therefore we accept null hypothesis. Acceptance of HO at 5% LOS indicates that there exists no relationship between Education and Service awareness level. Consumers belonging to different educational level have alike awareness about mHealth applications.

Table.12 Relationship between Education and Perceived Usefulness

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.378[a]	2	.068
Likelihood Ratio	5.400	2	.067
N of Valid Cases	708		

Interpretation

Hence, we fail to reject the null hypothesis as from the table the p value is found to be 0.068 i.e. p>0.05.The study reveals that Perceived Usefulness and Education are not related. mHealth applications are perceived to be likewise useful by the consumers belonging to different age groups.

Table.13 Relationship between Education and Perceived Ease of Use

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.068[a]	2	.356
Likelihood Ratio	2.427	2	.297
N of Valid Cases	708		

Interpretation

The value of p is found to be 0.068 from the given table i.e. p>0.05, therefore we accept the null hypothesis. Calculated Chi-Square value indicates that there is no relationship between the perceived ease of use and Education. Easiness in using mHealth applications is perceived to be identical among various consumers from different educational background.

Table.14 Relationship between Education and Perceived Risk

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.582[a]	2	.005
Likelihood Ratio	10.596	2	.005
N of Valid Cases	708		

Interpretation

From the table the value of p is derived to be 0.005 i.e. p<=0.05, therefore we reject null hypothesis.By rejecting the HO, the results of the table indicates there exists relationship between Education and Perceived Risk. The higher the education level of consumers lower is their perceived risk factor in using mHealth applications.

Table.15 Relationship between Education and Self-Efficacy

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.022[a]	2	.600
Likelihood Ratio	1.080	2	.583
N of Valid Cases	708		

Interpretation

Hence, as seen from the table, p=0.600 i.e. p>=0.05, therefore we fail to reject null hypothesis. The results of the table highlight that Education and Self Efficacy are not related. Efficiency of using mHealth applications is perceived to similar grounds among consumers with varied educational background.

Table.16 Relationship between Occupation and Service awareness level

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.933[a]	2	.231
Likelihood Ratio	2.949	2	.229
N of Valid Cases	472		

Interpretation

The value of p is found to be 0.231 i.e. p>=0.05, therefore we accept null hypothesis. The results shown in table highlight that Occupation and service awareness level are independent. Consumer occupational status does not have any influence on their awareness about mHealth applications.

Table.17 Relationship between Occupation and Perceived Usefulness

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.047[a]	2	.359
Likelihood Ratio	2.104	2	.349
N of Valid Cases	708		

Interpretation

From the table the value p is given to be 0.359 i.e. p>0.05, hence we accept null hypothesis. The study reveals that the Occupation and Perceived usefulness are independent on each other. Consumers like students, working or non-working and their perception about using mHealth application doesn't show much variation.

Table.18 Relationship between Occupation and Perceived Ease of Use

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.825[a]	2	.033
Likelihood Ratio	11.928	2	.003
N of Valid Cases	708		

Interpretation

We reject the null hypothesis as the value of p is given as 0.033 in the table i.e. p<=0.05.There exists dependency between the occupation and Perceived Ease of use. Occupational status of the consumers does influence consumer's perception about using mHealth applications.

Table.19 Relationship between Occupation and Perceived Risk

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.245[a]	2	.044
Likelihood Ratio	6.297	2	.043
N of Valid Cases	708		

Interpretation

From the given table it is observed that the value of p is 0.044 i.e. p<=0.05, therefore we reject null hypothesis. By rejecting the HO, the results of the table indicate that Occupation and Perceived Risk are dependent on each other. The risk perception does show variation among consumers based on their current occupational status with regards to using mHealth application.

Table.20 Relationship between Occupation and Self-Efficacy

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.278[a]	2	.528
Likelihood Ratio	1.286	2	.526
N of Valid Cases	708		

Interpretation

The p value is observed to be 0.528 from the given able i.e. p>=0.05, therefore we fail to accept alternate hypothesis. Calculated Chi-Square value indicates that Occupation and Self-Efficacy are independent of each other. Consumer's perception of their Efficiency in using mHealth is not affected by the factor of their occupational status.

Conclusions

The study revealed that Age plays an important factor in how consumers perceive mHealth application. Technology adoption is high in youngsters as compared to the other age groups. Age influences consumer's perception towards usability, ease of use, risk and self-efficacy. Gender doesn't influence consumer perception towards adoption of mHealth applications except for their perception towards ease of use. While education level and perceived risk are associated other parameters showed no association.

Perceived ease of use and perceived risk parameters were found to be dependent on consumer's Occupation from the current study. Service awareness level was found to

be low across the sample of consumers taken. Thus, the measures to taken by various stakeholders like hospitals, doctors, developers and government in order to promote mHealth applications in order to serve social benefit for the consumers to achieve a better health management anytime and anywhere.

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