

Road ahead for Indian telemedicine providers and online mobile health apps – A proposed theoretical framework

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Abstract

Like the demonetisation of 2016 which paved way for widespread adoption of digital payments methods in India, COVID -19 has turned into a similar black swan moment for the online mobile health apps. On one side, COVID-19 challenged the health infrastructure of India, and on the other side it opened opportunities for digital healthcare. Many healthcare start-ups rose to the challenge and brought innovations in the digital healthcare space. Taking leverage of being the second largest smartphone market in the world, these technology players brought online medical consultations within the reach of 1.5 billion people of India. The next challenge for these service providers is to spread awareness of these online medical health apps among smartphone users of India and encourage them to adopt and try these online medical consultation services. In this paper, an endeavour has been made to propose a research model towards the adoption of these OMHAs.

Introduction

In the unprecedented times of COVID-19, the adoption of online mobile health apps (OMHAs) has registered significant surge with number of consultations increasing manifolds (Srinivasan, 2020). According to many sources, this growth should continue in near future as people are apprehensive in venturing out from their homes. Specially in non-serious cases of flu, fever, cough or minor diseases people are shifting more towards these apps. The growth of success of these apps also lie in the fact that India's healthcare system has always been underequipped and overburdened with only one doctor for every 1500 individuals (Raha, 2020). Apps like Docsapp, Practo, Lybrate and Mfine have added features like video consult, AI bots etc. in order to provide timely and quality service to its consumers. Mostly, prevalent in tier I cities, gradually these apps are finding takers in tier II and tier III cities as well, where healthcare infrastructure is even worse (Biswas, 2020). According to a McKinsey report, the savings could go up to US \$10 billion dollars in 2025, if even 30% patients shift to telemedicine apps (Majumdar, 2020). Recently, Indian government also provided the necessary endorsement to digital healthcare by rolling out the Telemedicine Guidelines in

March 2020 which paved way for doctors to legally use online channel for consultations. For those patients who don't require hospitalisation and medical intervention like surgery, these apps have turned into boon during these testing times.

Though COVID-19 has provided the necessary impetus to digital healthcare, but the future depends on how the whole ecosystem evolves in the foreseeable future. The future will not only be about the consultation between the patient and doctor, but it will also be about how technology aids the seamless interaction between the different partners involved in the creating the holistic ecosystem of care. It is important how diagnostic services, online pharmacies, partner hospitals, and technology innovators / players combine together to complement each other. While private players have made significant headway in last couple of years, but the whole sector will not reach to its full potential till it is introduced to wider population covering tier III cities and villages. Therefore, it is imperative that different models are explored and tested to identify factors that encourage people from different backgrounds and age groups to try and adopt these new applications and services. To address this objective, an endeavour has been made in this paper to propose a research model based on the theory of reasoned action (TRA) and technology acceptance model (TAM).

Literature Review

In last five years, a lot of research have taken place to understand different facets of online medical consultation services. However, majority of the studies have taken place outside India as Indian telemedicine sector has only catapulted into prominence in last couple of years.

Yang et al. (2019) conducted an empirical study to examine the effectiveness of online healthcare platforms using longitudinal design. They studied over 75000 records of online doctor-patient consultations gathered across multiple periods and noted that initial interactions hold a pivotal influence on subsequent consultation behaviour of the patients. Doctor's response time, content of interaction and service impacts the switching behaviour of patients. Wu et al. (2019) investigated the behavioural pattern of consumers in regard to the access of multi-source health information in case of online health consultations. They identified that consumers still rated medical institutions higher than the online health providers and sought family and friends' opinion before looking for medical advice online. Wu and Lu (2017) examined the effect of online channel on offline channels of medical healthcare and how online consultations affected the doctor's offline reputation. Based on

data analysis of over 4250 doctors from Chinese online health sector, the study observed that channel effect did indeed exist, and online reputation of doctors influenced offline parameters of booking and services in hospitals. Tanis et al. (2016) explored how online health anxiety and consultation satisfaction are related to each other in context of online health consultations. Based on data from 240 patients, authors found out that health anxious patients were relatively less satisfied with online health satisfaction, whereas people searching for online medical advice were more appreciative. Schmidt-Weitmann (2017) studied the effectiveness of email based online consultation service in the field of gastroenterology. It was noticed that majority of the patients were satisfied with the service as it empowered them by enhancing their health literacy.

Liu et al. (2020) examined the effects of doctor's speech characteristics on patients' satisfaction by analysing over 35000 online consultation records. Results exhibited that patients were more satisfied with doctors talking at fast rate with neutral emotions rather than doctor speaking at slow speed showing low or high emotional state. Li et al. (2018) focused on the trust perspective and investigated its role in the adoption online consultations. Using a small sample of 190 patients, they found out that trust acted as a significant driver for the adoption of online consultations and this relationship was moderated by disease type. Patients with rare or severe disease demonstrated low intention of taking online medical advice. Gong et al. (2019) employed the extended valence framework and probed the factors which acts as drivers for the adoption of online health consultation services. Based on a sample of 550 students, the results indicated that perceived benefit, trust and subjective norm were positively related to the adoption intention whereas impact of perceived risk was found insignificant.

Theoretical Framework

In majority of research and studies conducted in the domain of e-commerce and online shopping, theories like Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Theory of Planned Behaviour (TPB) (Ajzen, 1991), Technology Acceptance Model (TAM) (Davis, 1989), Expectation Confirmation model (ECM) (1977), and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) have been used to study the adoption and usage intention of consumers. Singh and Srivastava (2019) developed a model taking elements from TRA and TAM to study the moderating effect of platform type on the online shopping behaviour. As consumers adoption of mobile health apps is similar to the

adoption of online shopping apps, it is reasonable to use the model developed by Singh and Srivastava (2019) as shown in Figure 1.

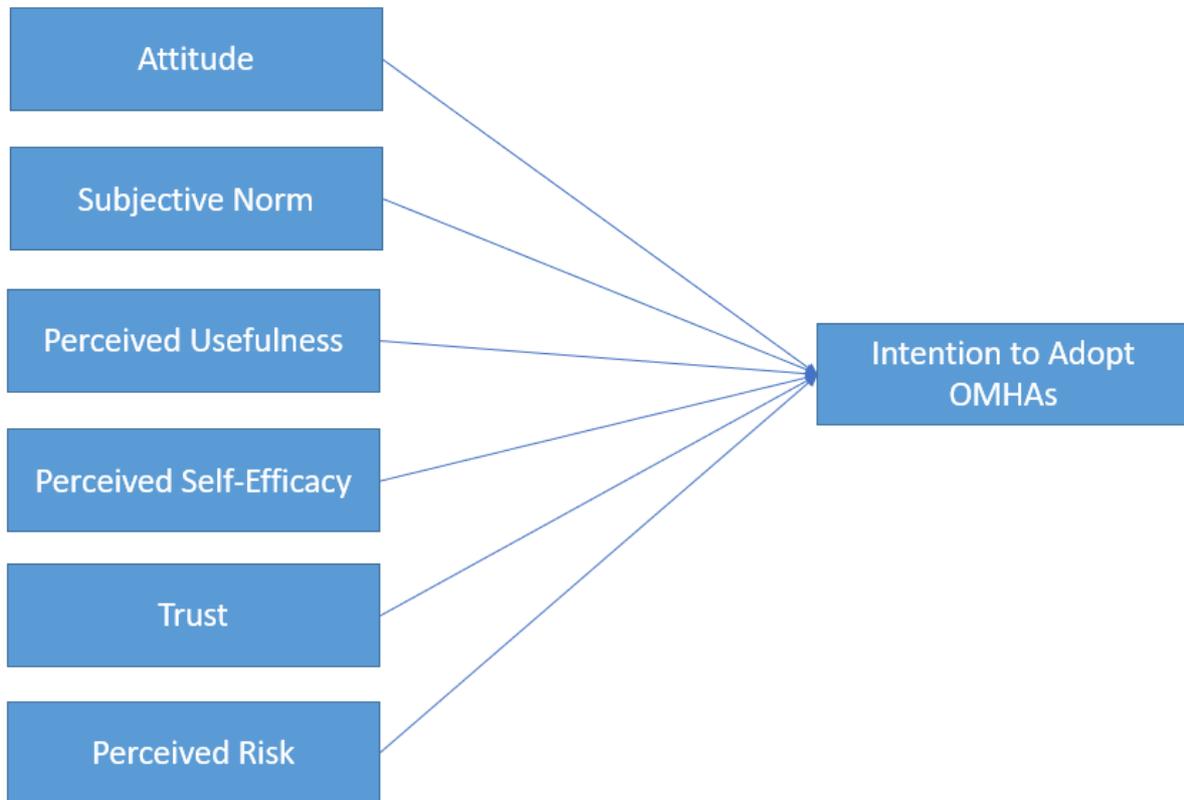


Figure 1: Proposed Research Model. Source: Singh & Srivastava (2017)

As shown in Figure 1, there are six factors identified after going through the literature in e-commerce domain. These factors are attitude, subjective norms, perceived usefulness, perceived self-efficacy, trust and perceived risk. Attitude is defined as individual's outcome derived from the beliefs and feelings held by a person towards any specific action or behaviour (Fishbein & Ajzen, 1975). In context of mobile health apps, attitude is expected to play an important role in the adoption intention. Hence, it can be posited that:

H1: Attitude is positively and directly related to the intention to adopt OMHAs.

As defined in TRA, subjective norm is the measure of acceptability of certain action or behaviour in the eyes of family, friends or peers. Like numerous studies in e-commerce domain where subjective norm has been instrumental in influencing the adoption intention, it can be hypothesised that:

H2: Subjective norm is positively and directly related to the intention to adopt OMHAs.

Perceived Usefulness has been one of the two path breaking constructs developed by Davis (1989), which has been used umpteen times in the academic community to explain the information system usage. It has been defined as the impression a consumer gets regarding the extent to which a new technology can better a person's life. In the adoption of mobile health apps, this construct appears to be a significant driver and therefore, it can be posited that:

H3: Perceived usefulness is positively and directly related to the intention to adopt OMHAs.

Perceived self-efficacy or self-efficacy was a construct given by Bandura (1969) which represented one's own judgment regarding the skills possessed by someone to perform any novel activity. In the case of mobile health apps, it is imperative that a consumer should be comfortable using a smartphone and making online payments. Hence, it can be postulated that:

H4: Perceived self-efficacy is positively and directly related to the intention to adopt OMHAs.

Trust has been described in different ways in various studies, but the most relevant in the e-commerce context has been the definition of Dash and Saji (2008). They defined trust as the sellers / service providers ability and intention in terms of 'competence' and 'benevolence'. Many researchers in the e-commerce domain has found the positive relationship between trust and intention to shop online. Along the same, for online consultations, it can be hypothesised that:

H5: Trust is positively and directly related to the intention to adopt OMHAs.

Perceived risk represents the exposure to danger the consumer senses in terms of failure to receive promised goods and services while dealing with faceless nature of online medium. In context of online medical consultations, perceived risk is also present in terms of compromised privacy and information breach. Therefore, it is arguable that:

H6: Perceived risk is negatively and directly related to the intention to adopt OMHAs.

Consistent with the literature review, the proposed research model incorporates commonly acknowledged factors from widely accepted theories in order to explain the intention towards adoption of online medical consultation services and online health apps.

Conclusion and direction for future research

As the road ahead for the success of online medical services in the Indian landscape is going to be challenging as well as rewarding. The main focus for service providers is to increase the awareness of OMS among widespread population in tier II, tier III cities and villages. In the long term, like e-commerce OMS can only succeed when it knocks the door of every Indian and when every citizen has some intention to adopt these services. Indian population is diverse in terms of geography as well as demography and therefore, different models should be explored and tested to that maximum people see the benefit of adopting this new technology. Once COVID-19 is over, the whole sector will have to grow on its merit rather than relying upon unprecedented events.

Future studies can empirically test the proposed model and generate insights that will be helpful for both academicians as well as service providers.

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