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Master Thesis

A meta-analysis of technology acceptance of mHealth applications

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1. Introduction

Mobile health applications have been spreading through different spheres of our daily life in the last decade: food delivery, online shopping, trip booking, fitness and nutrition, and also mobile healthcare. However, not all mobile health applications have been widely used by healthcare professionals and non-professional users. Considering how important and helpful such applications might be, it appears valid to assess the technology acceptance factors that influence mHealth adoption. In this paper, a systematic analysis has been performed on 41 papers focused on mHealth acceptance and assessing it using UTAUT or its extensions. All user groups were considered, and all countries. This study examined the Unified Theory of Acceptance and Use of Technology (UTAUT), a commonly recognized model for behaviors and acceptance analysis, to identify the factors influencing users' intention to use mHealth.

Understanding the intention of consumers to adopt mHealth services is considered critical because its success depends on the adoption rate among the end-users. The most crucial challenge for mHealth service providers is to attract and keep their end-users, thus increasing the understanding of users' mHealth service adoption behavior. Although numerous past studies investigated the mobile health technology adoption behavior, most of these studies focused on the perspective of consumers or non-professional users. In contrast, studies related to mobile health technology adoption behavior from the perspective of patients or professionals or physicians are relatively rare. Therefore, the importance of understanding different adoption intention and usage behavior in the diverse cultural and knowledge background becomes urgent, which is also the motive for this research.

Various models have been used to assess technology acceptance, including mHealth apps technology adoption motives. Two broadly used and scientifically proven models are Technology Acceptance Model (TAM) by F. Davis (1989) and Unified Theory of Acceptance and Use of Technology by V. Venkatesh et al. (2003). Since the TAM model is rather long in use and has been researched thoroughly in the previous decades, and UTAUT was developed later and is more up to date, it has been decided to focus on the UTAUT and its application in the healthcare field and mobile applications. Moreover, the UTAUT model was opted for based on its extensive use by numerous researchers to conduct research connected with the customers' acceptance of new technology. Thus, the following research question was formulated "What are the main determinants affecting the intention of mHealth by users in the framework of UTAUT and do the impacts of these factors on mHealth adoption differ depending on user type,

country of users or age of users?" Answering this research question would enable a more profound understanding of the factors that initiate mHealth adoption behavior in different markets and age segments.

Companies in the healthcare filed have been striving to develop strategies in an attempt to adapt to this evolving digital market by means of incorporating mHealth digital technologies (Hird, Ghosh, & Kitano, 2016). According to Duarte & Pinho (2019) consequently, healthcare companies have gained a stronger understanding that digital technologies should be incorporated as an important part of consumer benefits to retain competitiveness within the healthcare industry. Although mHealth applications have been actively created and present multiple potential benefits, they have still not been widely adopted. It was argued that the use of mHealth and how quickly this technology gets adopted is decided by stakeholders' response to mHealth, overcoming of structural barriers and the ability to offer the benefits that correspond to patients' needs and expectations (Duarte & Pinho, 2019). Because it is not yet completely clear how consumers interact with and continue to use digital products for health self-management, it poses a serious challenge to healthcare companies in their effort to design an effective digital strategy (Hird et al., 2016).

Another reason mHealth acceptance by users is a relevant research subject is the global pandemic that emerged in 2020 providing further reasons to adapt mHealth by professionals and non-professional users.

This research paper consists of the theoretical part where the UTAUT model is described in detail as well as its modifications, and the concept of mobile health is explained. Next, there is a literature background on the subject of UTAUT and mHealth is presented, followed by hypotheses generation process and explanation of methodology used for this research. After that a data analysis results are displayed and explained, as well as summed up in a discussion part. Limitations, theoretical and practical implications and directions for the future research are discussed and followed by the conclusion.

9. Conclusion

As one can conclude from the results of this analysis that have been generally obtained through qualitative analyzes: that UTAUT is a useful, effective and robust predictive model. The mediating effect of its constructs on one another has been under-researched and, therefore, not enough represented in the studies used for this analysis.

The analysis of subgroups on the subject of moderators according to the type of user and age of user demonstrated that professionals and general users yield rather different results. Nevertheless, non-professional users and patients had similar results for several factors. However, to prove the similarity between these two groups of users in a more reliable way, more studies might be necessary.

When it comes to the moderating effects of different ages, it appeared that age is an important moderator in the context of mHealth acceptance by users. Inevitably, because of a relatively small number of studies under the subdivision, there are possible sources of bias, and the results might be not representative of the whole population.

This paper's input offers both practical contributions and relevant empirical addition to the literature in medical information systems and health informatics area. It motivates a further research of technology adoption models such as UTAUT in their ability to measure citizens' intentions to adopt mHealth. Moreover, this research proves that intentions to adopt mHealth are influenced by different factors.

From the results of the moderator analysis it was revealed that Performance expectancy, Facilitating conditions and Social Influence are the most important factors that determine mHealth technology acceptance by younger people, and Effort Expectancy and Facilitating conditions were the most relevant for the elderly group. Moreover, Effort Expectancy appeared to be the least relevant concept in the young generation's mHealth acceptance. It can be assumed that although many of the elderly population are able to use mobile devices, the extent of using these devices for health purposes poses many challenges. Many of them might have doubts that they have the ability to use mHealth applications. Therefore, there arises the necessity to properly educate this group with regard to mHealth use and its benefits. Moreover, since multiple papers incorporated additional constructs together with the UTAUT model such as Trust and Perceived Privacy, these issues might be important to consider as well in order to ensure the successful adoption.

It takes a big amount of research and a broader population reach to properly examine the mHealth application adoption by users. Policy-makers and marketers are aiming to expand

the deeper knowledge about the factors that play role in the intention to get acquainted with mobile health applications and use them continuously throughout an extended period of time. It has been stated by multiple research papers that using mHealth applications has a great potential and can yield cost-efficiency for healthcare companies, a better and more flexible working approach for professionals, encourage knowledge-sharing between health workers, and provide a quicker help to patients, more precise diagnosing, as well as higher self-monitoring ability for users. It is important to identify the benefits for professional and non-professional users, variative motives and hesitations of different age groups, various cultural differences and technological capacities and economic conditions with regard to different countries. It is also crucial to not only examine the significance of UTAUT constructs, but also extend this model by additional factors that might help to adapt to a specific target population for a higher precision and possibly to increase the basic model's predictive power. Since the UTAUT model and its extensions have been widely used to assess mHealth applications technology acceptance and showed high factor significance and predictive power, it seems reasonable to assume that this model is suitable for a research in the healthcare area and might be beneficial for the further research as well.