**The Impact of Technology Acceptance Model (TAM) Factors and Trust on User Satisfaction of m-health Application Users in Colombo District.**

Gamage, P. T. T.1, Kulasekara, G. R. S.2
1Department of Operations and Logistics, Faculty of Business, NSBM Green University Town, Homagama, Colombo, Sri Lanka, gptthiraj98@gmail.com

2 Department of Operations and Logistics, Faculty of Business, NSBM Green University Town, Homagama, Colombo, Sri Lanka, rekha.k@nsbm.ac.lk

m-health, a technical progression of e-health, evolved with the rapid growth of digital healthcare platforms, healthcare-related mobile advancements, and the internet to serve its consumers in many ways. In developing countries, most consumers use m-health apps simply to channel doctors, order medicine, and perform other basic tasks. So, this study aims to discover the factors that influence the user satisfaction of Sri Lankan m-health application users in order to provide a clear rationale to m-health service providers m-health users. While this research follows a deductive, cross-sectional survey strategy-based research methodology, primary data sources are used in this study. First, this study will identify three possible factors (Perceived Ease of Use, Perceived Usefulness, and Trust) that influence the User Satisfaction of m-health application users. Then the researcher collected responses from 316 respondents by sending an online questionnaire to a sample size of 384 potential respondents. The analyzed data of this study indicated that all measures employed to measure the independent and dependent variables (PEoU, PU, Trust, and User Satisfaction) are reliable and that there are significant positive relationships between all independent and dependent variables. This research will help m-health service providers understand client expectations by providing clear conclusions. It will help them maintain and attract more users. This also gives current m-health app users a rationale to negotiate with their service providers, allowing them to demand more. Instead, future researchers can use this study's knowledge base and limitations to conduct more research.

***Keywords:*** Mobile health (m-health), Perceived Ease of Use (PEoU), Perceived Usefulness (PU), Trust, User Satisfaction

**Introduction**

In the digital era, driven by Industry 4.0 and internet-based digital technologies, most developing countries' healthcare sectors function poorly. Millions of digital innovations and ideas are discovered every second to improve patient-physician relationships in the global healthcare sector. Mobile health (m-health) applications employ the internet and mobile phones to connect patients and doctors. Several Sri Lankan m-health apps include capabilities like channeling doctors, audio/video consultation, chatting with a doctor, ordering prescriptions, and arranging lab tests. However, as the researcher observed, in developing countries like Sri Lanka, digital healthcare innovations are rarely considered or ignored. This is proved by Han et al., (2019) in their research study by stating that it is necessary to conduct additional research on the factors that determine the sustainable and scalable adoption of m-health in developing countries because the use of mobile technology for healthcare, also known as m-Health, has enormous potential in developing countries. Mobile health (m-health) is another vast and unique term that Sri Lankans know little about. Sri Lankan m-health research is limited and could only be found in several studies on Sri Lankan m-health practices, but none on user satisfaction.

This study examines how perceived ease of use, perceived usefulness, and user trust in m-health apps affect user satisfaction. Mobile phone use in developing countries is rising, making m-Health (mobile health) a potential area. Nevertheless, more research on m-health adoption in developing countries is needed (Han et al., 2019). The growing evidence supporting the use of mobile information and communication technology and information mobility in healthcare has caught the attention of practitioners, researchers, and policymakers worldwide (Chib et al., 2015). In the future, it would be helpful to study how patients feel about mobile health (m-health) to learn how this technology could be changed to meet the needs of different patients (Han et al., 2019). With such thinking, this study can examine another aspect of the m-health application to supplement healthcare professionals' views, such as how healthcare consumers or regular people would perceive and anticipate utilizing it. Health practitioners would also focus on reducing the quality and accessibility gap between rural and urban communities (Han et al., 2019). M-health service providers prioritize client satisfaction by providing the greatest features and functionality. To do it, they must focus on consumer satisfaction and its causes. This study will employ the Technology Acceptance Model (TAM) and the Trust factor to measure user satisfaction with m-health applications in Sri Lanka and discover the factors that affect it.

As m-health application service providers fail to satisfy customers in developing countries like Sri Lanka, we use the minimum of those emerging technologies. They don't understand user satisfaction aspects and how they relate. The researcher's findings will assist service providers in better understanding customer expectations, and it will retain and attract more customers. Not only that but by using the conclusions that are finally offered by this study, current users of m-health applications will have a clear justification to utilize in negotiations with their service providers, which will allow them to demand more from those service providers. Instead of doing that, future researchers can make use of the knowledge base that is created as a result of this research, and they can also make use of the limitations of this study to carry out additional research.

Besides that, in the next few sections of this research, the researcher will discuss the relevant literature he has gone through, the methodology of the research, the findings of the research, the discussion of the findings, and finally the conclusion which gives impressions on limitations of this study and suggestions for future research studies.

**Literature Review**

From this section, the researcher will identify the possible factors that affect the user satisfaction of m-health application users. The first section of this chapter discusses m-health and the original and modified Technology Acceptance Model. Then the researcher will review "Perceived Ease of Use (PEoU), Perceived Usefulness (PU), and Trust" definitions and opinions from various authors. In the later part, the researcher will provide several arguments, definitions, and concepts related to "User Satisfaction".

**m-health Concept**

The Internet changed global communication, information, and knowledge. Information technology is growing worldwide, presenting new difficulties and possibilities for many enterprises. Healthcare is one (Bae et al., 2016). E-Health research has grown worldwide due to the rapid growth of IT and its usage in healthcare. Changing conditions have improved e-health with mobile device improvements (Bae et al., 2016; Zhang et al., 2017). Sannino et al., (2019) define e-Health as healthcare delivered via Information technology. In recent decades, e-Health has developed wearable and portable monitoring devices, telemedicine services, and health information systems (HIS). Since the Internet was launched in the mid-1990s, e-patients have altered how doctors and patients communicate health information (Bae et al., 2016).

Prof. Robert Isteparian introduced "M-health" to describe the use of modern mobile communications and internet technologies in healthcare (Kariuki & Okanda, 2017). Until today, no one has defined m-health. Nevertheless, WHO, (2011) defined “m-Health or mobile health as medical and public health practice supported by mobile technology, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices". M-Health applications that monitor patients' vital signs, collect community and clinical health data, encourage healthy behavior, and raise health awareness have increased in recent years (Alaiad et al., 2019). Mobile health apps are growing rapidly. In 2017, there were over 325,000 health-related applications, increasing by 35% annually (Shemesh & Barnoy, 2020).

 **Technology Acceptance Model (TAM)**

Information Technology can boost productivity, efficiency, and convenience (Marikyan & Papagiannidis, 2022). Fred D. Davis created the Technology Acceptance Model (TAM) in 1989 to explain why people accept, reject, or continue using new technology (El-Wajeeh et al., 2014). TAM examined technology adoption factors using the Theory of Reasoned Action (Shemesh & Barnoy, 2020). TAM is a significant conceptual paradigm with solid experimental evidence supporting user awareness of many sorts of innovation in Western and non-Western cultures (Purwanto & Budiman, 2020). TAM estimates technology adoption based on user perceptions and evaluates PU and PEoU's impact on external factors, including perceptions (Zhang et al., 2017). Extended TAM may explain online user behavior. Few research studies have employed TAM for e-Health technology adoption and user acceptance (Fayad & Paper, 2015; Kalayou et al., 2020).

TAM ignores performance and user satisfaction when considering technology deployment (Isaac et al., 2018). Technology acceptance models deployed to examine mobile banking, telecommunications, virtual reality, and e-learning (Marikyan & Papagiannidis, 2022). Since technology advances quickly, several researchers have confirmed and used the TAM (Isaac et al., 2018). Purwanto & Budiman, (2020) discovered that TAM (perceived usefulness and ease of use), social impact, trust, and privacy affect health app adoption in developing nations. Context and technology influenced TAM2 and TAM3 adoption (Marikyan & Papagiannidis, 2022). TAM can be used to investigate the variables that impact customers' willingness to adopt new technology in many technical disciplines. However, studies have shown that mobile technologies necessitate an alternative acceptance model (El-Wajeeh et al., 2014; Marikyan & Papagiannidis, 2022). To measure healthcare application user satisfaction using TAM, researchers must define trust, usefulness, ease of use, and satisfaction (Allam et al., 2021).

**Perceived Ease of Use (PEoU)**

The TAM hypothesis states that ease of use and usefulness both influence a person's adoption of technology (Purwanto & Budiman, 2020). Perceived Ease of Use is a key element in determining users' adoption of new technologies (Al-Sharafi et al., 2018). Users embrace and employ technology based on their perceived ease of use (El-Wajeeh et al., 2014). The PEOU measures how easy a system seems to use (Alloghani et al., 2016). Users' "perceived ease of use" (PEOU) of services requires that they be simple to use (Junnonyang, 2021). A user's perception of whether a technical task demands mental effort is called perceived ease of use (Amin et al., 2014). TAM's most important dimension, perceived ease of use, predicts consumers' technological adoption or rejection (Kalayou et al., 2020). Amin et al., (2014) define PEOU as the general user perception of the ease of acquiring a mobile system using a mobile phone. Mobile commerce for street vendors is similarly mainly influenced by perceived ease of use (Junnonyang, 2021). PEOU, based on the TAM principle, is the ease with which consumers adopt new IT advancements (Al-Sharafi et al., 2018).

Useful, easy-to-use technology is more likely to be adopted (Al-Sharafi et al., 2018). Easy-to-use information technology is widely used (Purwanto & Budiman, 2020)). Complexity and difficulty affect IT product ease of use, but a lack of IT literacy, experience, training, and personal abilities may also (El-Wajeeh et al., 2014). Information systems literature indicates that system usefulness is directly proportional to ease of use (Isaac et al., 2018). PEoU helps consumers adopt new technology (Amin et al., 2014). Expanded TAM research showed that PEoU boosts consumer trust in service providers (Al-Sharafi et al., 2018).

**Perceived Usefulness (PU)**

The original TAM's second construct, the PU, forecasts a user's behavioral intention to accept and employ new technology (Al-Sharafi et al., 2018). Perceived usefulness indicates how confident someone is that technology will improve performance (Purwanto & Budiman, 2020). According to multiple studies, perceived usefulness is the best predictor of IT adoption (Alloghani et al., 2016; El-Wajeeh et al., 2014). "Perceived usefulness" initially indicated how much technology would improve work performance (Alloghani et al., 2016). The TAM hypothesis states that how useful a new technology is to a person is a key element in adopting it (Purwanto & Budiman, 2020). Mobile technology providers' utility value drives innovation which requires PU (Amin et al., 2014).

PU directly influences perceived ease of use and adoption intention (Zhang et al., 2017). TAM used for diabetes glucose monitoring technology revealed that device benefits influence acceptance (Purwanto & Budiman, 2020). Mobile health PU measures how much a person thinks utilizing mobile technology for healthcare would benefit them (El-Wajeeh et al., 2014). Internet banking's advantages—easy access, convenience, a wealth of information, dependability, cheap cost, saving time, and lower expenses—drive user PU (Al-Sharafi et al., 2018). Health professionals and patients who believe m-health systems will increase work performance, productivity, quality of life, and convenience will use them (El-Wajeeh et al., 2014). Chronic illness patients' adoption of personal health devices implies usefulness is important. PU predicts user satisfaction in numerous contexts, including e-learning. Usefulness increases satisfaction (Isaac et al., 2018). Healthcare application adoption in developing nations is largely influenced by a technological tool's perceived usefulness (Purwanto & Budiman, 2020).

**Trust**

Technology acceptance studies show that trust encourages information system (IS) use, hence IS researchers have investigated the characteristics that promote confidence in IS (Söllner et al., 2016). Academic debates on trust have long held that people don't use information technologies and systems because they don't trust them (Capistrano, 2020). Trust research has joined IS because trust manages risk perceptions (Öksüz et al., 2016). Trust is a party's readiness to be accountable for another's activities based on the expectation that the other will do a key activity regardless of their ability to monitor or control that other party (Junnonyang, 2021). Due to its ambiguity and risk, online business has concentrated on trust (Gao & Waechter, 2017). Zierau et al., (2020) claim that IS trust research has concentrated on human-computer interactions. Trust is relying on an object's attributes, events, or people in risky situations to achieve foreseeable but unknown aims (W. I. Lee, Fu, Mendoza, & Liu, 2021). Mobile commerce success depends on consumer trust (Sarkar et al., 2020). Al-Sharafi et al., (2018) state that customers' distrust of online businesses is one of the biggest barriers to online transactions.

Automation and other improvements have made Information Systems essential to trust relationships in various user situations (Zierau et al., 2020). Technology trust improves online recommendation agents, business information systems, e-commerce portals, and knowledge management systems, according to several studies (Lankton et al., 2015). Sarkar et al., (2020) said people don't buy online because they don't trust m-commerce.  Lee et al., (2021) found that trust makes healthcare users satisfied and more willing to use m-Health services. Mobile health service utilization grows with healthcare system trust (El-Wajeeh et al., 2014).

**User Satisfaction**

User satisfaction could be significant in Information Systems and online environment studies. (Fayad & Paper, 2015) Consumers' greater use of information services indicates their satisfaction with the information system (Ramadiani et al., 2017). The end user of an information system will be satisfied if the system produces high-quality information (Pratiwi, 2021). Sharma & Lijuan, (2015) define "user satisfaction" as the feelings, attitudes, and expectations of consumers who believe they had exceptional service from e-commerce applications and seem to visit and buy from that site again. Stakeholder satisfaction is one of the most essential factors in assessing a project's success when considering its context and environment (Subiyakto et al., 2016).

One of the best measures of information system success is end-user satisfaction (Sharabati et al., 2015). According to Oppong et al., (2021), ease of use, user background, and organizational attitude and support promote user satisfaction with information technology services. Most previous studies have either used TAM theories altogether or one of its parts to analyze mobile app users' satisfaction (Samsuri et al., 2022). User satisfaction increases performance, which is one of the main arguments behind the user satisfaction strategy (Sharabati et al., 2015). Lee et al., (2021) found that users are more inclined to use m-Health services if they think they improve their healthcare experience. User satisfaction with the IS has excellent face validity as reliable measurement equipment and significant conceptual appeal compared to other success metrics (Montesdioca & Maçada, 2015).

**Conceptual Framework**

Research conceptual frameworks graphically demonstrate the relationship between independent and dependent variables to make it easy to identify and assess. Researchers must properly identify independent and dependent variables to fulfill the objectives of their study. Thus, conceptual framework design is essential in research. In this research, m-health application user satisfaction is the dependent variable, as it has been in many other Information Systems studies. The independent variables of this research are perceived ease of use, perceived usefulness, and trust in m-health apps. In Information Systems research, various independent variables were used to determine user satisfaction. However, numerous studies assessed user satisfaction using simply the above independent variables. This study used the conceptual framework below to examine how Perceived Ease of Use, Perceived Usefulness, and Trust in m-health apps affect user satisfaction.



Fig 1: **Proposed conceptual framework.**

*Source – Developed by author.*

**Research Hypothesis**

The research done by Baki, Birgoren, & Aktepe, (2018) proved that there is a positive and significant relationship between PEoU and User satisfaction with e-learning systems. Then the research done by Masrek & Gaskin, (2016) proved that there is a significant relationship between PEoU and User satisfaction for Digital Libraries (DL). Another research done by Al-Jabri, (2015) on ERP systems proved that PEoU has a strong and significant effect on Satisfaction with ERP systems. Then in the research “User Satisfaction with mobile websites: the impact of Perceived Usefulness (PU), Perceived Ease of Use (PEOU) and Trust” done by Amin, Rezaei, & Abolghasemi, (2014) proved that there is a positive significant relationship between PEoU and User satisfaction of mobile websites. If we consider the research done by Ohk, Park, & Hong, (2015) also proved that there is a positive relationship between PEoU and Satisfaction with mobile applications. By considering all the proven facts, the researcher has developed the following hypothesis:

***H1:*** *There is a positive relationship between Perceived Ease of Use and User Satisfaction of m-health application users.*

Hammouri & Abu-Shanab, (2018) in their research related to e-learning systems proved that there is a positive relationship between PU and User satisfaction. The study “The relationship between attitude toward using and customer satisfaction with mobile application services: An empirical study from the life insurance industry” by Lee et al., (2015) proved that there is a positive relationship between PU and satisfaction. Then the study by Mou, Shin, & Cohen, (2017) on e-services proved that there is a positive significant relationship between PU and consumer satisfaction. In next study by Ohk et al., (2015) on mobile applications proved that there is a positive relationship between PU and User satisfaction. According to the results of all the above research, the researcher developed the following hypothesis:

***H2:*** *There is a* *positive relationship between Perceived Usefulness and User Satisfaction of m-health application users.*

According to the study “The relationships among service quality, Trust, User satisfaction and post-adoption intentions in M-payment services” by Dlodlo, (2014) there is a positive relationship between Trust and User satisfaction in M-payment services. According to the research by Amin et al., (2014) on mobile websites, there is a positive relationship between Trust and mobile User satisfaction. The study “Understanding trust and perceived usefulness in the consumer acceptance of an e-service: A Longitudinal Investigation” by Mou et al., (2017) proved that there is a positive relationship between consumer trust and consumer satisfaction with e-services. Then the research by Barua, Aimin, & Hongyi, (2018) on self-service technology also proved that there is a positive relationship between Trust and User satisfaction. Alongside the above-proven facts, the researcher developed the hypothesis as follows:

***H3:*** *There is a positive relationship between Trust and User Satisfaction of m-health application users.*

**Methods**

**Data Collection**

The researcher used an online questionnaire based on Google Forms and distributed the questionnaire among the participants selected on a judgmental basis via social media platforms like e-mail, WhatsApp, and Facebook Messenger as a link to open the questionnaire. In constructing the questionnaire, the researcher used already-developed questionnaires by previous researchers and modified those questions. The questionnaire built by the researcher consists of three sections and sections 02 and 03 are interrelated as they consist of questions related to independent and dependent variables. Section 01 measures the demographic factors such as age group, education level, and gender and two questions related to the m-health application in Sri Lanka. Section 02 measures the level of Perceived Ease of Use (PEoU) with m-health applications through five questions. This section will also measure the level of Perceived Usefulness (PU) of m-health applications through five questions. Then the level of user Trust in m-health applications will be measured also under this section of the questionnaire. Section 03 of the questionnaire consists of four questions that are developed aiming to measure the User satisfaction level of m-health applications.

**Participants**

As the population size of this research is unknown due to no evidence available for the researcher, he will take the optimal sample size for this research as 384 individuals which can reflect a population of over 1,000,000 at a 5% margin of error (Saunders et al., 2012). following that the researcher distributed the questionnaire among 384 possible respondents using a judgmental basis through social media platforms and he managed to get 316 responses in the end. Those 316 responses out of 384 responses account for a response rate of 82.29% which was at an acceptable level when compared with the main pieces of literature's 60.4% response rate - Amin et al., (2014), 86.05% response rate - Wu et al., (2022) that the researcher used as his base articles in conducting this research study. Therefore, after conducting an analysis of the data obtained from 316 respondents through the use of statistical measures including reliability, correlation, and regression, the hypotheses that were developed in the previous chapter by reviewing the literature review related to the identified research domain have been validated in this chapter.

Of those 316 respondents, females are the majority of respondents which accounts for 54.1% of the respondents of the total 316 respondents. The remaining respondents are males who account for 45.9% of the total respondents. Most respondents were between the ages of 25 and 30. This group made up 41.8% of the total 316 respondents. The group of people aged 51 and older makes up only 4.7% of all respondents. In the end, 25.0% of all respondents were between the ages of 31 and 40, 19.6% were between 16 and 24, and 8.9% were between 41 and 50. 37.7% of the 316 respondents have a degree, and 27.8% have a diploma or HND. 19.0% of the respondents say they have a GCE A/L, 5.1% have a GCE O/L or below, and 4.1% have a post-graduate degree or higher. 32.9% of 316 respondents use E-channeling for m-health. 24.7% of 316 respondents use Doc 990 for m-health. 12.0%, 11.4%, 8.2%, 5.7%, and 5.1% of respondents use Asiri Health, Nawaloka Care, Lanka Hospital Health App, other m-health apps, and Lanka Doctor. 56.0% of 316 respondents use Android for m-health apps. Then 28.8% of the 316 respondents use IOS (Apple OS). 9.5% and 5.7% of respondents use Windows and other operating systems for m-health apps.

**Research Methodology and Sampling Method**

When considering all aspects of this research, the researcher is going to deploy a cross-sectional research design to achieve the main objectives of this research and this research design will collect information from a derived sample only once at a single stage of time. In this study, the researcher used the deductive approach to achieve the intended objectives of this research by developing hypotheses based on past research and testing those hypotheses by analyzing the data that he will collect. As this research uses a deductive research approach and a survey questionnaire to collect data from the respondents, the researcher selects the survey strategy for his research.

As per the time and resource constraints, the researcher used the non-probability sampling technique to derive his sample as it is more cost-effective and convenient for the researcher. As it’s comfortable or easier to select a sample for the researcher in purposive sampling (Saunders et al., 2012) the researcher used that technique in deriving his sample.

When considering the data analysis part of this research, as the researcher categorized his research under the quantitative approach, he will analyze the data collected through a questionnaire quantitatively by using the numerical data obtained through the five-point Likert scale deployed to all the close-ended questions. In analyzing the data, the researcher will use “Statistical Package for Social Sciences (SPSS), Version 26.0” for the Microsoft Windows (64-bit) operating system.

Then the researcher will use Cronbach’s Alpha measurements to test the internal consistency and reliability of the questionnaire that he developed based on past research studies done on the same domain (Information Systems domain).

In order to determine the relationship between Perceived Ease of Use, Perceived Usefulness, and Trust with User satisfaction of m-health users in the Colombo district, the researcher will use the Pearson Correlation Analysis.

Finally, the researcher will use Linear Regression Analysis to analyze the impact of Perceived Ease of Use, Perceived Usefulness, and Trust on the User satisfaction of m-health users in the Colombo district.

**Measures**

Table 1: **Source and Cronbach’s alpha value of measures used to measure variable****.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Number of items** | **Source** | **Cronbach’s alpha value** | **Conclusion** |
| Perceived Ease of Use (PEOU) | 5 | (Alloghani et al., 2016) | 0.797 | Reliable |
| Perceived Usefulness (PU) | 5 | (Alloghani et al., 2016) | 0.860 | Reliable |
| Trust | 4 | (Alloghani et al., 2016) | 0.754 | Reliable |
| User Satisfaction | 4 | (Wu et al., 2022) | 0.737 | Reliable |

*Source – Developed by author.*

According to Table 1, all the items used to measure the variables deployed in the study have been extracted from the previous studies and modified to match the study. Cronbach’s alpha value of all the items was above the accepted value of 0.7 which indicates high internal consistency to measure the deployed variables of the study. Also in measuring the items related to each and every variable, the researcher deployed a five-point Likert scale where value 1 stands for Strongly Agree and value 5 stands for Strongly Disagree.

**Findings of the Study**

**Correlation Analysis**

The researcher employed Spearman's Rank Correlation analysis to investigate the relationships among the variables in their research study. This choice was made due to the skewed distribution of the variables, which necessitated the use of a non-parametric statistical technique. In cases where the assumptions of Pearson's Correlation Analysis are not satisfied, researchers may opt to employ Spearman's Rank Correlation analysis as an alternate statistical methodology where Spearman's Rank Correlation is characterized as a non-parametric method (Puteh & Azman Ong, 2017).

Table 2: **Summary of the correlation analysis.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Independent Variable** | **Dependent Variable** | **Spearman's Rank Correlation** | **Significance of the relationship** |
| Perceived Ease of Use | Use Satisfaction | 0.230 | 0.000 |
| Perceived Usefulness | Use Satisfaction | 0.136 | 0.015 |
| Trust | Use Satisfaction | 0.333 | 0.000 |

*Source – Developed by author.*

A Spearman's rank correlation of 0.230 between Perceived Ease of Use and User Satisfaction indicates a weak positive relationship between the two variables. Users are more satisfied with m-health apps when they are easier to use, and there is a 23% correlation between perceived ease of use and user satisfaction. As 0.000 is less than 0.05 (the threshold for accepting a significant relationship), this suggests that there is a significant correlation between Perceived Ease of Use and user satisfaction. An aggregate Spearman's rank correlation of 0.136 between Perceived Usefulness and User Satisfaction reveals a weak positive relationship between the two. There is a 13.6% correlation between perceived usefulness and user satisfaction in m-health apps, suggesting that improving the former tends to improve the latter. Given that the significance level of 0.015 is less than 0.05 (the accepted level), this suggests that there is a significant correlation between Perceived Usefulness and end-user happiness. There is a moderately positive relationship between trust and User Satisfaction, as measured by the Spearman rank correlation of 0.333. The correlation between trust and user satisfaction is 33.3%, indicating that increasing trust in m-health applications boosts user satisfaction. While there is a significant level of 0.000 that is less than 0.05 (the acceptable limit), indicates that there is a significant relationship between trust and user satisfaction.

**Regression Analysis and Hypotheses Testing**

Table 3: **Regression analysis summary and hypothesis testing summary.**

|  |
| --- |
| **Model Summary** |
| **R Square** | 0.219 |
| **Adjusted R Square**  | 0.212 |
| **Model Significance** | 0.000 |
| **Hypothesis** | **Beta Coefficient** | **Significance****(p-value)** | **Decision** |
| H1 | 0.164 | 0.026 | Accept |
| H2 | 0.009 | 0.895 | Reject |
| H3 | 0.334 | 0.000 | Accept |

*Source – Developed by author.*

In data analysis, it generally determines that the higher the coefficient of determination value the higher the model fitness. In general, it accepts that the R square value greater than 0.5 has higher model fitness. In this study, the R square value is only 0.219, indicating a very low model fit for measuring user satisfaction with the m-health application. It means that the researcher's model has to be refined using other independent variables that better address user satisfaction with m-health applications by referring to related literature. In research studies done by Purwanto & Budiman, (2020) and Aljohani & Chandran, (2021)they use factors such as privacy and social influence as the predictors of m-health use satisfaction. Not only that the study by Hossain, (2016) used system quality, interaction quality, performance expectancy, and m-health knowledge as determinants of user satisfaction.

The first hypothesis condition's significance value is 0.026, below 0.05. In theory, researchers must reject the null hypothesis and accept the alternative hypothesis if its significance value is less than 0.05. The researcher can reject the null hypothesis and accept his alternative hypothesis here. A beta coefficient of 0.164 suggests that altering Perceived Ease of Use by 0.164 units changes user satisfaction by 1 unit. Perceived Ease of Use affects m-health app user satisfaction by 16.4%.

The second hypothesis's significance is 0.895, which is much greater than the theory's 0.05. As this hypothesis has a significance level greater than 0.05, the researcher must reject the alternative hypothesis for this hypothetical condition. The researcher must imply that his alternative hypothesis is no longer accepted and admit that Perceived Usefulness would not increase m-health application user satisfaction. While the majority of prior research studies have consistently demonstrated a positive relationship between Perceived Usefulness and User Satisfaction, a limited number of studies within the information system area have presented evidence suggesting that User Satisfaction remains unaffected by Perceived Usefulness. The research study done by Daryanto, (2022) on “The Influence of Information System Quality, Information Quality and Perceived Usefulness on User Satisfaction of Personnel Information Systems (Study at The Indonesian Army Crypto and Cyber Centre)” proved that User Satisfaction is unaffected by Perceived Usefulness.

The third hypothesis condition's significance value is 0.000, below 0.05. In theory, researchers must reject the null hypothesis and embrace the alternative hypothesis if its significance value is less than 0.05. The researcher can reject the null hypothesis and accept his alternative hypothesis here. The beta coefficient of 0.334 suggests that changing trust by 0.334 units changes user satisfaction by 1 unit. Trust affects m-health app user satisfaction by 33.4%.

**Discussion and Recommendation**

With the rapid development of digital healthcare platforms, healthcare-related mobile developments, and the Internet/World Wide Web, m-health has become a global phenomenon. m-health uses smart mobile technologies to manage most medical practitioners' and patients' medical concerns. Many users of m-health applications in developed nations know what to ask from m-health service providers.  In developing countries, most users use m-health apps solely to channel doctors, order medicine, and perform other basic tasks. So, users' demand for m-health service providers is low, and they largely use what the providers supply rather than what they need and expect from such applications. With the help of literature by  (Chib et al., 2015) and (Han et al., 2019) on “m-health adoption in low-resource environments and Sri Lankan health professionals' perspectives on m-health,” the researcher tried to identify the factors that affect user satisfaction with m-health applications in Sri Lanka, with a focus on Colombo District.

As theorized under the literature review and hypotheses development in previous chapters, the researcher identifies the relationship between Perceived Ease of Use, Perceived Usefulness, and trust with the user satisfaction of m-health applications. In various pieces of literature, those relationships have been identified in numerous ways but most of them have identified that there are positive relationships between the identified independent variables and dependent variables.

When considering the relationship between Perceived Ease of Use and user satisfaction with m-health applications, it had a Spearman’s rank correlation of 0.230 which indicates a weak positive relationship among those variables. Many pieces of literature have already identified that there is a positive relationship between Perceived Ease of Use and user satisfaction which corroborates with the results of this study. The significance of this research is 0.000 which is below 0.05 (the accepted level) and also implies that the relationship between Perceived Ease of Use and user satisfaction with the m-health application is significant.

Then if we consider the relationship between Perceived Usefulness and user satisfaction with m-health applications alone, it had a Spearman’s rank correlation of 0.136 which indicates a weak positive relationship among those variables. Many pieces of literature have already identified that there is a positive relationship between Perceived Usefulness and user satisfaction which corroborates with the results of this study. The significance of this research is 0.015 which is below 0.05 (the accepted level) and also implies that the relationship between Perceived Usefulness and user satisfaction with the m-health application is significant when considering the relationship alone. However, according to the hypothesis testing using the entire model given the conclusion that there is no positive relationship between Perceived Usefulness and User Satisfaction of m-health application users. This hypothesis condition is also proved in the research studies done by Sørebø & Eikebrokk, (2008) on “Explaining IS continuance in environments where usage is mandatory” and the research study done by Lin et al., (2005) on “Integrating perceived playfulness into expectation-confirmation model for web portal context”.

Finally, if we consider the relationship between trust and user satisfaction with m-health applications, it had a Spearman’s rank correlation of 0.333 which indicates a moderate positive relationship among those variables. Many pieces of literature have already identified that there is a positive relationship between Perceived trust and user satisfaction which corroborates the results of this study. The significance of this research is 0.000 which is below 0.05 (the accepted level) and also implies that the relationship between trust and user satisfaction with the m-health application is significant.

Collectively if we consider the coefficient of determination (R2) value of this research which implies the idea of model fitness of the research model is only 0.219. The lower R square value the researcher received implies that the model he developed to assess user satisfaction with m-health applications does not well fit with the requirements of this research. The main reason behind that is the researcher had to overlook some independent variables from his research with the limited time that he permitted to complete his research. However, the overall model significance level of this research is at 0.000 level which is lower than the acceptable level of 0.05 implying that this model is significant in determining user satisfaction with m-health applications. Then if we look at the hypotheses testing of this research study only the first and third alternative hypotheses are accepted at an acceptable significance level and the second alternative hypothesis is rejected with a higher significance level of 0.895 which leads the researcher to accept the null hypothesis of that particular condition.

Lack of knowledge of m-health applications is the major discovery that the researcher discovered while conducting his research study. When distributing a questionnaire through the convenience method to the researcher he came up that most of the possible respondents to the questionnaire had very low knowledge of m-health applications. The researcher finds the major reason behind that concern is the low awareness of technology developments in the m-health context by the possible users of m-health and the poor marketing strategies used by m-health service providers to provide potential users with the relevant information about the m-health concept and applications.

Then the researcher also witnessed that the bargaining power of m-health applications users within Sri Lanka is at a very low level due to the lower interaction between m-heath users and service providers. As a recommendation, the researcher recommends that m-health users demand more from service providers rather than only using the functions that service providers are willing to provide and also recommends the service providers implement more strategies to get customer feedback and work on them more. Also, the responses obtained from the questionnaire suggested that m-health service providers should work more on functions like paying medical-related fees, reminders on next appointment dates, security functions of the applications associated with payments, and personnel information as those measures of the research got more neutral and dissatisfied responses when compared to other measures of the questionnaire.

**Limitations of the Study**

When considering this research study there are a few major limitations. The main limitation of this study is that this study does not consider all the major parameters that can potentially affect user satisfaction with m-health applications. Here the researcher only considered three major variables that exist in most of the literature he reviewed with the time constraint he allowed to complete his study. Not only that with the time constraint the researcher allowed, only considered the m-health users in the Colombo district, and he took out his sample only from that population. Another major limitation of this study is that the researcher has only been able to collect data through an online questionnaire which sometimes leads to false conclusions due to the law literacy on online questionnaires of the respondents.

**Suggestions for Future Research Studies**

This research study has a coefficient of determination value of 0.219 which is lower than the accepted level of 0.5 and which implies low model fitness due to the limitations of the study. Therefore, the researcher suggested that future researchers should consider other significant independent variables that he used in his study to describe user satisfaction with m-health applications. Future researchers can use factors like security, social influence, performance expectancy, m-health knowledge system, interaction quality, and facilitating conditions to determine the level of user satisfaction with m-health applications. More factors can be identified through a proper systematic literature review as suggested by Chathuranga et al. (2023), Jayasinghe, Johnson, et al. (2022), Jayasinghe et al. (2023), and Jayasinghe, Suraweera, et al. (2022). Then as a suggestion for a future research study, future researchers in this context should take a larger population size rather than considering one geographical area and should take a higher number of samples based on the population. Then future researchers can also address the other conditions stated in the limitations section of this research to generalize the findings of the research more.

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