Consumer Survey into Factors

Influencing Mobile Health Monitoring Service perceptions in the UK

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Brief Statement of the Research: This study will draw nine variables from Mobile Health monitoring services studies, and the unified theory of acceptance of technology model (UTAUT model)

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Abstract:

Mobile health monitoring services have the potential to provide individual health profiles and monitor patients' health conditions. While there is a variety of systems and devices to help patient's health management, there is little understanding regarding the factors that influence mobile health monitoring service perceptions. Thus, this UK study will examine the factors that influence users across different age groups towards well-being and Mobile Health monitoring services. This study applied a conceptual framework based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model to examine the factors that may influence the attitude towards mobile health services among consumers.

Introduction

Wearable health monitoring systems have recently attracted interest between the research community and also industry.[1,2] A variety of systems and devices have been produced and developed for providing real-time feedback information about individual's health status, either to the user himself or health providers.[2] Mobile health monitoring services could also be highly effective for those who want to manage their health and avoid illness, especially for patients with chronic conditions.[3,4]1]Towards this, mobile health monitoring services comprise a combination of medical sensors, communication technologies and mobile computing for healthcare.[1,5]

Healthcare applications divide into different categories such as: Prevention, check-ups, short-term and long-term monitoring systems, healthcare maintenance, incidence detection or fall detection, emergency intervention, treatment and also transportation. Mobile health technologies can store a significant amount of data and information on a mobile device and can update them as necessary to allow critical information on a user's mobile device.[1]

In the UK, there are drivers towards monitoring a patient's health condition while they are at home because of the high cost of healthcare and also the population is aging. Smartphones can provide access to individual's health information at any time and any context. While there are many types of research that focus on the technical aspects of m-Health (Mobile Health) applications, still little research on the effectiveness of apps and the significant factors for accepting them is available.[6,7]

Purpose of the Research:

To examine the factors that influence users towards well-being and mobile health services perceptions in the UK.

Research Questions:

1. What are the factors influencing the acceptance of Mobile Health monitoring service perceptions in the UK?

2. To what extent does social cohesion influence Mobile Health service acceptance?

3. How does the usage of Mobile Health monitoring systems correlate with well-being?

4. What are the effects of individual health profiles across the different age groups?

Theoretical Background

A. Patient's Perception in Mobile Health Monitoring Services Acceptance

A literature review was conducted related to Mobile health, individual's health profile and well-being to identify the factors that influence the user's perceptions towards mobile health technologies, and well-being. Through the literature review, the study found three perceptions: accessibility, mobility and personalisation. According to the findings in the literature review, telemedicine services can improve and help them to improve their health conditions, and it also would provide health profiles and healthcare unbound by time and space.[4] Also, according to the literature review, the factor personalisation can be beneficial for developing mobile health monitoring systems.[8,9] Personalisation is the process of producing, generating and processing the right content in the right and suitable format to an individual at the right location, and at the right time.[8] Mobile personalisation has adopted widely, and its benefits have been established. It requires specific technology, such as collaborative technology, data mining, location detection, and pattern recognition. Individuals carry the phones with them at all times, and everywhere, which can allow firms to analyse, and collect data easily and efficiently.[8]

B. Conceptual Framework

With the rapid development of technology, especially communication and information technologies, and its integration into user's life, accepting or rejecting the new technologies by users remains an open question.[10] Technology acceptance is about exploring the features of Mobile Health monitoring services and their relationships with the acceptance by its users,[11,12,13]

Technology adoption has been studied and examined frequently over the years. Some of the studies focus on relationships between technology adoption and the variables influencing it such as UTAUT and TAM (technology acceptance model). The UTAUT model was tested and applied to different technologies, such as online bulletin boards, and instant messengers.[14]

The UTAUT model factors comprise four essential constructs: 1) performance expectation, 2) social influence, 3) effort expectancy, 4) facilitating condition. The UTAUT model has various advantages that can be beneficial for this study. The UTAUT model was developed by multiple robust models that determined that this model is exceptionally fundamental and robust. Also, the UTAUT model is 69% of indentation to use IT, which is slightly higher than other theoretical models. Last but not least, the UTAUT model frequently has been used in the healthcare research fields.[15,16]

This study adopted four factors from the unified theory of acceptance and the use of technology model proposed by Venkatesh et al.[17] as this model can provide understanding of user's technology acceptance.[4]

Research Methods

Using mobile and wearable health information technologies (m-Health) can reduce the cost of health care and improve health results like well-being and health profile. M-Health technologies can support new methods for collecting various health data and also the outcomes of interventions. M-Health monitoring service can monitor phenomena with higher precision, improved sampling frequency, providing individual's health profile with fewer missing data at a lower cost than traditional methods.[6]

According to Creswell [18], there are three research methods which are known as qualitative, quantitative and mixed methods. "*Quantitative methodologies are used to address research questions about causality, generalisability, or magnitude of effects*" however, "Qualitative *methodologies apply to research questions to explore why or how a phenomenon occurs, to develop a theory, or to describe the nature of an individual's experience*". Moreover, according to Creswell [18], mixed methods use qualitative and quantitative methods and draw upon both ways strengths and also provides an innovative approach to solve contemporary issues.

After considering different research methods, qualitative and quantitative methods will be used where the quantitative method will be dominated, as there is a large number of respondents for this study that needs a large amount of time, manpower and finances in case of using qualitative methods. Moreover, the existing literature review in mobile health field shows that quantitative studies are needed in this area.[19]

During the survey there will be opportunities for respondents to make comments on the issues. Following data analysis, it is anticipated that key findings will be explored further in a qualitative manner.

Sample and Data Collection

Data for the pilot study will be collected from people in West London who use leisure facilities such as sport centres in different locations after receiving the research approval form Brunel University Research Ethics department. Questionnaires will be distributed to examine the proposed factors in the conceptual framework with the target of 50 to 60 respondents. The survey comprises a questionnaire with seven-point Likert scales. (Quantitative approach). 1= strongly disagree, 2= disagree, 3= slightly disagree, 4= uncertain, 5= slightly agree, 6= agree and 7= strongly agree.

After statistical analysis which will be done by SPSS software, the questionnaire will be revised for the main survey, which will target 200 respondents using Cluster sampling across different age groups.

>>> INSERT TABLE 1

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Table 1. Factors deployed in the preliminary framework

Factor	Definition	Sources
Performance Expectancy	''The degree to which an individual believes that using the Mobile Health monitoring service will help him/her to improve his/her health condition''	[20,21,22,23,24,25]
Effort Expectancy	''The degree of ease that patients associate with the use of mobile health monitoring service''	[20,21,22,23,24,25,26,27]
Social Influence	''The degree to which an individual perceives that important others believe he or she should use the mobile health monitoring service''	[20,24,25,27,28]
Facilitating Conditions	''The degree to which an individual believes that an organisational and technical exists to support the use of the mobile health monitoring service''	[20,25,27,28,29]
Mobility	'The factor which provides a pervasive and ubiquitous connection in encouraging users' behavioural intention to use the services"	[8,26,30]
Accessibility	''The degree to which an individual is provided health records or health care unbound by time and space''	[21,26]
personalisation	''The ability to customise m-Health monitoring services to fit the user's need''	[8,28]
Accessibility	''The degree to which an individual believes that the use of m-Health monitoring service would improve their health conditions and supply accurate and up-to-date information on an individual''	[20,28]

Mobile Health Monitoring Service

| Performance expectancy |
| Effort Expectancy |
| Social Influence |
| Facilitating Conditions |
| Mobility |
| Accessibility |
| Personalisation |

Mobile Health Monitoring
Service Outcomes

| Technology Acceptance |
| Wellbeing |
| Individual Health Profile |

Health Level

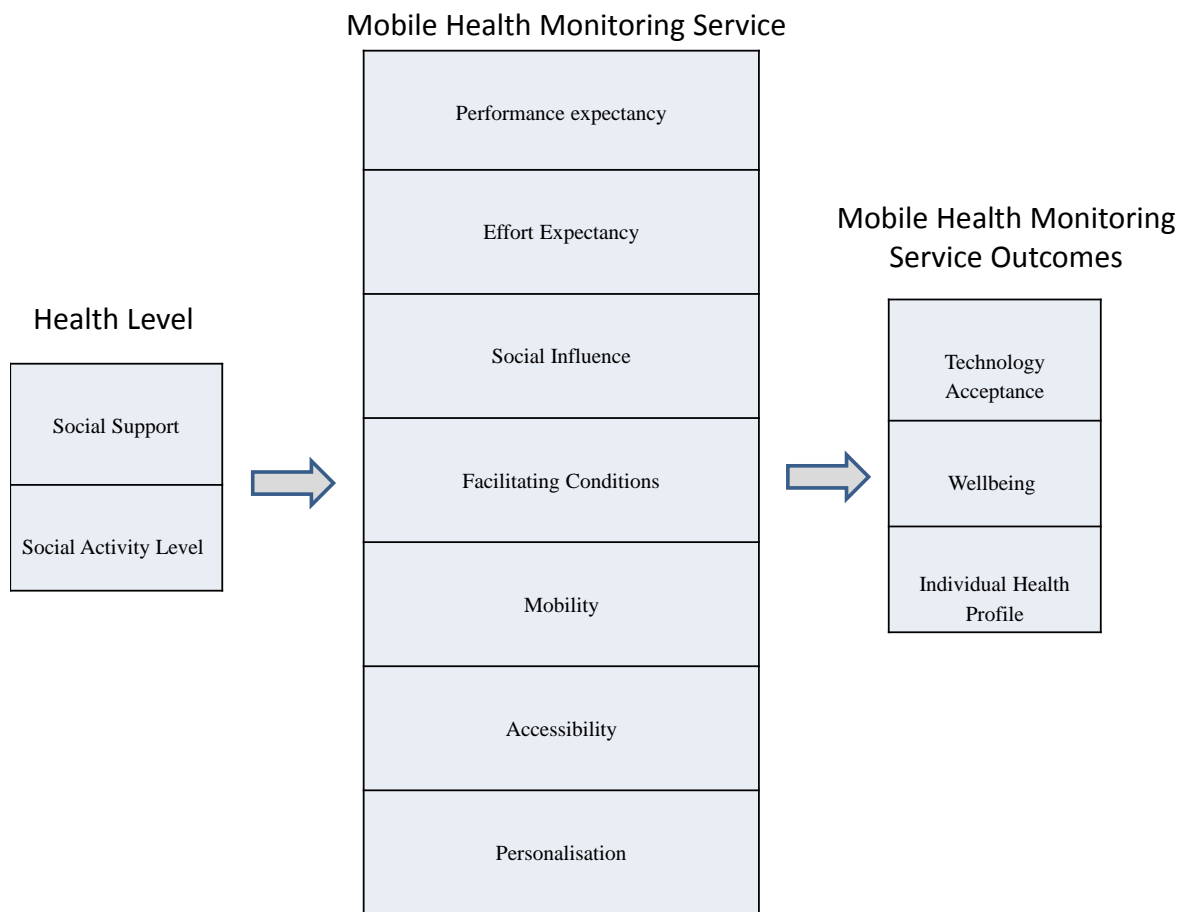| Social Support |
| Social Activity Level |

Figure 1. The preliminary conceptual framework of m-Health monitoring service