

Wearable Technologies Acceptance and Adoption by Elderly People in Masaka Uganda

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Abstract
The increased advancement in technology has ushered in wearable technology that can be used in various sectors, including medical services that can ranging from body fitness to remote monitoring of people's health**.** Non-communicable diseases (NCDs) have become a big burden in low- and middle-income countries (LMICs) and have significantly contributed to consistent morbidity and mortality, which have played a big role in impending development, due to increased poverty. Wearable technology may provide an integral part of the solution for providing health care to a growing aging population in the world. The philosophical approach used was Post positivist to underpin quantitative research, questionnaires were used to collect data from the elderly and health workers. The research approach was a deductive and Survey strategy which was used hand in hand with the deductive approach, and a cross-sectional time horizon was adopted to support a one round data collection. Data was analyzed using SPSS. Results showed that, Masaka region has not yet adopted Wearable technology, however elderly patients of greater Masaka together with health workers are willing to adopt to wearable technology. The UTAUT-3 model was based on to determine the acceptance and use of technology.
Keywords: Non-communicable diseases, elderly people, UTAUT model 3, wearable technologies
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1 Introduction

Wearable technologies can be defined as an interactive sensor based wearable device that can communicate to the end users, concerning any happenings in his/her health, either through physical input, or through voice command. Wearable technologies have gained popularity due to rapid increase in technologies, and many sectors have adopted it including medical departments. The medical personals are using this technology to deliver services like, fitness, surgery and many more (Iqbal, Aydin, Brunckhorst, Dasgupta, & Ahmed, 2016).

Various technologies like internet of things (IoT), wearable devices, smart phones, have been frequently used to monitor the health of the ever growing population (Asthana, Strong, & Megahed, 2016). Therefore, wearable technologies can play a greater role in providing a better solution to improve health monitoring services to the elderly people, by providing telemedicine, physiological signal transmissions among the health stakeholders, and recording of health data.

2 Literature Review

Wearable devices/technologies are computerized systems that are integrated into various wearables like vests shoes, and other accessories, which can be comfortably worn on some one's body, to monitor and detect the health status of the user. The performance of these devices have surpassed those of the handheld devices like laptops, mobile phones, etc. This is due to the fact that, wearable technologies use sensory and scanning features such as biofeedback and tracking of physiological function(Wright & Keith, 2014). Wearable devices have different versions among which include implanted devices which can be fixed in someone's body like smart tattoos. On the other hand, wearable technologies have another version that can be put on and off, by the user.

These include smart watch, vests, shoes, etc. (Tehrani & Michael, 2014).

The main objective of wearable devices is to monitor people's daily life. These devices are majorly used in education, entertainment, finance, music and many more. However, the field that has greatly been influenced by the wearable technologies and potentially adopted, is the health care, medicine and fitness (Wright & Keith, 2014). Technologies related to health care industry has gained great prominence in the last two decades, due to various registered health issues globally, and the main focus was on the ageing population, more so in the developed countries, where the cost of health care has increased significantly, which has forced the policy makers to redefine a better strategy for health care services. A lot of money have been injected in the developed countries to almost one third to half of their overall expenditure on healthcare for the elderly people who are above 65 years of age (Waheed, 2019).

Majority of the influential electronic companies have resorted to invest in wearable technologies, where by prototype development has taken shape, while other companies have already launched their first products of wearable technologies. Therefore, wearable technologies is still in its infancy stage, and its adoption by public and commercial uses is still very low. These devices will reach maturity stage and increasingly be accepted by the society if the prices are lowered (Çiçek, 2015).

The number of people aged 64 and above are increasing significantly, compared to any other category, worldwide. The world population prospects for 2019 revision showed that, elderly people will reach 16% of the total population by 2050. The most social challenge of the twenty first century will be ensuring the quality of life for the aging population. These challenges include; maintaining their capacity to perform activities independently for some reasonable time, providing good health care and warrantees, which can help to achieve active aging process. The high increase in chronical diseases among the aged population have raised a great concern on how to improve the quality of life for these people, and these concerns have made it very urgent to find out the best solution and to spread the adoption and use of reliable wearable technologies, which are good enough to assist the elders during their active aging period *(Teixeira et al., 2021)*.

With wearable technologies, decision making can be made swift in clinical services, and also uplift on the quality of care given to the patients, and also reduce on the cost of the clinical services like remote rehabilitation of the patients. On the other hand, some issues like security, user acceptance, ethics, usability and functionalities for wearable devices need to be addressed in order to increase on the usability and acceptance of the wearable devices (Wu & Luo, 2019).

There are various categories of wearable technologies, which include trackers, notifiers and glasses. Notifiers are those that avail information concerning the surrounding environment of the user. These can include the smart watch. Second are the trackers, that incorporate sensors to record data captured from the user, and finally are the glasses that are based on the eye glasses to form an augmented virtual reality (Lunney, Cunningham, & Eastin, 2016).

It should be remembered that, the elderly people are the most affected people and are associated with health burdens, including NCDs as compared to other different categories of age groups. However, if these people are monitored effectively, and are provided with alarm systems, the unpredictable diseases like sudden falls, illness among others will be reduced significantly (Wang, Yang, & Dong, 2017). Other diseases monitored by wearable technologies include heart rate, respiratory diseases, temperature rate, blood pressure and many more, by enabling the wearable device to interface with the human skin with the support of body area network (BAN). This can help to improve regular monitoring of the all the vital signals with the aim of alerting all the stakeholders about the risks encountered in the patients so that further medical investigation and attention can be done (Wang et al., 2017). This is intended to improve health service delivery, patient's lives and also gain efficiency in the system as a whole. This is aimed at reducing on the continuous mobility of the patients and premature mortality related to NCDs'(Schwartz et al., 2015). Once it can be predicted in its early stages, the patients can be treated promptly, and effectively.

3 User Acceptance Of Technologies

In order for users to accept the adoption of new technologies, their preference on the design of a wearable device will determine acceptance and use of the device, both at home setting and clinical setting. Otherwise, if the clinicians and patients reject to work with the sensor systems, they will become redundant, and no one will use them, unless they meet their needs. The wearable sensors should be easy to operate and maintain and also compact enough not to become a burden to the end user.

Even though it is significant to consider user preferences, there is still a gap for good quality research in the area of wearable technologies (Wu & Luo, 2019). One of the major concerns about older adult acceptance of wearable device applications is their interest in using tailor made wearable devices for personal health monitoring. Kakande and colleagues(2018) report revealed that, 60% of the aged people developed interest in using wearable technologies in future to help them improve their physical and mental health. These people were found to have been ignorant about wearable devices Kankande et al., 2018). In order to increase the awareness,

political intervention and commitment should be put at the fore front (Schwartz et al., 2015).

4 Non-Communicable Diseases (NCD)

In 2006, Uganda formed strategic goals and priorities for NCDs under the ministry of health (MoH), which aimed at prevention and control of NCDs in Uganda (Schwartz et al., 2015). However, implementation became a night mare due to lack of research on health services, local disease prevention data, and financial resources to support this agenda. The sample that was done by MoH on the 54 health facilities revealed that, health workers' preparedness to diagnose and manage NCDs was still very poor, and could not meet the standards (Rogers, 2014).

In addition to the above, the budget for the ministry of health provides a total amount that makes only 0.011% to NCDs program, and largely funded by external grants (Schwartz, Guwatudde, Nugent, & Kiiza, 2014). An Integrated Management of Non-Communicable Diseases (UINCD) was formed in an effort to improve health service delivery in Uganda, which elaborated how UINCD was formed, its mission and goals was developed, challenges that were faced during the first year of operation, and current and proposed projects.

All the above took place between Yale University in new Haven and Makerere University in Kampala. This forced Ugandans who were part of these two universities to work hand in hand in order to provide medical education and clinical care at Mulago National Referral Hospital. This has been done since 2006 (Schwartz et al., 2015). In this struggle NCDs were recognized to be a growing burden to Ugandan population, and characterized with scarce resources for prevention and treatment. To address this dilemma, there is need to integrate multiple cooperation and collaboration among various stakeholders, in order to improve health services for NCDs (Schwartz et al., 2015).

5 Methodology

The philosophical approach that was adopted by this research was a Post positivist worldview which tends to prefer quantitative research more often than qualitative research (Abutabenjeh & Jaradat, 2018). This research was based on questionnaire to collect data from the elderly and health workers. The research approach was a deductive approach, since the researcher first identified the problem, then found out the theory, then proceeded to data collection to relate the findings with the existing theory. UTAUT 3 was therefore the most appropriate theory to underpin this research, which aimed at investigating the potential use of wearable technology for elderly people with underlying medical conditions, and to investigate the readiness of these people to use the wearable technology.

Survey strategy was used which worked hand in hand with deductive approach (Saunders, Lewis, & Thornhill, 2009). Data was collected using questionnaires, to support Post positivist worldview methodology, with the aim of generating quantitative understanding of the current health state of the elderly patients and their willingness to adopt wearable technology. A cross-sectional time horizon was adopted to support a one round data collection. Data was analyzed using SPSS to analyze the data that was captured with questionnaires.

5.1 Participants And Settings

This study was conducted in greater Masaka region and targeted the elderly people with underlying medical conditions, as the target population**,** who are 60 years and above. The study also involved health workers in various medical centers of Masaka region. The focus was generally on elderly people with NCD's, and specifically those with high blood pressure, cancer, and diabetes. Previous studies have showed that majority of people above 60 years of age suffer from one of the NCD's, of which diabetes, cancer and high blood pressure are the most prevalent.

5.2 The Sample Size

The sample size was 388, out of 12797 elderly people, from all the sub counties in Masaka district/city. The Slovenes formula was used to compute the sample size of 388 elderly people from whom, data was collected. However, the number of questionnaires exceeded the sample size, and reached 411.

5.3 Sampling Techniques.

Simple random sampling technique was used in order to give equal opportunity for each respondent to be selected. The researcher tried out all possible ways of meeting all respondents in groups (clusters), with the main aim of avoiding bias. Other respondents were found in their homes, because they could not move. On the side of the health workers, the research team had to visit health facilities to meet the respondent. Cluster random sampling technique was also used, where by target population was divided into groups called clusters according to villages or sub counties. Data was collected using a questionnaire. These instruments catered for all elderly people regardless of whether one is literate or not.

5.4 Data Analysis
Data was analyzed using Statistical Package for the Social Sciences (SSPS)

6 Adoption And Acceptance Of Wearable Technologies
Although the field of wearable technologies has advanced significantly, there is an impediment in user acceptance and use of technology due to various reasons. These include, but not limited to, high costs, unreliability of data, and lack of privacy. All these among others have prevented users from accepting wearable technologies (Waheed, 2019). Despite the above observation by Waheed, majority of the elders and health workers are enthusiastic about the adoption of wearable technologies in their day to day lives. These facts can be seen in the analyzed data after data collection in greater Masaka region. The acceptance rate was largely based on the UTAUT model 3, constructs that were composed by both Venkatesh and Farooq, to predict the likelihood of end users to accept technology.

6.1 Participants
Study participants were the elderly people with NCDs and health workers from Masaka district and city. It involved both public and private hospitals. Participants were informed that participation in the study was completely voluntary. Prior to any data analysis, the data was evaluated for duplicate participants and missing data. Data was collected using questionnaires, which were distributed physically by research assistants and the main researcher.

6.2 Willingness To Adopt Wearable Technologies By Elders.
The majority of the respondents were willing to adopt the new technology to increase access to health services composing up to 95.5% of the respondents, while 4.5% didn't show interest for the new proposed technology.

Table 1: Elders acceptance and use of wearable technologies

		Frequency	Valid Percent	Cumulative Percent
Valid	yes	315	95.5	95.5
	no	15	4.5	100.0
	Total	330	100.0	
Missing	System	81		
Total		411		

6.3 Adoption Of Wearable Technology Based On UTAUT 3 Model.
6.3.1 Social Influence On Use Of Wearable Technologies
A big portion of the participants strongly agreed to use wearable technology due to social influence at a rate of 84.1%, those who agreed were 11.2%, while the rest disagreed 3% and strongly disagreed 2% to adopt to wearable technology due to social influence.

Table 2: User acceptance and use of wearable technologies based on social influence

		Frequency	Valid Percent	Cumulative Percent
Valid	strongly agree	333	84.1	84.1
	agree	46	11.6	95.7
	disagree	10	2.5	98.2
	strongly disagree	7	1.8	100.0
	Total	396	100.0	
Missing	System	15		
Total		411		

6.3.2 Facilitating Condition On The Adoption Of Wearable Technologies
81.4 % of the sample population strongly agreed to use wearable technology if government provides them with gargets to implement them. 12.9% also agreed, 2.4% disagreed, and 3.2% strongly disagreed to use wearable technology even when the government avails them with the gargets to adopt the technology (Table 3). In summary, most people are willing to adopt to wearable technology if the government provide them with the resources. This means people are willing to use technology in case the government assist them to get access to them.

Table 3: User acceptance of wearable technology based on facilitating condition

		Frequency	Valid Percent	Cumulative Percent
Valid	strongly agree	329	81.4	81.4
	agree	52	12.9	94.3
	disagree	10	2.5	96.8
	strongly disagree	13	3.2	100.0
	Total	404	100.0	
Missing	System	7		
Total		411		

6.3.4 Effort expectancy and use of wearable technologies

88.2% strongly agreed to use wearable technology if it will be easy to use, 8.5% agreed, 1.5% disagreed, and only 1.8% strongly disagreed to use wearable technology no matter what (Table 4). This means that if the wearable technology will be easy to use, most of the elderly people will be in position to adopt it.

Table 4: User acceptance of wearable technologies based on effort expectancy

		Frequency	Valid Percent	Cumulative Percent
Valid	strongly agree	352	88.2	88.2
	agree	34	8.5	96.7
	disagree	6	1.5	98.2
	strongly disagree	7	1.8	100.0
	Total	399	100.0	
Missing	System	12		
Total		411		

6.3.5 Hedonic Motivation And Adoption Of Wearable Technologies

87.8% strongly agreed and 7.9% agreed to adopt to wearable technology if it is enjoyable. Only 2.8% were not in agreement to use technology, even if it was enjoyable, and 1.5% strongly disagreed to use wearable technology no matter how easy it way be (Table 5).

Table 5: User acceptance of wearable technologies based on hedonic motivation

		Frequency	Valid Percent	Cumulative Percent
Valid	strongly agree	346	87.8	87.8
	agree	31	7.9	95.7
	disagree	11	2.8	98.5
	strongly disagree	6	1.5	100.0
	Total	394	100.0	
Missing	System	17		
Total		411		

6.3.6 Price Value And Use Of Wearable Technologies

The majority (72%) of the elderly strongly agreed that they will use wearable technology if it is affordable. 11.5% also agreed to the same. Others (strongly disagreed 6.9%, disagreed 9.7%), to use technology even though it was affordable (Table 6). Therefore, there are higher chances of adopting the technology if the elderly can afford to buy, or install wearable technology.

Table 6: User acceptance of wearable technology based on price value

		Frequency	Valid Percent	Cumulative Percent
Valid	strongly agree	283	72.0	72.0
	agree	45	11.5	83.5
	disagree	27	6.9	90.3
	strongly disagree	38	9.7	100.0
	Total	393	100.0	
Missing	System	18		
Total		411		

6.3.7 The Desire To Advance In Technology And The Use Of Wearable Technology

Despite the fact that the target population were elderly people, they showed much interest in advancing in technology at a rate of 80.5% who strongly agreed, and 5.8% agreed to advance in technology. Only (5.5% strongly disagreed and 6.7 disagreed) to advance in technology (Table 7). This means that the elderly people are likely to adopt wearable technology because they want to advance in technology. This matches with one of the constructs of UTAUT3 model, which says that people can adopt technology because they want to advance in technology.

Table 7: User acceptance of wearable technology to advance in technology

		Frequency	Valid Percent	Cumulative Percent
Valid	strongly agree	182	80.5	80.5
	agree	13	5.8	86.3
	disagree	17	7.5	93.8
	strongly disagree	14	6.2	100.0
	Total	226	100.0	
Missing	System	28		
Total		254		

6.4. Willingness to adopt wearable technologies by Health workers.

Various hospitals were visited, and questionnaires were issued to a total of 33 respondents. This section highlights the quantitative views of the health workers in different categories of hospitals in Masaka. Twelve respondents were from government hospitals, constituting 36%, 19 were from private or community hospitals at a percentage of 57%, while 6% were from personal hospitals. This indicated that private hospital outweighed government hospitals.

6.4.1 Willingness Of Health Workers To Adopt To Wearable Technologies.

96.8% of the health workers were willing to adopt to wearable technologies, and 3.2% did not like to adopt to technology. The rest did not show their position in this matter.

Table 8: Health workers willingness to adopt to wearable technologies

		Frequency	Valid Percent	Cumulative Percent
Valid	Yes	30	96.8	96.8
	No	1	3.2	100.0
	Total	31	100.0	
Missing	System	2		
Total		33		

6.4.2 Willingness Of The Health Workers To Adopt To Wearable Technology Basing On UTAUT 3 Model (Social Influence).

46.9 % strongly agreed to use technology due to social influence, 34.4% also agreed to follow the same trend if others adopt to this technology, while 9.4% disagreed and the remaining 9.4% also strongly disagreed to adopt to technology due to social influence**.**

Table 9: Use of wearable technologies due to social influence

		Frequency	Valid Percent	Cumulative Percent
Valid	Strongly Agree	15	46.9	46.9
	Agree	11	34.4	81.3
	Disagree	3	9.4	90.6
	Strongly disagree	3	9.4	100.0
	Total	32	100.0	
Missing	System	1		
Total		33		

6.4.3 Willingness Of The Health Workers To Adopt To Wearable Technology Basing On UTAUT3 (Facilitating Condition).

The health workers were willing to use wearable technology if the government provided them with the required gargets to support them in implementing the new technology in their health centers. 78.1% strongly agreed, 15.6% agreed, 3.1% disagreed, and 3.1% strongly disagreed to adopt to wearable technology if government is willing to facilitate them with required gargets.

Table 10: use of wearable technologies based on facilitating conditions

		Frequency	Valid Percent	Cumulative Percent
Valid	Strongly agree	25	78.1	78.1
	Agree	5	15.6	93.8
	Disagree	1	3.1	96.9
	Strongly Disagree	1	3.1	100.0
	Total	32	100.0	
Missing	System	1		
Total		33		

6.4.3 Willingness Of The Health Workers To Adopt To Wearable Technology Basing On UTAUT3 (Effort Expectancy).

Majority of the health workers are willing to use wearable technology if it is easy to use. 68.8% strongly agreed and 25% agreed about the same. Well as 3.1% disagreed, and the other 3.1% also strongly disagreed to adopt to new technology even though it will be easy to use.

Table 11: Use of wearable technologies due to effort expectancy

		Frequency	Valid Percent	Cumulative Percent
Valid	Strongly Agree	22	68.8	68.8
	Agree	8	25.0	93.8
	Disagree	1	3.1	96.9
	Strongly Disagree	1	3.1	100.0
	Total	32	100.0	
Missing	System	1		
Total		33		

6.4.4 Willingness Of The Health Workers To Adopt To Wearable Technology Basing On UTAUT3 (Hedonic Conditions)

62.5% of the health workers strongly agreed to use wearable technology if it is enjoyable, 25% agreed, 6.3% disagreed, and also 6.3% strongly disagreed to use technology even though it will be enjoyable.

Table 12: Use of wearable technologies due to hedonic motivation

		Frequency	Valid Percent	Cumulative Percent
Valid	Strongly Agree	20	62.5	62.5
	Agree	8	25.0	87.5
	Disagree	2	6.3	93.8
	Strongly Disagree	2	6.3	100.0
	Total	32	100.0	
Missing	System	1		
Total		33		

6.4.5 Willingness of the health workers to adopt to wearable technology basing on UTAUT3 (Price values).

Health workers are willing to use wearable technology if it is affordable. 67.7% strongly agreed and 25.8% agreed to use wearable technology if it is affordable. Although 3.2% and 3.2% disagreed and strongly disagreed to adopt to wearable technology even though it will be affordable.

Table 13: Use of wearable technologies due to price value

		Frequency	Valid Percent	Cumulative Percent
	Strongly Agree	21	67.7	67.7
	Agree	8	25.8	93.5
	Disagree	1	3.2	96.8
	Strongly Disagree	1	3.2	100.0
	Total	31	100.0	
		2		
Total		33		

6.4.6 Willingness of the health workers to adopt to wearable technology basing on UTAUT3 (advance in technology)

The biggest number of the health workers strongly agreed to adopt to wearable technology because they want to advance to new technology, at a rate of 59.4% and 34.4% respectively. 3.1% disagreed, and 3.1% also strongly disagreed to adopt to wearable technology due to advance in technology.

Table 14: Use of wearable technologies due to advance in technology

		Frequency	Valid Percent	Cumulative Percent
	Strongly Agree	19	59.4	59.4
	Agree	11	34.4	93.8
	Disagree	1	3.1	96.9
	Strongly Disagree	1	3.1	100.0
	Total	32	100.0	
	System	1		
Total		33		

7 Findings

7.1 Awareness Of Wearable Technology.

The idea of wearable technology was not yet known in many hospitals like St. Joseph's hospital Kitovu, Masaka regional referral hospital, etc. However, they were willing to adopt to the new remote monitoring system. The discussion that was conducted with the medical officer at MRRH indicated that these health workers were ignorant about the wearable technologies, and they assumed that this technology could not work in Masaka, because majority of the elders were poor. The doctor proved that, the idea of wearable technology was still new, and was not yet introduced in Masaka. After a long discussion, and a brief elaboration about how wearable technology works, the doctor begun to develop a feeling that wearable technologies could save the situation.

However, this doctor assumed that adoption of this technology required people who are computer literates, and who have access to internet. He reported that most of the elderly people do not have access to internet, and are poor financially. He therefore assumed that this wearable technology was more likely to take longer time without being adopted.

7.2 Awareness Of Wearable Technology By Health Workers

Almost all the health workers were ignorant about wearable technologies, apart from very few of them. The renowned wearable devices that were known by the few health workers included smart shoes, belt, and head caps. Majority of the health workers were willing to adopt to wearable technologies to improve on their services.

7.3 Willingness to adopt to wearable technology by elderly people.

There was a likelihood that the elderly patients were willing to adopt to the wearable technology because they realized that wearable technology had numerous benefits. A big number of patients were willing to embrace this new technology irrespective of their capacity to buy them.

7.4 Willingness of the health workers to adopt to wearable technology basing on UTAUT3 model

Majority of the health workers agreed to adopt to wearable technology because of social influence. They also agreed to adopt to technology if there is a facilitating environment to implement the wearable technology services. They also confessed that they will use technology if it does not require a lot of effort to learn it, and are also willing to use it if it is enjoyable, and if its benefits outweigh the costs. Lastly, there was a need to advance in technology, in order to give a better service to their clients.

8 Discussion

Elderly people are willing to adopt to wearable technologies basing on the various constructs of the UTAUT 3 model. They are willing to adopt to technology if their friends and families adopt to it, if government avails the gadgets, if it is easy to use and affordable and also because they want to advance in technology. This means that there is a likelihood that, elderly people can adopt to wearable technology because they want to advance in technology. This matches with most of the constructs of UTAUT3 model, as literature put it.

The elderly people believed that they would achieve better services if all goes well with wearable technology as UTAUT 3 constructs put it in performance expectancy(MB, 2015). Performance expectancy variables seemed is predicted to be the strongest influencing factors of user intention to use technology (Chang, 2012). Therefore, if the wearable technology performs to the expectation of the users (elderly), there is a likely hood that they will adopt to new technology.

Elderly people are willing to adopt to the new technology if it easy to use, and does not require a lot of time to learn how to use it, likewise, effort expectancy is the extent to which the system can easily be used (MB, 2015). This model states that, an application considered to be user friendly is more likely to be accepted by end users. Venkatesh et al. (2012) also stated that effort expectancy must be hassle free and cannot cause trouble to users.

If all these are met in the proposed system, elderly people are more likely going to adopt to it because of being user friendly (Venkatesh, 2022). In a Similar manner, Godoe & Johansen (2012) explained that system end users prefer to go for user-friendly technology with maximum efficiency and high performance. This means that there will be high chances for elderly people to accept the new technology, if there is less effort required to understand the new technology (Godoe, 2012).

In the perspective of wearable technology on elderly smart healthcare, it is expected that, the elderly people will adopt to new technology because there is less effort required to manage wearable technologies and the mere fact that the elderly people already have little energy to support themselves. Needless to say, elderly people are not ready to spend much time to grasp complicated stuff. However, if it is user friendly, there are high chances of adopting to the new technology.

Elderly people are more willing to adopt to the new technology if their friends and families also adopt to it. According to Venkatesh et al. (2012), his definition suggests that social influence can be the perception

customers can have on a particular technology, in relation to how the technology is important to others who are using it. This means that elderly people agreed to adopt to the wearable technology if they find that their friends are using it, so that they can also be recognized by others. People take image to be a crucial matter, therefore, they can easily adopt technology innovations, due to social influence because they want to uplift their status in their social groups (Kamalasena & Sirisena, 2021).

Therefore, social influence can easily be caused by various constructs, including peers influence, influence of superiors, interpersonal influence, as well as other external forces. All the above mentioned influences can significantly influence end users acceptance and use of technology (Gonzalez-Garcia, Maltoni, Salvado, & Schwetz, 2012). The pressure from higher authorities can significantly shape an individual's behavior to accept the technology (Kamalasena, 2021). From this point of view, if for instance health workers adopt to technology, they are likely to influence the elderly people to adopt to the new technology if it happens to be effective.

Elderly people are willing to adopt to new technology if there are facilitating conditions. For instance, if the government provides them with wearable technology gadgets, they will be ready to adopt to the technology. This is because most of them loved to use them, but the capacity to buy them is a big issue. They therefore strongly agreed to adopt to wearable technology if government provides them with the required gadgets. Venkatesh, et al., (2012), stated that, the "facilitating conditions" are the renowned environmental factors or physical behaviors, which motivate a user to perform his duties.

This facilitating condition can include things like the technological or organizational environment that can be of help to the end users in the process of adopting to the new technology. The organizations try to eliminate any barrier that would hinder the technology acceptance by availing all the necessary equipment required to use technology (Sserwanga et al., 2015). In the context of wearable technologies for elderly, if these people get access to digital devices, stable internet connectivity and other related gadgets like CCTV cameras, smart home, the elderly will be in position to adopt to the new technology.

Elderly people greatly agreed to use wearable technology if it is enjoyable. This is derived from the UTAUT 3 models construct which refers to Hedonic motivation, and this can be defined as the fun or pressure one achieves from the use of technology. This has played an important role in determining people's acceptance of the use of technology (Gunasinghe, Hamid, Khatibi, & Azam, 2020). Therefore, the elderly people are willing to adopt to this technology if they find some enjoyment in using them.

In line with wearable technology for elderly people, when these people detect some enjoyment and fun in their wearable devices, they will be in position to adopt to this new technology, the same way they adopted to mobile phones because they can talk to their people remotely as though they are with them physically, receiving mobile money at the comfort of their homes, and so on. Therefore, there is a belief that the elderly people and the health workers are likely to adopt to the wearable technology once they discover that it is user-friendly.

Lastly, were the price values. The elderly people were more willing to adopt to the technology if it is cheaper and affordable. Cost is an important factor in influencing the intention to use the new technology (A. Chang, 2012). The elderly compared the transport they inject in to reach the hospital in relation to the benefit of technology which will eliminate the unnecessary movement, and they concluded that they are willing to use technology if it is cost friendly. So when the advantage of using technology outweigh the initial cost of technology, then there is a likelihood that people's intention to use technology will be positive (Kamalasena, 2021). It is therefore believed that elderly people will adopt the wearable technology if they find out that it's cheaper to use technology, than visiting of the hospital regularly.

On the other hand, majority of the health workers agreed to adopt to wearable technology because of social influence. They also agreed to adopt to technology if there will be facilitating condition to implement the wearable technology services, they also confessed that they will use technology if it does not require a lot of effort to learn it. They are also willing to use it, if it is enjoyable, and if its benefits outweigh the costs. Lastly there was a need to advance in technology in order to give a better service to their clients.

In a nutshell, the UTAUT 3 model fit well with the research study, basing on the above-mentioned explanations that were derived from the data collection process in Masaka.

9 Conclusion

This study aimed at testing the willingness of elderly people with underlying medical conditions and health workers to adopt to wearable technologies in greater Masaka region. It was aimed at reducing on the movement of the elders to reach the services in the hospitals and also make sure that, they get health services remotely and promptly. However, wearable technology is not yet seen in the circles of the medical and elderly patients of greater Masaka. Results showed that majority of the elderly people and the health workers had positive attitude towards the adoption of wearable technologies.

Literature indicated that, most developed countries have embraced the wearable technologies to improve on the wellbeing of the elders in their countries. It's therefore believed that, if this technology adoption can consider the local contextual concerns of the Ugandans, like integration of local languages into the systems, government

support among others, this technology can be implemented in the health sector. The adoption of wearable sensor systems is predicted to play a significant role to fight against NCDs among the elderly people.

These sensors can be designed to fit a specific NCD on a specific patient, in order to monitor his or her specific NCDs. This can be of great importance for both the affected person being monitored and the professional health workers, in a way that frequent advices can be rendered to the elderly patient on how to manage the disease (Kristoffersson & Lindén, 2020).

More to the above, it is believed that, this study will serve as the basis for further research and end users' acceptance of wearable technologies in greater Masaka region, and the country at large. As a result, the elderly people together with the health workers will have improved health care services. The primary responsibility for this research was to find out the readiness of the elderly people and the health workers towards the acceptance and use of wearable technology.

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