Moderating Effects of IT Knowledge on Adoption of Health Wearable Technology Among Working Adults in Abuja, Nigeria

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Abstract

This study examines moderating effect of IT Knowledge on the relationships between constructs of the SUTAUT model and adoption of health wearable technology among working adults in Abuja. SUTAUT is a model which combines the four key constructs of UTAUT and one construct from the SCT model, self-efficacy. Two research questions were tested. The study employed descriptive survey research design. A questionnaire was implemented offline and online using Google-Forms. Five experts validated the instrument and a pilot study was conducted and analysed using Cronbach Alpha coefficient method on the instrument which yielded overall reliability coefficient of 0.83. These tests showed the survey items to be suitably reliable for the research. Data was collected from 383 working adults who live in Abuja and analysed using Mean and Standard Deviation to answer the research questions. Findings present positive significant relationship between constructs of SUTAUT model and adoption of health wearable technology among the working adults in Abuja; and also showed the moderating effect of IT Knowledge on the relations of those constructs and adoption of wearable technology, presenting that IT Knowledge has no effect on the relationship of performance expectancy and adoption while the relationships of the other constructs with the adoption are significantly imparted by the moderating effect of IT Knowledge. The research therefore recommends for developers of wearables to adopt responsible research and innovation in designing wearable devices to encourage people with IT Knowledge to see beyond data privacy concerns to embrace the positive benefits of these devices.

Key Words: IT Knowledge, Health Wearable Technology, Wearables, Working Adults, Healthcare, Fitness.

1. Introduction

The impact of Internet of Things (IoT) on the global network is further enhanced by introduction of wearable devices into the data communications ecosystem, especially in developed nations. Wearable Technology is applicable in a wide variety of areas of human endeavour, mostly in health-related sub-sectors such as healthcare, medicine, nursing and fitness. Wearable technology utilizes such gadgets as smartwatches, smart google glasses, smart head bands, hand bands, ankle bands and other fitness trackers.

Wearable technology is a dynamic phenomenon whereby developers need to constantly step up their development of these portable monitoring systems to address the ever-increasing needs for real-time data monitoring and management (Sharma et al., 2022). There is a rise in the way users interact with smart wearable devices today, especially in the present health Artificial Intelligent (health-AI) market. This enables

the execution and enhancement of interactive marketing by various companies if users adopt and use the wearable devices (Zhu et al., 2022). While many recent user-to-system interfaces are designed to use touchscreens and/ or touchpads with sensors that are mostly used in IoT developments, such sensors are mostly seen to be complicated, bulky and inflexible. Wearable technologies eliminate or reduce the complications and provide additional flexibilities with the introduction of devices which can easily be attached to users' clothing, or which are even worn directly on their bodies, usable in almost every area of human life (Anwer et al., 2022).

Knowing the importance of wearable technology, working adults and the ageing population should generally adopt and use the devices to enhance their physical activities and improve their livelihoods. But they might be reluctant to adopt the technology for various reasons including but not limited to ignorance of the technology (Kalantari, 2017), unavailability of wearable devices, ignorance of the potential benefits, concerns over data privacy, user income, cost of purchase and maintenance of wearable devices, compatibility with other smart gadgets, and so on. Most times, economic and financial challenges may hamper consumers ability to demand good brands or models of the wearables per time (Kalantari, 2017). But if the factors influencing wearable technology adoption are properly explored and awareness is created among working adults then, further research could be carried out on evaluating the advantages and drawbacks and developing strategies to overcome the drawbacks so that the target users would be encouraged to adopt and use the technology and benefit therefrom.

Wearable Technology is a new concept on IoT which offers various products and services for users, mostly in healthcare, in fitness tracking and in a wide range of other areas of human endeavour. Campelo & Katz (2020) opined that wearable technology can support users to increase their physical literacy, which will in turn stimulate their uptake and ongoing participation in physical activities. Today, it is believed that IoT, including wearable technologies, enhances success in several sectors of human life (Al-rawashdeh, 2022). Because of the importance, all and sundry should be encouraged to adopt and use wearable technology; although, this is not yet the case among dwellers in most underdeveloped countries like Nigeria. The current study is therefore designed to enhance this adoption and enable the population benefit from the vast advantages of these health wearables.

2. Statement of the Problem

The entire world is more challenged today with increased prevalence of diseases and different chronic disorders than ever before. For example, it is believed that complications related to hypertension are annually responsible for over nine (9) million deaths globally; and forty percent of deaths among diabetes patients result from hypertension (Anyanti et al., 2020). Hypertension, also known as High Blood Pressure, is further considered a leading risk factor for disabilities and deaths arising from several other cardiovascular disorders (Egan et al., 2010; Minamimoto et al., 2022). It is also believed that the current upsurge in chronic health complications could be attributed to unhealthy lifestyles, such as associated with wrong choices (Pal et al., 2018); and the trend may yet rise if not checked.

Due to incidences of rise in illnesses resulting sometimes, from population growth, increase in ageing population and also due to endemics/ pandemics and so on, there is a shortfall of health experts and inadequate workforce to cope with the challenges which in turn results in much pressure on the part of the available health workers. Furthermore, healthcare providers are unable to effectively manage this constantly rising health issues with the erstwhile traditional ways and methods as before. The pressure on the specialists and caregivers also hampers the inter-communications between them; for example, such phenomenon as communications among doctors, between doctors and nurses, doctors and laboratory scientists, et cetera. Also, with the traditional methods, effective communication between health workers and patients is not always guaranteed. But the risk of deaths can generally be curtailed if the deadly ailments are effectively managed and mitigated through appropriate diagnosis and correspondent treatment (Anyanti et al., 2020).

Deployment of wearable technologies in healthcare allows for real-time data access and remote management of patient records by health experts not defied by constraints in location, thereby providing timely access to data for analysis which would also promote timely diagnosis and patients' treatment. Wearable technology provides new sets of facilities for the next trend of innovations in technology, which encourages healthcare to change from conventional hub-based systems to more personalized healthcare systems. This new concept is seen to be more efficient; more cost effective, reliable and guarantees more safety in the health sector (Mieronkoski et al., 2017). The adoption and use of wearable technologies effectively allow for access to relevant data which accurately provide insights into healthcare and fitness conditions of users, helping both the users and care providers to make more informed healthcare decisions. Extensive control of healthcare challenges by deployment and use of wearable technologies can prevent or greatly curb the incidences of cardiovascular diseases and other heart related attacks (Leupold et al., 2022; Patil et al., 2022). Wearable technologies enable users to track

fitness parameters and record physical activities automatically (Casado-Robles et al., 2022; Creaser et al., 2021). This research will therefore investigate the adoption of health wearable technology in the case study with the hope to enhancing the adoption and help the users to benefit from the vast advantages of such adoption.

2.1 Research Questions

1. What is the relationship among performance expectancy, effort expectancy, social influence, facilitating condition, and self-efficacy, with adoption of health wearable technology?
2. What is the moderating impact of IT Knowledge on the relationships between performance expectancy, effort expectancy, social influence, facilitating condition, self-efficacy and adoption of health wearable technology among working adults in Abuja, Nigeria?

2.2 Research Objectives

The specific objectives of this research are:

1. To examine the relationship among performance expectancy, effort expectancy, social influence, facilitating condition, self-efficacy, with adoption of health wearable technology among working adults in Abuja, Nigeria
2. To investigate the moderating impact of IT Knowledge on the relationships between performance expectancy, effort expectancy, social influence, facilitating condition, self-efficacy and adoption of health wearable technology among working adults in Abuja, Nigeria.

3. Methodology

The study adopted the descriptive survey research design whereby a structured questionnaire was developed and used to collect primary data from 383 respondents both online (using Google Forms) and offline. Purposive sampling technique was used. The questionnaire included two sections: demographic data and data related to questions of adoption. Five experts validated the questionnaire and a pilot test was also caried out to check the reliability of the instrument. The overall Cronbach Alpha coefficient reliability of the instrument was 0.83 using Statistical Package for Social Sciences (SPSS). Respondents were informed on the purpose of the study and assured that their data would be treated in confidence. Analyses were done using Mean and standard deviation methods to answer the research question, the results of which are presented in subsequent sections.

4. Results

Table 1

Descriptive Statistics, Cronbach's a Coefficients and Relationships of the Study Variables

	$\bar{X}$	SD	1	2	3	4	5	6	7
PE	3.95	0.60	1						
EE	2.57	0.40	.046	1					
SI	2.69	0.52	-.024	.460	1				
FC	2.48	0.54	-.016	.410	.919	1			
SE	2.36	0.42	.026	.78	.524	.617	1		
IT	2.42	0.44	-.063	.264	.818	.692	.281	1	
AHWT	2.35	0.36	.021	.829	.743	.734	.852	.479	1

Note: $\bar{X}$ = Mean, SD = standard deviation, PE= performance expectancy, EE = effort expectancy, SI = social influence, FC= facilitating condition, SE= self-efficacy, IT= IT Knowledge, AHWT = adoption of health wearable technology

On Table 1 is presented the Pearson correlation results which show that the relationship between performance expectancy and adoption of health wearable technology is positive but very weak relationship (+0.02), the results also showed a positive and very strong relationship (+0.83) between effort expectancy and adoption of health wearable technology, a positive and very strong relationship (+0.74) between social influence and adoption of health wearable technology, a positive and very strong relationship (+0.73) between facilitating condition and adoption of health wearable technology, a positive and very strong relationship (+0.85) between self-efficacy and adoption of health wearable technology, a positive and moderate relationship (+0.48) between IT Knowledge and adoption of health wearable technology among working adults in Abuja, Nigeria. Summarily therefore, all study variables showed positive relationships with adoption of health wearable technology among working adults in Abuja, the Nigerian Federal Capital City and its environs. Consequently therefore, the study variables would enhance adoption of wearable technology among the study population.

Table 2

Analysis Summary Using PROCESS Macro on moderating impact of IT Knowledge on the relationships between performance expectancy, effort expectancy, social influence, facilitating condition, self-efficacy and adoption of health wearable technology among working adults in Abuja, Nigeria. N = 383

Predictor	*B*	*SE*	*T*	*P*	*95% CI (Upper -*

					Lower)
Int_1 *PE/AHW T*	-.036	.060	-.599	.550	[0.08, -0.15]
Int_1 *EE/AHW T*	-.237	.048	-4.901	.000	[-0.14, -0.33]
Int_1 SI*/AHW T*	-.125	.043	-2.919	.004	[-.04, -0.21]
Int_1 *FC/AHW T*	-.245	.048	-5.125	.000	[-0.15, -0.34]
Int_1 *SE/AHW T*	-.144	.043	-3.328	.001	[-0.06, -0.23]

Note: B = Unstandardized coefficient, SE = standard error, t = t-statistics, p = p-value, CI = confidence interval, **p<0.001, PE= performance expectancy, EE = effort expectancy, SI = social influence, FC= facilitating condition, SE= self-efficacy, IT= IT Knowledge, AHWT = adoption of health wearable technology

As can be seen on Table 2, the results of the analyses presents the moderating impact of IT Knowledge on the relationship between performance expectancy and adoption of health wearable technology among working adults in Abuja, Nigeria as negative (B= -0.036, CI= [0.08, -0.15], t= -0.599), the moderating impact of IT Knowledge on the relationship between effort expectancy and adoption of health wearable technology among working adults in Abuja, Nigeria as negative (B= -0.237, CI= [-.14, -0.33], t= -2.90), the moderating impact of IT Knowledge on the relationship between social influence and adoption of health wearable technology also as negative (B= -0.125, CI= [-.04, -0.21], t= -2.92). Similarly, the moderating impact of IT Knowledge on the relationship between facilitating condition and adoption of health wearable technology shows negative impact (B= -0.245, CI= [-0.15, -0.34], t= -5.13), and the moderating impact of IT Knowledge on the relationship between self-efficacy and adoption of health wearable technology among working adults in Abuja, Nigeria also showed negative impact (B= -.144, CI= [-0.06, -0.23], t= -3.33, p<0. 001).

In summary therefore, the instantized coefficient (B) results shows that IT Knowledge have negative moderating impact on the relationships between each of the study constructs with adoption of health wearable technology in Abuja, Nigeria.

5. Discussion of Findings

5.1 Discussion - Research Question 1

Firstly, this study aimed to investigate the relationships between performance expectancy and adoption of health wearable technology, effort expectancy and adoption of health wearable technology, social influence and adoption of health wearable technology, facilitating condition and adoption of health wearable technology and also the relationship between self-efficacy and adoption of health wearable technology among working adults in Abuja, Nigeria, to understand how these variables each affect the adoption of health wearable technology among working adults in Abuja, Nigeria. The results are presented in Table 1 and provide insight into the relationships between each of the model constructs and adoption of health wearable technology among working adults in Abuja, Nigeria.

5.1.1 Performance Expectancy and Adoption of Health Wearable Technology

Generally, the findings of the current study revealed a significantly low adoption of health wearable technology among working adults. However, the study showed that there is a positively significant relationship between performance expectancy and adoption of health wearable technology among working adults, suggesting therefore that individuals would more likely adopt wearable devices if these will enhance their performance or productivity. The finding agrees with earlier studies which highlighted the importance of performance expectancy in predicting adoption and usage of health wearable technology. For instance, the finding is in consonance with findings from (Venkatesh & Davis, 2000) and from (Chen & Chan, 2014) who revealed that performance expectancy does significantly influence users' intention to adopt health wearable devices, since individuals expect these tools to improve their health outcomes and fitness monitoring. Similarly, Davis (1989) found perceived usefulness (which is a component of performance expectancy) to be a primary predictor of technology adoption among health-conscious users.

5.1.2 Effort Expectancy and Adoption of Health Wearable Technology

The current study also shows positive relationship between effort expectancy and adoption of health wearable technology among working adults. Effort Expectancy (EE) refers to the degree to which users see that using a particular technology will be free of physical and mental efforts (Venkatesh & Davis, 2000). The current study revealed that there is a strong positive and significant relationship between effort expectancy and Adoption of Health Wearable Technology which agrees with findings of other existing studies conducted using the UTAUT model. One such works, (Chen & Chan, 2014) presents that effort expectancy is positively associated with adoption and use of technology. Therefore, working adults in Abuja are expected to more confidently adopt health wearable technologies if they find them to be easy to use and manipulate without much physical and mental effort. In the same vein, Al-rawashdeh (2022) found effort expectancy to be a positive factor of adoption. Thus, simplifying the functionalities of technology and reducing possible learning barriers would significantly enhance adoption and encourage widespread use of health wearable technologies, even among working adults in Abuja, Nigeria.

5.1.3 Social Influence and Adoption of health Wearable Technology

The study findings also show positive, significant relationship between social influence and Adoption of health wearable technology by the working adults, meaning that the working adults in this study area will most likely adopt health wearable technology if they are influenced by family, friends and other associates. The finding is in consonance with prior research which have also highlighted the importance of social influence in predicting usage and adoption of health wearable technology. Social influence explains the degree to which an individual is motivated to adopt and use a technology following the importance they attach to how others believe they should use a new system (Venkatesh & Davis, 2000). (Al-rawashdeh, 2022) revealed social influence to be a key element of adoption at individual application of IoT in healthcare. Though, some studies show technology adoption not to directly relate to various aspects of technology, but to evolve more complicatedly in processes containing the users' attitudinal and personality parameters including social influence and facilitating conditions (Sharma & Mishra, 2014), there exist theories and models which explain technology adoption from the concept of social influences (Sharma & Mishra, 2014) indicating that it positively supports adoption of health wearable technologies.

5.1.4 Facilitating condition and Adoption of health Wearable Technology

The findings of the current research revealed a positive significant relationship between facilitating condition and adoption of health wearable technology among working adults in the study area, indicating that working adults in Abuja, the Nigerian capital city are more opened to adopt health wearable technologies if they find a system that encourages them to accept and use the technology. The finding supports the findings in existing literature; like (Al-Momani et al., 2018) and (Al-rawashdeh, 2022), which found that facilitating condition is one of the key factors that meaningfully affect adoption and use of mHealth technologies.

Even though many researchers believe that with key constructs of the UTAUT which are Performance Expectancy, Effort Expectancy and Social Influence which are the key intention models of UTAUT, research should have found all the determinants of intention to use, a number of these show that a fourth determinant, which is Facilitating Condition would be necessary for examining the effect of possible external variable use of the technology (Al-Qeisi, 2009). This is in agreement with the discoveries of the current study which shows Facilitating Condition to relate positively with adoption of health wearable technologies among working adults in Abuja, the Nigerian capital city. In 2003, Venkatesh proposed the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh et al., 2003) whose key constructs include facilitating conditions; the constructs sometimes are moderated by such factors as gender, age, experience, trust, voluntariness to use, etc. (Taherdoost, 2018) also sees facilitating condition as akey factor that affects adoption and use of technology.

Again, the study (Al-rawashdeh, 2022), stated that while facilitating conditions may not directly impact intention to use a technology, that it influences adoption and use behaviour directly. Al-rawashdeh, (2022) added that facilitating condition is an environmental factor that encourages adoption of IoT and application for smart healthcare technologies.

5.1.5 Self-efficacy and Adoption of health Wearable Technology

The findings of this study presented positive significant relationship between self-efficacy and adoption of health wearable technology. Consequently, the working adults in Abuja, Nigeria are most likely to adopt health wearables if they feel confident about their abilities to use the technology the health wearable devices. The finding is in in agreement with the findings of other studies in extant literature. For example, Bandura (1986)'s Social Cognitive Technology (SCT) considers self-efficacy and outcome

expectations as the key constructs that influence behavior. The model also shows that these two constructs could be weakened or strengthened, depending on source(s) of information/ feedback available to the users (Bandura, 1986). The research to study users' adoption intentions for mobile health smartphones included Self-Efficacy (SE) with two other important constructs to the UTAUT model, to explore their effect on adoption of new systems found self-efficacy to have a strong influence on the users' intention especially for new technologies. In 1986, Bandura (1986) founded the Social Cognitive Theory (SCT) and showed that behaviors are influenced directly by self-efficacy Gowin et al. (2019).

Even though self-efficacy is not be the actual ability and/ or skill possessed by users, it is "the extent to which the users see themselves to be able to carry out any actions required to attain specific types of performance" Bandura (1986). This construct is one of the crucial constructs of SCT and it could be seen that when people are endued with positive thought of their abilities to accomplish tasks, they would more likely participate in the exercise than when they doubt their abilities whereby tend to avoid the task. This is particularly significant when trying to adopt a novel technology which may seem to be complex in operation (Kalantari, 2017). According to Kalantari (2017), self-efficacy could be positively influenced by participation since consumers who are more concerned in new technologies are more likely to judge their abilities as positive to use these technologies. SCT presents perceived self-efficacy and outcome expectations as important variables that form behavior and goals. And these constructs are achievable by acquiring knowledge or having the right information per time (Simmich et al., 2021).

5.2 Discussion on Research Question 2

The second objective of this work was to investigate the moderating effect of IT Knowledge on the relationship between the study variables and adoption of health wearable technologies among working adults in Abuja, Nigeria; utilizing the SUTAUT model. The study examines how participants' knowledge of IT impacts their adoption and usage of wearable technologies as they each interact with the model constructs (or factors). The SUTAUT model being used here is presented in the figure below.

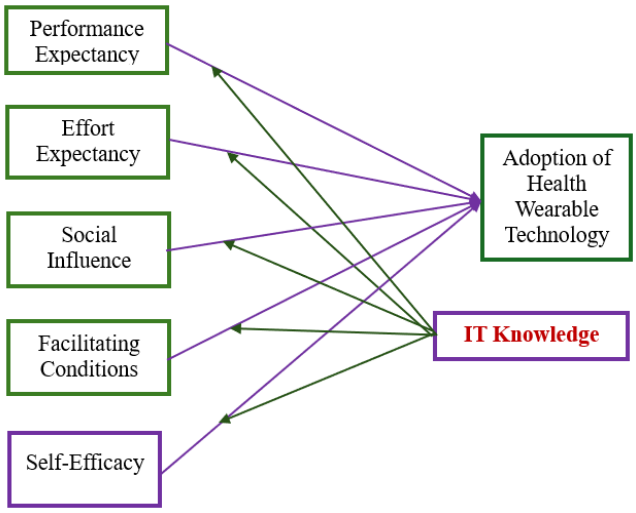

Figure 1: Research Model (SUTAUT)

The findings of the research are presented and discussed thus:

5.2.1 Moderating role of IT Knowledge on the relationship between performance expectancy and adoption of health wearable technology among Working Adults

Assessing the moderating impact of IT Knowledge on the relationship between performance expectancy and adoption of health wearable technology; R-sq value for the adoption was 0.23. The model explains 23.3% variance in the adoption of health wearable technology ($R2 = 0.23$, $F(3, 379) = 38.36$, $P=0.001$ which shows 23% change in adoption of health wearable technology when the relationship of performance expectancy and the adoption is acted on by IT Knowledge. Testing the significance of moderating (interaction) effect revealed a negative and non-significant effect of IT Knowledge on this ($B= -0.04$, $CI= [0.08, -0.15]$, $t= -0.59$, $p=0.55$). This shows that the IT Knowledge of the working adults in Abuja does not affect the relationship between their performance expectancy and adoption of the health wearable technology. In other words, the IT Knowledge of a working adult does not explicitly alter how performance expectancy influences adoption. Although, higher IT Knowledge may somewhat weaken the effect without producing any statistically significant impact. Thus, the relationship between performance expectancy and adoption of health wearable technology is not moderated by IT Knowledge of the working adults in Abuja, Nigeria.

5.2.2 IT Knowledge on the relationship between effort expectancy and adoption of health wearable technology among Working Adults

The moderating role of IT Knowledge on the relationship between effort expectancy and adoption of

health wearable technology was assessed. R-sq value for adoption of health wearable technology was 0.78. Thus, the model results in 78% variance in the adoption of health wearable technology (R2 = 0.78, F (3, 379) = 434.73, P=0.001. This shows a 78% shift in adoption, resulting from the interaction between effort expectancy and IT knowledge. When analysed, the significance of moderating (interaction) revealed a negative and significant effect of IT knowledge on the relationship between effort expectancy and adoption of health wearable technology (B= -0.24, CI= [-0.14, -0.33], t= -4.90, p=0.001). This shows that IT knowledge of working adults will affect the relationship of their effort expectancy and adoption. And since this effect is negative, IT knowledge would decrease the adoption despite the awareness that using this technology would require less effort. Such scenario could occur when the adults think of the implications of IT devices perceive that adopting such technology as health wearables may pose some security challenges to them or may violet their data privacy.

5.2.3 IT Knowledge on the relationship between social influence and adoption of health wearable technology among Working Adults

The moderating role of IT Knowledge on the relationship between social influence and adoption of health wearable technology was assessed. R-sq value for the adoption was 0.61 meaning that 61% variance in adoption of health wearable technology was explained by the model (R2 = 0.61, F (3, 379) = 198.76, P=0.001. Hence, there is a 61% change in adoption of wearable technology resulting from the activity of IT Knowledge on the relationship of social influence and the adoption. Analyzing the significance of moderating (interaction) revealed a negative and significant effect of IT Knowledge on the relationship between social influence and adoption of health wearable technology (B= -0.125, CI= [-.04, -0.21], t= -2.919, p=0. 004), which mean that the interaction of IT Knowledge and social influence among working adults have significant effect on their adoption of health wearable technology. Hence, the relationship between social influence and adoption of health wearable technology is negatively and significantly moderated by IT Knowledge of working adults.

5.2.4 IT Knowledge on the relationship between facilitating condition and adoption of health wearable technology among Working Adults

Moderating role of IT Knowledge on the relationship between facilitating conditions and adoption of health wearable technology was assessed. R-sq value for adoption of health wearable technology was 0. 57 explains 57% variance in the adoption of health wearable technology (R2 = 0.57, F (3, 379) = 167.14, P=0.001. Thus, 57% change in adoption of wearable technology is accounted by facilitating conditions and IT Knowledge. The significance of moderating (interaction) analysed showed a negative and significant effect of IT Knowledge on the relationship between facilitating conditions and adoption of health wearable technology (B= -0.25, CI= [-0.15, -0.34], t= -5.125, p=0. 001) which pre-supposes that even when resources and support are available, individuals with higher IT Knowledge may adopt health wearable technology less. Consequently, the relationship between facilitating conditions and adoption of health wearable technology is significantly moderated by IT Knowledge of working adults since the p-value (0.001) is less than 0.05.

5.2.5 IT Knowledge on the relationship between self-efficacy and adoption of health wearable technology among Working Adults

The study finally assessed the moderating role of IT Knowledge on the relationship between self-efficacy and adoption of health wearable technology. R-sq value for adoption of health wearable technology was 0.79 and this shows that model explains 79% variance in the adoption of health wearable technology (R2 = 0.79, F (3, 379) = 485.92, P=0.001. This shows that 79% variation in adoption of wearable technology happened by the interaction of IT Knowledge on the relationship of self-efficacy and adoption of health wearable technology. The moderation (interaction) of IT Knowledge was negative and significant on the relationship between self-efficacy and adoption of health wearable technology (B= -.144, CI= [-0.06, -0.23], t= -3.328, p=0.001). Thus, even with feelings of more confidence (self-efficacy), higher IT Knowledge reduces the likelihood of adoption, probably due to greater awareness of implications, risks, or other possible limitations of wearable technologies. The results also show that the interaction of IT Knowledge and self-efficacy among working adults significantly have effect on their adoption of health wearable technology. Thus, the relationship between self-efficacy and adoption of health wearable technology is significantly moderated by IT Knowledge of working adults since the p-value (0.001) is less than 0.05 and the hypothesis is therefore accepted.

Generally, there have not been much studies in literature on technology adoption which have investigated IT Knowledge as a moderator and checking the moderating effect thereof thus, making the findings of this research novel with the results as presented. Nevertheless, the findings of this study could be compared with the findings of previous

studies in the literature. For instance, the findings in (Al-Momani et al., 2018) revealed IT Knowledge to be one of the factors affecting the adoption of IoT services amongst clients in telecommunication firms. Also, (Al-rawashdeh, 2022) shows IT Knowledge as one of the factors that positively affect the awareness and adoption of IoT applications by users. According to Al-rawashdeh, (2022), IT Knowledge significantly and highly impacts the users' awareness of the technology, leading to acceptance and use of the same. From the results as presented on Table 2, the research has shown that IT Knowledge does not significantly moderate the relationships between performance expectancy and adoption of health wearable technology. However, the relationship between effort expectancy and adoption, between social influence and adoption, facilitating condition and adoption and the relationship between self-efficacy and adoption of wearable technology among working adults in Abuja, Nigeria are significantly moderated by IT Knowledge.

6. Conclusion and Recommendations

6.1 Conclusion

This study aimed to determine the relationships among study variables (performance expectancy, effort expectancy, social influence, facilitating condition, self-efficacy) and adoption of health wearable technology among working adults who are aged between 30 and 60 years inclusive and who live and work in and around Abuja, the Nigerian federal capital territory (FCT). Also, the study set out to investigate the moderating impact of IT Knowledge on these relationships between each of the variable and adoption of health wearable technology among the participants.

Firstly, the findings of the study revealed that there exist positive significant relationships between the constructs of the research model and adoption of health wearable technology among working adults in Abuja. Secondly, the study findings revealed IT Knowledge to have no moderating effect on the relationship between performance expectancy and adoption. But IT Knowledge has negative significant moderating effects on both relationships between effort expectancy and adoption, social influence and adoption, facilitating condition and adoption, and the relationship between self-efficacy and adoption of health wearable technology among working adults in Abuja, Nigeria. This shows that for the relationship of the four later constructs with adoption; additional knowledge of IT diminishes adoption of health wearable technology. This could be due to the fact that the more the IT Knowledge of a respondent, the more their awareness of possible risks of using such health wearable devices to manage health data which most prefer to handle in confidence.

6.2. Recommendations

Wearable technologies come with a lot of benefits to the users, especially in healthcare and fitness handling. Unfortunately, many of the working-class citizens in Nigeria do not adopt and use these wearables to benefit therefrom. To encourage the adoption of health wearable technology therefore, this research recommends for developers of health wearable devices to maintain responsible practice, adopting responsible research and innovation in designing wearable devices to encourage people with IT Knowledge to see beyond data privacy concerns to embrace the positive benefits of these devices. Other stakeholders, including both governments organizations, companies and other non-governmental employers should provide incentives and formulate policies that would enhance adoption of this technology among their working population since adopting this technology will benefit the users, assisting them in managing their medical, healthcare and fitness data more efficiently and remotely consulting with experts per time. If working adults in the Nigerian capital city maximize the benefits of health wearable technologies then, with time, other working adults and in deed, the entire Nigerian population would adopt the technology and benefit from it more than the situation is currently.

7. Limitations and Future Works

This study has a few limitations that could be addressed in future research. Firstly, the research is undertaken in Abuja, the Nigerian Federal Capital city and its environs; and only working adults ranging from 30 to 60 years inclusive, participated. Future works could be extended to include both the younger and older generations; and to cover more areas to allow for better generalization of the findings thereof. In addition, this study did not distinguish health wearable technology adoption by different genders. For example, Albert et al. (2019) stated that adoption of IoT differed by generations and by gender. Hence, future works on this subject could consider comparing how different generations and different genders adopt the health wearables technology.

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