



Business & Social Science
IJRBS

Research in Business & Social Science

IJRBS VOL 14 NO 1 (2025) ISSN: 2147-4478

Available online at www.ssbfn.net

Journal homepage: <https://www.ssbfn.net/ojs/index.php/ijrbs>

The adoption of e-health tools for digital mental health services in a South African higher education institution

 Rhodrick Nyasha Musakuro ^{(a)*}



^(a)Faculty of Business and Management Sciences, Cape Peninsula University of Technology, Cape Town, South Africa

ARTICLE INFO

Article history:

Received 18 November 2024

Received in rev. form 20 Jan 2025

Accepted 12 Feb 2025

Keywords:

E-health tools, digital mental health services, higher education institutions

JEL Classification:

I00, I18, I23, I38

ABSTRACT

The study aimed to investigate factors influencing the intention to adopt e-health tools for accessing digital mental health services among university staff at a selected South African higher education institution. A quantitative case study was conducted at a single university in Cape Town, South Africa. Data was collected from 348 respondents using online questionnaires and analysed using descriptive statistics and multiple regression. The results revealed that stable internet access at home did not significantly influence the intention to adopt e-health tools ($p = 0.698$, $\beta = -0.020$), but concerns about internet costs were a barrier ($p = 0.011$, $\beta = 0.131$). University staff who used multiple devices ($p = 0.014$, $\beta = 0.136$) and preferred e-health tools over traditional face-to-face services were more likely to adopt them ($p < 0.001$, $\beta = 0.319$). Moreover, social media usage ($p < 0.766$, $\beta = 0.016$), searching for digital mental health services ($p < 0.107$, $\beta = 0.085$), and awareness of free university services ($p < 0.307$, $\beta = -0.058$), DMHS providers ($p < 0.529$, $\beta = 0.038$), and fourth industrial revolution technologies ($p < 0.106$, $\beta = -0.091$) did not significantly influence adoption intentions. The study contributes to sustainable digital mental health support for university staff in South Africa. The results could potentially be applicable to similar contexts globally. Thus, helping to achieve the Sustainable Development Goal 3 of the United Nations of ensuring good health and wellbeing.

© 2025 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

Introduction

The contemporary university landscape is characterised by heightened workload, increased pressure, and reduced job autonomy which are essential factors that have been linked to deteriorating mental health among academic staff (Aleksynska et al., 2019; Kinman & Johnson, 2019). These challenges are particularly noticeable in South African higher education institutions (SA HEIs), which have undergone significant transformations since the end of apartheid (Pienaar & Bester, 2009). The combination of increased student enrolment, research output demands, and administrative responsibilities has created a demanding work environment that negatively impacts university staff well-being (Barkhuizen et al., 2014). The COVID-19 pandemic exacerbated these pressures which then highlighted the urgent need for accessible mental health support for university staff (Inchausti et al., 2020).

Fortunately, information communication technology (ICT) tools better known as electronic health (e-health) tools emerged as a promising solution by offering confidential and convenient access to mental health services in SA HEIs (Musakuro & Gie, 2024). While these e-health tools have been adopted in various contexts (Fagherazzi et al., 2020), research on the factors influencing their uptake within SA HEIs remains limited. Therefore, the study aimed to investigate factors influencing the intention to adopt e-health tools for accessing DMHS among university staff at a selected South African university. This would help to ensure the continuous provision of DMHS to the university staff post-COVID-19. In essence, investigating these factors is essential for ensuring the sustainable adoption of DMHS to support the mental well-being of university staff. Thus, contributing to the achievement of the Sustainable Development Goal 3 of the United Nations of ensuring good health and wellbeing.

* Corresponding author. ORCID ID: 0000-0002-3787-3580

© 2025 by the authors. Hosting by SSBFNET. Peer review under responsibility of Center for Strategic Studies in Business and Finance.

<https://doi.org/10.20525/ijrbs.v14i1.3841>

This paper is organised as follows: the second section is a literature review with theoretical and empirical studies that shed light on the linkage between theory and practice on the factors influencing the intention to adopt e-health tools for DMHS. The third section introduces background information on the research methodology applied to conduct the study. The fourth section provides the results of the study. The fifth section provides discussions with respect to the results of the study. Finally, this paper concludes with the main points, recommendations, future research directions and study limitations.

Literature Review

Mental health constitutes a fundamental component of overall well-being. The World Health Organization (WHO, 2001) defines mental health not merely as the absence of mental illness, but as a state of positive well-being wherein individuals realize their potential, cope effectively with life's challenges, work productively, and contribute meaningfully to society. This definition encompasses three key dimensions: psychological well-being, effective personal functioning, and successful social integration (Lamers et al., 2011). These dimensions are interconnected, with each influencing the others. For instance, the ability to manage stress positively enhances personal functioning, which in turn contributes to increased productivity and social engagement. Mental health is thus intrinsic to the human experience, shaping how individuals relate to themselves and others, learn, work, and experience joy and suffering (United Nations, 2020).

The concept of e-health gained prominence within academic discourse in the early 2000s. However, the precise definition of e-health remains elusive, with interpretations varying across the literature based on factors such as functionality, technological innovation, and stakeholder perspectives (Pagliari et al., 2005). For the purposes of this study, e-health is defined as a broad category encompassing health-related ICT-based tools that facilitate electronic information processing to support and enhance mental healthcare for patients. In other words, e-health is used to refer to the utilisation of multiple ICT tools that support the delivery of digital mental health services (DMHS) in personalised or group mental health initiatives (Gooding, 2019). Examples of e-health tools include desktop computers, laptops, smartphones, tablets, and other mobile devices and applications. This also extends to other various forms of e-health health tools that help to deliver DMHS including mobile health (m-health), telehealth, social media, and Fourth Industrial Revolution (4IR) technologies such as artificial intelligence, robotics, gaming, machine learning, virtual reality, Internet of Things and cloud computing. These e-health tools perform different functions which include but are not limited to communication, mental health information sharing, online mental health promotion, mental health literacy, information storage, and access, clinical decision support, patient and/or population monitoring, internet-delivered cognitive behavioural therapy, diagnosis, prevention and treatment of patients (Gooding, 2019; Asi & Williams, 2018; Schueller et al., 2016). The use of e-health tools enables mental health service delivery in the workplace by impacting how mental health services are designed and accessed, but more importantly how mental health services are delivered in a formal and informal workplace setting (Howarth et al., 2018).

Davis (1989) posits that behavioural intention to use reflects the probability of adopting technology, including e-health tools for DMHS in this study. As a crucial determinant of technology usage, behavioural intention bridges the gap between perceptions of the technology and actual user behaviour. Recent results by Gbollie et al., (2023) suggest a strong behavioural intention to use e-health tools for DMHS, indicating significant potential for their widespread adoption in the future. Consequently, this study hypothesizes that behavioural intention to use e-health tools is a key factor influencing the adoption of DMHS among university staff.

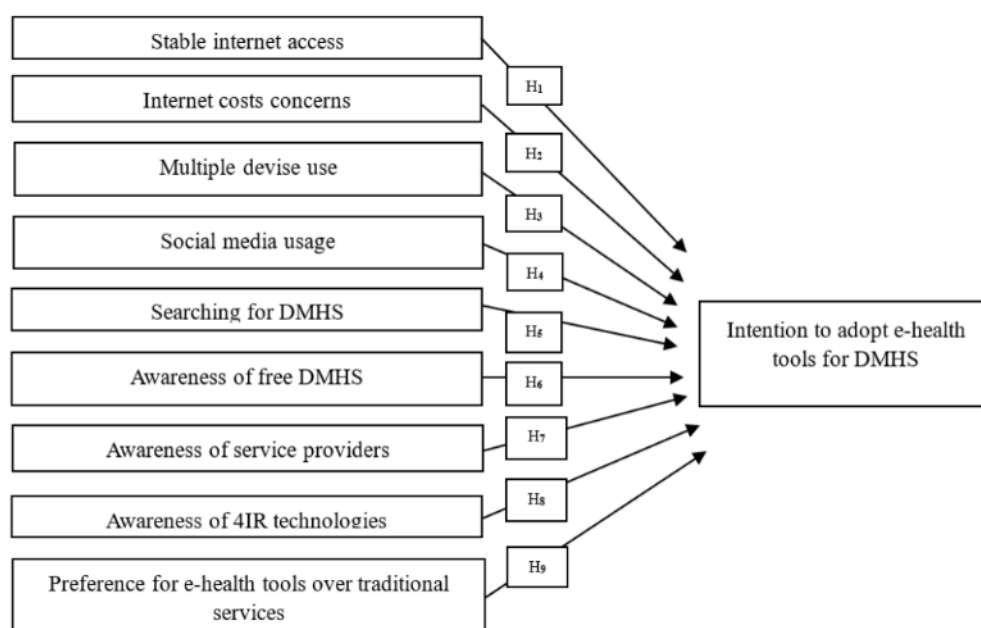


Figure 1: Conceptual Model of the Study; Source: Author

Empirical Review and Hypotheses Development

Stable Internet Access

The utilisation of e-health tools is increasingly gaining popularity worldwide as various countries are realising that modern ICTs and internet access have since become an inseparable part of human life (Aungst & Patel, 2020). On the one hand, people utilise the internet as their major basis for health-related information and communication. Organisations, on the other hand, are increasingly incorporating e-health tools to provide mental health services, as a result of the recent COVID-19 crisis and government regulations (Fagherazzi et al., 2020). Consequently, this presents an exciting opportunity for mental health providers to leverage digital technology to provide better services and improve mental health outcomes. Taking advantage of this opportunity can help reduce the stigma of mental health issues and create a more inclusive environment for individuals to seek support (Hanisch et al., 2016). This could help to make mental health services more accessible and effective and in due course leads to better mental health outcomes. Based on this discussion, it is hypothesized that:

H1: University staff with stable internet access at home are more likely to intend to adopt e-health tools for DMHS.

Internet costs concerns

In Africa, the accessibility, quality and cost of the internet and ICT tools remain expensive and out of reach for many people. This indicates that DMHS are not always accessible to some patients due to the lack of e-health tools and internet costs resulting in inequities in access to mental health care. A recent survey revealed that internet and data services and products are still out of reach for over half of the South African population (Gillwald et al., 2018). This means the internet is highly priced for many people in South Africa. In SA HEIs, the problem of internet access seems to remain an area of primary concern due to the adoption of multimodal teaching and learning policies. As a result, it has been reported that university staff in SA HEIs have been discouraged from effectively utilising internet services due to limited access and poor Internet connection speeds (Maphalala & Adigun, 2021). This is however not surprising given that previous scholars reported that in SA HEIs, there is a lack of bandwidth management skills and poor internet policies that impact the effective utilisation of the internet (Njenga, 2011). Therefore, universities should invest in the necessary resources to ensure the Internet is properly managed and accessible to all staff. Considering the above analysis, it can be hypothesized that:

H2: University staff who are concerned about internet costs when using e-health tools are less likely to intend to adopt them for DMHS.

Multiple device use

Having e-health tools accessible across multiple devices can enhance both performance expectancy and facilitating conditions (Venkatesh et al., 2003). In view of this, the study argues university staff would be more likely to engage with e-health tools that they can access on the go and on their preferred device which can increase the overall convenience of DMHS. The use of e-health tools largely relies on internet connectivity and computers to function effectively, and they can be connected to a wide range of ICT tools such as mobile devices, tablets, smartphones, and mobile software applications (Mwangama et al., 2020). The Internet is one of the world's most rapidly developing technologies. With its growth and evolution, new opportunities for digital mental health care are constantly emerging. In recent years, it has had a major impact on how people communicate, share information, stay connected and more importantly how people can access DMHS (Howarth et al., 2018). Therefore, it is no surprise that the internet has become a powerful tool for mental health professionals and their patients to address their mental health issues. In light of the preceding discussion, the following hypothesis can be formulated:

H3: University staff who regularly utilise multiple devices to connect to the internet are more likely to intend to adopt e-health tools for DMHS.

Social media usage

The term social media refers to a form of interactive technology that allows for the creation and sharing of information through online platforms (Wankel et al., 2010). It is often regarded as a platform where people connect, exchange ideas, and interests and establish relationships, especially among people that may have similar interests or backgrounds. For example, social media platforms like Instagram, WhatsApp, and X formally known as Twitter, YouTube, LinkedIn, TikTok, Facebook and many others allow users to post photos, videos, and messages and interact with others. With this, users can engage with one another and create online communities of people with similar interests. Sawyer & Chen (2012) assert that social media through connecting people, can foster a sense of community and allow for the exchange of information in a way that can be beneficial to all involved. For example, online discussion forums, Facebook groups, WhatsApp groups, and X hashtags provide people with a platform to share their experiences and gain knowledge from others in the community. In the delivery of DMHS in SA HEIs, social media platforms can be used to create online support groups for individuals with similar mental health issues. Korda & Itani (2013) continue further, stating that the use of social media makes it possible to create content and share information with a much broader audience than is possible through conventional media. In the context of mental health care, Kruzan et al., (2022) point out that social media platforms have become increasingly popular among individuals who use them to connect, engage, and seek help when they are experiencing mental health

problems. Researchers have demonstrated, for instance, that people share on social media their mental health problems, such as depression, eating disorders, and self-harm, as well as seeking assistance from their colleagues (Cunningham et al., 2021). Many countries including South Africa adopted numerous containment and mitigation measures to prevent the spreading of COVID-19 virus transmission and limit the movement of people. To this end, social media platforms were particularly effective in connecting individuals, spreading awareness, and disseminating information about mental health issues during the pandemic (Saud et al., 2020). Overall, it is clear that social media played a key role in mitigating the spread of the virus and helping individuals cope in the face of the pandemic. Drawing from the evidence outlined, it is proposed that:

H4: University staff who regularly use social media technologies are more likely to intend to adopt e-health tools for DMHS.

Awareness of service providers, free DHMS and searching for DMHS

The study posits that factors such as awareness of service providers, availability of free DMHS and initiatives, and active search for DMHS can positively influence the behavioural intention to adopt e-health tools for DMHS (Venkatesh et al., 2003). This implies that when university staff are well-informed about the capabilities and benefits of e-health tools, they are more likely to perceive them as useful and user-friendly. Moreover, the study argues that the presence of trusted and credible service providers can significantly enhance social influence and performance expectancy, as university staff would feel more confident in the quality and reliability of the available DMHS.

For ethical reasons, the specific SA HEI at the centre of this study will remain undisclosed. Throughout this research, the institution will be referred to as University X. The past three years (2020-2022) have been a period of significant change in the landscape of digital mental health care, largely due to the impact of COVID-19. In response, University X implemented various measures to mitigate the negative effects on the mental health of its staff (Mbunge et al., 2022). In partnership with the South African Depression and Anxiety Group (SADAG), Higher Health, the national agency of the Department of Higher Education and Training (DHET) dedicated to staff well-being, led a comprehensive response to the COVID-19 pandemic. This partnership enabled the rapid provision of much-needed mental health services to university staff across all SA HEIs, free of charge. Additionally, Momentum Wellness, a brand of Momentum Metropolitan Holdings Limited, offered employee well-being services to University X in 2022, encompassing psycho-social counselling, medical support, trauma support, family care, legal advice, financial advice, debt restructuring, and on-site mobile medical clinics. In conjunction with the digital mental health and employee well-being services provided by Higher Health, SADAG, and Momentum Wellness, University X also offered a range of online mental health initiatives, including webinars, online workshops, and online resources. This comprehensive approach demonstrates the university's commitment to providing accessible and supportive mental health services to its staff during the COVID-19 pandemic. Taking into account the points raised, it can be inferred that:

H5: University staff who regularly search for DMHS on the internet are more likely to intend to adopt e-health tools for DMHS.

H6: University staff who are aware of free DMHS offered by their university are more likely to intend to adopt e-health tools for DMHS.

H7: University staff who are aware of various service providers offering free DMHS are more likely to intend to adopt e-health tools for DMHS.

Awareness of the 4IR

The 4IR or industry 4.0 denotes significant and rapid changes that have occurred in technology, industries, societal patterns, and processes in the current 21st century as a result of digitalisation and increased interconnectedness (Zorzenon et al., 2022). The advent of the 4IR and the increasing integration of digital technologies into various sectors have brought significant advancements in health care, including mental health services. Studies show that 4IR technologies are having a significant impact on healthcare delivery, transforming interactions between patients and healthcare providers as well as between governments and stakeholders (Gomes de Melo e Castro e Melo & Araújo, 2020). User awareness of 4IR technologies, particularly artificial intelligence (AI), machine learning (ML), virtual reality (VR), Internet of Things (IoT) and cloud computing is key for the effective and sustainable adoption of e-health tools. The study posits that increased awareness can enhance user engagement, improve mental health outcomes, and drive innovation in service delivery.

AI denotes computer capabilities that resemble human intelligence, mimicking human reasoning and judgment (Moosavi et al., 2021; Zorzenon et al., 2022). AI has been increasingly utilised in DMHS to improve user experience and tailor interventions (D'Hotman & Loh, 2020). D'Alfonso (2020) asserts that predictive and detection models for mental health conditions are being utilised using data-driven AI technology, which essentially collects information from multiple sources, including social media interactions and personal digital device usage. However, biases in training data can lead to biased and inaccurate models (Navarro et al., 2021).

ML, a subset of AI, is transforming DMHS by developing self-learning computer programs that use historical data to analyse problems, identify patterns and suggest solutions (Magwegwe, 2021; Moosavi et al., 2021). As a 4IR technology, ML aids in making predictions without explicit programming and is effective in applications such as depression detection using social media data (Burdizzo et al., 2019). In developing nations, ML can assist in predicting health conditions, thus improving diagnoses and reducing

mortality (Gomes de Melo e Castro e Melo & Araújo, 2020). However, it cannot fully replace the expertise and intuition of experienced mental health practitioners, potentially leading to errors and misdiagnoses (Ray et al., 2022).

VR is another 4IR technology revolutionising DMHS by creating immersive simulated environments (Bai et al., 2020). VR systems include visual processing units, joysticks, 3D displays, and sensory devices that enable a sense of touch stimulation (Baghaei et al., 2021). VR has proven effective in treating anxiety and depression and as a mental health assessment tool due to its ability to control experimental conditions (Baghaei et al., 2021). However, challenges include cost, accessibility, and technical issues (Bell et al., 2022).

The IoT is another 4IR technology transforming DMHS by connecting devices with sensors and network capabilities to collect and share health data in real time (Moosavi et al., 2021; Zorzenon et al., 2022). IoT in healthcare includes devices such as wearables that monitor mental health through continuous tracking of vital signs (Singh, 2018). IoT aids in early diagnosis and alerts during medical emergencies (Singh, 2018). It also enhances public health by allowing better self-management and efficient use of the healthcare workforce (Kelly et al., 2020).

Cloud computing is an on-demand, self-service technology that enables users to access and store data remotely via the internet (Kuo, 2011; Moosavi et al., 2021). It is a 4IR that offers advantages in data collection, storage, and transmission over on-premises computing, allowing real-time access to electronic and personal health records (Kuo, 2011). This improves efficiency and accuracy in healthcare (Lustgarten et al., 2020). However, cloud computing faces risks such as data breaches and data loss, with significant incidents reported (Seh et al., 2020). These concerns can impact the acceptance of e-health tools due to privacy and security issues (Wies et al., 2021). Reflecting on the discussion above, the hypothesis posited is that:

H8: University staff who are aware of 4IR technologies for DMHS are more likely to intend to adopt e-health tools for DMHS.

Preference for e-health tools Over traditional mental services

There are several barriers to mental health care. These barriers include stigma, lack of resources, lack of awareness and education about mental health, as well as data privacy and confidentiality. These barriers present challenges to accessing mental health care and support, negatively impacting staff well-being. However, e-health tools, through interactive media and personalised methods, promote the continuity of digital mental health care and service engagement (Lal, 2019). This is significant, considering the high rates of disengagement associated with traditional face-to-face mental health services (O'Brien et al., 2009). Moreover, e-health tools also enable digital mental health interventions for people who prefer to seek help anonymously for fear of stigmatisation (Lal, 2019). Besides, this is also useful for people who may seek help regarding their mental health problems but may be hesitant to use traditional face-to-face services (Gainsbury & Blaszczyński, 2011). In view of this, it can be considered that preference for DMHS delivered via e-health tools over traditional in-person mental health services can significantly influence a university staff's intention to use e-health tools. Based on this discussion, it is hypothesized that:

H9: University staff who prefer DMHS delivered via e-health tools over traditional in-person services are more likely to intend to adopt e-health tools for DMHS.

Research and Methodology

Design and approach

The study employed a quantitative research approach, specifically a survey research design, to investigate a single SA HEI located in Cape Town, South Africa. A positivist research paradigm was adopted, utilizing objective and measurable scientific methods (Bryman & Bell, 2011). In line with a deductive research approach, as outlined by Bryman and Bell (2011), the study derived logical conclusions from existing the conceptual framework to formulate hypotheses and subsequently test them empirically.

Study population and sampling strategy

Given the constraints of time, finances, resources, and accessibility, the research population was limited to all public higher education institutions in South Africa that offer contact mode teaching and learning. This criterion resulted in the inclusion of 25 of the 26 public higher education institutions in South Africa (Quinlan et al., 2015). However, the target population for this study was further narrowed down to a single university located in Cape Town, South Africa, with an approximate staff complement of 2840. For ethical reasons, the specific university will remain undisclosed. The sampling frame comprises three groups: top management, academic staff, and non-academic staff.

The study utilised a voluntary response sampling technique which is a non-probability sampling technique to collect data from 348 respondents. This sampling technique allowed respondents from the selected SA HEI to self-select themselves into the survey relating to factors influencing the intention to adopt e-health tools for DMHS (Murairwa, 2015). In terms of research protocols, the researcher provided an open invitation to potential university staff to participate and each individual had an option to participate based on their interest or willingness. The formal invitation and participant informed consent form for university staff to participate in the survey was distributed through emails to reach university staff across multiple campuses of the selected university. From this, university staff volunteered themselves to participate in this study rather than being randomly selected by the researcher. The demographic

profile of the university staff who responded to this study is depicted in Table 1 below. A total of 348 usable questionnaires were obtained. It is evident from Table 1 that a good spread among the different demographic variables of the study participated in this study.

Table 1: Demographic information.

Item	Category	Frequency	Percentage
Gender	Male	156	44.8
	Female	192	55.2
Race	African	161	46.3
	White	44	12.6
	Coloured	89	25.6
	Indian	51	14.7
	Asian	3	0.8
Age group	20 - 29	10	2.9
	30 - 39	83	23.9
	40 - 49	149	42.8
	50 - 59	93	26.7
	60 or older	13	3.7
Highest level of qualification attained	National senior certificate	2	0.6
	Diploma	16	4.6
	Undergraduate Degree	47	13.5
	Postgraduate Degree	39	11.2
	Master's Degree	180	51.7
	Doctoral Degree	63	18.1
	Other	1	0.3
Occupation	Academic staff	205	58.9
	Non-academic staff	124	35.6
	Management staff	19	5.5
Employment category	Permanent employment	242	69.5
	Fixed-term contract employee	106	30.5
Length of service at the current institution	0 - 5 years	74	21.3
	6 - 10 years	103	29.6
	11 - 15 years	67	19.3
	16 - 20 years	76	21.8
	More than 21 years	28	8.0

Measuring instrument

The study utilised an online questionnaire for data collection through Microsoft Forms. The online questionnaire included a 5-point Likert scale where the rating was 1–strongly agree, 2–agree, 3–neutral, 4–disagree, and 5–strongly disagree. The online questionnaire was uniform and consistent for all the respondents, commencing with a cover letter that outlined the objective of the study, a request from the researcher for honest responses, with clear options and instructions on how to respond. The development of measuring instrument was informed by theoretical insights from the literature review (See Figure1). Measurements items were adapted primarily from valid and reliable scales, but in some cases, where suitable measures could not be developed from the literature, new measures were developed. A pilot study was carried out prior to data collection to ensure the validity and reliability of the research instrument, as highlighted by Bayat and Fox (2007). The pilot study comprised 18 non-respondents who were purposively selected from the selected university. The non-respondents to the main study provided valuable suggestions and recommendations for the questionnaire development. This was particularly on the structure, design style, layout, font size, observing the time to complete the questionnaire and presentation of statements, the accuracy of information and suitability of questions used in the questionnaire, thus improving the face and construct validity of the questionnaire (Quinlan et al., 2015; Bless et al., 2006). Furthermore, the research instrument underwent rigorous review by the research supervisor, a statistician, two academic experts, and the Faculty Research Ethics Committee at the Cape Peninsula University of Technology. This process helped to create well-structured statements that captured essential information while minimising bias.

The study adhered to strict ethical guidelines throughout the study, including obtaining informed consent, necessary permissions, and ensuring participant anonymity and confidentiality. It also prioritised protecting participants from harm and committed to honest reporting of results and responsible data management. The study received ethical approval from the Faculty of Business and Management Sciences Research Ethics Committee at CPUT (Approval Number: 2021_FBMSREC 083).

Data analysis

Data collected from 348 respondents were processed through the use of Statistical Package for the Social Sciences (SPSS) version 28. Descriptive statistics including means and standard deviation were used provide a summary of the data by focusing on central tendencies and the spread of data. Additionally, the study applied multiple regression analysis to examine the relationship between intention to adopt e-health tools (dependent variable) and multiple independent variables (stable internet access, internet cost concerns, multiple device use, social media usage, searching for DMHS, awareness of free DMHS, awareness of service providers, awareness of 4IR technologies and preference for e-health tools over traditional services). The method helped to determine how much each of these factors influences the intention to adopt e-health tools for DMHS.

Results and Discussion

Descriptive statistics

The descriptive statistics relating to the factors of the study as displayed in Table 2, indicated that university staff reported that they have stable internet access at home (mean = 1.92 and standard deviation = 1.427) but concerns regarding internet cost (mean = 2.20 and standard deviation = 1.475) posed as a significant barrier to the sustainable adoption of e-health tools for DMHS. Furthermore, the high utilisation of multiple devices (mean = 1.52 and standard deviation = .976) and social media platforms (mean = 1.74 and standard deviation = 1.237) demonstrated readiness among the university staff for the adoption of e-health tools for DMHS. Moreover, university staff indicated a moderate level of engagement in searching for DMHS (mean = 2.58 and standard deviation = 1.483). However, awareness of free DMHS, awareness of service providers and awareness of 4IR technologies remained low (mean = 3.46 and standard deviation = 1.484, 3.29 and standard deviation = 1.664 and 3.49 and standard deviation = 1.590, respectively). Despite this, university staff showed a clear preference for DMHS over traditional in-person mental health services (mean = 1.92 and standard deviation = 1.296).

Table 2: Descriptive statistics.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Stable internet access	348	1	5	1.97	1.427
Internet cost concerns	348	1	5	2.20	1.475
Multiple device use	348	1	5	1.52	.976
Social media usage	348	1	5	1.74	1.237
Searching for DMHS	348	1	5	2.58	1.483
Awareness of free DMHS	348	1	5	3.46	1.484
Awareness of service providers	348	1	5	3.29	1.664
Awareness of 4IR technologies	348	1	5	3.49	1.590
Preference for e-health tools over traditional services	348	1	5	1.92	1.296
Valid N (listwise)	348				

Multiple regression results

Model summary

In terms of the model summary, the R Square value (0.214) as shown in Table 3 indicates that the model explains 21.4% of the variance in the intention to use e-health tools. While not exceptionally high, it suggests some predictive power. However, the F-statistic (10.240; $p < 0.001$) as illustrated in Table 4 suggests the overall model is statistically significant.

Table 3: Model summary

Model Summary				
Model	R	R Square	Adjusted R ²	Std. Error of the Estimate
1	.463 ^a	.214	.193	.999

a. Predictors: (Constant), Preference for e-health tools over traditional services., Awareness of service providers., Stable internet access., Internet cost concerns., multi-device use., Searching for DMHS., Social media usage., Awareness of 4IR technologies and awareness of free DMHS.

Table 4: ANOVA: Factors influencing the adoption of e-health tools for DMHS

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	91.909	9	10.212	10.240	<.001 ^b
	Residual	337.088	338	.997		
	Total	428.997	347			

a. Dependent Variable: Behavioural intention to adopt e-health tools.

b. Predictors: (Constant), Preference for e-health tools over traditional services., Awareness of service providers., Stable internet access., Internet cost concerns., multi-device use., Searching for DMHS., Social media usage., Awareness of 4IR technologies and awareness of free DMHS.

As presented in Table 5, for H1, the expectation that stable internet access at home would influence the intention to adopt e-health tools was not supported by the data. The hypothesis was rejected as the results were not significant ($p = 0.698$, $\beta = -0.020$). In contrast, H2 was accepted, confirming that concerns about internet costs acted as a barrier to adopting e-health tools, with significant results ($p = 0.011$, $\beta = 0.131$). H3, which hypothesized that university staff using multiple devices to access the internet were more likely to adopt e-health tools, was supported. This hypothesis was accepted based on the significant results ($p = 0.014$, $\beta = 0.136$). However, H4, which proposed that social media usage would impact the adoption of e-health tools, was rejected, as the results were not significant ($p = 0.766$, $\beta = 0.016$). Similarly, H5, concerning the influence of searching for DMHS, was rejected based on its non-significant outcome ($p = 0.107$, $\beta = 0.085$). H6, which focused on awareness of free university services, did not significantly influence the intention to adopt e-health tools and was therefore rejected ($p = 0.307$, $\beta = -0.058$). H7, which examined awareness of free providers, was also rejected due to its lack of significance ($p = 0.529$, $\beta = 0.038$). H8, which hypothesized that awareness of Fourth Industrial Revolution (4IR) technologies would affect the adoption of e-health tools, was not supported by the data, leading to its rejection ($p = 0.106$, $\beta = -0.091$). Lastly, H9 was also accepted, as university staff who preferred e-health over traditional services were significantly more likely to adopt them ($p < 0.001$, $\beta = 0.319$).

Table 5: Summary of hypotheses testing results

Hypothesis	Independent variable	<i>p</i> -value	Regression weight	β coefficient	Recommendation
H ₁	Stable internet access	0.698	-0.016	-0.020	Rejected
H ₂	Internet cost concerns	0.011	0.099	0.131	Accepted
H ₃	Multi-device use	0.014	0.155	0.136	Accepted
H ₄	Social media usage	0.766	0.015	0.016	Rejected
H ₅	Searching for DMHS	0.107	0.063	0.085	Rejected
H ₆	Awareness of free DMHS	0.307	-0.043	-0.058	Rejected
H ₇	Awareness of service providers	0.529	0.025	0.038	Rejected
H ₈	Awareness of 4IR technologies	0.106	-0.063	-0.091	Rejected
H ₉	Preference for e-health tools over traditional services	<0.001	0.274	0.319	Accepted

Discussion

The study employed multiple regression analysis to examine the relationship between multiple variables of the study and the analysis revealed interesting and important understandings that accepted H2, H3 and H9. In essence, the results of the study confirmed that internet cost concerns are a barrier to the adoption of e-health tools for DMHS among university staff. The results are consistent with the literature where it was noted that high internet costs are a barrier to accessing e-health services, specifically in developing countries such as South Africa (Gillwald et al., 2018). Therefore, the university staff concerned about internet costs may be less likely to adopt e-health tools for DMHS due to the perceived financial burden.

The results of the study accepted the hypothesis that postulated that multiple devices to access the internet influence the intention to adopt e-health tools for DMHS. The results are consistent with previous studies that posit that nowadays people use multiple devices to access the internet which is also used to support the delivery of DMHS in personalised or group mental health initiatives (Gooding, 2019). Therefore, the result of the study demonstrates that university staff who utilise multiple devices to access the internet are more likely comfortable in navigating e-health platforms and accessing DMHS.

The study also found that preference for e-health tools for the delivery of DMHS over traditional face-to-face mental health services has a positive significant influence on the intention to adopt e-health tools. The study results corroborate the notion that positive attitudes towards e-health tools are imperative for the adoption of e-health tools (Davis, 1989). Accordingly, university staff who prefer the convenience and potential anonymity of e-health tools for DMHS are more likely to embrace them (Lal, 2019).

The results of this study revealed that stable internet access is not a significant factor that influences the intention to adopt e-health tools for DMHS. The results were contrary to the literature and expectations of this study (Mwangama et al., 2020). It is, therefore, possible that the study focused on staff within a university setting, where internet access may be more readily available when compared to the general population or maybe the university staff prioritised other factors such as internet costs or service preference in completing the survey for the study.

The results of the study showed that the use of social media did not directly influence the intention to adopt e-health tools for DMHS. The results mean that while social media can be a platform for mental health awareness as suggested by other researchers (Kruzan et al., 2022), it may not directly translate to the use of e-health tools for DMHS.

The results of the study provided empirical evidence that actively searching for DMHS may indicate pre-existing interest, but it does not necessarily translate to a strong intention to use e-health tools for DMHS. This highlights the need to bridge the gap between initial interest and actual adoption of e-health tools for DMHS.

The study results demonstrated that university staff's awareness of free services offered by the university or other providers (Higher Health, SADAG, Momentum Wellness) did not significantly impact their intention to adopt e-health tools for DMHS. The results indicated that simply knowing about free DMHS and the service providers may not be enough. Rather, promoting and educating the university staff about the benefits and the ease of use among other issues regarding e-health tools for DMHS could be fundamental to the effective and long-term adoption of e-health tools.

Further to the above, the results of the study showed that awareness of 4IR technologies including AI, ML, VR, IoT and cloud computing among others did not influence the intention to adopt e-health tools for DMHS. The results suggest that these technologies are still evolving and their application in e-health tools for DMHS may not be well understood by the target population of this study.

Conclusion

The study aimed to investigate factors influencing the intention to adopt e-health tools for accessing DMHS among university staff at a selected SA HEI. The results of the study showed stable internet access at home did not significantly influence the intention to adopt e-health tools for DMHS. Moreover, concerns about internet costs are barriers to the intention to adopt e-health tools. Also, the university staff who use multiple devices to access the internet were more likely to adopt e-health tools for DMHS. The results also confirmed that university staff who preferred e-health tools over traditional services were significantly more likely to adopt them for DMHS. In addition, the results indicated that social media usage, searching for DMHS, awareness of free university services, awareness of free providers, and awareness of 4IR technologies did not significantly influence the intention to adopt e-health tools for DMHS. In conclusion, this study makes an important empirical evidence contribution by means of providing evidence-based knowledge on the intention to adopt e-health tools for DMHS. This contributes to the need for empirical data to inform policy decisions which enhances policymakers' abilities to make informed decisions on how technology-driven tools can impact the delivery of DMHS. In consideration of the study results, the following recommendations are presented to the investigated institution and that they should:

- i. Address internet cost concerns to improve accessibility and broaden the adoption of e-health tools.
- ii. Implement targeted interventions to promote awareness and usage of e-health tools among university staff who utilise multiple devices.
- iii. Address user concerns beyond cost, such as usability and security, to increase staff confidence in e-health tools.
- iv. Highlight the benefits of e-health tools for DMHS compared to traditional face-to-face services, as these significantly influence adoption intentions.
- v. Foster institutional support and launch awareness campaigns to enhance understanding and acceptance of e-health tools within higher education environments.

Limitations and future research

A primary limitation of this study was its exclusive reliance on quantitative research methods, which precluded a further exploration of the underlying reasons for non-significant predictors and contradictory results. As a result, future research should integrate qualitative approaches to address this limitation. Moreover, future studies should consider assessing the potential impact of contextual and cultural factors on the adoption of e-health tools for DMHS. To address the potential limitations of generalisability arising from the single institution focus of this study, future research should investigate multiple SA HEIs.

Acknowledgement

Author Contributions: Conceptualization, R.N.M; methodology, R.N.M; validation, R.N.M; formal analysis, R.N.M; investigation, R.N.M, resources, R.N.M; writing—original draft preparation, and R.N.M; writing—review and editing, R.N.M and supervision, R.N.M.

Institutional Review Board Statement: Ethical review and approval were waived for this study, due to that the research does not deal with vulnerable groups or sensitive issues.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Aleksynska, M., Berg, J., Foden, D., Johnston, H. E. S., Parent-Thirion, A., & Vanderleyden, J. (2019). *Working conditions in a global perspective*. International Labour Organization.
- Asi, Y. M., & Williams, C. (2018). The role of digital health in making progress toward Sustainable Development Goal (SDG) 3 in conflict-affected populations. *International Journal of Medical Informatics*, 114, 114–120. <https://doi.org/10.1016/j.ijmedinf.2017.11.003>
- Aungst, T. D., & Patel, R. (2020). Integrating digital health into the curriculum—Considerations on the current landscape and future developments. *Journal of Medical Education and Curricular Development*, 7, 1–7. <https://doi.org/10.1177/2382120519901275>
- Barkhuizen, N., Rothmann, S., & Van De Vijver, F. J. (2014). Burnout and work engagement of academics in higher education institutions: Effects of dispositional optimism. *Stress and Health*, 30(4), 322–332. <https://doi.org/10.1002/smi.2520>
- Bless, C., Higson-Smith, C., & Kagee, A. (2006). *Fundamentals of social research methods: An African perspective* (4th ed.). Juta.
- Bryman, A., & Bell, E. (2011). *Research methodology: Business and management contexts*. Oxford University Press.
- Brynard, P. A., & Hanekom, S. X. (2006). *Introduction to research in management-related fields*. Van Schaik Publishers.
- Cunningham, S., Hudson, C. C., & Harkness, K. (2021). Social media and depression symptoms: A meta-analysis. *Research on Child and Adolescent Psychopathology*, 49, 241–253. <https://doi.org/10.1007/s10802-020-00715-7>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(2), 319–340. <https://doi.org/10.2307/249008>
- Fagherazzi, G., Goetzinger, C., Rashid, M. A., Aguayo, G. A., & Huiart, L. (2020). Digital health strategies to fight COVID-19 worldwide: Challenges, recommendations, and a call for papers. *Journal of Medical Internet Research*, 22(6), 1–10. <https://doi.org/10.2196/19284>
- Gainsbury, S., & Blaszczynski, A. (2011). A systematic review of Internet-based therapy for the treatment of addictions. *Clinical Psychology Review*, 31(3), 490–498. <https://doi.org/10.1016/j.cpr.2010.11.007>
- Gbollie, E. F., Bantjes, J., Jarvis, L., Swandevelder, S., Du Plessis, J., Shadwell, R., Davids, C., Gerber, R., Holland, N., & Hunt, X. (2023). Intention to use digital mental health solutions: A cross-sectional survey of university students' attitudes and perceptions toward online therapy, mental health apps, and chatbots. *Digital Health*, 9, 1–19. <https://doi.org/10.1177/20552076231216559>
- Gillwald, A., Mothobi, O., & Rademan, B. (2018). *The state of ICT in South Africa. Policy Paper no. 5, Series 5: After Access State of ICT in South Africa*. Retrieved from <https://www.africaportal.org/publications/state-ict-south-africa/>
- Gooding, P. (2019). Mapping the rise of digital mental health technologies: Emerging issues for law and society. *International Journal of Law and Psychiatry*, 67, 1–11. <https://doi.org/10.1016/j.ijlp.2019.101498>
- Hanisch, S. E., Twomey, C. D., Szeto, A. C., Birner, U. W., Nowak, D., & Sabariego, C. (2016). The effectiveness of interventions targeting the stigma of mental illness at the workplace: A systematic review. *BMC Psychiatry*, 16(1), 1–11. <https://doi.org/10.1186/s12888-015-0706-4>
- Howarth, A., Quesada, J., Silva, J., Judycki, S., & Mills, P. R. (2018). The impact of digital health interventions on health-related outcomes in the workplace: A systematic review. *Digital Health*, 4, 1–8. <https://doi.org/10.1177/2055207618770861>
- Inchausti, F., MacBeth, A., Hasson-Ohayon, I., & Dimaggio, G. (2020). Psychological intervention and COVID-19: What we know so far and what we can do. *Journal of Contemporary Psychotherapy*, 50, 1–8. <https://doi.org/10.1007%2Fs10879-020-09460-w>
- Kinman, G., & Johnson, S. (2019). Special section on well-being in academic employees. *International Journal of Stress Management*, 26(2), 159–161. <https://doi.org/10.1037/str0000131>
- Korda, H., & Itani, Z. (2013). Harnessing social media for health promotion and behavior change. *Health Promotion Practice*, 14(1), 15–23. <https://doi.org/10.1177/1524839911405850>
- Kruzan, K. P., Fitzsimmons-Craft, E. E., Dobias, M., Schleider, J. L., & Pratap, A. (2022). Developing, deploying, and evaluating digital mental health interventions in spaces of online help-and information-seeking. *Procedia Computer Science*, 206, 6–22. <https://doi.org/10.1016/j.procs.2022.09.081>
- Lal, S. (2019). E-mental health: Promising advancements in policy, research, and practice. *Healthcare Management Forum*, 32(2), 56–62. <https://doi.org/10.1177/0840470418818583>
- United Nations. (2020). *Policy brief: COVID-19 and the need for action on mental health*. <https://unsdg.un.org/sites/default/files/2020-05/UN-Policy-Brief-COVID-19-and-mental-health.pdf>

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.

World Health Organization. (2001). *Strengthening mental health promotion*. Geneva: World Health Organization.

Publisher's Note: SSBFNET stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2025 by the authors. Licensee SSBFNET, Istanbul, Turkey. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

International Journal of Research in Business and Social Science (2147-4478) by SSBFNET is licensed under a Creative Commons Attribution 4.0 International License.