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The Effect of Digitalization on Advancing Psychology for Sustainable Development at Imo State University

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Abstract
Digitization has greatly impacted the field of psychology, providing new tools and methods for research and analysis. Using digital technology, psychologists can collect accurately. This led to progress in the understanding of human behaviour and opened up new possibilities for sustainable development in education. This study investigated the effect of digitization on advancing psychology for sustainable development at Imo State University Owerri. The study was guided by two research questions and two hypotheses. The study adopted a quasi-experimental research design. The population included 729 lecturers (531 male and 198 female) at Imo State University. The sample for this study consisted of 200 (100 male and 100 female) educators from Imo State University using a stratified random sampling technique. The researcher developed and utilized the Psychology Advanced Test (PAT) for data collection, validated using measurement and evaluation experts. A reliability coefficient of 0.87 was obtained for the PAT using the Kuder-Richarson 21 method. Research questions were answered using mean and standard deviation, while hypotheses were tested using a t-test and two-way ANOVA at a 0.05 level of significance. The findings revealed that there was a significant difference between the mean scores of educators exposed to mHealth and educators exposed to traditional personal therapies in psychology for sustainable development. Gender was also found to be significant in average exposure to mobile health (mHealth). The study recommended that higher institutions support researchers around the world who help monitor the effectiveness of interventions aimed at promoting sustainable behaviour.

Keywords: Digitalization, Advancement, Psychology, Sustainable Development, Research

Introduction

The world is going through an era of digitization in which most of our daily activities are highly dependent on innovative digital and computer technologies. These current technologies have found application in socio-economic, environmental, sustainable, and climate applications to increase the productivity and efficiency of a given system (Balogun et al., 2020; Ceipek et al., 2020). Digitization is the integration of digital technologies into everyday life. Such integration is possible thanks to the digitization of information. Digitization is defined as the process of converting physically collected information (eg sensors, written information, etc.) and knowledge into a computer-readable language. The tiresome effort to digitize information collected over centuries (including pictures, images, and video formats) has yielded valuable information-technology-driven fruits. The benefits of digitization have contributed to the development of tools and sensors integrated into the Internet of Things (IoT) environment. The IoT is a robust network of physical objects connected over the Internet through embedded sensors, software, and other technologies that enable the exchange and collection of data. The convergence of concurrently evolving technologies for real-time analytics, machine learning, and artificial intelligence manages massive amounts of data, also known as big data. The high value of these massive datasets created is not yet fully exploited but creates unique opportunities to accelerate the transition to more efficient and sustainable smart integrated cities. Digitization brings a new set of tools that must be carefully balanced to ensure a smart application and its green character. The ability to make informed decisions about more efficient use of resources and services has a significant impact on sustainability and equity (Appio et al., 2021; Ardito et al., 2018), but several challenges to ensure the achievement of these goals cannot be resolved. The development and production of electronic devices exhaust limited resources and create e-waste (unwanted electronic products, non-functional and near or at the end of their "useful life"), which is hardly recycled (Ahirwar & Tripathi, 2021; Dhir et al. ., 2021). Life cycle consideration and development of e-waste recycling

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technologies is an urgent need. The need for better infrastructure is another challenge that can widen the gap between developed and developing regions instead of narrowing it. Infrastructure and equal access to the Internet are needed to achieve the holistic goal of reducing inequality and poverty in line with the need to provide digital education to end users (Habibi & Zabardast, 2020; Lopez-Sintas et al., 2020; Matthew & Kunkel, 2020). Finally, data security is one of the main concerns of the wide availability and openness of big data sources. Data security is a sensitive topic that raises debate about the security risks and network integrity of these digitized services (Craig, 2018; Reveron & Savage, 2020). These challenges need to be taken into account, but should not be seen as obstacles to the usability of digitization to face sustainable challenges from an applied perspective.

In 2015, the United Nations (UN) defined a plan for equity and sustainable development with a horizon set for 2030 (United Nations, 2018). These so-called Sustainable Development Goals (SDGs) identify 17 existing challenges that should be overcome to achieve this ambitious global goal: (1) no poverty, (2) zero hunger, (3) good health and well-being, (4) quality education, (5) gender equality, (6) clean water and sanitation, (7) affordable and clean energy, (8) decent work and economic growth, (9) industry, innovation and infrastructure, (10) reducing inequalities, (11) Sustainable cities and communities, (12) Responsible consumption and production, (13) Climate action, (14) Life underwater, (15) Life on land, (16) Peace, justice and strong institutions, and (17)) Partnership for Goals. These interlinked Sustainable Development Goals represent the urgent needs of our civilization to ensure a sustainable and competitive future. The creative development of digital tools to generate, use, transfer, or source electronic data for organizational activities can be used to achieve the SDGs. These tools that contribute to the achievement of these specific goals can be defined as digital sustainability. Digital sustainability is understood as the effort to develop and implement smart technologies to ensure sustainable economic growth while taking into account and integrating the SDGs. Modern digital innovations such as artificial intelligence and machine learning techniques have seen exponential growth in value, estimated to add approximately 14% to the global economy by 2030 (George et al., 2020; Magistretti et al., 2019). In this perspective, we explore how digitization can pave the way for the sustainable development necessary to create a Smart Green Planet that provides resources while protecting the environment and health of all the planet's inhabitants.

Mobile medical devices are being recognized as a cheaper and easier way to provide quality care to patients in low- and middle-income countries (LMICs) where sanitation is difficult, tropical diseases are prevalent, mortality rates are high, etc. It is a research-based and experimental discipline where psychologists draw on the long history of psychology to inform modern methods and practices. "Psychology is everywhere and encompasses all aspects of life. It is about people and the human mind. The study of psychology is very diverse; as a student, you can learn about a variety of theories and topics and understand how to apply them to real life. Situational and Environmental Psychology is a broad field with many programs that may include mental health studies. Wellness can help improve health, better understand the relationships we create, improve self-esteem, or prevent addiction. It also benefits our communication and understanding of others. It transcends the individual and can help society develop by helping to build and direct areas such as education, justice, employment, health, and work. It will also improve technology.

Ways to develop digital psychology

1. Data collection and analysis: The use of digital tools such as online surveys, mobile applications, and wearable devices allows researchers to collect data from different populations (Miller, 2012).
2. Online therapy and telemedicine: Teletherapy platforms allow psychologists to provide remote counselling and treatment, increasing access to clients in underserved areas. Digital mental health services provide self-help tools, mindfulness, and mood trackers to support mental health (Anderson & Titov, 2014).
3. Education and Training: Online courses and virtual courses provide flexible learning opportunities for aspiring students and professionals. Virtual reality (VR) and augmented reality (AR) technologies can simulate real-world situations for training, such as healthcare (Kratochwill & Levin, 2014).
4. Digital Assessment: Online psychological assessment and diagnostic tools simplify the assessment process and make it easier to reach target audiences. Digital platforms can offer adaptive tests that adjust the difficulty of questions based on participants' responses (Cohen & Swerlik, 2018).
5. Collaboration and Networking: Digital platforms facilitate collaboration among researchers, educators, and professionals worldwide. Online forums, webinars, and social media can share research findings and best practices (Woolley et al., 2010).
6. Public outreach and education: Blogs, podcasts, and social media channels can help spread mental health awareness to the public and increase awareness and understanding of mental health issues (Suler, 2016).

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7. Ethical issues and data security: As digitalization progresses, it is important to address ethical issues such as data privacy, consent, and the potential for digital preservation. Data security must be implemented to protect sensitive information (American Psychological Association, 2017).

Objectives of the study

The study aimed to investigate the effect of digitization on advancing psychology for sustainable development at Imo State University Owerri, specifically, the objectives of the study were to:

1. Find out how effective are mobile health (mHealth) compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals
2. Determine the mean difference between male and female educators using mobile health (mHealth) applications compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals.

Research Questions

The following research questions guided the study:

1. How effective are mobile health (mHealth) compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals?
2. What is the mean difference between male and female educators using mobile health (mHealth) applications compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals?

Hypotheses

The following null hypotheses were formulated for the study:

1. There is no significant effect of mobile health (mHealth) compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals.
2. There is no significant difference between male and female educators using mobile health (mHealth) applications compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals.

Methodology

The study was guided by two research questions and two hypotheses. The study employed a quasi-experimental research design. The population included 729 lecturers (531 males & 198 females) at Imo State University. (Source: Office of the Registrar Establishment). The sample for this study consisted of 200 (100 males and 100 females) educators from Imo State University using a stratified random sampling technique. There were 100 educators in the experimental group and 100 control group. The researcher developed and utilized the Psychology Advanced Test (PAT) for data collection, validated using measurement and evaluation experts. The PAT was first administered to both groups before treatment and it was re-administered to them after treatment. The educators in the experimental group were instructed on the use of mobile health while those in the control group were instructed on how to use traditional in-person therapies. A reliability coefficient of 0.87 was obtained for the PAT using the Kuder-Richarson 21 method. Research questions were answered using mean and standard deviation, while hypotheses were tested using a t-test and two-way ANOVA at a 0.05 level of significance.

Research Question One: How effective are mobile health (mHealth) compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals?

Table 1:Mean and standard deviation of mobile health and traditional in-person therapies

Groups	N	Mean	S.D	Mean Difference
Experimental	100	86.44	11.02	2.6
Traditional in-person therapies	100	83.84	10.04	

The Mobile health group's mean score and standard deviation were 86.44 and 11.02 respectively, while the traditional person therapies group had a mean score of 83.84 and a standard deviation of 10.04 indicating a mean difference of 2.6. The result indicated that the mobile health group was more effective than traditional in-person therapies.

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Research Question Two: What is the mean difference between male and female educators using mobile health (mHealth) applications compared to traditional in-person therapies in advancing psychological interventions for sustainable development goals?

Table 2:Mean scores and standard deviation of male and female educators exposed to experimental and traditional in-person therapy Groups.

Groups	Gender	N	Mean	S.D	Mean Difference
Experimental	**Female**	**50**	**87.48**	**11.38**	**2.08**
	Male	**50**	**83.84**	**10.67**	
Traditional in-person	**Female**	**50**	**86.66**	**8.14**	**2.91**
	Male	**50**	**81.02**	**11.01**	

The results in Table 2, indicate that the mean for females of experimental was 87.48 (SD=11.38), while the mean for males was 85.40 (SD=10.67) indicating a mean difference of 2.08. Whereas, the mean for females of traditional in-person was 86.66 (SD=86.66), while the mean for males was 81.02 (SD =11.01) indicating a mean difference of 2.91. This implies therefore that the mean performance of female educators in experimental groups was higher than the mean performance of female educators in traditional groups and vice versa.

Hypothesis 1 There is no significant effect of mobile health (mHealth) compared to traditional in-person therapies in advancing psychological interventions for sustainable development.

Table 3:T-test Analysis of Experimental and Traditional in-person Therapies in the post-test

Group	N	Mean	S.D	DF	T-test	p-value	Decision
Experimental	100	86.44	11.02	99	1.86	0.62	Significant
Traditional in – person	100	83.84	10.04				

The result in Table 3 shows the t-value (1.86) was obtained and a probability value is 0.62. The probability value of 0.62 was compared with 0.05 and it was found to be greater than 0.05 (p>.05). Hence, the null hypothesis is accepted. This indicates that there is no significant disparity between the mean scores of educators exposed to mobile health(mHealth) and those exposed to Traditional in-person therapies on advancing psychology for sustainable development in Imo state.

Hypothesis 2 There is no significant difference between male and female educators using mobile health (mHealth) applications compared to traditional in-person therapies in advancing psychological interventions for sustainable development.

Table 4:Summary of 2-way ANOVA on males and females exposed to mobile health (mHealth) applications and traditional in-person therapies.

Source	Type 111 Sum of Squares	DF	Mean Square	F	Sig
Corrected Model	1241.400	3	413.800	3.843	.011
Intercept	1449763.920	1	1449763.920	13465.291	.000
Gender	744.980	1	744.980	6.919	.009
Group	338.000	1	338.000	3.139	.078
Gender/Group	158.420	1	158.420	1.471	.227
Error	21102.684	196	107.667		
Total	1472108.000	200			
Corrected Total	22344.080	199			

Table 4 shows the difference in male and female educators exposed to mobile health(mHealth) and Traditional in-person therapies on advancing psychology for sustainable development. (F1,196) =6.919 p=.009). Hence null

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hypothesis was rejected at 0.05 alpha level. This implies there is a significant difference between the scores of male and female educators exposed to the two groups.

Discussion

The first finding points to the effect of mobile health (mHealth) compared to traditional face-to-face therapies on the advancement of psychological interventions for sustainable development. mHealth interventions have significantly improved the availability of psychological services. This finding is consistent with Miller (2012) who says that with the use of smartphones and the Internet, interventions can reach otherwise underserved populations, such as those in rural or remote areas. This broad reach is essential to achieving the Sustainable Development Goals related to health and well-being. Traditional in-person therapies require significant resources, including physical space, trained personnel, and materials. A comparison between mHealth and traditional personal therapies shows that both have unique strengths and can complement each other. Moreso, mHealth offers wide availability and cost advantages, traditional therapies provide the depth of personal interaction essential for certain types of psychological interventions. In addition, the study revealed that gender had no significant effect on educators using mobile health (mHealth) applications compared to traditional face-to-face therapies in advancing psychological interventions for sustainable development. The finding is in support with Ronquillo et al. (2020), who stated that understanding gender differences in the adoption and effectiveness of mHealth applications is essential for designing inclusive and effective psychological interventions. When comparing mHealth to traditional therapies, studies suggest that while both methods are effective, their impact varies on user characteristics and preferences. For example, mHealth is often more accessible to individuals in remote areas or those with mobility issues, but traditional therapies offer deeper personal interaction and support, which some users prefer. In addition, research shows that there are significant gender differences in the use and perception of mHealth applications. Men generally show higher mHealth awareness and usage rates compared to women. This is attributed to differences in technology knowledge and comfort levels. Women often report higher levels of anxiety and lower self-confidence when it comes to using technology, which may affect their adoption of mHealth solutions. On the other hand, men tend to have a more positive attitude towards the perceived ease of use and usefulness of these technologies.

Conclusion

It can be concluded that digitization offers significant opportunities for the advancement of psychology in the context of sustainable development. It improves data-driven insights, increases the availability of mental health services, promotes sustainable behaviour, facilitates global collaboration, and supports effective behavioural interventions. Create new opportunities for research education and environmental sustainability. As technology continues to evolve, it is safe to say that the field of psychology at these institutions will continue to move forward and contribute significantly to the development of sustainable practices. The field is infinite.

Recommendations

1. Educators should use social media, websites, and apps to promote sustainable practices and psychological resilience.
2. The government should improve access to psychological services, especially in underserved or remote areas, as this will address mental health issues.
3. Higher institutions should support researchers around the world who will help monitor the effectiveness of interventions aimed at promoting sustainable behaviour.
4.

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