

Utilization of Digital Technologies in OTM Programme in Polytechnics for Sustainable Development in Delta State

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Abstract

The study investigated the utilization of digital technology in Office Technology and Management (OTM) programme in polytechnics for sustainable development in Delta State. Two research questions guided the study and two hypotheses were tested at 0.05 level of significance. The descriptive survey design was utilized for the study. The population of the study comprised 25 lecturers drawn from two polytechnics in Delta State. The instrument for data collection was a structured questionnaire developed by the researchers which was validated by three experts in the field. The test of reliability of the instrument using Cronbach Alpha method yielded coefficient values of 0.84 and 0.86 for clusters 1 and 2 respectively. Mean, standard deviation and t-test were used to analyze data for the study. The findings of the study revealed that telecommunication technology was utilized to a low extent in OTM programme in polytechnics for sustainable development in Delta State. The findings also revealed that multimedia technology was utilized to a low extent in OTM programme in polytechnics for sustainable development in Delta State. Based on the findings of the study, the researchers recommended that government at all levels should take committed measures towards providing telecommunication technologies for OTM programme. It was also recommended that administrators of business education programme should organize in-service training programmes to train and retrain OTM lecturers on the use of multimedia technologies in OTM programme.

Keywords: Utilization, Digital Technologies, Office Technology and Management (OTM), Sustainable Development

Introduction

Education is unquestionably a pillar of national development, acting as a potent catalyst for good change in citizens' lives. Nigeria's education system is divided into tiers, each of which serves a specific role in the development of its inhabitants and the nation as a whole. These levels include primary, secondary, and postsecondary education, with the latter including universities, polytechnics, and colleges of education.

Polytechnics in Nigeria provide practical and skill-oriented programmes with a concentration on technical and vocational education. It is a two-tiered programme of study that consists of the National Diploma (ND) and Higher National Diploma (HND) (Ukata & Edeh, 2022). These programmes provide opportunities for hands-on learning, emphasizing practical skills applicable to a variety of professions and sectors. Office Technology and Management (OTM) is one of the academic programmes offered at the polytechnic both at the National Diploma and Higher National Diploma levels.

Oyinkoye and Oluwalola in Ovbiagele and Mgbonyebi (2018) averred that office technology and management is a new nomenclature that developed to take the role of the prior secretarial studies course and was adopted by NBTE in 2004. OTM was created primarily to prepare office managers and professional secretaries for the rapidly changing workplace. This lend credence to the main objective of polytechnic education, to provide technical knowledge and skills necessary for occupational development in Nigeria (Ukata & Edeh, 2022). The realization of this objective could lead to sustainable development. This view is promoted by the Nigerian National Policy on Education which recognizes education as a tool for excellence (Federal Republic of Nigeria, 2013), a belief supported by the world community, including the United Nations. The concept of Education for Sustainable Development (ESD) is one of the primary initiatives pushed by the United Nations in the field of education (Zhang et al., 2023).

The United Nations General Assembly declared 2005-2014 the UN Decade of Education for Sustainable Development. The United Nations' Education for Sustainable Development initiative is a comprehensive approach to education that strives to inculcate in students the information, skills, values, and attitudes required to develop a sustainable and equitable future. It recognizes the interdependence of social, economic, and environmental crises and emphasizes the significance of education in addressing these global difficulties. In the pursuit of a more sustainable future, education for sustainable development (ESD) and technological utilization are inextricably intertwined. The internet, in particular, enables unprecedented access to a variety of information and instructional materials. This accessibility democratizes education by providing learners of all ages and backgrounds with relevant information on sustainability and its varied aspects. This has increased the call for the utilization of digital technologies in Office Technology and Management (OTM) programmes in polytechnics (Baba et al., 2022).

Digital technologies, often known as "digital tech" covers the wide range of tools, systems, and devices that use digital information, which is commonly represented in binary code (0s and 1s). Digital technology according to Nnajofofor and Ejikeme (2020) is defined as the system and network devices, instruments, methodologies, and procedures utilized to fulfill a specific set of learning objectives. According to Mary and Neena (2017), digital instructional technology is any process in which a teacher or learner uses digital equipment like a computer (or a laptop, tablet, MP3 player, or console) to access digital tools like learning platforms and virtual learning environments (VLEs), and/or learning with digital technology resources to improve students' knowledge and skills. Oguejiofor and Nwogu (2014) grouped digital technology into four categories: communication, telecommunication, reprography, and micrographic. The researchers focused on telecommunications and multimedia technology for this study.

Telecommunication technology, often known as electronic communication technology, is an important part of office technology. It refers to the transfer of information over long distances, particularly by

electronic means. This technology is in charge of transmitting signals, images, and messages over huge geographical distances using mediums such as radio, telephone, television, satellites, and the internet (Abdullah et al., 2019). Nweke (2013) opined that the use of electronic communication in teaching allows teachers to influence knowledge and communication from afar. It also helps to improve the quality of classroom instruction and acts as a regular and systematic aid to under-resourced classroom teachers (Baba et al., 2022). Similarly, multimedia technology is another category of digital technology.

Multimedia technology is the incorporation of multiple forms of media elements, such as text, photos, music, video, animations, and interactive information, into a single digital format or platform (Winter et al., 2021). This technology permits the development, display, and dissemination of information or entertainment that engages several senses at the same time. Websites, applications, presentations, games, and other forms of multimedia can all be found. The use of multimedia technology in education has revolutionized the way students learn, making education more engaging, interactive, and accessible. Multimedia technology combines various media elements such as text, images, audio, video, and interactive content to create dynamic learning experiences (Carroll & Conboy, 2020). Despite the suggested benefits of the utilization of digital technologies in education, it has been observed that factors such as years of experience could influence the utilization of digital technologies.

In the context of this study, "years of teaching experience" refers to the duration of one's career as an OTM lecturer. Years of teaching experience are determined by how long a person has been working as a teacher. It is regarded as the abilities and information a person has acquired via their employment. Regardless of their years of teaching experience, Adeoye et al. (2020) reported that there was agreement among lecturers on the usage of technology to mitigate the influence of Covid-19 in higher institutions. According to Jokiah et al. (2018), business educators' years of classroom experience may have an impact on how they employ synchronous and asynchronous technologies in their lectures. However, this view cannot be said to be the case in polytechnics in Delta State. It is therefore against this background that the researcher investigated the utilization of digital technology in OTM programme in polytechnics for sustainable development in Delta State.

Statement of the Problem

OTM graduates in Delta State are encountering significant challenges in keeping pace with the demands of the 21st-century business environment, which is heavily reliant on advanced digital technologies. This issue is further compounded by instances where OTM graduates, upon being recruited, find themselves in the uncomfortable position of needing retraining by their employers in the use of digital technologies. This scenario paints a distressing picture of lack of familiarity with digital technologies among OTM graduates who have completed their programs in Delta State Polytechnics.

The situation is of grave concern and if left unaddressed, could evolve into a critical problem for Delta State. In an era where sustainable development hinges on a nation's capacity to nurture its human resources, equipping them with the necessary skills and competencies to drive progress in both society and the environment, this issue takes on even greater significance. Sustainable development relies on a highly skilled workforce adept at utilizing digital technology. In light of this, it is absolutely imperative to conduct a thorough investigation into the utilization of digital technology in OTM programme for sustainable development in Delta State. This study is not only essential for the advancement of Delta State but also serves as a critical step towards ensuring that the state's human capital is well-prepared to meet the challenges of the modern business landscape, where digital proficiency is no longer an option but a fundamental requirement for success.

Purpose of the Study

The main purpose of the study is to determine the utilization of digital technology in OTM programme in polytechnics for sustainable development in Delta State. Specifically, the study:

1. determined the extent of utilization of telecommunication technology in OTM programme in polytechnics for sustainable development in Delta State.
2. determined the extent of utilization of multimedia technology in OTM programme in polytechnics for sustainable development in Delta State.

Research Questions

The following research questions guided the study:

1. To what extent is telecommunication technology utilized in OTM programme in polytechnics for sustainable development in Delta State?
2. To what extent is multimedia technology utilized in OTM programme in polytechnics for sustainable development in Delta State?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of telecommunication technology in OTM programme in polytechnics for sustainable development in Delta State.
2. There is no significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of multimedia technology in OTM programme in polytechnics for sustainable development in Delta State.

Method

The descriptive survey research design was utilized for the study. The study was conducted in Delta State, Nigeria. The population of the study consisted of 25 OTM lecturers in two polytechnics in Delta State. This is made up of 12 OTM lecturers from Delta State Polytechnic, Otefe-Oghara and 13 from Delta State Polytechnic, Ogwashi-Uku. The data collection instrument used was a structured questionnaire developed by the researchers. The instrument was titled "Questionnaire on the Utilization of Digital Technology in Office Technology and Management Programme in Polytechnics (QUDTOTMPP)". The questionnaire has two sections, A and B. Section A contains information on the respondents bio-data covering respondents years of experience. Section B contains 14 items on digital technology which was broken down in two clusters according to the specific purposes of the study. Cluster 1 contains 7 items on the extent of utilization of telecommunication technology in OTM programme in polytechnics for sustainable development. Cluster 2 contains 7 items on the extent of utilization of multimedia technology in OTM programme in polytechnics for sustainable development. The questionnaire utilized a 4-point Likert rating scale, ranging from Very High Extent (VHE), High Extent (High Extent), Low Extent (LE) and Very Low Extent (VLE). The instrument underwent validation by three experts from the Department of Office Technology and Management in Delta State Polytechnic, Ogwashi-Uku.

A pilot test was conducted using the instrument with 10 OTM lecturers in Oko Polytechnic, Oko, Anambra State, who were not part of the study population. The obtained data underwent reliability analysis using the Cronbach Alpha method, resulting in coefficient values of 0.84 and 0.86 for clusters 1 and 2 respectively with an overall reliability co-efficient of 0.85. The questionnaire was administered to the respondents in their offices, allowing them sufficient time to complete it. The researchers retrieved the questionnaire

immediately in cases where respondents were willing to fill it on the spot. However, if a respondent was unavailable, an appointment was scheduled for the retrieval. This process lasted for two weeks. The data collected from the respondents were analyzed using mean and standard deviation. The mean values were used to answer the research questions, while the standard deviation was used to determine the level of homogeneity among the respondents' ratings. Any item with a mean score of 2.50 or higher was considered as high extent, while any item with a mean score below 2.50 was regarded low extent. For the hypothesis, t-test was used to test the null hypothesis at .05 level of significance. If the p-value is equal to or greater than the alpha value of 0.05, it means that there is no significant difference. The hypothesis was accepted. Consequently if the p-value is less than the alpha value of 0.05, it means that there is a significant difference, therefore the hypothesis is not accepted.

Results

Research Question One

To what extent is telecommunication technology utilized in OTM programme in polytechnics for sustainable development in Delta State?

Table 1: Respondents Mean Ratings on the Extent Telecommunication Technology is Utilized in OTM Programme in Polytechnics for Sustainable Development (N=25)

S/No.	Item Statement	Mean	SD	Remarks
1.	Using online video conferencing platforms like Zoom, Microsoft Teams, or Google Meet for virtual lectures.	2.33	.87	Low Extent
2.	Creating discussion boards on platforms like Slack or Reddit for students to engage in discussions and ask questions	2.22	.81	Low Extent
3.	Using interactive whiteboards for brain storming with students	2.04	.90	Low Extent
4.	Sharing instructional videos on platforms like YouTube or Vime	2.02	.84	Low Extent
5.	Hosting webinars for specialized training and guest lectures	2.16	.86	Low Extent
6.	Creating podcasts for easy access to audio content.	2.12	.76	Low Extent
7.	Using tools like Survey Monkey for collecting feedback.	2.11	.79	Low Extent
	Cluster Mean	2.14		Low Extent

Data in Table 1 reveal that the respondents rated items 1-7 to a low extent with mean ratings ranging between 2.02 to 2.33. The standard deviation scores ranging between .81 and .90 indicated that the respondents' opinions were close. The cluster mean of 2.14 indicated that telecommunication technology is utilized in OTM programme in polytechnics for sustainable development in Delta State to a low extent.

Research Question Two

To what extent is multimedia technology utilized in OTM programme in polytechnics for sustainable development in Delta State?

Table 2: Respondents Mean Ratings on the Extent Multimedia Technology is Utilized in OTM Programme in Polytechnics for Sustainable Development (N=25)

S/No.	Item Statement	Mean	SD	Remarks
8.	Use of projectors for presentation of projects	3.18	.83	High Extent
9.	Using smart phones for creating course contents on videos	2.44	.85	Low Extent
10.	Using documents camera to make soft copies of physical course materials that could be shared to students	2.27	.77	Low Extent
11.	Using simulation games to teach students office management skills	2.11	.86	Low Extent
12.	Using virtual reality and augmented reality to teach students practical skills	2.08	.80	Low Extent
13.	Creating course contents in e-book formats for students	2.20	.78	Low Extent
14.	Using desktop computers to carry out research materials	2.56	.72	High Extent
	Cluster Mean	2.41		Low Extent

Data in Table 2 reveal that the respondents rated items 8 and 14 to a high extent with mean ratings ranging between 3.18 and 2.56 respectively. However, they rated items 9, 10, 11, 12 and 13 to a low extent with mean ratings ranging between 2.08 to 2.44. The standard deviation scores ranging between .72 and .86 indicated that the respondents' opinions were close. The cluster mean of 2.41 indicated that multimedia technology is utilized in OTM programme in polytechnics for sustainable development in Delta State to a low extent.

Hypothesis One

There is no significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of telecommunication technology in OTM programme in polytechnics for sustainable development in Delta State.

Table 3: Summary of t-test Analysis of Mean Ratings of Experienced and Less Experienced Lecturers on the Extent of Utilization of Telecommunication Technology in OTM Programme in Polytechnics for Sustainable Development

Variable	N	$\bar{X}$	SD	df	α	p-value	Decision
Exp. OTM lecturers	17	2.07	.83	23	.05	.56	Not Significant
Less Exp. OTM lecturers	8	2.28	.87				

Data in Table 3 showed that the p-value of .56 is greater than .05 alpha level of significance. This means that there is no statistically significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of telecommunication technology in OTM programme in polytechnics for sustainable development in Delta State. The hypothesis was therefore accepted.

Hypothesis Two

There is no significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of multimedia technology in OTM programme in polytechnics for sustainable development in Delta State.

Table 4: Summary of t-test Analysis of Mean Ratings of Experienced and Less Experienced Lecturers on the Extent of Utilization of Multimedia Technology in OTM Programme in Polytechnics for Sustainable Development

Variable	N	$\bar{X}$	SD	df	α	p-value	Decision
Exp. OTM lecturers	17	2.38	.81	23	.05	.81	Not Significant
Less Exp. OTM lecturers	8	2.46	.85				

Data in Table 4 showed that the p-value of .82 is greater than .05 alpha level of significance. This means that there is no statistically significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of multimedia technology in OTM programme in polytechnics for sustainable development in Delta State. The hypothesis was therefore accepted.

Discussion

The findings of the study revealed that telecommunication technology is utilized in OTM programme in polytechnics for sustainable development in Delta State to a low extent. This finding may have resulted because of limited access to telecommunication technology among students and faculty. Another reason could be lack of skills on the use of telecommunication technology for teaching and learning. This finding is in agreement with Nnajofofor and Ejikeme (2020) who decried the failure of lecturers to use digital tools in the OTM programme. According to Abdullah et al. (2019), the failure of integrating digital technology in the OTM programme is reflected in the poor digital skills displayed by graduates of OTM which have made it difficult for them to effectively function in a modern day digital office. Furthermore, finding of the study revealed that there is no statistically significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of telecommunication technology in OTM programme in polytechnics for sustainable development in Delta State. This implies that both experienced and less experienced OTM lecturers use telecommunication technology in OTM programme in polytechnics for sustainable development to a low extent. This finding is in agreement with Adeoye et al. (2020) who noted that lecturers irrespective of their experiences utilized technology for learning to a low extent.

The findings of the study further revealed that multimedia technology is utilized in OTM programme in polytechnics for sustainable development in Delta State to a low extent. This finding might be due to various factors such as budget constraints, lack of awareness, or resistance to change. Furthermore, the extent of multimedia technology usage could be influenced by the availability and quality of technological infrastructure in Delta State polytechnics. The finding is in disagreement with Baba et al. (2022) who reported that lecturers utilized multimedia technology in OTM to a moderate extent. However, Nnajofofor and Ejikeme (2020) revealed that poor knowledge of educators on the use of multimedia technology in schools. This view is further buttressed by the finding of the study which revealed no statistically significant difference in the mean ratings of experienced and less experienced lecturers on the extent of utilization of multimedia technology in OTM programme in polytechnics for sustainable development in

Delta State. The finding of the study revealed that OTM lecturers irrespective of their years of experience utilized multimedia technology for sustainable development in Delta State to a low extent.

Conclusion

The researchers conclude based on the findings of the study that digital technology is utilized in OTM programme in polytechnics for sustainable development in Delta State to a low extent. The low extent of utilization of telecommunication and multimedia digital technologies in OTM programme suggests that there is a pressing need for advancement in this area. It is therefore imperative that measures are put in place to improve the utilization of digital technologies in OTM programme in polytechnics for sustainable development in Delta State.

Recommendations

The following recommendations are made based on the findings of the study:

1. Government at all levels should take committed measures towards providing telecommunication technologies for OTM programme.
2. Administrators of OTM programme should organize in-service training programmes to train and retrain OTM lecturers on the use of multimedia technologies in OTM programme.

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