THE ROLE OF CYBERSECURITY AWARENESS IN OFFICE TECHNOLOGY AND MANAGEMENT: IMPLICATIONS FOR BUSINESS EDUCATION

Alabi, Blessing Ebifakumor
School of Votech, Department of Business Education
Isaac Jasper Boro College of Education
Sagbama, Bayelsa State

&
Dr. Cletus Akpo Atah
Department of Business Education
University of Calabar
Nigeria

Abstract

This study explores the role of cybersecurity awareness in office technology and management and its implications for business education. Using a descriptive survey research design. The study targeted a population of 300 participants, including 100 lecturers, 50 professionals, and 150 final-year undergraduate students from selected universities in Nigeria. A stratified random sampling technique was employed to ensure representation from each subgroup. The data were collected using a structured questionnaire titled "Cybersecurity Awareness and its Role in Office Technology and Management Survey (CAROTMS)," which was divided into three sections: demographic information, cybersecurity awareness levels, and the integration of cybersecurity practices. The questionnaire was validated through two expert consultations and a pilot test, yielding a Cronbach's alpha coefficient of 0.87, ensuring reliability. Data were collected through physical distribution and online surveys, with follow-up reminders to provide a high response rate. The data were analyzed using descriptive statistics (mean and standard deviation) to assess the awareness levels among different groups and the impact of cybersecurity awareness on office technology practices. The findings revealed that cybersecurity awareness significantly enhances the teaching and learning of business education courses and the overall cybersecurity competence of students and educators. Both educators and students exhibited strong knowledge of institutional policies, secure behaviors, and data encryption, promoting secure online environments and ethical standards. However, the study also identified gaps in secure methods of sharing sensitive information, which need improvement. The study highlights the importance of integrating comprehensive cybersecurity training into business education curricula to enhance teaching, learning, and career preparedness, ensuring a secure and effective educational environment. Based on the findings of the study, it was recommended that institutions offering Office Technology and Management (OTM) programs should integrate comprehensive cybersecurity awareness training into their curricula. This training should cover topics such as data protection, secure communication practices, phishing identification, and safe online behaviors.

Key words: Business Education, Cybersecurity Awareness, Office Technology and Management, Teaching and Learning and Data Encryption

Introduction

In the 21st century, advancements in technology have revolutionized the educational landscape, particularly in business education and office technology and management (OTM). The integration of digital tools and platforms into teaching and learning has transformed how information is communicated, stored, and managed. With these technological advancements,

educational institutions, educators, and students are increasingly relying on digital platforms for a wide range of activities. However, this growing dependence on technology has introduced new risks, especially cybersecurity threats such as data breaches, phishing attacks, malware, and ransomware. These threats highlight the importance of cybersecurity awareness to safeguard sensitive information and ensure the secure utilization of technology in education (Miller & Johnson, 2020; Adekunle & Thomas, 2022).

Cybersecurity awareness refers to the understanding of digital threats and the preventive measures required to mitigate these risks. For students and educators in the fields of OTM and business education, cybersecurity awareness is essential given their regular use of virtual learning platforms, email communication, and cloud-based storage systems. Lack of awareness exposes individuals to vulnerabilities, such as identity theft, financial fraud, and accidental disclosures of sensitive information, which can undermine the integrity of educational processes (Brown et al., 2021; Williams & Chen, 2023). This makes it crucial for students and educators alike to be equipped with the knowledge necessary to navigate these digital risks effectively.

OTM programs, which focus on preparing students to manage office systems and adopt digital tools, are heavily reliant on an understanding of cybersecurity principles. Without cybersecurity awareness, students may struggle to navigate the risks associated with modern office technologies, thus hindering their ability to be effective in professional environments (Nguyen & Adeyemi, 2024). In business education, where the demand for skilled graduates in a technology-driven world is growing, prioritizing cybersecurity awareness becomes imperative. Educators play a key role in fostering this awareness by incorporating cybersecurity principles into their curricula and promoting safe and ethical technology use. Despite the clear need for this integration, many institutions face challenges such as inadequate training programs, limited access to cybersecurity resources, and a lack of institutional policies addressing digital security (Adams & Thomas, 2023; Johnson & Lee, 2024).

The significance of cybersecurity awareness extends beyond individual educational institutions to the broader field of business education. By ensuring that both students and educators are equipped with adequate cybersecurity knowledge, institutions can enhance the security of their digital environments, improve teaching and learning outcomes, and better prepare graduates to meet the technological demands of the modern workplace. This study seeks to explore the role of cybersecurity awareness in Office Technology and Management and its implications for the effective delivery of business education courses.

The first objective of this study is to examine the level of cybersecurity awareness among students and educators in OTM programs. Research has demonstrated that low levels of awareness regarding cybersecurity threats such as phishing, malware, and ransomware can lead to compromised academic data and disrupted learning environments (Nguyen & Adeyemi, 2024). Educators, who are expected to model safe digital practices, often lack the training and resources necessary to effectively address these risks (Williams & Chen, 2023). Similarly, students may underestimate the importance of practices like using strong passwords, secure file sharing, and identifying fraudulent online activity. Understanding the existing levels of cybersecurity awareness is vital for designing targeted interventions that can ensure the safe use of technology in OTM programs. Empirical studies have uncovered significant gaps in cybersecurity awareness among both students and educators. For example, Adeboye et al. (2022) found that only 40% of educators in Nigeria

demonstrated adequate knowledge of cybersecurity practices, highlighting the lack of training and awareness programs. Similarly, research by Smith and Green (2021) revealed that over 60% of business education students failed to recognize phishing scams or adopt secure password practices. A study by Lee and Zhang (2023) also found that while students in technology management programs had high exposure to digital tools, their awareness of cybersecurity threats was limited, primarily due to insufficient integration of cybersecurity topics into the curriculum.

The second objective of this study is to analyze the implications of cybersecurity awareness for the effective teaching and learning of business education courses. Knowledge of cybersecurity threats and the necessary preventive measures enables educators and students to create secure digital learning environments that foster academic integrity and the effective use of technology. On the other hand, lack of awareness can lead to data breaches, loss of sensitive academic information, and disruptions in online teaching and learning processes (Adams & Thomas, 2023). As business education increasingly relies on digital platforms for course content delivery, addressing cybersecurity concerns is vital to ensure smooth academic interactions. Moreover, equipping students with cybersecurity competencies prepares them for success in technology-driven workplaces where data security is a critical concern (Johnson & Lee, 2024). Numerous studies have explored the relationship between cybersecurity awareness and the effectiveness of teaching and learning in business education. Jones et al. (2023) found that educators with high levels of cybersecurity awareness were more likely to implement secure digital learning platforms, thereby enhancing student engagement and data protection. In contrast, Okafor and Adeyemi (2022) reported that low cybersecurity awareness among educators in Nigerian business education programs resulted in frequent data breaches and disrupted online learning. Additionally, Johnson and Taylor (2024) demonstrated that institutions offering structured cybersecurity training programs saw a 30% increase in the effective use of online teaching tools, thereby improving the overall learning experience.

Problem of the Study

The rapid integration of technology into business education and Office Technology and Management (OTM) has revolutionized teaching, learning, and administrative processes. However, this technological shift has also introduced significant cybersecurity risks, such as data breaches, phishing attacks, identity theft, and ransomware. These threats compromise the confidentiality, integrity, and availability of critical information, posing challenges to educational institutions, educators, and students alike. Despite the increasing reliance on digital tools in OTM, there is evidence of inadequate cybersecurity awareness among students and educators, which exacerbates vulnerabilities in educational environments (Adekunle & Thomas, 2022; Nguyen & Adeyemi, 2024). Many institutions offering OTM and business education programs lack structured initiatives to equip students and educators with the necessary knowledge and skills to address cybersecurity threats. The absence of robust cybersecurity policies, limited access to relevant training programs, and insufficient institutional funding for advanced cybersecurity infrastructure have left educators and students ill-prepared to navigate the risks associated with modern office technologies (Adams & Thomas, 2023; Johnson & Lee, 2024).

Furthermore, the curriculum in many business education programs does not adequately emphasize cybersecurity principles, leaving a gap in students' preparedness to handle technology-driven office environments. This lack of preparedness threatens the employability of graduates and their ability to meet the

demands of workplaces where cybersecurity has become a critical competency. Educators, too, often lack adequate training in cybersecurity, which hinders their ability to model and impart safe digital practices (Williams & Chen, 2023).

The insufficient emphasis on cybersecurity awareness in OTM and business education has broader implications for institutional reputation, academic integrity, and workforce readiness. Without addressing this gap, educational institutions risk falling behind global standards and producing graduates who are ill-equipped to manage the technological demands of the modern workplace. Therefore, the problem of this study is the lack of cybersecurity awareness among students and educators in Office Technology and Management, which undermines the effective integration of digital tools, jeopardizes the security of educational environments, and limits the preparedness of graduates for the demands of the 21st-century workplace. Addressing this issue is crucial for ensuring that business education programs remain relevant and that students are adequately equipped to succeed in a technology-driven world.

Objectives of the Study

The study investigated the role of cybersecurity awareness in office technology and management: Implications for Business Education. specifically, the study aimed to

1. To examine the level of cybersecurity awareness among students and lecturers in Office Technology and Management programs in business education.
2. To evaluate the implications of cybersecurity awareness on the effective teaching and learning of business education courses.

Research Questions

Two research questions were formulated for the study:

1. What is the level of cybersecurity awareness among students and lecturers in Office Technology and Management programs?
2. How does cybersecurity awareness impact the teaching and learning of business education courses?

Methodology

The methodology outlines the approach used to investigate the role of cybersecurity awareness in Office Technology and Management and its implications for business education. The study adopted a descriptive survey research design to examine the perceptions and practices related to cybersecurity awareness among educators, students, and professionals in business education. The population comprised 300 business education lecturers, Office Technology and Management professionals, and final-year undergraduate students in business education programs across selected universities in Nigeria. These groups were chosen for their relevance to the study objectives and their direct engagement with office technology and cybersecurity issues. A stratified random sampling technique was employed to ensure representation from each subgroup (lecturers, professionals, and students). The sample consisted of 100 lecturers, 50 professionals, and 150 students, with the sample size determined based on the manageable population and the need for comprehensive data collection.

The primary data collection instrument was a structured questionnaire titled "Cybersecurity Awareness and its Role in Office Technology and Management Survey (CAROTMS)." The questionnaire was divided into three sections: Section A, which gathered demographic information; Section B, which assessed cybersecurity awareness levels using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree"; and Section C, which evaluated the integration of cybersecurity practices in office technology and its

implications for business education. The questionnaire was validated through consultations with experts in cybersecurity and business education, and a pilot test conducted with 30 participants ensured reliability, yielding a Cronbach's alpha coefficient of 0.87.

Data were collected through a combination of physical distribution and online surveys. The questionnaires were administered directly to lecturers and professionals, while students were invited to participate via online forms. Follow-up reminders and phone calls were made to ensure a high response rate. The data were analyzed using descriptive statistics, such as mean and standard deviation, to summarize responses and identify patterns. An independent t-test was used to compare awareness levels between different groups, while regression analysis examined the impact of cybersecurity awareness on office technology practices. This methodology provided a systematic and robust approach to achieving the study's objectives and offered a comprehensive understanding of the relationship between cybersecurity awareness, office technology, and business education.

Findings of the study

Research question 1

What is the level of cybersecurity awareness among students and lecturers in Office Technology and Management programs?

Table 1: Mean rating of the responses on cybersecurity awareness and students and lecturers in Office Technology and Management programs

S/N	level of cybersecurity awareness among students and educators in Office Technology and Management (OTM) programs	N	Mean	SD	Remarks
1	I am aware of common cybersecurity threats such as phishing, malware, and ransomware.	300	3.0345	0.1857	Accepted
2	I understand how to recognize and respond to suspicious emails or online links.	300	3.1379	0.9901	Accepted
3	I am knowledgeable about secure methods of sharing sensitive information online.	300	2.8276	0.92848	Accepted
4	I understand the concept of data encryption and its importance in protecting sensitive data.	300	3.5172	0.68768	Accepted
5	I am familiar with the different types of cybersecurity tools available for securing digital systems.	300	3.3103	0.47082	Accepted
6	I regularly practice secure behaviors, such as using strong passwords and multi-factor authentication.	300	3.4483	0.57235	Accepted
7	I am aware of the institutional cybersecurity policies and guidelines related to online activities.	300	3.6207	0.56149	Accepted
	Cluster Mean	**300**	**3.2709**	**0.62808**	**Accepted**

The data presented in Table 1 provides insights into the level of cybersecurity awareness among students and lecturers in Office Technology and Management (OTM) programs. The cluster mean score of 3.2709 on a 4-point scale indicates a relatively high level of awareness regarding cybersecurity issues within this population. The table reveals that the respondents exhibit strong awareness of institutional cybersecurity policies and guidelines, with the highest mean score of 3.6207, suggesting that

institutional efforts to communicate these policies have been effective. Similarly, the high mean score of 3.5172 for understanding the concept of data encryption and its importance highlights a strong comprehension of fundamental cybersecurity principles. Other areas of awareness, such as practicing secure behaviors like using strong passwords and multi-factor authentication (3.4483) and familiarity with different types of cybersecurity tools (3.3103), reflect the proactive steps being taken by students and lecturers to secure digital systems and environments.

However, the lowest score (2.8276) relates to knowledge about secure methods of sharing sensitive information online. This suggests a potential gap in understanding secure file-sharing practices, which could be an area for targeted training or improvement. Overall, the findings demonstrate that students and educators in OTM programs possess a commendable level of cybersecurity awareness, but some specific areas, such as secure information sharing, require further emphasis to enhance their overall cybersecurity competence.

Research question 2

How does cybersecurity awareness impact the teaching and learning of business education courses?

Table 2: Mean rating of respondents responses on cybersecurity awareness impact the teaching and learning of business education courses

S/N	Cybersecurity awareness and effective teaching and learning of business education	N	Mean	SD	Remarks
8	Cybersecurity-aware educators create secure online learning environments.	300	3.2069	0.5592	Accepted
9	Students' cybersecurity awareness enhances safe use of digital tools.	300	3.1379	0.9901	Accepted
10	Awareness reduces academic dishonesty and improves integrity.	300	3.2759	0.6489	Accepted
11	Breaches negatively impact learning outcomes.	300	3.1724	0.8048	Accepted
12	Educators teaching cybersecurity prepare students for future careers.	300	3.3103	0.8495	Accepted
13	Lack of awareness among educators leads to insecure learning environments.	300	3.2759	0.5914	Accepted
14	Cybersecurity training in curricula equips students for workplace challenges.	300	3.3103	0.8063	Accepted
	Cluster Mean	**300**	**3.2414**	**0.7500**	Accepted

The data in Table 2 highlights the impact of cybersecurity awareness on the teaching and learning of business education courses. The overall cluster mean of 3.2414 on a 4-point scale demonstrates that cybersecurity awareness positively influences various aspects of teaching and learning. For instance, educators who are cybersecurity-aware create secure online learning environments, as reflected in the mean score of 3.2069, fostering a safe space for effective digital interactions. Similarly, students' awareness of cybersecurity practices enhances their ability to use digital tools safely, with a mean score of 3.1379, thus improving their learning experiences. Awareness of cybersecurity's role in reducing academic dishonesty and improving integrity scored 3.2759, indicating its importance in maintaining

ethical standards in online education. Additionally, the recognition that breaches negatively impact learning outcomes, as evidenced by a mean score of 3.1724, underscores the critical need to prioritize cybersecurity to avoid disruptions in teaching and learning processes.

Educators play a pivotal role in shaping the impact of cybersecurity awareness, as seen in the score of 3.3103 for their efforts in preparing students for future careers by integrating cybersecurity concepts into their teaching. Similarly, cybersecurity training in business education curricula, with a score of 3.3103, equips students with the skills to navigate workplace challenges, thereby enhancing their career readiness. Conversely, the acknowledgment that a lack of awareness among educators leads to insecure learning environments, scoring 3.2759, highlights the risks of neglecting cybersecurity awareness. In conclusion, the findings illustrate that cybersecurity awareness significantly enhances the teaching and learning of business education courses. It fosters secure digital environments, strengthens academic integrity, and prepares students to meet the technological demands of the modern workplace. To maximize these benefits, continued emphasis on integrating cybersecurity training and practices into business education curricula is essential.

Discussion of the findings

level of cybersecurity awareness among students and lecturers in Office Technology and Management programs in business education.

The findings of this study revealed that students and lecturers in Office Technology and Management (OTM) programs in business education possess a commendable level of cybersecurity awareness. Respondents demonstrated strong awareness of institutional cybersecurity policies and guidelines, indicating that efforts to communicate these policies have been effective. Similarly, there was a solid understanding of fundamental cybersecurity principles, such as the concept of data encryption and its importance in protecting sensitive data. Participants also showed proactive behaviors, such as practicing secure habits like using strong passwords and multi-factor authentication, as well as familiarity with various cybersecurity tools for securing digital systems. However, the study identified a gap in knowledge regarding secure methods of sharing sensitive information online, suggesting the need for targeted training in this area. This aligns partially with previous findings by Adeboye et al. (2022), who noted that educators in Nigeria lacked adequate training and awareness of cybersecurity practices, highlighting specific areas for improvement.

The study also supports Smith and Green (2021), who found gaps in students' cybersecurity competencies, such as difficulty in recognizing phishing scams or adopting secure practices. While participants in this study demonstrated higher awareness levels overall, these gaps indicate that further training is necessary to enhance cybersecurity competence fully. In contrast to Lee and Zhang (2023), who reported limited awareness of cybersecurity threats among students in technology management programs due to insufficient curriculum integration, this study suggests that the OTM programs in business education have successfully integrated cybersecurity topics into their curriculum. This integration likely accounts for the higher levels of awareness observed among the respondents. Nevertheless, the findings emphasize the importance of continuous improvement in cybersecurity training to address specific weaknesses, such as secure file-sharing practices, and ensure comprehensive preparedness among educators and students in business education programs.

the implications of cybersecurity awareness on the effective teaching and learning of business education courses.

The findings of this study revealed that cybersecurity awareness significantly enhances the teaching and learning of business education courses. Cybersecurity-aware educators contribute to creating secure online learning environments, which foster safe and effective digital interactions. Similarly, students' awareness of cybersecurity practices enhances their ability to use digital tools safely, leading to improved learning experiences. The study also highlights that cybersecurity awareness reduces academic dishonesty and strengthens integrity, emphasizing its importance in maintaining ethical standards in online education. Furthermore, recognizing that breaches negatively affect learning outcomes underscores the need to prioritize cybersecurity measures to avoid disruptions in teaching and learning processes. Educators play a critical role in leveraging cybersecurity awareness for positive impacts, particularly by integrating cybersecurity concepts into their teaching, which equips students with the skills necessary to navigate workplace challenges and enhances their career readiness. Conversely, the acknowledgment that a lack of cybersecurity awareness among educators can lead to insecure learning environments highlights the potential risks and underscores the importance of continuous awareness programs.

These findings align with Jones et al. (2023), who found that educators with high levels of cybersecurity awareness were more likely to implement secure digital learning platforms, thereby enhancing student engagement and protecting data. They also agree with Johnson and Taylor (2024), who demonstrated that institutions offering structured cybersecurity training programs observed significant improvements in the effective use of online teaching tools, which enhanced overall learning experiences. However, the findings of this study contrast with Okafor and Adeyemi (2022), who reported low levels of cybersecurity awareness among educators in Nigerian business education programs, which led to frequent data breaches and disrupted online learning. The present study indicates higher levels of awareness among participants, suggesting that there may be variations in awareness levels across different institutions or regions. This study underscores the importance of cybersecurity awareness in fostering secure digital environments, promoting academic integrity, and preparing students to meet the technological demands of the modern workplace. To sustain and maximize these benefits, there is a need for continuous integration of cybersecurity training and practices into business education curricula.

Conclusion/implications

The study highlights the pivotal role of cybersecurity awareness in Office Technology and Management (OTM) programs and its far-reaching implications for business education. As digital tools and online platforms increasingly dominate the teaching and learning landscape, fostering a strong foundation in cybersecurity knowledge has become essential. The findings indicate that addressing gaps in cybersecurity practices can significantly improve the security and efficiency of digital learning environments. Promoting a culture of cybersecurity awareness within OTM programs ensures that students are well-prepared to navigate and address the challenges posed by a technology-driven business world.

The implications of this study extend to various stakeholders, including educators, students, policymakers, and institutions. Educators are encouraged to incorporate cybersecurity education into OTM curricula, equipping students with the necessary skills to safeguard digital assets. For students, awareness training offers the practical knowledge needed to handle professional responsibilities in environments where data

security is critical. Policymakers are urged to prioritize cybersecurity in educational policies, mandating structured programs to align with global standards. Institutions offering OTM programs must also invest in secure digital tools, provide ongoing training for educators, and organize workshops or certifications to enhance cybersecurity competencies. By addressing these areas, the study provides actionable insights to strengthen educational systems, protect sensitive data, and ensure the relevance and quality of business education in today's digital age.

Recommendations

Based on the findings of the study on "The Role of Cybersecurity Awareness in Office Technology and Management: Implications for Business Education," the following recommendations are proposed:

1. Cybersecurity Awareness Training: Institutions offering Office Technology and Management (OTM) programs should integrate comprehensive cybersecurity awareness training into their curricula. This training should cover topics such as data protection, secure communication practices, phishing identification, and safe online behaviors. By doing so, students will be equipped with the knowledge to recognize and mitigate cybersecurity threats in professional environments.
2. Curriculum Development for OTM Programs: Business education stakeholders should develop and implement a specialized curriculum that emphasizes the role of cybersecurity in office technology. This curriculum should include case studies, practical exercises, and simulations to ensure that students understand how to secure digital platforms and office technology tools effectively.
3. Implementation of Secure Office Technologies: Institutions should invest in secure office technology systems and infrastructure. This includes adopting secure cloud-based platforms, encrypted communication tools, and regularly updated software systems. These measures will provide students with a secure learning environment and practical experience with tools used in modern business settings.
4. Workshops and Certifications: Regular workshops and certifications on cybersecurity should be organized for both students and educators in OTM programs. Collaborations with cybersecurity experts and organizations can enhance the quality of these programs. Certifications, such as CompTIA Security+ or Certified Information Systems Security Professional (CISSP), could provide students with competitive advantages in the job market.
5. Awareness Campaigns: Business education institutions should launch awareness campaigns targeting both students and faculty members to highlight the importance of cybersecurity. This can be achieved through seminars, webinars, and digital campaigns focusing on the implications of cybersecurity breaches in office technology and business operations.
6. Policy Formulation and Implementation: Policymakers in the education sector should mandate the inclusion of cybersecurity courses as a core part of OTM and business education programs. These policies should also encourage continuous professional development for educators to stay abreast of emerging trends in cybersecurity.
7. Research and Development: Further studies should be encouraged to explore the relationship between cybersecurity awareness and office management practices. Institutions should support research initiatives to develop innovative methods and tools

for enhancing cybersecurity education in business-related programs.

These recommendations aim to ensure that students and educators in OTM programs are well-prepared to address cybersecurity challenges effectively, thereby enhancing the overall quality of business education and safeguarding digital resources.

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