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PERCEIVED IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON COMPETENCIES OF BUSINESS EDUCATORS IN COLLEGES OF EDUCATION IN DELTA STATE

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ABSTRACT

*This study investigated the perceived impact of Information and Communication Technology (ICT) on the competencies of business educators in Colleges of Education in Delta State. A survey research design was employed for data collection and analysis. Five research questions and five null hypotheses were formulated and guided the study. The population for the study was 104 business educators from three colleges of education in Delta State. The instrument for data collection was a structured questionnaire designed by the researcher. The instrument was validated by three experts and reliability was determined using Cronbach Alpha Reliability test which yielded coefficient of 0.86. The data collected were analysed using mean and standard deviation. t test was used to test the null hypotheses at 0.05 level of significance. The findings of the study revealed that business educators perceived ICT as having a significant impact on their competencies, particularly in areas such as online collaboration, classroom management, and assessment. However, the study also identified some challenges faced by business educators in integrating ICT into their teaching practices, including inadequate infrastructure, lack of technical support, and insufficient training. This study's findings have implications for policymakers, educators, and researchers interested in enhancing the competencies of business educators in colleges of education. The study recommended the provision of ICT training programs, ICT infrastructural development, and technical support for business educators in colleges of education in Delta state to enhance their competencies in integrating ICT into their teaching practices.***

Keywords: Information, Communication, Technology, Competencies, Business Educators

Introduction

Educators and other concerned individuals have consistently emphasized that education is the most valuable gift a nation can offer its citizens. Investing in education is, therefore, one of the most strategic decisions a country can make. Consequently, it is important not to overlook the shortcomings in our educational system. A sound educational framework, supported by adequate Information and Communication Technology (ICT) infrastructure, significantly enhances the learning process. Studies have indicated that tools such as computers, internet access, projectors, laptops, Wi-Fi, broadband, telecommunication devices, digital boards, and well-equipped ICT centres are essential for effective instructional

delivery by business educators in colleges of education. According to Ogah (2018), variables such as the socio-economic background of educators are key factors influencing teaching effectiveness in these institutions. Business education, as a branch of vocational education, is similarly impacted.

Business education is designed to provide learners with relevant skills, knowledge, attitudes, and values that prepare them to function effectively in their environments. It involves formal education, training, and retraining that aims to make individuals productive, whether in formal employment or through self-employment (Nwosu & Ezinwa, 2018). Offered in colleges of education and other higher institutions, business education prepares students for careers in areas like accounting, office technology, entrepreneurship, and marketing. This programme imparts diverse competencies across these areas. Olayinka and Suleiman (2021) views business education as a field focused on subjects such as accounting, business mathematics, word processing, entrepreneurship, marketing, and office practices (Edokpolor & Owenvbiugie, 2019). Business education contributes significantly to Nigeria's economic development and human capital growth by enhancing individual capabilities, promoting ethical behaviour, and encouraging economic independence, thereby fostering societal progress. It also equips learners with the necessary skills for both office employment and entrepreneurship (Nwalado, 2020). Its core goals include preparing students for specific office roles, developing entrepreneurial skills, and offering comprehensive business knowledge, including ICT literacy.

A business educator is an individual responsible for systematically guiding the teaching and learning activities within the business education programme, with the goal of helping students reach their learning objectives. These educators teach the principles, theories, and practical applications of business. As defined by Oluseyi et al. (2020), business educators impart essential knowledge for acquiring business-related skills. They are trained professionals equipped to teach the required competencies effectively, which are clearly outlined in the business education curriculum for colleges of education. These competencies include accounting, office technology, marketing, and entrepreneurship.

Competencies refer to the fundamental qualities or capabilities that enable an individual to perform effectively in a given role. They encompass a blend of skills, knowledge, and personal attributes that contribute to high performance. In the context of business education, competencies represent the comprehensive learning outcomes achieved in areas such as accounting, office technology, entrepreneurship, and marketing. Unlike the traditional focus on theoretical knowledge, competencies emphasize the practical ability to perform tasks effectively. For business educators, competencies include the full range of skills and knowledge required to deliver successful instruction.

Business education competencies are heavily dependent on the use ICT; hence, it is crucial for business educators to acquire adequate ICT skills to effectively apply them in their teaching. For instance, competencies in accounting education which include essential subjects such as financial accounting, cost accounting, advanced financial accounting, taxation, auditing, business communication, principles of management, and public sector economics require the integration of ICT tools in instructional delivery. These tools are used to train students on various hardware and software applications for recording business transactions, preparing financial statements such as income statements and balance sheets, and communicating financial information to relevant stakeholders (Oluseyi et al., 2020). However, many Business Educators in Colleges of Education are

yet to integrate ICT into their teaching methods. This has led to the production of graduates with limited ICT skills which negatively affects their performance in the job market.

ICT encompasses a broad range of tools and systems designed to meet the information and communication needs of organizations. It includes hardware, software, networks, and multimedia tools (e.g., video, audio, and photography equipment) that digitize text, images, sound, and motion. ICT enhances the processes of creating, managing, transmitting, storing, and accessing information, thereby facilitating seamless communication between individuals and systems (Vannili, 2018).

The role of ICT in building the competencies of business educators is highly significant. It has transformed the teaching of modern accounting by enabling the use of spreadsheets and specialized software to prepare financial documents such as income and expenditure statements and balance sheets. These documents can be stored, updated, and shared digitally. ICT also supports the management of fixed assets through digital inventories and streamlines accounting operations using software like Peachtree. Furthermore, ICT tools including computers, internet services, projectors, laptops, broadband, digital boards, and ICT centres enhance teaching efficiency and academic performance in colleges of education. ICT has also revolutionized office administration and secretarial functions, introducing tools such as word processors and office automation software that improve document speed, accuracy, and presentation. Database systems have simplified filing and retrieval of documents. In marketing, ICT supports online sales, customer relations, advertising, and global outreach. In entrepreneurship, ICT provides vital information for managing operations and improving productivity. Entrepreneurs benefit from acquiring digital skills such as spreadsheet use, database management, presentation tools, email communication, and video conferencing. Platforms like YouTube and Facebook also serve as avenues for continuous learning and skills enhancement. This study focused on hardware and software ICT components.

ICT hardware refers to the physical components that can be seen and touched, such as desktop computers, laptops, network switches, routers, Wi-Fi, Bluetooth, data banks, broadband, radios, telephones, televisions, projectors, and presenters.

Software, on the other hand, includes the programs that control hardware functions. It is divided into system software which serves as an interface between users and hardware and application software, which performs specific tasks. Examples include Microsoft Office, CorelDraw, AutoCAD, Peachtree Accounting, and web browsers. Operating systems such as Symbian, BlackBerry OS, Android, iOS, Windows, and Linux run various devices, while applications like Google, Facebook, YouTube, Telegram, Google Classroom, and Internet Explorer serve various communication and educational purposes. Together, these hardware and software elements constitute the ICT ecosystem, which plays a vital role in modern education and business training. For business educators in Delta State, mastering these technologies is essential to align with current professional demands and enhance teaching effectiveness. This study, therefore, aims to determine the perceived impact of ICT on the competencies of business educators in colleges of education in Delta State, with particular emphasis on the hardware and software components of ICT.

Statement of Problem

The business education programme in colleges of education is primarily designed to produce competent and qualified educators who can impart business knowledge and skills to

secondary school students. With the advent of business education in these institutions came the integration of various information and communication technology (ICT) tools such as computers, telecommunications, the internet, online collaboration platforms, e-libraries, and digital boards in teaching and learning environments. However, the influence of ICT on the professional competencies of business educators has continued to raise concerns.

Technological advancements in ICT occur rapidly, and their proper application can significantly enhance the effectiveness and efficiency of teaching. When business educators integrate ICT with their subject-specific competencies, they tend to be more impactful in their instructional delivery. As such, business educators are expected to be proficient in using hardware, software, networking systems, data processing tools, and telecommunication technologies, applying them appropriately in the classroom.

Despite this expectation, the influence of ICT on the instructional competencies of business educators in colleges of education within Delta State appears limited. Several challenges hinder the effective adoption of ICT, including insufficient or outdated ICT hardware and software, poor and unreliable internet access, limited training and support for ICT skill development, reluctance among some educators to embrace technological change, frequent power outages, and cultural or societal resistance to ICT usage.

These challenges necessitate this study, which seeks to examine the perceived impact of ICT on the competencies of business educators in colleges of education in Delta State.

Purpose of the Study

The main purpose of the study was to identify the perceived impact of information and communication technology on competencies of business educators in colleges of education in Delta state. Specifically, the study sought to:

1. ascertain the perceived impact of hardware on competencies of business educators in colleges of education in Delta state
2. find the perceived impact of software on competencies of business educators in colleges of education in Delta state

Research Questions

The study was guided by the following research questions: -

1. What are the perceived impacts of hardware on the Competencies of business educators in colleges of education in Delta state?
2. What are the perceived impacts of software on the Competencies of business educators in colleges of education in Delta state?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance: -

1. There is no significant difference in the mean ratings of male and female business educators on the perceived impact of hardware on their competencies in colleges of education in Delta state.
2. There is no significant difference in the mean rating of male and female business educators on the perceived impact of software on their competencies in colleges of education in Delta state.

Methods

This study employed a survey research design aimed at examining the perceived impact of Information and Communication Technology (ICT) on the competencies of business educators in Colleges of Education located in Delta State. The choice of survey design was deemed appropriate because it allowed the researchers to collect opinions from business educators using a structured questionnaire.

The study was conducted within Delta State, focusing on a target population of 104 business educators (comprising 48 males and 56 females) drawn from the three Colleges of Education in the state: Federal College of Education (Technical), Asaba, Delta State College of Physical and Health Education, Mosogar and Delta State College of Education, Warri. Given the manageable size of the population, the entire population was used as the sample, thereby adopting a census sampling technique.

The main data collection tool was a researcher-designed questionnaire structured to assess the perceived impact of ICT on the professional competencies of business educators in the state. The questionnaire was divided into three sections: Section A collected demographic information of respondents; Section B, made up of 20 items grouped into two clusters (B1 and B2), focused on the hardware and software components of ICT. Responses were rated on a 4-point Likert scale: Strongly Agree (SA) – 4, Agree (A) – 3, Disagree (D) – 2 and Strongly Disagree (SD) – 1. Section C consisted of 10 items specifically addressing ICT competencies of business educators and was also rated using the same 4-point scale.

To ensure the validity of the instrument, it underwent face and content validation by three academic experts: two from the Department of Vocational Education and one from Measurement and Evaluation, Department of Educational Foundations, all from Chukwuemeka Odumegwu Ojukwu University, Igbariam. Their suggestions were incorporated into the final version of the instrument.

A pilot study was conducted using 20 business educators from Federal College of Education (Technical), Umunze and Nwafor Orizu College of Education, Nsugbe, both located in Anambra State, to determine the reliability of the instrument. Using Cronbach's Alpha, the reliability coefficients obtained were: Cluster B1: 0.79, Cluster B2: 0.89, and 0.84 overall coefficient for Section B: while Section C was 0.86 coefficient. These values indicate a high level of internal consistency.

The questionnaires were personally administered by the researcher and three trained assistants during official working hours. All 104 copies were retrieved successfully, resulting in a 100% response rate.

For data analysis, mean and standard deviation were used to analyse the research questions. The Likert scale responses were interpreted such that a mean score of 2.50 or above indicated agreement, while a score below 2.50 denoted disagreement. To test the hypotheses, t-tests were conducted at a 0.05 level of significance. A hypothesis was rejected if the p-value was less than 0.05 and accepted if the p-value was equal or greater than 0.05. All statistical analyses were performed using SPSS software.

Results

The data obtained from the study by the researchers were presented below: -

Analysis of Research Questions:

Research Question One:

What are the perceived impacts of hardware on the Competencies of business educators in colleges of education in Delta state?

Table 1: Mean and Standard Deviation Response Ratings on Perceived Impact of Hardware on the Competencies of Business Educators in Colleges of Education in Delta State; N=104

S/N	STATEMENT	*Mean*	SD	Decision
1	Hardware provides access to specialised software applications that business educators can use to enhance their teaching activities	3.42	0.50	Agree
2	It enables business educators to deliver engaging presentation lecture	3.28	0.65	Agree
3	Hardware like computer enhances business educators' research activities	3.40	0.65	Agree
4	Hardware tools enable business educators to take students on virtual field trips.	3.17	0.65	Agree
5	It provides access to online resources which enable business educators to stay updated on best practices	3.28	0.53	Agree
6	Video hardware conferencing equipment enable business educators to collaborate with experts in education industry	3.19	0.56	Agree
7	ICT hardware enhance digital content creation.	3.31	0.61	Agree
8	ICT hardware enhance effective classroom management	3.21	0.50	Agree
9	ICT hardware enhance data storage	3.36	0.61	Agree
10	ICT hardware enhance multitasking.	3.18	0.46	Agree
Grand Mean		**3.28**	**0.57**	**Agree**

Table 1 presents business educators' responses on how hardware influences their professional competencies. Ten items explored various aspects of hardware usage, including access to specialized applications (Mean = 3.42), enhancement of research efforts (Mean = 3.40), and improved classroom management (Mean = 3.21), all of which received high ratings. Other aspects like delivering engaging presentations (Mean = 3.28) and conducting virtual field trips (Mean = 3.17) were also rated positively, though slightly lower than others.

The overall mean score was 3.28 with a standard deviation of 0.57, suggesting strong agreement among respondents about the importance of hardware. The relatively low standard deviations (ranging from 0.46 to 0.65) indicate consistency in responses. These findings show that hardware is broadly perceived as a vital tool in improving teaching effectiveness and supporting the professional growth of business educators.

Research Question Two: What are the perceived impacts of software on the Competencies of business educators in colleges of education in Delta state?

Table 2: Mean and Standard Deviation Response Ratings on Perceived Impact of Software on the Competencies of Business Educators in Colleges of Education in Delta State; N=104

S/N	STATEMENT	*Mean*	*SD*	Decision
11	Software enhances teaching of business education courses	3.45	0.57	Agree
12	Software enhances data analysis.	3.17	0.53	Agree
13	Software enhances course management	3.12	0.49	Agree
14	Software enhances content creation	3.25	0.50	Agree
15	Software enhance collaboration among business educators	3.21	0.41	Agree

16	Software like databases provide access to relevant up-to-date resources	3.20	0.40	Agree
17	Software enhances assessment of students by business education teachers.	3.35	0.48	Agree
18	Software enhances online teaching of business education courses	3.23	0.64	Agree
19	Software enhances teaching methodology.	3.28	0.74	Agree
20	Software enhances content development.	3.15	0.66	Agree
Grand Mean		**3.24**	**0.54**	**Agree**

Table 2 highlights how business educators perceive the influence of software on their competencies. The ten items covered key aspects such as improving teaching quality (Mean = 3.45), aiding in student assessment (Mean = 3.35), facilitating collaboration (Mean = 3.21), and enhancing access to current resources (Mean = 3.20).

Some features, like course management (Mean = 3.12) and content development (Mean = 3.15), received comparatively lower ratings, suggesting they might be less effectively implemented or supported. Standard deviations ranged from 0.40 to 0.74, reflecting a relatively high level of consensus among respondents. With a grand mean of 3.24 and a standard deviation of 0.54, the results indicate that business educators generally perceive software as moderately beneficial in enhancing their professional competencies.

Test of Hypotheses

Hypothesis One: There is no significant difference in the mean ratings of male and female business educators on the perceived impact of hardware on their competencies in colleges of education in Delta state.

Table 3: Independent Sample t-test of Significant Difference in the Mean Ratings of Male and Female Business Educators on the Perceived Impact of Hardware on Their Competencies in Colleges of Education in Delta State

Group	N	Mean	Std. Dev.	Mean Difference	95% CI Lower	95% CI Upper	t-cal.	df	p-value	Alpha Level	Decision
Male	48	33.85	5.04								
				1.94	0.026	3.861	2.010	102	0.047	0.05	Sig.
Female	56	31.91	4.81								

Table 3 reports the findings from an independent samples t-test assessing gender-based differences in perceptions of hardware impact. Male business educators (n = 48) had a higher mean score (M = 33.85, SD = 5.04) compared to their female counterparts (n = 56, M = 31.91, SD = 4.81). The mean difference was 1.94, with a 95% confidence interval ranging from 0.026 to 3.861. The t-test yielded a t-value of 2.010 with 102 degrees of freedom and a p-value of 0.047. Since the p-value is below the alpha level of 0.05 and the confidence interval does not include zero, the result is statistically significant. This suggests that male educators perceive a greater impact of hardware on their competencies than female educators, thereby rejecting the null hypothesis.

Hypothesis Two: There is no significant difference in the mean rating of male and female business educators on the perceived impact of software on their competencies in colleges of education in Delta state.

Table 4: Independent Sample t-test of Significant Difference in the Mean Ratings of Male and Female Business Educators on the Perceived Impact of Software on Their Competencies in Colleges of Education in Delta State

Group	N	Mean	Std. Dev.	Mean Difference	95% CI Lower	95% CI Upper	t-cal.	df	p-value	Alpha Level	Decision
Male	48	32.65	5.05								
				0.635	-1.367	2.230	0.476	102	0.635	0.05	Not Sig.
Female	56	32.21	4.19								

Table 4 displays the results of an independent samples t-test conducted to determine whether there is a statistically significant difference in the mean ratings of male and female business educators regarding the perceived influence of software on their competencies in Colleges of Education in Delta State. The table compares the responses of male (n = 48, Mean = 32.65, SD = 5.05) and female (n = 56, Mean = 32.21, SD = 4.19) educators. The observed mean difference is 0.635, with a 95% confidence interval ranging from -1.367 to 2.230. The test yielded a t-value of 0.476 with 102 degrees of freedom and a p-value of 0.635. Since the confidence interval includes zero and the p-value exceeds the 0.05 significance level, the difference in mean ratings between the two groups is not statistically significant. This indicates that both male and female educators similarly perceive the impact of software on their competencies, suggesting a shared recognition of software's role in professional development.

Discussion of the Findings

The findings suggest that business educators in Delta State's Colleges of Education widely acknowledge the positive influence of hardware on their teaching competencies. The availability of hardware tools like laptops, projectors, and interactive whiteboards enables educators to access specialized software that improves lesson delivery. These tools support the creation of multimedia presentations, facilitate data analysis for informed teaching, and allow for engaging content delivery, ultimately enhancing student learning outcomes. These observations align with Margaret (2023), who emphasized that ICT comprises various hardware and software components that work together to support the origination, transmission, acquisition, and storage of information through electronic communication infrastructure. Furthermore, the study revealed that software significantly contributes to improving business educators' competencies. Participants agreed that software applications such as Microsoft Office and Google Suite aid in the delivery of interactive lessons, efficient course management, collaboration with peers, and access to current resources. These tools not only improve instructional effectiveness but also empower educators to stay updated in their field. This finding supports Vannili (2018), who stated that software consists of programmed instructions installed on hardware, enabling it to carry out specific functions.

Conclusion

In summary, the study has underscored the vital role of ICT in enhancing the competencies of business educators in Colleges of Education across Delta State. It demonstrated that ICT supports pedagogical, content, and technical skill development, thereby improving instructional design and delivery. Despite its benefits, challenges such as limited training, inadequate infrastructure, poor power supply, and cultural resistance were identified. These findings are consistent with previous research, including UNESCO (2020), which emphasized the importance of ICT in teacher education and competency development. The study's recommendations on training, curriculum integration, infrastructure investment, and institutional support align with existing literature on ICT in education.

Recommendations

Based on the study's findings, the following recommendations are proposed:

1. Regular ICT Training: Continuous professional development programmes should be organized to enhance business educators' proficiency in using ICT tools for instruction. These trainings should emphasize the integration of Technological Pedagogical Content Knowledge (TPACK).
2. Curriculum Integration: ICT should be fully embedded into the business education curriculum to prepare educators to teach digital skills effectively. This integration should focus on building comprehensive ICT competencies among educators.

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