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Digitalization of Future Business Education NCE Minimum Standard Curriculum: Challenges, Opportunities and Trends

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Highlights:

Emphasis on the digitalization of the future NCE Minimum Standards Curriculum for Business Education in Nigeria

Highlights major challenges include inadequate digital infrastructure, limited funding, poor internet connectivity, and insufficient digital competencies.

Essentials for preparing graduates for the digital economy include continuous curriculum review, investment in digital infrastructure, and capacity building

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Abstract: The rapid advancement of digital technologies has transformed the global educational landscape, necessitating a shift from traditional teaching approaches to digitally driven learning environments. This paper examines the digitalization of the future Business Education Nigeria Certificate in Education (NCE) Minimum Standard Curriculum in Nigeria, with particular emphasis on the challenges, opportunities, and emerging trends associated with its implementation. The study highlights the need for Business Education teachers and students to acquire contemporary digital competencies that are relevant to the demands of the twenty-first-century workplace. Digitalization provides opportunities for enhanced teaching and learning through the integration of information and communication technologies, online learning platforms, artificial intelligence, cloud computing, data analytics, virtual collaboration tools, and digital entrepreneurship skills. These innovations have the potential to improve curriculum delivery, promote lifelong learning, and prepare graduates for self-employment and global competitiveness. However, the implementation of a digitalized curriculum is constrained by challenges such as inadequate digital infrastructure, limited access to technological devices, poor internet connectivity, insufficient funding, and inadequate digital skills among educators and learners. The paper further identifies emerging trends including blended learning, virtual classrooms, mobile learning, artificial intelligence-assisted instruction, and industry-driven digital skill development. It concludes that the future relevance and sustainability of Business Education in Nigeria depend largely on the successful integration of digital technologies into the NCE Minimum Standard Curriculum. Therefore, stakeholders should prioritize investment in digital infrastructure, capacity building, and continuous curriculum review to ensure that graduates acquire the competencies required for success in the evolving digital economy.

Keywords: Digitalization, Business Education, NCE Minimum Standard Curriculum, Digital Skills, Information and Communication Technology (ICT).

Introduction

The ability to use various digital technologies or applications and the knowledge of various networks to manage and access information is referred to as digital skill. Digitalization of Business education (BED) curriculum is all forms of electronic supported learning and teaching which are procedural in character. They aim at affecting the construction of knowledge with reference to individual experience, practice and knowledge of the learner. It enables people to create and share digital content, communicate and collaborate, and solve problems for effective and creative self-fulfillment in life, learning, work, and social activities. A typical example of this multidimensional concept is the Information and Communication Technology, which has created new global networks, dismantling national boundaries and barriers, thereby generating a global village where one can access information from any part of the

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universe within seconds (Olaniyi, 2015).The COVID-19 lockdown measures have made digital skills more relevant.

The use of digital technologies has substantially increased, largely because many people worked and learnt from home, and manage health, social life, and household chores (for example, shopping) in a digital environment. The 21st century is experiencing a communications revolution, and digital business education is changing the way teachers and students receive and use messages (Stephen & Carlson, 2015).

According to the National Commission for Colleges of Education Minimum Standard (NCCE, 2012) the philosophy for Business Education in Nigeria is to make the business educators understand the concept and philosophy of National Policy on Education as regards business education subjects in secondary and other related educational institutions. The objectives of business education include the following

1. To produce Nigeria Certificate in Education (NCE) teachers who will be able to inculcate the vocational aspects of business education into the society.
2. To equip graduates with the skills that will enable them engage in life of work in the office as well as for self-employment (NCCE, 2012).

In spite of all these laudable philosophical objectives for business education NCE Programmes in Nigeria, the curriculum contents and mode of teaching the courses still remained analog in the 21st century. The mode of teaching business education courses is by lectures, case studies, practical, excursions and other appropriate methods. These teaching methods among other are not digitalized and the students' failure rate is very high. Nseabasi, Essien, Samuel, Udo, and Ainyang (2023) observed that majority of the business studies teachers have the knowledge of theoretical aspect of computer skills but lack the practical aspect. While changes in the traditional roles of teaching and learning, consumers and companies have created the need for material that can both shape and contribute to the emerging and evolving digital landscapes, these same changes have created innovative teaching and learning opportunities in our classrooms. Digital in business education is a fact-moving phenomenon, and business educators must stay abreast of the times. Not only are the tools changing constantly, the issues related to the tools are also expanding rapidly.

During the teaching and learning period, the practical aspect becomes "passive or do it yourself". This is partly due to lack of retraining of the business studies teachers on practical computer applications and the absence of retraining appears to be the most daunting challenge facing the business studies teachers' effective instructional delivery. In the course of the above challenge, the students do not do well even in the public examination such as Junior Basic Education Certificate Examination (BECE). In a bid to fill this gap, a digitalization of NCCE minimum standard for the capacity building needs of business studies students for teaching and learning computer skills in colleges becomes imperative. So, a strong advocacy and well thought out dissemination strategies should be employed to pressure decision-makers to make the right policies and enforce business education digitalization programme a reality in Nigeria.

Eshemogie and Owie (2023) stated that poor implementation of the Business Education curriculum is corruption and embezzlement among officials responsible for managing and disbursing educational funds, which often results in inadequate resources for effective programme delivery. Based on the intrinsic value of instructional media in teaching and learning process generally in Business education, the old instructional media available for teachers are as follows: printed media, instructional board, chart, real objects, pictures, models,

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mock-ups, radio, flash cards, posters, drawing, chalk, erasing board marker, cut-out/templates (Eze, 2014).

Benefits of Digitalization of Business Education Curriculum

Digitalization of the Business Education curriculum offers numerous benefits to students, teachers, institutions, and society. The integration of digital technologies into teaching and learning processes enhances access to education, promotes flexibility, and equips learners with competencies required in the contemporary workplace. The major benefits include:

1. Courses are Accessible on One's Schedule

Digitalization enables learners to access course materials, recorded lectures, assignments, and assessments at their convenience. Students can study at times that suit their personal, academic, or professional commitments. This flexibility enhances learning opportunities for individuals who may be unable to participate in conventional classroom settings due to work or family responsibilities. According to Graham (2021), digital learning platforms increase educational accessibility by allowing learners to engage with instructional content at their preferred time.

2. Online Learning does not Require Physical Attendance

One of the most significant advantages of digitalization is that students can participate in learning activities remotely without being physically present in a classroom. This reduces transportation costs, accommodation expenses, and geographical barriers. Digital technologies facilitate virtual classrooms, video conferencing, and online collaboration, making education available to learners regardless of location (Bozkurt et al., 2022).

3. Learning is Self-Paced

Digitalized learning environments allow students to progress through course materials according to their individual learning abilities and needs. Fast learners can move ahead quickly, while slower learners can spend more time reviewing difficult concepts. This individualized approach enhances understanding, retention, and academic performance (Ally, 2020).

4. Learning is Unbound by Time

Digital education provides continuous access to learning resources twenty-four hours a day and seven days a week. Students can access notes, videos, assignments, and other instructional materials whenever they need them. This uninterrupted access promotes lifelong learning and encourages independent study habits (Bond et al., 2021).

5. Learning is Unbound by Place

Digitalization allows learners to study from virtually any location, including homes, workplaces, libraries, and other environments with internet connectivity. This flexibility is particularly beneficial for distance learners and individuals in remote areas where access to educational institutions may be limited (UNESCO, 2023).

6. Wide Range of Programmes and Courses

Digital platforms offer learners access to diverse educational programmes, including degree programmes, professional certifications, vocational training, and short courses. Students can select courses that align with their interests, career goals, and skill development needs. This variety increases opportunities for career advancement and lifelong learning (OECD, 2022).

7. Availability of Different Pricing Options

Digital education often provides more affordable learning opportunities than traditional classroom-based instruction.

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Many institutions offer free, low-cost, or subscription-based courses, enabling learners from different socioeconomic backgrounds to access quality education. The reduced cost of transportation, accommodation, and printed materials further enhances affordability (World Bank, 2022).

8. Student-Centered Learning

Digitalization promotes learner-centered education by shifting the focus from teacher-directed instruction to active student participation. Learners can interact with digital content, engage in collaborative activities, access personalized feedback, and take greater responsibility for their learning process. This approach enhances motivation, engagement, and academic achievement (Means & Neisler, 2021).

9. Enhancement of Life and Employability Skills

Digitalized Business Education curricula contribute significantly to the development of essential life and employability skills. These include decision-making, problem-solving, critical thinking, creative thinking, effective communication, interpersonal relationships, self-awareness, empathy, emotional intelligence, and stress management. Such competencies are highly valued in modern workplaces and entrepreneurial ventures. The World Health Organization originally identified these as key life skills, while recent studies emphasize their importance in digital learning environments and future workforce preparedness (WHO, 1997; UNESCO, 2023). Students in contemporary educational settings increasingly prefer learning through technological tools and digital platforms. McCabe and Meuter (2011) observed that while students commonly accessed faculty members through traditional digital technologies such as websites and e-mail, faculty members preferred interacting with students through course management systems that facilitated communication, assignment submission, and learning activities.

Major Challenges in the Digitalization of Business Education Curriculum

In Nigeria, the digitalization of the Business Education curriculum is constrained by several factors, including poverty, insecurity, and inadequate electricity supply, the high cost of smartphones and computers, and expensive internet data services. These challenges limit students' and teachers' access to digital learning resources and technologies (Ogunode & Adah, 2022; UNESCO, 2023). Other obstacles include poor funding of education, inadequate educational facilities, and poor teaching and learning conditions, lack of reliable educational data, weak research capacity, and insufficient advocacy for the digitalization of NCE minimum standards (Ogunode, 2020). Furthermore, many Business Education students are unable to afford quality digital devices or sustain internet subscriptions required for effective online learning. Computer-Based Teaching (CBT) and Computer-Based Testing systems also present challenges because they require substantial capital investment in hardware, software, internet connectivity, and maintenance, which many educational institutions struggle to provide (Aduwa-Ogiegbaen & Iyamu, 2005).

In Nigeria, digitalization of business education curriculum can be hampered by many factors, such as poverty, insecurity, irregular electricity supply, high cost of smart phone and computers. The GSM operators in Nigeria charged a lot of money for data. Other challenges in achieving digital content goals in Business Education emanated from government poor funding of education, poor enrolment, poor education facilities, poor teaching and learning conditions, lack of reliable data and a weak research base, weak advocacy for digitalization of NCE minimum standards. An average business student cannot maintain a good Android phone or pay for internet bills or charges.

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The Formal Curriculum and the Proposed Digital Curriculum

Table 1: The NCCE Minimum Standard for Business Education and the Proposed Digital Curriculum

FORMAL CURRICULUM SET AVAILABLE FOR NCE BUSINESS EDUCATION (NCCE MINIMUM STANDARD CURRICULUM ITEMS)	PROPOSED NCE BUSINESS EDUCATION (DIGITAL-GAPS IN NCE BUSINESS EDUCATION) CURRICULUM
Accounting	Digital marketing and Business Education
Marketing	Digital skill and Business Education development
Business math	E-Social media and Business Education
Business communication	Digital Skill-sets for success in economy
Secretarial duties	Creation and sharing digital content
Word processing	Communication and collaboration digital content
Advertising	Digital entrepreneurial skill content
Office practice	Digital tools e-mail
Bookkeeping	Desktop conferencing
Keyboarding	Web computer training
Computer studies (basic computer)	Black board Web
Commerce (basic)	Video conferencing
Instagram, twitter, snap chat	Law and information ICT
Whatsapp, youtube mobile application usage	Digital Identification and utilization of business opportunities
	Internet advertising
Store management	e-learning BED/teaching
	e-marketing research
	Desktop computers, text messaging, laptop, e-readers, content sharing
	Online learning teaching practice
	Skill-set for success in 21st century; how to register business online with google, facebook
	Digital data to understand audience

The traditional software previously used for developing Computer-Based Teaching (CBT) materials, such as Adobe Flash and Adobe Director, has become obsolete. Contemporary CBT development now relies on modern authoring tools such as Articulate Storyline 360, Adobe Captivate, iSpring Suite, Lectora Inspire, H5P, and Learning Management Systems such as Moodle, which provide more flexible, interactive, and mobile-friendly learning environments (Articulate, 2024; Adobe, 2024). In addition, lack of human interaction can limit both the type of content that can be presented and preserved as well as the type of assessment that can be performed. It is costly to develop instructional networks and purchase the system software needed to run them in Nigeria. There is still widespread computer illiteracy among some Business Education students, which hinders the effective integration and utilization of digital technologies in teaching and learning. Limited digital literacy skills among students often affect their ability to access,

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evaluate, and utilize digital learning resources effectively (UNESCO, 2023). The success of a digital curriculum system largely depends on the resourcefulness and competence of teachers in effectively utilizing digital technologies to support teaching and learning. Teachers must possess the necessary technological, pedagogical, and content knowledge to integrate digital tools into classroom instruction successfully (Mishra & Koehler, 2006). Unfortunately, not all Business Education teachers possess adequate e-learning competencies required for effective digital instruction (Ogunode & Adah, 2022). Consequently, Business Education teachers need to continually learn, unlearn, and relearn digital and computer skills to remain relevant in the rapidly evolving technological environment. Continuous professional development is essential for improving teachers' digital competence and enhancing curriculum implementation (UNESCO, 2023). Furthermore, Harrigan and Hulbert (2011) observed that marketing curricula have often lagged behind developments in marketing practice, particularly regarding technological innovations. Similarly, many higher education institutions continue to utilize outdated curriculum materials and lesson notes that may no longer reflect current technological realities and workplace requirements, thereby limiting the effectiveness of teaching and learning in the digital age (OECD, 2022). Another challenge to digital teaching and learning Business Education is lack of common technique for engaging students with digital and social media in the classroom. Common sense dictates that it has become clear by the body language of Business Education educators that many of them are far from an agreed-upon curriculum for digital and social media inclusiveness in teaching and learning Business Education at NCE level.

Opportunities in Digitalization of Business Education Curriculum in Nigeria

The following digital software packages in business education are available in the market; customer relationship management application software (AS), enterprise resources planning app., project management app., business process management software, database software, resources management software, productivity software, educational software, word processing software, graphics software, spreadsheet software, web browser, software, educational and reference software, content access software, information worker software, free wave software, share wave software, open source software and closed source software and this will enable business education students and lecturers to excel in the business market when installed and used in the school for teaching and learning. Great opportunities are now available for lecturers in business education, sciences, engineering, and medical fields for postgraduate programmes overseas through tetfund sponsorship so as to update their knowledge to fit in this digital economy. Nigeria has entered bilateral agreements with some foreign countries especially South Korea to develop the electronic industries for national development (Enoh &Yoon, 2026). In fields of human endeavors where digitalization of curriculum and operational system is now the order of the day, like computer studies, banking and architecture and business education, software is used to provide feedback on students' specific mistakes and to navigate them through a series of questions that adapt based on what they appears to have learned or not learned. Another opportunity is the use of Computer-Based Multimedia Hyper Card (CBHC), hypermedia and a skill developing generation of powerfully sophisticated and flexible computing tools have helped a lot in the area of teaching sciences, medicine, humanities, business education and engineering.

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Trends in Digitalization of Business Education in Nigeria

There is a trend to move towards blended learning services where computer based activities are integrated with practical or classroom based situations. Bates and Poole (2003) and OECD (2005) Opined that different types of e-learning can be considered as a continuum. In addition, hybrid learning has reduced classroom times as well as involved intensively devoted online teaching and learning, which is a form of distance education. Web- Enhanced (WE), Web- Supplemented (WS) and Web-Dependent (WD) softwares have increased the use of the technology in handling Business Education subjects in many African countries. In the Bate and Poole proposed continuum, "blended learning" can cover classroom aids, like laptops and hybrid learning, while distributed learning can incorporate either hybrid or fully online learning. Adeleye (2011) was of the opinion that e-learning can describe a wide range of applications for adoption in the classrooms. Digitalization of Business Education curriculum will be seen in Computer Based Learning (CBL), Computer Based Training (CBT) or Web Based Training (WBT). The difference between CBT and WBT is the delivery method. The CBTs are typically delivered via CD-ROM, WBTs are delivered via the internet using a web browser. Assessing learning in a CBT in BED may take the form of multiple choice questions or other assessment that can be easily scored by a computer such as drag-and-drop, radial button, simulation or other interactive means that may emerged in future.

Assessments are easily scored and recorded via online software, providing immediate end-user feedback and completion status. The use of analog marking and grading of student scripts and results will be avoided. Imagine where NCE student wait for months even a year before they know their faith in an exam is too bad. In future, CBTs will be widely applied in teaching and learning Business Education that will provide learning stimulus beyond traditional methodology from textbook, manual or classroom based instruction. Instead of limiting students to attending course or reading printing manuals, students can acquire knowledge and skill through methods that are much more conducive into individual student's learning and ability and preference. CBTs can be a good alternative to printed learning material since rich media, including video or animation can easily be embedded to enhance learning. Most recent developed CSCL (Computer Supported Collaborative Learning) have been called E-learning but the concept of collaborative or group learning whereby instructional method, are designed to encourage or require students to work together on learning tasks has existed much longer. The trends in digital world entails Data-cloud described by Johnson Eilola (2005) on smart Board System that provide a 72-inch, rear projection, torch, screen intelligent white board surface for work. In Data cloud, attempt have been made for the learners to understand how users or learners move within information spaces and also how they can exist within information spaces rather than merely gaze at them, and how information spaces must be shared with others rather than being private, lived within rather than simply visited.

Johnson- Eilola (2005) gave three advantages of the technology as follows.

1. The smart Board allows the user or learner to work with large amount of information
2. Smart Board offers an information space that invites active collaboration
3. The work produced in often dynamic and contingent.

Researchers are producing new packages for the world of teaching and learning such as Technology Enhanced Learning (TEL) which provides great opportunities for social- technical innovations, improve efficiency and cost effectiveness for electronic learning practices, regarding individuals and

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organization, independent of time place and pace.

The Future of Application Software in Business Education

As technology evolves, more and more application software are slowly finding their way to intrude into all aspects of online activities, virtually whether it is a brand new application that can be downloaded on mobile phone or a new way to make vehicles less dependent on a driver; application development is moving ahead by leaps and bounds. Companies will rely on developing application software that will allow artificial intelligence to analyze massive amounts of data simultaneously to help them in decision-making that would otherwise prove impossible. White-collar jobs may be highly reduced because of automation.

Business Education Industry-Digitalization

Just as the academy in business education has not coalesced on course titles, content, materials, delivery, and so on, it seems there is no common techniques for engaging students with digital and social media in the classroom in some of the following courses; Fundamental of business communication**,** Project management**,** Information management**,** Organizational behavior**,** Managing financial resources**,** Business environment**,** Research project**,** Business ethics**,** Business decision making**,** Introduction to cyber security**,** Introduction to marketing and branding and Work placement Digitalization of business education is not cake-wall, picking the right application software for business involves wise decisions, brainstorming session, and critical thinking.

Conclusion

In the near future, digitalization of education curriculum especially Business Education will be like Point of Sale (POS) and Automated Teller Machine (ATM) whereby people can access education anywhere with their digital cards. With the current wave of digital research in the world, there will be less demand for boarding school and educational mansions or Government heavy expenditure in educational infrastructures. Challenges in achieving digital content goals in Business Education emanated from government poor funding of education, poor enrolment, poor education facilities, poor teaching and learning conditions, lack of reliable data and a weak research base, weak advocacy for digitalization of NCCE minimum standards.

Recommendations

This paper recommended that some colleges of education in the country run NCE and degree progammes in affiliation with universities, the National Commission for Colleges of Education can synergize with National University Commission to sponsor a bill at the national assembly for digitalization of higher education curriculum in the country. Using Digital instructional materials for effective teaching practice in Nigeria schools, the NCCE Minimum Standards should be reviewed to make the graduates become self-reliant rather than depending on government work which is not available nowadays and thus increase their numbers on labour market. The Federal Government under the leadership of President Bola Tinubu planned creating one million jobs in information communication technology in order to lift majority of youths out of poverty by 2024 and beyond will be meaningful if the business education teachers and students learn, unlearn and relearn modern pedagogical principles and skills in digital fields.

Business Educators must be willing to upgrade their skills on regular basis so as to able to impart the skills and knowledge to students. Hence, there should be training courses for both teachers and students on digital skills as it is the new and future yardstick to thrive in the world of business and the society at large. Alternative power supply should be made available in the

departments of Business Education in all the colleges to ensure constant power supply for internet services. Stakeholders funding tertiary education should focus attention on digitalization of the curriculum. The National Commission for Colleges of Education (NCCE) can approach Tetfund to help or procure teaching and learning software for Business Education teachers. There are NGOs that have great interest in education like Dangote, BUA and Oil Companies that may offer help in developing institutions based software to aids teaching and learning.

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