Digital Infrastructure and Sustainable Development of Marketing Education Curriculum in Tertiary Institutions in Nigeria

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ABSTRACT

This paper focuses on digital infrastructure for sustainable development of marketing education curriculum in tertiary institutions in Nigeria. Digital education with the attended infrastructure is basic elements that drive modern day academic institutions. A digital infrastructure is conceptualized as an interconnection of different system collectiveness, including the software, hardware, standards, the Internet, platforms, and humans, very unlike standalone information systems. Thus, digital infrastructures are the drivers of modern education and economic system. Marketing education is at its infantile stage in the Nigerian education system, therefore requires the right curriculum configuration to balance its development and implementation. The paper adopted systematic review method that allows the author to use meta-analysis to interrogate previous and existing literature to suit the current demand of the study. The paper reviewed the following: Digital Design for Sustainable Marketing Education, Digital Delivery for Sustainable Marketing Education, Digital Collaboration and Sustainable Marketing Education, Connecting Digital Transformation with Sustainable Marketing Education Gap. The paper recommended that a robust and sustainable digital hub for developing the marketing education towards an economic sustaining domain in Nigeria. Thus the paper concluded sustainable marketing education can only be a visible achievement in the 21st century when the digital landscape of the educational system is expanded.

Keywords: Digital, Infrastructure, Sustainable, Development, Marketing, Education, Curriculum

INTRODUCTION

Education and pedagogics system has evolved over times. The greatest influence that has fronted the change in education and pedagogy is technology and digitalization, propelled by globalization. In today academic environment, it is impossible to discuss educational issues without dabbling into technology or digitalization. The hallmark of education and teaching in the 21st century is centred on the application of technological approaches in achieving educational objectives. According to Tilson, Lyytinen and Sørensen (2010) since the inauguration of information systems research (ISR) two decades ago, the information systems (IS) field's attention has moved beyond administrative systems and individual tools. The Information System is the domain of technology and digitalization. In the 20 years of ISR's existence, pervasive digitalization of organizational life has become the "new" reality (Yoo 2010). Thus, the new world order in education is "digitalization". We cannot shy away from this phenomenon. It is an impetus that drives the academic process within the global education connectivity. Therefore, the concept of "Digital Infrastructure" rings a bell in modern education system. Globally, it is a domain that enhanced academic development, designs and delivery. However, due to the struggle of the technological divide within the third world nations, the concept is still gaining recognition and acceptance, especially because of the high level of "digital illiteracy". Nevertheless, it is the driving force in today educational system. Currently, no educational system or academic discourse can rise beyond its technological or digital level of awareness and acquisition. Thus, digital infrastructure is a sustainable infrastructure that networks the education system. To build or create a sustainable education tool such as curriculum, it is pertinent to imbed digital presence, if

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such curriculum will compete with best practices among the global institutions. In other words, no education system can work and succeed without global connections and collaboration in the 21st century. Thus, digital infrastructures are the drivers of modern education and economic system.

Tilson, Lyytinen and Sørensen (2010) stated that infrastructure in general can be defined as the basicphysical and organizational structures needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function (Wikipedia). It is the basic systems and structures that a country or organization needs in order to work properly. It was also seen as the basic system and equipment needed for an industry or business to operate successfully. Appropriately in line with the focus of this paper, it is the computers, communications, networks and software needed for an educational system to operate or communicate with other systems. The term "Infra" means 'below', thus, infrastructure is the underlying structure of a system. Consequently, digital infrastructure is the basic underlying structure needed for a system to operate and function successfully. In view of this, digital infrastructures can be defined as thebasic information technologies and organizational structures, along with the related services and facilities necessary for an enterprise or industry to function (Tilson, Lyytinen and Sørensen , 2010). These infrastructures can be further defined with respect to the entity being supported or enabled as global, national, regional, industry, or corporate infrastructures. Morphologically, digital infrastructures can be defined as shared, unbounded, heterogeneous, open, and evolving sociotechnical systems comprising an installed base of diverse information technology capabilities and their user, operations, and design communities (Hanseth and Lyytinen 2010).

According to (2020) developing sustainable digital infrastructures is crucial to ensure technological advances that benefit society. Investment in infrastructure and innovation has therefore become essential for economic growth and global development. This is explicitly emphasized by the United Nations Development Programme (goal 9: Industry, innovation, and infrastructure). It focuses on technological progress in finding sustainable solutions to economic and environmental challenges, such as ensuring growth of new industries with green supply chains and promoting energy efficiency. The Hustad and Olsen posited that digital infrastructures are important foundations to ensure digital transformation of organizations that want to enhance the potential of new digital technologies. A digital infrastructure consists of both technical and organizational components, processes, and networks. It comprises the social environment of users of digital tools and the designers and systems developers connected to the infrastructure. A digital infrastructure is conceptualized as an interconnection of different system collectiveness, including the software, hardware, standards, the Internet, platforms, and humans, very unlike standalone information systems (Henfridsson & Bygstad, 2013). Digital infrastructures are becoming indispensable for sustainable operations in both public and private sectors, and their emergence and growth are increasing across different industries (pharmaceutical, health care, manufacturing, energy, marine industry, education etc etc). Education as an industry of teaching and learning cannot function effectively without the integration of digital infrastructure. Thus, digital education is the focus of this paper. It is looking at integration of digital infrastructure for sustainable development marketing education in Nigeria. Digital education is the innovative incorporation of modern technology and digital tools to support and strengthen teaching and learning activities (Casillas-Martín, Cabezas-González, & García-Valcárcel Muñoz-Repiso, 2020). According to Reche, Trujillo-Torres, & Romero-Rodríguez, (2019) digital education goes far beyond virtual or distance learning; it establishes the use of technological resources to contribute to higher quality education. Not only does this involve the integration of digital devices and tools, but it also involves an educational transformation that improves learning in the classroom. This vision will help schools to advance and students to adapt to new jobs (Veletsianos, VanLeewuen, Belikov, & Johnson, 2021). Digital education is not just a concept, but a set of facts that triggered a new way of imparting knowledge and using it as an instrument of technology to meet a goal (Minerva, 2021). In particular, digital education seeks to: enhance skills such as problem solving, critical thinking, creativity, team work, and communication, generating autonomous people who assume individual and collective responsibilities (Yashalova & Vasiltsov, 2020).

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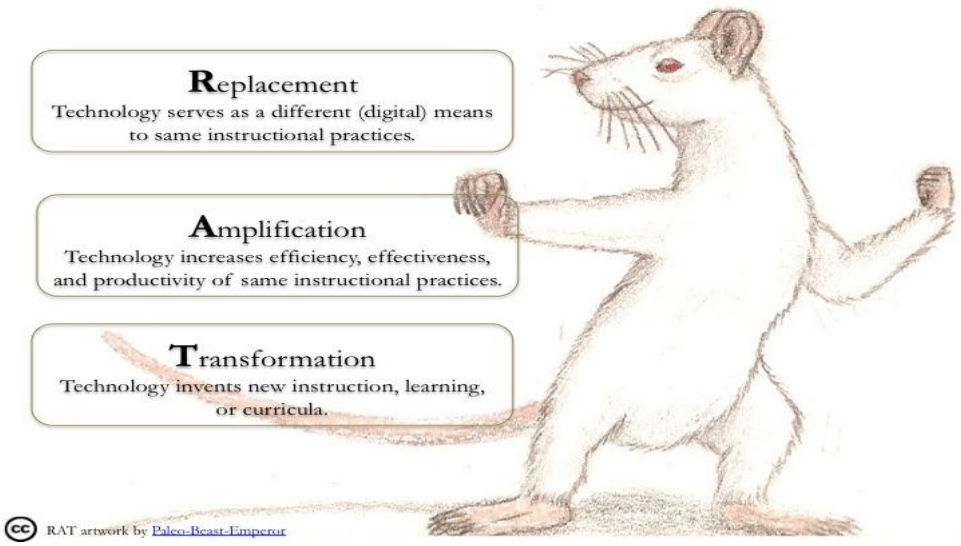
In this regard, marketing education cannot function effectively without proper integration of digital infrastructure. Marketing education is relatively new in Nigeria, however its place of importance cannot be underestimated in the development of the Nigerian economy. Marketing is all about learning to use marketing tools and processes to take an idea and bring it to the consumer. Marketing Education is the aspect of education that focuses on the process of obtaining knowledge or receiving formal instruction in the principles and techniques of marketing leading to an academic qualification in marketing such as certificate, ordinary diploma, higher diploma, bachelor's degree, master's degree and doctorate degree in Marketing. Marketing education prepares students both for academic and managerial career development. Therefore, with modern digital tools, marketing education is a course to reckon with in modern day education, ranging from marketing research, product development, customer satisfaction, awareness and promotional strategies, e-marketing and e-business development. Developing the 21st century marketing students requires aggressive digital integration into marketing education to juxtapose students against global best practices. Marketing is an integral part of every economy and its development, thus, marketing education is focused on building students that will drive the economic infrastructure of Nigeria. In today's global economies, digital marketing specialist are driving the current market forces, capitalizing on digital advertising and campaigns, content creation, optimization and analysis to redesign the marketing landscape of global economies. Nigeria, cannot be left behind in this current waves of global change. The hallmark of this current study is creating digital entrepreneurs, through educational equipment of the marketing education students to drive modern economy of Nigeria.

THEORETICAL CONSIDERATION

RAT Model (Hughes, 2006)

The theoretical consideration that guides the decisions of the study is the RAT Model developed by Dr. Joan Hughes in 2006. RAT is an assessment framework for understanding technology's role in teaching, learning and curricula practices. The acronym RAT stands for Replacement, Amplification and Transformation. The model leads you to understand if digital technology is functioning as replacement, amplification, or transformation in education practices.



Technology as Replacement: Technology used to replace and in no way, changed established instructional practices, student learning processes or content goals. The technology serves merely as a different (digital) means to same instructional end. Typically all that changes is the medium through which a well-established purpose is met. Think of: proxy, stand-in or surrogate.

Technology as Amplification: technology increases efficiency, effectiveness and productivity of

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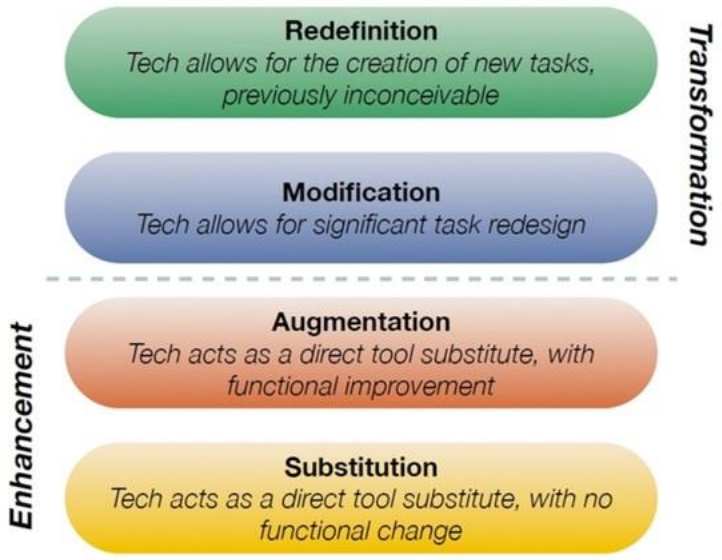
instructional practices, students learning processes or content goals. The tasks stay fundamentally the same while the technology extends our capabilities in effectiveness or streamlining. Think of: enlargement (larger, greater, and stronger), addition of detail (fuller, clearer), increase in magnitude, making louder.

Technology as Transformation: Technology reinvents aspects of instruction, learning or curriculum in new and original ways. New cognitive forms could emerge, new people could be involved, or new content may be accessible. Think of: alteration, change, conversion, revolution, renovation, makeover, restructure, reorganize.

Thus, to assess a technology's contribution, one considers an instance of technology use and assesses is systematically in terms of three broad themes: instructional methods, students learning processes, and curriculum goals. The basis for which study is built, is to think replacement, amplification and transformation of marketing education curriculum to accommodate digital tools that will enhance sustainable development of the course.

SAMR Model (Dr. Ruben Puentedura, 2014)

SAMR is a model designed to help educations to infuse technology into teaching and learning. The model supports and enables teachers to design, develop and infuse digital learning experiences that utilize technology. The goal is to transform learning experiences so they results in higher levels of achievement for students.



Source: Puentedura, R. @http://www.hippasus.com/rrpweblod.

SAMR is also very relevant and apt in the study, as it directs the focus of the researcher to consider substitution, augmentation, modification and redefinition of curriculum to suit educational currency in the 21 st century.

STATEMENT OF PROBLEM

Since the 19th century, the way people live has been shaped by the infrastructures of modernity such as steam, rail, and electricity. The 20th century added information infrastructures like telephone, radio, and TV. In the wake of the 21st century, social, software applications, cloud computing and electromagnetic information system has revolutionized the entire super-high way. Digitizing and digitalization has removed the tight coupling between information types and their storage, transmission, and processing

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technologies—potentially shattering the dominant service model and the stability of the industrial organization. Therefore, digital infrastructures are rupturing physical infrastructures, thereby shaping the new system order. Education cannot survive without digital entrenchment. Globally, digital infrastructures are the domain on which organizations and institutions are striving and driving the course of human development. Successfully building out digital infrastructure (hybrid and purely digital) across all types of infrastructure will unlock new education and economic opportunities, job creation, and better quality of life. Education in Nigeria has dwell so much on physical infrastructure, which has created an atmosphere of dull critical and creative minds. To link the Nigeria education with global best development agenda, it is imperative to imbibe the digital framework. The digital divide in education between the developed and developing nations can only be closed if the third world nations embrace digitalization rapidly. To enable education to deploy its transformation capabilities in the various programs related to sustainable development, it must engage in the profound pedagogical and organizational transformations. Consequently, the new digital settings are critical means of developing new knowledge and approaches, because they constitute one of the leading devices that encourages and enhances the emergence of new pedagogical practices which facilitates access to information. Thus, digital resources offer the opportunity to capitalize on knowledge and know-how, particularly in the case of sustainable marketing education curriculum development and transversal approach that breaks with the usual teaching methodologies.

The adoption of digital infrastructures in development of marketing education is only apt because marketing education is becoming one of the sorts after professions due to its emphases on sustainability, digital entrepreneurship and self-reliance. With the application of digital infrastructures, physical barriers will be eliminated and more global collaborations will be open. Marketing education is the economic base for national development, it cannot be dealt with reckless abandon, and it needs that global focus that can attract international respect and recognition. On this premise, the study is focused.

OBJECTIVE CONSIDERATION OF THE STUDY

The pedagogical innovation resulting from digital development contributes to modifying the practices of both teachers and students who will have the opportunity to train themselves, to self-evaluate, to participate in diagnostics based on resources adapted to their levels or needs. The development of sustainable marketing education is greatly facilitated by digital technologies that help students by providing them with resources and by facilitating the monitoring and evaluation of their schooling. Strengthening partnership through digital technology or infrastructures strengthens linkages in sustainable marketing education curriculum development by bringing closer to real-life situations in society and bridging gaps in global collaborations. The learning objectives of marketing education can be abridged as it cut across key proficiencies for sustainability in life. Achieving these objectives requires acquiring, in addition to basic knowledge, a range of skills such as critical thinking, normative and strategic skills, collaboration, self-awareness, problem solving, and so on. Faced with this challenge, digital infrastructures have a range of potential applications that will facilitate innovative pedagogies for learning about marketing education. However, attention will be paid to:

1. Digital Design and sustainable marketing education
2. Digital Delivery and sustainable marketing education
3. Digital Collaboration and sustainable marketing education

MATERIALS AND METHODS

A systematic review was adopted, based on the compilation of the literature and results of research published over the period in previous papers, with the aim of responding to each specific research objective. The study adopted Systematic Review and Meta-Analysis. It is an evidence-based reporting systematic

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reviews and meta-analysis that review literature in line with author's intention and interrogation. This current study is a meta-analysis of existing literature, with strong evidence of interrogation and adaptation to current realities. Hence, it is perfect for qualitative review research.

CONCEPTUAL RATIONALIZATION

Digital Design for Sustainable Marketing Education

Technology advancements bring rapid changes in human lifestyles and standards in all aspects. People interact daily with new Information and knowledge using internet search engines, features, and frequently new applications. The expanding power of technologies makes it possible to access information and understand sources and services. The boom of technology is also reaching out to the older generation (Zhang, Ying, Khan, Ali, Barykin, Jahanzeb, 2023). Marketing education cannot survive in 21st century, operating in obsolete graphics designs. According to Domin, Philipp, Florian (2022) markets must be designed properly to serve the common good. This is particularly evident in the digital economy, where platform companies have profoundly restructured value chains over the last 20 years. Consequently, digital design in an integral tool for developing modern marketing education. Domin, Philipp, Florian further stated that the design of digital information flows to help develop ecological ecosystems with fewer emissions, less waste and high natural resource efficiency has been especially proposed by Circular Economy (CE) researchers. This is what green marketing philosophy engenders. In this direction, digital design plays vital role in shaping marketing education.

Digital design is an umbrella term that encompasses several different roles and disciplines. It's the process of mapping out the look and feel of the content that people view and interact with on a digital interface. Digital designers do more than design graphics; it's all about creating designs crafted for specific devices, taking into account factors like user experience, interactivity, and overall aesthetic balance. Each of the roles that fall within the sphere of digital design involves the core practice of designing what people see on a screen, but the most common digital design roles have a more interactive element to their work. With the face of technology rapidly evolving, digital designers have to continually update their skillsets to ensure the content they design can meet the changing needs of their users (Jaye, 2021).

According to Levanier, (2020) Digital design is a type of visual communication that presents information or a product or service through a digital interface. Put simply, its graphic design made specifically to be used on computers. Therefore, a digital designer's primary responsibility is to produce digital assets for multimedia and graphic design projects, such as websites, mobile applications, advertising, animation, emails, social media, video games, and interactive displays. A digital designer conceptualizes, maintains, and delivers digital design solutions for several applications, including websites, product graphics, email templates, social media graphics, brand campaigns, and photography, (Blue Sky Graphics, 2021). In today's digital age, graphic design plays a crucial role in branding and marketing. It's not just about creating visually appealing designs, but also about communicating a brand's message effectively to its target audience. (Anjana, 2023). The age-old phrase, 'A picture is worth a thousand words' couldn't be more true. Graphic design is important for any business that is looking to make a positive and long-lasting impression. When it comes to spreading the message about businesses, the design gets the attention first and then the words. Together, they convey a powerful message.

Visual identity or Branding Digital Design

A visual identity communicates the personality, memories, emotions, and experience of a brand. It acts as the face behind the brand and passes on important messages to the audience. Digital graphic design plays a role in creating memorable visuals that help to strengthen a brand's recognition. With the help of tools like Adobe Photoshop, Illustrator, and InDesign, designers can create unique logos, custom typography, and

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other visuals for a brand. Additionally, designers can also create stunning motion graphics for branding projects. Designers who specialize in visual identity design will create logos, typography, color palettes, and image libraries that will represent the personality of the brand.

Advertising and Marketing Digital Design

Companies invest in marketing efforts to influence the decision-making process of their target audience. Designers who create digital graphics for advertising and marketing purposes work directly with decision-makers and marketing professionals. In developing marketing education contents, incorporation of marketing design as a curriculum has become imperative, because it will be totally out of place for students of marketing education to graduate with considerable knowledge in designing simple marketing graphics in the digital world. This knowledge is timely, because, globally, the super-high-way is moving the nations.

There is need to alter the marketing narratives, by integrating digital design in marketing education in Nigeria. According to Blevis, Preist, Schien, and Ho, (2017) in applying trans-disciplinary design theory to sustainable design we are led from the present to the future by asking how we can reduce environmental harm now, alter practices to reduce environmental harm in the future, alter practices to promote a healthier society, and create new technology and practices to face future challenges. If a healthier economy and environmentally free society is our educational concern, it is important to incorporate digital designs that will enhance environmental friendly system. The contributions of marketing education cannot be over emphasized, because the basis for sustainable economy in third countries like Nigeria is building a sustainable marketing education, to drive the business environment.

Digital Delivery for Sustainable Marketing Education

Looking at this, it may appear confusing with digital design. But, no they are totally different. Digital delivery is a driver system. It refers to information being transferred among electronic devices such as mobile phones, computers, iPads, and more. This allows information to be sent back and forth through various devices to many organizations or system (Preeti, 2023). The author stressed that with companies decreasing their reliance on paper files, they can become more efficient overall through digital communication among employees, clients, and more. Preeti raised three distinct stands where digital delivery will benefit the economy.

1. It is Environmentally Friendly: Digital delivery allows companies to significantly decrease the amount of paper they use and buy. This means that the environment can benefit since it would decrease the number of trees being cut down every day and, therefore, the amount of carbon dioxide in the atmosphere. This also means that companies will save money and decrease their costs each year. As more and more companies rapidly decrease the amount of paper they consume, the world will become a healthier place.

2. It Creates More Efficient Communication: Employees and clients can receive information much faster digitally when compared to reliance on paper files being moved by hand. The speed of technology has increased and will continue to do so over time. With this type of delivery, companies are now able to offer immediate responses, online responses, personalization, and greater accessibility to customers. This digital transformation allows businesses to engage more easily and effectively with their clients and potential customers.

3. It Encourages eLearning: This type of communication easily allows organizations to utilize eLearning, where employees attend training programs online. According to a recent article on superoffice.com, “roughly 86% of businesses believe that cloud technology is critical to digital transformation.” More and more companies acknowledge the importance of using digital methods for communication. You should want your company to prepare for the demands of the future by implementing artificial intelligence in the

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workplace. The sooner your company embraces digital delivery, the better.

These advantages of embracing and utilizing digital delivery within an organization can contribute to the success of the system. The educational institutions leverages on digital delivery to enhance teaching and learning. However, in the direction of marketing education, digital delivery is both learning and marketing tool. According to García-Hernández, García-Valcárcel Muñoz-Repiso, Casillas-Martín, Cabezas-González, (2023) from the educational practice itself, at any level of education, it is necessary to promote good academic results in students, forming responsible citizens capable of solving problems associated with any of the Sustainable Development Goals. In this sense, the use of ICTs is vital in the knowledge society, where technological tools mediate in different daily aspects, including education, health, and government management, (Nevado-Peña, López-Ruiz, Alfaro-Navarro, 2019). Therefore, digital delivery is an offshoot of digital education. It is the basis upon which digital education strives. Digital education is the innovative incorporation of modern technology and digital tools to support and strengthen teaching and learning activities (Casillas-Martín, Cabezas-González, García-Valcárcel Muñoz-Repiso, 2020). Some authors state that digital education goes far beyond virtual or distance learning; it establishes the use of technological resources to contribute to higher quality education (Alonso-García, Aznar-Díaz, Cáceres-Reche, Trujillo-Torres, Romero-Rodríguez, (2019). Not only does this involve the integration of digital devices and tools, but it also involves an educational transformation that improves learning in the classroom. This vision will help schools to advance and students to adapt to new jobs (Veletsianos, Van-Leewuen, Belikov, Johnson, 2021).

Digital Collaboration and Sustainable Marketing Education

A digital designer collaborates with cross-functional teams to bring ideas to life, collaborating with project managers, design teams, information technologists, and subject matter experts. A Digital Designer translates the team's thoughts into an excellent user experience. (Blue Sky Graphics, 2021). Digital collaboration is the application of digital technologies for collaborative linkages. It brings about broader connections of participants who can accomplish much more than they would on their own and it is applicable in every field. It is also a collaborative system through electronic devices which allows users to exchange messages and information online by way of computer networks and applications. Digital collaboration is the most effective institutional and individual connection system that creates an environment for conducive networking. Thus, marketing education with its focus on building the next generation of economic base networkers, can only achieve its objectives with a collaborative digitalized effort. According to Chopra (2022) digital collaboration is revamping how everyday tasks, from menial to business-crucial jobs, are performed. The author buttressed that more and more brands have detoured from the traditional marketing routes and run on digital strategies to reach their potential customers.

Ranging from content marketing to educational content, digital collaboration plays important role. Content marketing strategy clubbed with educational content can help a brand by giving customers just the information they need to engage with the brand. Therefore, the secret to effective content marketing strategy is to include the right balance of promotional and educational content (Chopra, 2022). Digital marketing education cannot strive without effective collaborative effort electronically. The global influence is a force that is driving world economies, thus sustainable marketing education will have its basics on effective collaboration with informed educational institutions globally. According to Times Higher Education (2023) universities must design more collaborative course offerings and listen to the demands of students to survive in the digital-first world. Anthony Tattersall (Vice President EMEA) stated that ‘‘the idea that the university has to originate everything themselves is starting to change. He stressed that a university can be a steward and a curator of best-in-class content from the around the world but accept that third parties can deliver content that is not in the core areas of excellence’’ (Times Higher Education, 2023).

Digital collaboration is applicable in all spheres of education and administration or job. Collaborative

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learning and teaching enhances the out of education. According to Laal and Ghodsi (2012) collaborative learning is all about cooperation in contrast to competition, since working via consensus building contributes too many benefits. Therefore, one of the benefits of digital collaboration is to improve collaborative learning. Digital collaboration brings connections beyond national boundaries, thereby influencing educational cultures and changes. Marketing education is a collaborative content education that connects students with other interactive platform using collaborative applications such as Google classroom, Google meet, zoom, social media conferencing etc to share ideas and learning outcomes. According to Gopinathan, Kaur, Veeraya and Raman (2022) an increase in the deployment and usage of digital technology integration has brought lots of positives changes to the educational system. This has improved digital skills for both students and educators. It is not easy to engage digital technology in the learning process without a change in the mindset of learning and educators, since they will need to use and work with collaborative digital tools (Dahki, Jama, and Irfan, 2020). Digital collaboration is an aspect of involving artificial intelligence in delivery of education content. In other words it is a collaborative intelligence decision that allows institutional systems to modify, replace and transform their structure to accommodate digital infrastructure. According to Wilson and Daugherty (2018) artificial intelligence (AI) is transforming all sectors of the economy, thus to get the most of AI companies need to redesign the business processes. The author buttressed that after deciding what needs improvement: their operational flexibility, speed, or scalability; their decision making; or their ability to personalize products and services, they can now devise appropriate technology. Therefore, it means while optimizing AI (Technology) it is necessary to develop the human intelligence that will interface the human-machines. This optimization and integration cannot be effective without effective collaboration with design and operational systems. Educationally, the world is moving towards AI optimization; however without human beings their operation will be limited.

Connecting Digital Transformation with Sustainable Marketing Education Gap

According to Mohamed Hashim, Tlemsani, and Matthews (2022) digital transformation in the global higher education industry determines the future roadmap to a sustainable education management strategy. Reidl (2020) stated that sustainable digital transformation is applied, evolving and dominated by technological transformation. Thus, it requires significant research collaboration specifically in the implementation stage. Technologies are revolutionizing the current education era, powered by digital transformation, which creates new market opportunities for organizations by refining the organization value chain. The factors influencing digital transformations are rapidly changing, the propelling forces such as artificial intelligence, cloud computing, big data and internet of things are increasing the landscape of digitalization (Bican and Brem, 2020). Education is becoming competitive and systematic globally, Africa and Nigeria are rated downward in the digital divide. Marketing education on the contrary is becoming more and more recognized in economic build-up and build-in. Hence, once the educational system recognizes the impact of digital transformational capabilities, invariably they could transform into operational effectiveness and economic development hub. This transformation gap is where the education system need to cash in, by replacement, amplification and transformation in is marketing oriented view. Consequently, it is important that a sustainable blueprint with a futuristic digital transformational view be developed to guide the design and implementation marketing education as an economic hub. Therefore the digital transformation of marketing education is an impetus, since it will bring about connecting schools and corporate industries to empower students in the 21st century.

CONCLUSION

This paper has elaborated on the topic of digital infrastructures and its connection to marketing education development. It highlighted the sustainable characteristics of digitalizing the marketing education processes and its structure. The concepts of digital infrastructure, digital design, digital delivery and digital collaborations were extensively expanded, and the need for creating a sustainable digital education based

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system in marketing education.

The adoption and integration of advanced digital technologies (fifth-generation (5G) mobile networks, the Internet of things (IoT), cloud computing, artificial intelligence, big data analysis, robotics, etc.) means that we are moving from a hyper connected world to one of digitalized economies and societies. It is a world in which the traditional economy, with its organizational, productive and governance systems, overlaps or merges with the digital economy, with its innovative features in terms of business models, production, business organization and governance. This results in a new, digitally interwoven system in which models from both spheres interact, giving rise to more complex ecosystems that are currently undergoing organizational, institutional and regulatory transformation (ECLAC, 2018).

Digital technologies foster ecological innovations that contribute to sustainable development by reducing environmental impacts and optimizing resource use. As these technologies evolve and converge with biotechnology and nanotechnology, they could generate exponential innovations that contribute to a sustainable future, (ELAC, 2022). Collaborative ICT controlled measures and tools are the new frontier for educators and policy makers as they work towards maximizing the opportunities afforded by digital transformation across industries and sectors within the economy. This paper concluded that sustainable marketing education can only be a visible achievement in the 21st century when the digital landscape of the educational system is expanded. Thus the paper recommends a robust and sustainable digital hub for developing the marketing education towards an economic sustaining domain in Nigeria.

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