

## Promoting Disruptive Innovation in Open and Distance Learning Institutions in Nigeria

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### Abstract

*The rapid development in emerging technologies has brought remarkable changes in the 21st century; their roles are becoming increasingly important in our educational system, especially in open and distance learning (ODL). ODL program is considered as one of the most important educational systems in Nigeria as it provides opportunities for those who could not afford to leave their jobs regardless of age or qualification. This paper is theoretical in nature; focuses on historical developments, benefits, mode and challenges of distance learning in Nigeria as well as on promoting the use of technologies such as disruptive in Nigeria's ODL centres. The paper is theoretical; its methodology lies on reviewing of relevant literatures. The study revealed that in spite of potential advantages of ODL in Nigeria, the following challenges militated its sustenance; change in policy, epileptic power supply, cost, inadequate staff and attitudes. The study therefore recommended amongst many; stable policy, electric power supply, and positive attitude to global change in the use of new technology. In addition, the Nigerian Universities offering ODL courses should embrace promote and deploy the disruptive change and its technologies in Nigeria's ODL centres to improve the quality of ODL program in Nigeria.*

**Keywords:** Disruptive innovation, Open and Distance Learning, Modern technologies, Nigerian universities

### Introduction

Open and distance learning (ODL) programs at several ODL centres and universities throughout the world has been significantly impactful by numerous recent technology advancements, which are becoming increasingly crucial to ODL. Education in general and the field of ODL in particular have made a number of new options for students and a number of its

stakeholders to increase information delivery available as a result of recent technological and/or innovative advances (Ajadi, Salawu & Adeoye, 2014).

ODL essentially requires technologies which enable effective communication among learners, instructors and course materials. Direct teacher-student contact is being replaced by disruptive technologies, such as those that are now in use or being developed. Thanks to creative and technological developments like Disruptive, teachers and students can use a variety of approaches that might engage students' active interest in ODL. Disruptive Innovation (DI) is defined as creative activity that challenges established markets and value systems (Christensen, 2007).

A non-localized change (Disruptive change), brought on by shifting market patterns, has an impact on a particular industry sector. This can cause the mode of manufacturing to change in order to meet consumer demand. ODL was first used in Nigeria during the 1930s, when certain Nigerians were forced to enroll in correspondence courses offered by British Universities. Such ODL advanced until University of Ibadan, Nigeria's first institution, was established in 1948.

### **Disruptive Technology in Open and Distance Learning**

The term "disruptive technology" refers to technology that changes how a market or industry typically operates. Christensen coined the phrase "disruptive innovations" in 2000 to refer to technological developments, concepts, services, methods, and products that upset the status quo. Christensen and Raynor (2003) developed the concept so that it could be applied in the business sector, where disruptive ideas might actually under-optimize current technology or fall short of satisfying users, consumers, or other stakeholders in the mainstream market and organisation.

The term "disruptive technology" is more specifically used to refer to goods, services, concepts, and technological advancements that significantly influence their respective markets and ultimately transform them. By adopting disruptive technologies, companies and organisations can frequently enter new markets or take the opportunity to displace major firms in an established setting. Disruptive technology is any innovation that radically alters how consumers, companies, industries, and the related stakeholders work. The requirements, methods, and procedures usually change almost instantaneously when disruptive technology enters an established business or organization (Horn, 2024)

## Concept, Types and Examples of Disruptive Technologies

Numerous technologies have been hailed as disruptive, including the internet, blogs, wikis, social networks, open source software, mobile devices, open education, social bookmarking websites for images, music, and video files, Google, RSS, creative commons, social networks, cloud computing, free software, affordable storage, digital cameras and recorders, broadband, and virtual worlds. These appear to be powerful and fascinating instruments. Soon, it will be acceptable and encouraged in all endeavours to view disruption as a necessary component of every new instrument (Team, 2024). Innovations in ODL and higher education as well as disruptive technology are made possible by computer's use rather than by the hardware (McKinney, 2022)

Larson (2016) and McKinney, (2022) distinguished Type I and Type II disruptive discoveries or technologies based on their intended applications. Automation of current processes or their duplication is referred to as Type I. Specifically, using media like podcasts or streaming videos that are passive, one-way teaching paradigms. Type II recommends using technology to get students and teachers involved in tasks that were previously challenging. Their approach gives a different viewpoint on disruption: while one technology maintains the connections between teachers, students, and content, another drastically disrupts these connections. There are often issues with performance, a tiny audience, and unproven practical applications with disruptive technologies.

Human endeavours are greatly impacted by technology and innovation in general, including disruptive innovation. The following examples of disruptive technology were provided by Twin (2023):

- i. *Numerous applications*: such as those for fraud prevention, gaming, and email spam detection, use artificial intelligence (AI). The use of AI improves the efficiency of both personal and professional endeavours. Virtual assistants like Apple Siri or Google Home, chat bots on the web, and other similar technologies. AI gathers data on a person's purchases, search history, and overheard conversations in order to determine their preferences. Google is working on an algorithm that will enable machines to acquire driving abilities that are on par with humans.
- ii. *Block Chain*: Block chain was developed as a means of weakening the banking system because ledgers are highly centralised there. Because it is decentralised and encrypted, block

chain uses distributed ledger technology. With block chain, third parties are no longer required for financial transactions. Block chain's decentralisation, transparency, and inherent security features seek to lower the expensive bank costs while increasing the security of financial transactions. Block chains provide quicker, risk-free, and unique transactions.

- iii. *Internet of Things (IoT)*: The present widespread and expensive network of internet-connected devices. The IoT aids in bridging the physical and digital divide. The Internet of Things (IoT) expects new connections between many different things, including people, to arise. Even if the possibility of connecting more items to the internet is not very revolutionary, more things than ever before are now connected to it. Thanks to IOT, which will also increase city efficiency, cost, and safety, smart cities will be conceivable.
- iv. *Web-based Video*: Netflix, which is already well-known, has completely changed how people watch television and films. By allowing for on-demand viewing, the traditional broadcasting model has been impacted. On Netflix and other comparable sites, viewers may skip the bothersome advertisements and watch their favourite episodes whenever it suits them.
- v. *Ride-Sharing Services*: As a result, a number of one-way ride-sharing services, such as Get about, City Carshare, Relay Rides, Enterprise Carshare, Lyft, and Uber, have recently appeared. The epitome of disruptive technical innovation has arisen as Uber, a ride-sharing company that is rapidly growing. The traditional taxi cab business has unexpectedly and fundamentally changed because to a smartphone network that links passengers and drivers who are willing to provide services. Additionally, customers no longer need to flag down a cab on the street, and those with electronic Uber accounts can pay without using cash.
- vi. *Virtual reality (VR)*: VR is more than just fun or entertainment. As a result, it could obstruct how people conduct business. Gaming and entertainment will account for a sizable chunk of the growth, but VR technology may also be employed by manufacturers, retailers, and interior designers.
- vii. The term "*Augmented reality*" (AR) refers to a technologically provided, digitally enhanced representation of the real world that may incorporate sound, video, or other input. Mobile computing and business application companies are observing a growing trend in this approach.

- viii. *Collaborative Commerce*: Technology and physical networks are combined in this to enable business collaboration. Businesses employ a hybrid strategy to collaborate closely with suppliers and competitors. As a result of structural changes in technology, the economy, and culture, a brand-new type of cooperation commerce has evolved that is founded on the democratization of physical and human resources. Using the web as a fundamental shift in technology, C-commerce enables the interchange of information, such as inventories and product specs.
- ix. *3D Printing*: A three-dimensional part is built up in layers using the additive process of 3D printing. The subtractive manufacturing procedures, in contrast, include taking a larger piece of material and cutting out the desired design. Therefore, 3D printing requires fewer raw resources.

### **Roles of Disruptive Technology**

Innovations known as disruptive technologies supplant established practices, products, or technological developments. They create cutting-edge consumer, commercial, or joint operating models. As a result of their superior features, disruptive technologies totally alter and replace existing solutions, creating new opportunities. Innovative Disruptive Technology fundamentally changes how customers, markets, businesses, or organizations function. Because it possesses better and more intelligent qualities than the system or behaviors it replaces, disruptive technology sweeps them aside.

Nearly every element of human life has changed as a result of modern disruptive technologies. ODL is not an exception, but it is positive that people are excited about its roles. ODL is a market that requires game-changing breakthroughs (Gejdran, Aniaa, Vignesh & Kalaimami, 2020). Disruptive technology forces a break from routine thought processes, promotes contemplation, and finally results in the formation of a new understanding of how learning occurs. If applied properly, disruptive technology in ODL would greatly enhance teaching and learning. With advancements in hardware and software, the impact of such technological innovation on ODL and other forms of learning is anticipated to increase.

Technology's ongoing advancement has a slow and subtle impact on learning an ODL in particular. It's interesting to note that disruptive technologies unexpectedly and favorably impact every industry. This is not exclusive to a sizable corporation. Opening new markets is one of the

most exciting potential outcomes of disruptive technologies. Traditional models would be abandoned in favor of new tools or technologies, which would improve operations and benefit everyone. Meyer (2010) essentially listed the following roles.

- i. Disruptive technology must challenge the accepted norms, procedures, and assumptions.
- ii. Disruptive tools will compel fresh perspectives and innovative methods to guarantee kids' learning.
- iii. Online learning is now possible, which may be considered a disruptive innovation in the field of education. Therefore, there are forces for change that encourage disruptive innovation in online learning and other fields.

### **Reasons for Disruptive Innovation in Nigerian Open and Distance Learning**

Jegede (2016) explains that when more and more acclaimed new technologies are accepted, adapted, integrated, or promoted, it is imperative to highlight the benefits of disruptive technology in the delivery of education in ODL. A variety of instructional delivery strategies have been proposed as alternatives to synchronous or asynchronous educational transmission. Since the introduction of correspondence-based distant education, there are now several communication technologies that can be used in educational settings. The following are some of the communication technologies that have been and are still used in Nigeria's ODL.

(a) Telephone, answering machine, voicemail, audio conference, AM/FM radio, audiotape, CD, talkback radio, mobile satellite,

(b) Communications, text, and print (Cable Network International Satellite, Cable Network- Local Cable Network Wide Area);

(c) Image (Electronic Whiteboard, Facsimile, Imaging);

(d) Audio, video, and

(e) Image (Electronic Whiteboard, Facsimile, Imaging) (still video/slides, video tapes, teletext, television, talkback TV, video disc, CD TV, DVD video conference, VCD). Various media (e) (including, but not limited to, wireless communication, satellite technology, DVD, and VCD) (Jegede, 2016)

Because of the aforementioned, the paradigm of being the center of instruction must be modified in favor of being a facilitator. According to Briamoh (2015), many African nations are not all prepared to use any kind of technology for educational reasons. Inadequate government attention, expensive costs, and insufficient or constrained bandwidth are additional linked challenges. The implication is that coordinated efforts should be made to acquire, promote, develop, and adopt the necessary skills and mentality for the use of disruptive technologies in ODL in Nigeria.

### **Advantages and Difficulties of Open and Distance Learning in Nigeria**

In order to free students from geographical and chronological constraints and to give both individual and group learners flexible learning alternatives, the open and distance learning (ODL) strategy places an emphasis on open access to education and training (Ghosh, Nath, Agarwal, Nath & Chaudhury 2012). ODL is characterised by its openness to everyone and its simplicity. Anyone can use ODL as a type of remote learning, regardless of their age, location, educational level, or ethnicity. Separated from the distance that must be travelled to study away from the ODL centre, institution, or college is the time spent teaching and learning. Accessing free online material, enrolling in free open learning courses, collaborating on initiatives to create open knowledge (such as wikis, websites, and so forth), actively maintaining a study plan, and meeting all deadlines for assignments are other characteristics.

However, ODL is renowned for two specific characteristics, namely:

- (a) Physical separation between teachers and learners during lessons; and (b) the use of diverse technologies to promote communication between students and teachers as well as between students themselves

Four characteristics that distinguishes ODL (Simonson, 2022) namely:

- i. ODL is conducted by institutions; it is not self-study or conducted in a setting other than an academic setting.
- ii. Students and teachers may be separated by geography, as well as by time and place;
- iii. Interactive telecommunications establish connections between students (individuals) in a class and the instructor; and
- iv. Fourth, ODL, like other learning methods, creates a community of learners, also known as a learning group, made up of students, teachers, and instructional materials.

The following advantages of ODL were underlined by Clark (2020)

- (a) Self-pacing: When pursuing ODL benefits, students study at their own pace rather than adhering to a classroom timetable;
- (b) ODL is known to be cost-effective; (c) learners can study anywhere in the world; (d) the sitting and arrangement in the classroom may be avoided;
- (e) Scheduling: The ODL timetables are more flexible. This enables professionals, parents, and students to attend classes whenever it is convenient for their schedules;
- (f) Networking: ODL gives students the chance to connect with a wider variety of people. It provides greater chances for networking;
- (g) A variety of course options: ODL offers the chance to enrol in additional classes and access programs that are not offered nearby;
- (h) Accessibility: ODL offers accessibility for people who live outside of ODL Centres. In urban, rural, or any other location, students can pursue their education; and
- (i) Risk and Travelling Expenses are Significantly Reduced: Travel risks and expenses are significantly reduced.

From notable theses from South Dakota State University (2017); five advantages of ODL are:

1. Flexibility: ODL permits students who don't live on or close to a college campus.
2. Affordability: Economic/cost-effective affordability.
3. Quality: The knowledge and degree earned through ODL are of the same caliber as those from conventional institutions.
4. Personal Development: Knowledge obtained through ODL can be used to a variety of fields outside of academia, such as research, leadership, communication, time management, and others.
5. Networking: Learners are able to connect both locally and globally.

Moreover, Jegede (2016), pointed out the following advantages, including but not limited to;

- (a) Access and equity for overall development
- (b) Easing social ills like poverty and illiteracy.



- (c) Improving the ability to develop human resources.
- (d) The creation of a knowledge-based and educational environment through lifelong and comprehensive education.

Though, ODL in Nigeria has many potentials and obvious advantages, there are also problems that need to be resolved. The difficulties include, but are not limited to:

- (a) Poor funding: It is well known that education receives inadequate funding, with less than 10% of the annual budget set up for it.
- (b) A lack of adequate modern technology suited for ODL.
- (c) A negative attitude towards ODL programs as well as the acceptance, interpretation, or use of contemporary technology on the part of students, facilitators, and other ODL stakeholders.
- (d) The price of technological advancements, such as modern or disruptive technology, is on the higher side.
- (e) Inadequate staff or personnel: ODL centres appear to lack qualified personnel.
- (f) Epileptic Power Supply is another significant issue. This has a lot to do with recent problems with national grids.
- (g) Recognition of ODL graduates' calibre, academic standing, and professional experience by society or institutions.
- (h) Limited Internet Access: This is a result of the internet services' limited bandwidth.
- (i) Lack of motivation: The difficulties with the epileptic power supply and networking are discouraging.
- (j) Terrible Economic Situation: In addition to the program's inadequate funding, the terrible status of the nation's economy has had a significant impact on ODL students. Basic disruptive tools like a laptop, an iPhone, and other such items were out of the reach of the average ODL learner.

- (k) Attitudes that are unfavourable towards the usage and uptake of disruptive technology: If positive views are not sufficiently demonstrated, disruptive innovation penetration and promotion frequently encounter setbacks.

### **Problems and Prospects of Disruptive Innovation in Open and Distance Learning**

A special strategy approach that is emergent and focused on unforeseen possibilities, problems, and victories rather than planned and focused on improved understanding is required for disruptive innovation. Disruptive innovation issues and challenges, according to Bhalerao and Deshmukh (2019), include;

1. **Adaptability:** It would take time for disruptive technology to establish itself in ODL facilities and surroundings.
2. **More competition:** New concepts, tools, services, and the like have a propensity to challenge tried-and-true concepts, tools, services, or products. This is a significant obstacle for the new idea because the established ones may adopt any strategy to avoid rejection.
3. **User Acceptance:** Any new idea or product needs to develop and demonstrate its major significance over a period of time.
4. **Gestation period:** Any novel concept or item will require some time to take root within a company.
5. **Unrefined inventions:** In its early stages, new technology is often unproven and undeveloped, making it difficult to market such ground-breaking goods.
6. **Applications that haven't been tested:** It may take some time for a disruptive technology to establish itself. Such applications' efficacy is first unproven. The ability of the product to replace the previous or current may be questioned by users.
7. **Performance issues initially:** A problem-solving stage is one that almost all innovations go through. Consumers of today are used to this kind of connection with recently created software or apps. To fix bugs and other issues with the technology, updates and patches are required. Any disruptive technology goes through the same procedure, which might make early adoption more difficult.

### **Open and Distance Learning's Potentials for Disruptive Innovation**

Innovation in technology can either be disruptive or long-lasting. Considering that disruptive technology is entirely new, it has a better future in ODL than sustaining technology, which relies on minor improvements to technology that already exists. The majority of ODL stakeholders must have easy access to technology for it to be considered disruptive. Due to their high cost, revolutionary inventions frequently fail to have a significant impact. In many cases, the degree or gravity of the changes a technology makes when it enters the mainstream determines whether or not it is disruptive (Indeed Editorial Team, 2020; Meryer, 2010). These were cited by Christensen (2000) as elements that could lead to subsequent disruptive technologies that could affect ODL;

- (a) Enabling Technology: A development that lowers the cost of a product and increases accessibility for a larger population.
- (b) An organizational or institutional model that is user-centered is referred to as a "innovative organizational model" (b).
- (c) Coherent Value Network: A type of network where disruptive technology succeeds and suppliers, distributors, and other stakeholders benefit. Disruptive technologies have the potential to impact growth, employment and inequality by creating new product infrastructures and different labour skills.

Unquestionably, disruptive technologies can benefit consumers by increasing the accessibility and affordability of goods and services. Cloud computing, advanced robotics, fully and almost driverless cars, next-generation genomes, energy storage, 3-D printing, and advanced materials, renewable energy, open and distance learning are the 12 areas that the Mckinsey Global Institute (MGI) has identified as having the greatest potential for disruption and economic impact by 2025.

Chiku (2017) asserts that disruptive technology's debut in Nigeria is not particularly recent. Nigerians have already been affected by various technological changes that have raised their standard of living while also causing some conflict between disruptive markets and disruptive technology. Nigeria may encounter disruptions in these four principal areas:

- (a) Transport: The launch of Uber in important Nigerian cities like Ibadan, the Lagos region, Kano, Abuja, and Port Harcourt, among others.
- (b) Unmanned aerial vehicles (UAV) and remotely piloted aircraft systems (RPAS) are two examples of drone technology.

- (c) Trade and e-commerce refer to the growth of internet sales and purchasing, online goods and services, digital distribution, and other e-commerce-related activities.
- (d) Education: As technology and innovation continue to have an impact, learning is evolving from a simple process to a more complex one. In post-secondary institutions all across the world, ODL and online learning are becoming more and more popular. Bookstores and publishers have been impacted by the growth of ODL, online learning, and learning materials. ODL, online instruction, and online courses upend the traditional teaching paradigm. There is no longer a requirement for teachers and students to be present in person before class may start. Meetings for exchanging knowledge can be held virtually.
- (e). Financial Services: Banks and the financial sector as a whole could be disrupted by the advent of virtual or crypto-currency. As this financial disruptor gives citizens the ability to act as their own banks, institutions are likely to lose their importance. In Nigeria, there are several organizations that control technology. The National Office for Technology Acquisition & Promotion and the Nigeria Information Technology Development Agency are two of them (NOTAP).

## **Conclusion**

Technology advancements and innovation bring about notable change that eventually has a big impact on ODL and education as a whole. Technologies associated with disruptive innovation are extremely potent tools for influencing ODL's penetration, usability, and quality in Nigeria. Disruptive technologies essentially serve as a pedagogical supplement to the traditional methods and approaches applied before to their introduction. The adoption of its technology or innovation will permeate all ODL centres in Nigeria in order to keep up and be on par with global recognition and acceptability, to name a few implications of this study. The deployment of disruptive technology in Nigeria's ODL would result in a paradigm shift from onsite learning to online learning.

## **Recommendations**

In light of the aforementioned, the following recommendations were made:

- First, a sound government policy that supports the development, adoption, and application of disruptive innovation and associated technology is necessary.

- Second, the inconsistent electric power supply needs to be sufficiently rectified to allow for the utilization of contemporary technological developments. If accomplished, this will significantly raise the standard of other economic sectors outside ODL and education. More importantly, all ODL stakeholders ought to use, integrate and adapt new technologies with a favorable attitude toward global change.
- In addition, the National Open University of Nigeria (NOUN), the 14 Nigerian Universities authorised to offer ODL courses, the Nigeria Universities Commission (NUC), and other universities in Nigeria should embrace, support, promote, and implement the disruptive change and its technologies and innovations in ODL centres in Nigeria in order to facilitate, enhance the quality, and provide better services in ODL centres in Nigeria.
- Last but not least, all ODL centres across the country (NITDA) should have adequate and appropriate leadership roles provided by the technological research and development organisations that regulate technology in Nigeria, such as the National Office for Technology Acquisition & Promotion (NOTAP) and Nigeria Information Technology Development Agency.

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