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A Proposed e-Readiness Assessment Model for University Libraries in Nigeria

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ABSTRACT

Information and communication technology (ICT) deployment has been prompted by the desire to increase effective services and have a favorable impact on organizational development. The development in the creation of e-readiness frameworks in many organizations, including libraries, is as a result of this demand. While the e-readiness study is widely used in libraries developed nations, it has not yet expanded into many libraries in underdeveloped nations. This study's objective is to close this knowledge gap by outlining a model for e-readiness in Nigeria, with a focus on university libraries. The study has an e-readiness framework with eight (8) variables that is guided by the Network Readiness Framework, the Digital Media Readiness, the Digital Opportunity index, and the e-Readiness Ranking. The suggested model will use the eight variables, internet literacy, human resources, ICT policy, affordability, access, education, and usage, as measures and measurements. The proposed approach is intended to provide as a springboard for empirical investigation into the evaluation of e-readiness in Nigerian University libraries.

Keywords: ICT, e-Readiness, University Libraries, Nigeria

1. INTRODUCTION

Over the past few years, scholars from various professions have paid close attention to the e-readiness research. According to Hanafizadeh, Hanafizadeh & Bohlen (2013), many scientific journals and conferences are very concerned about being e-ready. This theme has received particular attention from researchers ever since 2002. The idea of e-readiness can be viewed from various angles. The micro-perspective evaluates the sector, community, public system, enterprise, organization, institution, and individual level while the macro-perspective evaluates the global and national level, or the country, government, and policy level (Hanafizadeh, Hanafizadeh & Bohlen., 2013).

Currently, there are significant differences between nations in terms of e-readiness. However, the global trend is favorable and is seen in every continent. The adoption of technology by people,

corporations, and governments has significantly increased worldwide. The disparity between industrialized and underdeveloped countries persists despite this progress. Nigeria and the majority of underdeveloped nations have relatively poor chances of taking use of the potential provided by ICT. According to the Global Information Technology Report of the World Economic Forum (2016:30), Nigeria is as follows:

> Nigeria remained in position 119 overall in the NRI rankings, but this fact shows significant heterogeneity in terms of changes to individual networked readiness dimensions, including a six-spot increase in readiness (to 117th) and a ten-spot decrease in impact (to 114th). Nigeria achieving complete mobile service this year is mostly to account for the improvement in readiness; broadband prices have also decreased marginally but are still exorbitant. On many fronts, the political and regulatory environment is thought to be getting better, but the business and innovation environments are thought to be getting worse. Although it seems as though there has been a considerable decline in government usage and involvement over the past year, this may alter under the new administration that took office in 2015. Both the economic and the social implications of ICT show deterioration, suggesting that overall conditions have worsened. Taking action to close the skills gap in the nation should be a policy priority with broad advantages in other sectors (134th).

The idea of "e-readiness" can be applied to people, organizations, and social phenomena. Readiness is characterized as a willingness, ability and/or preparation for a particular activity (Hoffmann, Lutz & Meckel, 2014). On an individual level, e-readiness is frequently linked to users' knowledge, trust, and acceptance of technology. The term e-readiness refers to an organization's capacity and readiness to use ICT advancements on an organizational level. This assumes that the person or organization is e-ready. Having the appropriate ICT expertise, knowhow, infrastructure, or resources to interact with them (Van Belle, 2009). The amount to which the library institution is prepared, able, and willing to use ICTs to improve information service delivery is how this study conceptualizes e-readiness in university libraries.

Global Technology Report (2016) states that e-readiness is based on whether an individual, organization, or country has the "drivers" required to bring about the promise of digital technologies and whether these technologies are having an impact on the economy and society. Different perspectives have been used by researchers to examine e-readiness in developing nations. These include e-government, e-business, e-commerce, e-governance, and e-library (Motahari-Nezhad, Shekofteh & Kazerani, 2018; Mpofu, Milne & Watkins-Mathys, 2009; Aghaunor & Fotoh, 2007; Obijiofor, Inayatullah & Stevenson, 2005). The findings of these

studies confirmed that e-readiness is fraught with difficulties, such as weak legislation, a lack of ICT infrastructures, limited bandwidth, and low ICT competency among professionals and the general public. Other significant difficulties include lack of access to fundamental services, financial limitations, and a lack of knowledge and skills.

In Nigerian university libraries, e-readiness is affected by several factors including infrastructural deficiencies and lack of access to computer and internet facilities (Ditimi & Ayanda, 2013; Mostert & Olorunfemi, 2013). All these factors remain problems that have the capacity to limit the potentials of university libraries to be fully e-ready for information service delivery.

RESEARCH PROBLEM

Information and communication technology has significantly spread throughout the library over time. By facilitating the gathering, packaging, and access to information and removing time and distance constraints, those spread have made library operations practical. Numerous studies have compared the e-readiness of individuals, organizations, and nations using various models. According to Tarvid (2008), these studies mostly concentrate on an "entity" (in most cases, a country). The current study's point of view is that previous studies are incomplete because none have examined e-readiness in Nigerian university libraries using a multi-e-readiness approach. This gap is crucial for a number of reasons.

First, there is no general structure in place to assess how e-ready university libraries are in Nigeria. It is crucial to create a framework that is completely opaque in order to assist the e-readiness of university libraries across the nation. A structure that will act as a guideline for all university libraries wishing to adopt ICT

Also, variables that may be specifically customized to the context of libraries and adequately depict the phenomenon's complexity are not included. Third, the indicators and factors used to gauge e-readiness across nations are too general to be useful in the particular context of libraries. Additionally, Choucri, Maugis, Madnick & Siegel (2003:1) point out that e-readiness studies and attendant indices have assumed a fixed, "one-size-fits-all set of requirements", regardless of the distinctiveness of various countries or the desire for specialized application. As a result, Choucri, Maugis, Madnick & Siegel (2003) emphasize the significance of creating multiple assessment tools for varied stakeholders. To address these issues, the current study suggested creating a

multi-level e-readiness model that would allow university libraries to be evaluated for their level of e-readiness.

STUDY OBJECTIVES

The two goals of the paper are as follows:

1) To determine the factors influencing the University Library's e-readiness in Nigeria.
2) To provide a conceptual framework for an e-readiness model for university libraries in Nigeria that takes these factors into account. The model will be created using existing e-readiness frameworks and e-readiness empirical investigations.

2. LITERATURE REVIEW

The body of research on e-readiness is extensive, and there are numerous frameworks and models that have addressed the various metrics and indices that affect e-readiness. Although there is a limited amount of research on drivers of e-readiness in university libraries, ICT literature has come a long way in examining various determinants of e-readiness. Early studies on e-readiness have been reviewed, and it was discovered that the majority of them were based on models like the Network World (CID, 2000), the Digital Access Index (ITU, 2003), the ICT Diffusion Index (UNCTAD, 2005), the Digital Opportunity Index (ITU, 2007), the e-Readiness Ranking (Economist Intelligence Unit, 2007) and the Network Readiness Framework (World Economic Forum, INSEAD & InfoDev, 2016). But these frameworks include different indications for gauging ICT readiness.

A. The Network Readiness Framework

The World Economic Forum, INSEAD, and InfoDev (2016) Network Readiness Index (NRI) is based on a number of key presumptions. First, in order to fully utilize ICTs, a favorable environment is essential. Second, in order to have an impact, you must be "e-ready", which is determined by the infrastructure, skills, and availability of ICTs. Third, a collective effort across society is necessary to fully reap the rewards of ICTs. This implies that all parties involved- the government, private industry, and the general public must work together. Finally, for the entire set of drivers to have a greater impact, they must interact, co-evolve, and strengthen one another. The environment indices (political and regulatory environment, business and innovation

environment), readiness indices (infrastructure, availability, and skills), and usage indices (individual, business, and government) are all interrelated (World Economic Forum, 2016).

Network Readiness Index (NRI) is defined as the level of community readiness to take part in and profit from ICT innovation. In conclusion, NRI aims to assess the relative ICT usage and development in a specific nation and highlight its ICT strengths and limitations. The NRI's utilization of both quantitative and qualitative characteristics allows for better representation of reality. However, because of the qualitative factors, the evaluation is rather arbitrary (Tarvid, 2008). In addition, few indicators evaluated the actual utilization of ICT infrastructure.

B. The Digital Media Readiness (DMR) Framework

The purpose of the Digital Media Readiness (DMR) index was to "help in gauging a community's access to and usage of media, entertainment, and information products, services, and content, referred to simply as digital media" (World Economic Forum, 2016, p 4). Communities can be countries, cities, or any other group of residents who stand to gain from becoming digitally ready. Anyone can use the DMR framework as an open-source tool. The framework's ultimate goal is to aid the facilitation of investments, incentives, and programs that will result in the global sustainable development of the MEI business.

The DMR index divides pertinent indicators into three categories, with multiple variables being used to measure each category. Environment (law, business, education, and culture), capacity (infrastructures, accessibility, affordability, and skills), and usage are the primary areas (government and private sectors). The environment category evaluates how much a community's market dynamics and legal system encourage innovation, the advancement of ICT, and the usage of digital media. The infrastructure category gauges how well-equipped a community is to support the creation and consumption of digital media, including thing like mobile network coverage, global internet bandwidth, energy, etc. It also takes into account other elements like cost, accessibility, and the general skill level of the populace. The utilization category evaluates the level of adoption of digital MEI, ICTs, and new technologies by society's stakeholders (World Economic Forum, 2016).

C. Digital Opportunity Index

The ITU's Digital Opportunity Index (DOI) (2007) was created as a measure for monitoring progress in closing the digital divide and putting the World Summit on the Information Society's

outcomes into practice. Three categories- opportunity, infrastructure, and utilization- make up the index; each category is measure using a variety of indicators. Each variable has a "goal post", or preferred value, that it desires to attain, according to (Tarvid, 2008, p.6). Tarvid added that it is simple to determine how much variable in the DOI may be improved because of the obvious goal post. There are no qualitative factors; therefore all variables are directly measured.

D. E-Readiness Rankings

The Economic Intelligence Unit's E-Readiness Rankings (ERR) (2007) described e-readiness as the current state of a country's ICT infrastructure and its citizens' and governments' ability to utilize ICT for their benefit. Government can use the index to compare the success of their technological initiatives to those of other nations. Additionally, the ranking offers an overview of the world's most attractive investment sites to businesses looking to engage in online operations. In its previous ERR publication; the EIU based its index on six categories, with each category being measured by a set of qualitative and quantitative factors (Tarvid, 2008).

The categories measured by ERR include connectivity and technology infrastructure (broadband adoption, broadband affordability, internet adoption, PC adoption, and Wi-Fi hotspot adoption), business environment (overall political environment, tax regime, foreign investment policy, and financing), social and cultural environment (level of education, level of internet literacy, degree of innovation, and technical skill workforce), legal environment (effective of traditional legal framework, laws covering the internet, level of censorship), government policy vision (government spend on ICT as a proportion of GDP, digital development strategy, e-government strategy, online procurement), and consumer and business adoption (consumer spending on ICT per capita, level of e-business, level of online commerce, availability of online public services for citizens and businesses).

E. Examining Empirical Research on e-Readiness in Libraries

Studies on e-readiness in university libraries in Nigeria are less concentrated, despite rising study on the factors and metrics that assessed e-readiness in nations and commercial organizations. Understanding the factor and indices affecting e-readiness in libraries can assist forecast how e-ready libraries in Nigeria are, as ICT is crucial for providing better and more efficient library services. With this knowledge, researchers may assess the libraries' e-readiness to ICT utilization.

Environmental, infrastructural, and use indices are the current aspects used for evaluating and analyzing e-readiness in nations, businesses, educational institutions, and libraries. For instance, Motahari-Nezhad, Shekofteh & Kazerani (2018) evaluated the level of e-readiness of the libraries at Shahid Beheshti University of Medical Sciences in terms of four dimensions: people, technology, programs and enhances of the networked environment. By using a self-prepared questionnaire for managers, staff, and ICT officials, the study discovered that libraries had an average to high status in terms of human resources, electronic infrastructure, network services and programs. Overall, the e-readiness of all the libraries ranged from average to good.

Similar to this, Kamau, Kiplang'at & Odini (2015) evaluated the e-readiness of university libraries in Kenya for online students using for indicator: ICT infrastructure, electronic communication system, electronic services, and information literacy. The study found that the ICT infrastructure is weak, e-communication is low, there is lack of awareness of the e-services provided by the libraries, and there is poor usage of e-resources. These findings were reached using quantitative and qualitative approaches. Therefore, the results point to a poor degree of e-readiness in the two case study areas.

Furthermore, Chaputula & Mutula's study (2018) examined the e-readiness of public university libraries in Malawi to use mobile phones in the provision of library and information service. The study found that the institutions had the ICT infrastructure required for providing library and information services using mobile platform. This finding, however, showed that the institutions lacked operational ICT policies to control how libraries and information services were provided via mobile devices. The survey also showed that although there were enough people to manage the delivery of library and information services through mobile phone, they lacked the expertise required to deliver high-quality services. Chaputula & Mutula (2018) used in-depth semi-structured interviews and s survey questionnaire to gather responses from university/collage librarians, ICT directors, and students. They combined a quantitative and qualitative strand.

Yaghoub & Ismaiel (2013) also looked at the level of e-readiness in Iran from the perspective of organization and management, human resources, information, ICT, and communication with the outside world. Based on IUP, a tool designed to gauge an organization's readiness for electronic commerce, the study created a model for evaluating the e-readiness of academic libraries. A questionnaire was utilized to collect the data for the study, which combined a survey method

with a descriptive approach. Yaghoub & Ismaiel (2013) found that the University of Tabriz libraries had a lower-than-desirable total e-readiness score of 2.44 out of a possible 5 points.

By creating a proposed e-readiness evaluation model with 17 indicators, Kashorda & Waema (2011) evaluated e-readiness in higher education institutions in developing economies. The indicators were divided into five categories: institutional ICT strategy, network access, networked campus, networked learning, and networked society. Additionally, the model divides the indicators into approximately 88 sub-sectors based on objective data and perpetual information. Kashorda & Waema (2011) claim that the suggested model has created a framework of quantifiable targets for grading each of the 17 sub-indicators on a scale of 1 to 4, with 1 denoting the lowest state of preparedness and 4 denoting the highest stage of preparedness. Since then, this framework has undergone two independent e-readiness evaluations in East Africa.

3. FORMULATION OF THE PROPOSED FRAMEWORK

This study highlights critical characteristics appropriate for the construction of an e-readiness model in university libraries in Nigeria based on a survey of the literature and an examination of published e-readiness frameworks and models. There are 8 indicators in the model (see Figure 2).

- **ICT Infrastructure**

ICT infrastructure, according to Gade & Agarwal (2017), is an important element and a deciding factor in evaluating e-readiness. The benefits of computerization cannot be reaped by libraries without a strong ICT infrastructure. The infrastructure of university libraries is captured by the ICT infrastructure variable in the framework. It also includes the infrastructure needed to advance ICT, such as network speed, internet bandwidth, and availability. Additionally, it includes the infrastructure that is important for the growth of ICT, such as the production of electricity, internet accessibility, internet capacity, network speed and quality, and mobile network coverage.

- **Internet Literacy Skills**

Determining e-readiness may also require certain abilities and knowledge on how to use the internet and its applications. Internet literacy is the capacity to use online tools for research, creation, and communication in order to contribute productively at home, at school, and in

society. The idea of the internet literacy also emphasizes purposeful, conscientious, and thoughtful usage of the internet and other applications, in addition to having pure technical proficiency in using internet applications and related software (Stodt et al., 2018). According to this concept, internet literacy measures a person's proficiency with both computer hardware and software and internet applications. Additionally, it will track how and why someone uses the internet to publish their own material and communicate with others.

- **Human Resources**

Tarvid (2008) agrees that the human resources issue is one element that is not as heavily emphasized in the current models. Despite the fact that it is quite vital, this is the case. For instance, Van Belle (2009:9) claims that "even the most expensive, cutting-edge computers will be useless if staff members do not want to use them or are not trained to do so". Human resources evaluate the availability of skilled ICT personnel and measured the level of education of the ICT departmental workforce in this framework.

- **ICT Policy**

Policies, rules, and guidelines are the cornerstone for the consistent management and application of e-readiness (Gade & Agarwal, 2017). It is required that university libraries establish an ICT policy. Here, the library outlines its plans for the future of ICT in library services, including its expectations, objectives, content, and actions. It will be challenging for university libraries to compete in the knowledge based economy without a solid ICT policy in place. It will be challenging to support their efforts to build a knowledge-based society. ICT policy variable in this framework evaluates the presence of a solid ICT policy plan (vision blueprint) for university libraries, a technological inventory, and a thorough ICT policy plan that takes into account support for ICT training activities and monitoring activities.

- **ICT Affordability**

The degree of e-readiness is one of the most crucial components. The amount of money invested in establishing or using ICT is one of the most crucial factors in e-readiness. Affordability extends beyond just the cost of purchasing hardware to include the cost of purchasing software, maintaining the system, paying for connectivity, and staff training (Van Belle, 2009). By assessing the price of a broadband internet subscription, the affordability variable in this framework gauges the capacity of university libraries to finance ICT and new developing

technologies in the libraries. A viable ICT budget and an ICT upgrade budget with anticipated enhancements are evaluated.

- **ICT Access**

Access variable assesses the availability of computers and the internet at university libraries. Additionally, it will evaluate deterrent elements including equipment costs, access costs, logistical problems and, lack of recognized demand.

- **Librarians Education**

The education variable determines if there are significant education programs and professional training programs available that are designed to increase ICT knowledge and usage. The readiness of the library to accept ICT can be determined by a strong educational system that emphasizes computer application.

- **ICT Usage**

It is crucial to observe how a university library employs or make use of the ICT resources at its disposal. Sometimes organizations do have ICT resources, they may not be utilizing them effectively or fully deploying them (Van Belle, 2009). Van Belle emphasizes that this where the organizations should concentrate the majority of its efforts because utilizing ICTs is the main reason it has them. The utilization variable in this framework gauges how much ICT has been utilized by university libraries.
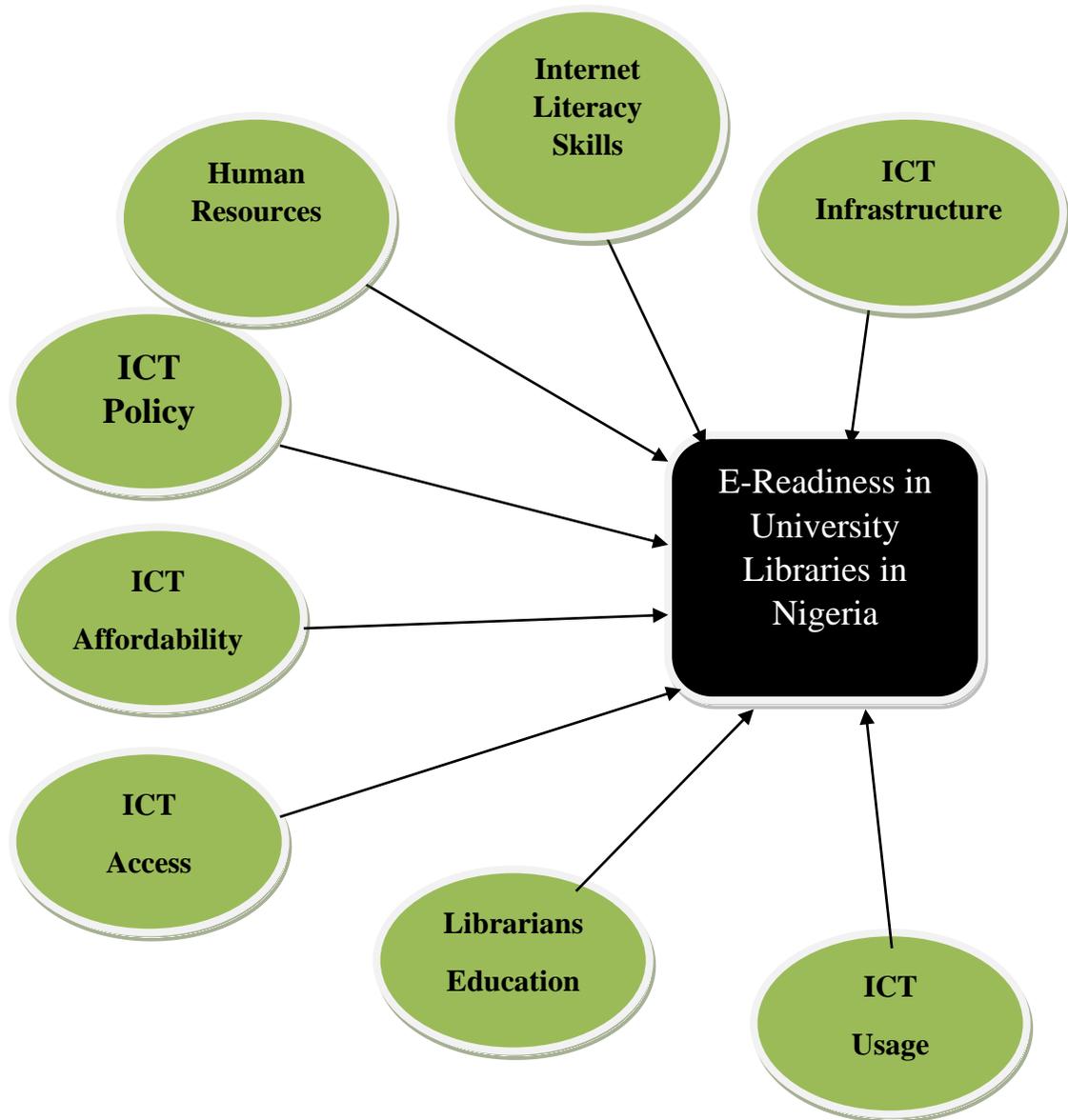
Figure 2: University Libraries E-readiness Framework (source: Developed by the author)

4. IMPLICATIONS

There are various research implications of this study. Understanding libraries' willingness to accept and employ these technologies is an essential research topic because ICTs and new developing technologies are constantly having impact on libraries. The state of e-readiness in university libraries is a complicated matter. First, a research model must be created in order to pin point the factors and metrics that influence e-readiness in university libraries and their

connections. Although several e-readiness model and frameworks have been examined in this research, it is necessary to create a model that will satisfy the need of the library and be appropriate.

This research holds that it is necessary to identify the critical factors for assessing the e-readiness of university libraries. A mixed technique approach can be used to accomplish this. In order to deepen and enrich the framework previously described, the author will initial apply the philosophical perspective of constructivist together with qualitative and open-ended research methodologies. The author will later carry out a survey to demonstrate the model's applicability. To do this, the study models predicted association for three Nigerian university libraries – the Sir Kashim Ibrahim Library at A.B.U. Zaria, the Bayero University Kano (BUK) Library and the UMYU, Katsina – would be developed and tested. The survey's results will help the author validate the study model and comprehend the r-readiness of university libraries.

5. CONCLUSION

This study defined e-readiness of a university library and created a framework for measuring it, called the e-readiness model. Eight (8) indicators- infrastructure, internet literacy, human resources, ICT policy, affordability, access, education, and usage- will be used in the proposed framework to evaluate e-readiness. The framework's elements are thought to be quantifiable and comprehensible. Practitioners are encouraged to adopt the model and make necessary modifications. It would be possible to create a practical e-readiness model that would meet the needs of university libraries in Nigeria with the support of specialists with knowledge of relevant policies and theoretical underpinnings.

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