

## **DIGITAL INFORMATION ACCESSIBILITY AND INFORMATION MANAGEMENT SUCCESS OF TELECOMMUNICATION FIRM IN PORT HARCOURT**

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### **ABSTRACT**

The main aim of the study was to ascertain the relationship between digital information accessibility and information management success of telecommunication firms in Port Harcourt. The study employed the dynamic capability theory as the baseline theory underlying the study. The study adopted the explanatory research design, using a cross sectional approach. The targeted population comprised the entire leadership of the four functional and operational telecommunication firms in Port Harcourt. As a macro study, the researcher adopted a census approach, however, five (5) managers were chosen from branch offices of the four (4) functional and operational telecommunication firms in Port Harcourt, giving us a sample of one hundred and twenty (120) managers. Data for the study was collected using structured close-ended questionnaire. Administered and retrieved data was analyzed using the Spearman Rank Order of Correlation Coefficient, with the help of Scientific Package for Social Science (SPSS). The findings revealed that there is a positive and significant relationship between digital information accessibility and information management success of telecommunication firms in Port Harcourt, Nigeria using the Pearson Product Moment Correlation coefficient at 95% confidence interval. From the findings made, the study therefore recommended that; the tested attributes of digital information accessibility in this study should be adopted by telecommunication firms in Port Harcourt, so as to enhance information management success of telecommunication firms in Port Harcourt.

**Keywords:** Digital Information Accessibility, Indexing/Cataloguing, Search Optimization Techniques, Information Architecture, Information Availability, Information Accessibility

### **INTRODUCTION**

Nigeria's venture into the telecommunication sector dates back to 1886, a journey that was propelled by the need for the colonial government to connect and engage with other colonial governments like that of; Ghana, Sierra Leone, Gambia and England. By 1893 colonial offices in Lagos, Jebba and Illorin were provided with telephone services. Gradually a national telecommunication network was emerging. By 1923 the first commercial telephone service between towns of Itu and Calabar was established. That is how Nigeria's foray into the telecommunication industry started and has advanced to its current state where the nation is connected especially for voice calls which is our main focus in this study by telecom giants; MNT, Globacom, Airtel and Etisalat

Information management success is the strategic process of capturing, organizing, storing, securing, retrieving, and disseminating information in order to ensure that its value and accessibility for decision-making and operational efficiency within organizations. It can also be regarded as the appropriate and optimized capture, storage, retrieval and use of information. It may be at a personal or organizational level of information management. From an organizational standpoint, it concerns a cycle of organizational activity; the acquisition of information from one or more sources, the custodianship, and the distribution of that information to those who need it, and its ultimate disposal through archiving or deletion and extraction.

Digital information accessibility in telecommunication firms and indeed every other organization plays a vital role in all fields of human endeavours and the world has increasingly become more dependent on it. According to the online dictionary of Library and information science (ODLIS, 2004), electronic information resources can be defined as Material consisting of data or computer program(s) encoded for reading and manipulation by a computer, by the use of a peripheral device directly connected to the Computer, such as a CD-ROM drive, or remotely via a network, such as the Internet category includes software applications, electronic texts, bibliographic databases, institutional repositories, Web sites, e-books, collections of e-journals, etc.

Digital information resources are convenient to search and access vast amount of information within the shortest possible time. These electronic information resources are available on the Internet, which can be accessed free of charge or through university's subscriptions to provide free online databases access to their customers to support academic activities especially in the area of teaching, learning and research. Various scholars in the field of Library and Information Science have discussed how electronic resources have positively boosted the timely and accurate provision of information to users without delay. Slim, et al (2001) defined electronic information resources and services as that which can be seen as what users' access electronically via a computing network from inside the library or remotely from the library. Tammaro (2006) observed that electronic information resources include websites, online databases, e-journals, e-books, CD ROMs, audio visual, multimedia, etc Electronic information resources provide many advantages over the traditional print resources such as 24x7 access, universal access; saving physical space; ability to linked indexing and abstracting databases; accessibility from the user's home, office, or hostels irrespective of whether or not the physical library is open. Similarly, Kinber (1968) defines electronic information resources as the information stored in a medium which requires an electronic device to read its content. Information stored in different electronic media such as floppies, CDs, magnetic tapes, videos etc. can be retrieved with the help of other electronic devices like computers, video players etc.

The term 'information management' is used ambiguously in the literatures of several fields: in computer science and its applications it is used as a synonym for information technology management (Synott & Gruber 1981) or as identical to 'data management', where the emphasis is on the structures underlying quantitative data and their relationship to the design of databases. In business or management studies it has similar connotations to technology management, with an emphasis on the relationship of information technology to business performance and competitiveness (Synott 1987).

In the field of librarianship and information science it is identified with the 'emerging market' for information workers (managers), whose perception of information embraces data, organizational intelligence, competitive intelligence, external information resources of all kinds and the associated technology (manual or machine) for handling these different sources. Compared with the other areas, information management in this latter context is more widely concerned with the meaning of information for the information user and with information retrieval issues, all of which are integral to organizational success.

A further difficulty in defining information management arises out of the often synonymous use of the term information resource (or resources) management (IRM), the term used by the

US National Commission on Federal Paperwork in its report (1977), where 'paperwork', including electronic documents of all kinds, was defined as constituting the information in IRM. This usage appears to limit the idea of IRM, but the report goes on to say that an IRM function (in US government agencies) would incorporate a wide range of disparate activities, including records management, library management, computer systems, printing and reprography, microforms and word-processing centres. Scholars within and outside Nigeria have studied digital information accessibility, but to the best of our knowledge, none has studied digital information accessibility and information management success of telecommunication firms in Port Harcourt. This is the gap in literature that the present study intends to fill.

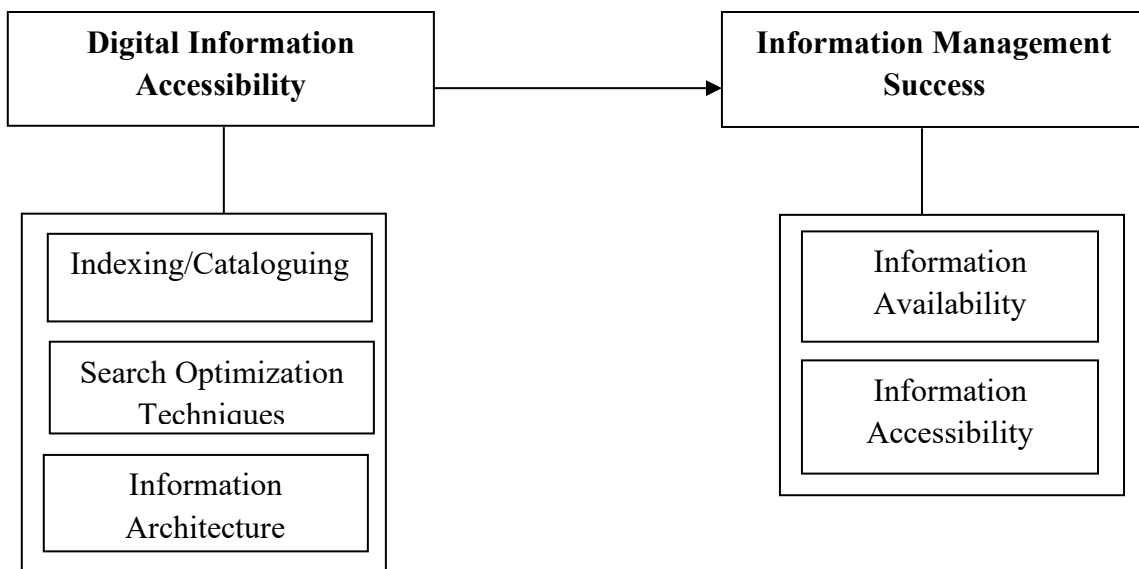


Figure: 1.1 Conceptual Framework for Digital Information Accessibility and Information Management Success

Source: Researchers' Conceptualization 2025

## THEORETICAL FOUNDATION

### Resource Based Theory

The resource-based theory (RBT) is an influential approach in strategic management. It has been widely applied as a managerial framework to determine vital resources for a firm to achieve a sustained competitive advantage. The theory provides an essential framework to explain and predict the fundamentals of a company's performance and competitive advantage. Resource-Based Theory (RBT) was first put forward by Penrose (2009), who proposed a model on the effective management of firms' resources, diversification strategy, and productive opportunities. It is a managerial framework used to determine the strategic resources a firm can exploit in order to achieve sustainable competitive advantage. It resonates with this study on the basis that, the adoption and implementation of digital information accessibility by telecom firms will bring about the much needed information management success by driving information accessibility and information availability.

### **CONCEPT OF DIGITAL INFORMATION ACCESSIBILITY**

Digital technology permeates every aspect of our society, mediating communications in education, the workplace, and interpersonal relationships. With people spending over 12 hours daily on digital media as of 2020, losing access to digital technology is a significant setback in our interconnected world (Nielson, 2020). Particularly during the Covid-19 outbreak, where the absence of digital accessibility poses a tangible threat to basic social engagement, digital accessibility turns out to be a precondition for social and economic activities. The growing emphasis on building an inclusive society, as seen in initiatives like the European Accessibility Act, has propelled research on digital accessibility. However, digital world is still suffering from substantial accessibility gaps, with disparities in internet connectivity and usage across geographic locations, gender, ages, and disabilities as of 2022 (Signe, 2023).

While technological advances, intelligence-supported such services, as artificial are widely acclaimed, there is much less focus on those who are technologically marginalized. For instance, a survey by WebAIM revealed that 95.9% of the top 1 million websites have WCAG conformance failures on their homepages (Parker, 2024). ADA digital accessibility lawsuits increased to 4,605 cases in 2023, indicating growing conflicts over digital accessibility for those excluded from digital services (Belova, 2024). Significant digital barriers still affect 1.3 billion people with disabilities worldwide, highlighting a technological advancements gap between and actual accessibility (Sommer, 2023). This emphasizes the need for a comprehensive understanding that will serve as the foundation for future research, decision-making, and policy development to achieve digital accessible society (Prado et al., 2023).

Surveying digital accessibility literature is crucial as a guiding framework for future research. Identifying mainstream accessibility studies will help understand who is missing and what should be addressed in current accessibility literature. Also, having a comprehensive conceptual understanding of digital accessibility will serve as a foundation for accessibility-related research, standards, and legal measures. While most conceptual definitions are limited to web accessibility literature, broadening the scope to digital accessibility will increase its relevance in the digital context.

#### **Indexing/Cataloguing**

Radzuan, Yatin, Junaide, & Mazlan, (2018) posited that, indexing is one of the most important process in the Retrieval Maklumat (IR) system. It forms the main function in the Information Retrieval process as it is the first step in helping to retrieve the information accurately and efficiently. The indexing can reduce the documentation activity to the mandatory term contained therein. Mapping from information to the respective documents contained therein. Among the effective indexes created from document collection, the material recovery process is simplified. Indexing continues to follow four levels of process namely content specification, tokenization of documents, processing of document terms, and index building. Indexes are stored in the form of different data structures such as direct indexes, index documents, lexicon and reverse indexes. Indexes can be built using different algorithms or schemes, such as indexing such as single-pass in-memory indexing, blocked-indexing, etc.

### **Search Optimization Techniques**

Search engine optimization is a process that uses a search principle for search engines (SE) to acquire higher ranking for Web Pages or websites to enhance the probability of website access. With the occurrence of Bing, Yahoo, Google and Ask the search engine optimization (SEO) principles and SE innovations have been in the process of development. SE is a methodology which depends on various techniques using a computer program to collect data from the Internet, and organizing and processing the searched information for displaying the search results to the users in a systematic way. A SE contains four working areas: searcher, indexer, hunter, and user. SE is not only the necessary function of the website to provide a convenience for users, but it is also an effective tool of understanding web user's behaviour. Effective SE allows users to discover the target information quickly and accurately. According to (Seema & Upasana, 2014), at present, the major Internet SE are Google, Yahoo, and Bing and so on.

### **Information Architecture**

The term "information architecture" is not new, and dates back to at least the 1970s; it has been used within some communities of organizational science, urban design, software development, and user experience (UX) research (Brancheau & Wetherbe 1986; Dillon & Turnbull 2005, Morville & Rosenfeld 2006; Downey & Banerjee 2010; Arango 2011). In these contexts, information architecture typically refers to a process of intentional, active design as performed by one or more "information architects." A representative definition of information architecture in this literature is the "organization of information to support findability, manageability and usefulness from the infrastructural level to the user interface level" (Downey & Banerjee, 2010).

The information architect's job, in this context, is to design systems with users in mind, to facilitate the best possible user experience and the highest-value engagement with information in those systems (Arango 2011). We aim to extend the traditional conception of IAs from this literature in two ways: first, to expand it beyond the scale of specific organizations, applications, or interfaces to encompass the flow of information throughout society, and second, to expand the concept of "design" to include non-deliberate processes. We are interested in information architectures that result from the combination of both deliberate and non-deliberate processes that unfold over multiple time scales. Although our perspective on information architectures differs from past usage, we adopt the term because, at heart, we still seek to describe and understand how the nature of social and technological organization facilitates how information is or is not accessed and transmitted.

### **NATURE OF INFORMATION MANAGEMENT SUCCESS**

The term 'information management' is used ambiguously in the literatures of several fields: in computer science and its applications it is used as a synonym for information technology management (Synott & Gruber 1981) or as identical to 'data management', where the emphasis is on the structures underlying quantitative data and their relationship to the design of databases. In business or management studies it has similar connotations to technology management, with an emphasis on the relationship of information technology to business performance and competitiveness (Synott 1987).

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A further difficulty in defining information management arises out of the often synonymous use of the term information resource (or resources) management (IRM), the term used by the US National Commission on Federal Paperwork in its report (1977), where 'paperwork', including electronic documents of all kinds, was defined as constituting the information in IRM. This usage appears to limit the idea of IRM, but the report goes on to say that an IRM function (in US government agencies) would incorporate a wide range of disparate activities, including records management, library management, computer systems, printing and reprography, microforms and word-processing centres.

### **Information Availability**

Availability of electronic information resources is about information being accessible as needed, when needed, where needed. The objective of availability is to enable access to authorized information or resources. Availability, in the context of a computer system, refers to the ability to a user to access information or resources in a specified location and in the correct format. Chandrasekhar (2006) observed that the availability of electronic resources depend on the availability of funds as well as the demand for their use Aguolu & Aguolu (2002) argue that availability should be viewed from both national and instructional levels. They attribute the lack of availability of information resources to the steady proliferation of universities: federal, state, and private, along with increases in students and faculty, and the diversification of courses and academic and research programmes, without adequate information resources to meet the actual and information needs. They identify obstacles to the development of adequate information resources.

### **Information Accessibility**

Accessibility is very important specifically as it focuses on special libraries and their access to entities, often through the use of assertive devices of printed and electronic devices or through technological format. It is one thing for the resources to be available and it is another thing to be accessible. Whatsoever is available but not accessible is equally useless, only what is accessible is usable. Ndagana (2000) in his opinion noted that the term "access" is used by different people in relation to quite bits and pieces of the whole as in subject open access and knowledge access system. However, each refers to one or more aspects of providing the means of access to information in a fuller sense to knowledge.

The accessibility of information resources is an important recurring theme in the library. According to Aguolu & Aguolu (2002), resources may be available in the library and even identified bibliographically as relevant to one's subject of interest, but the user may not be able to lay hands on them. The more accessible information sources are the more likely to be used. Readers tend to use information sources that require the least effort to access. They also noted that the availability of an information resource does not necessarily imply its

accessibility, because the source may be available but access to it prevented for one reason or the other. Garba (2009) posited that information resources can be accessible through the use of telecommunication and information technology. It enables access to information and services by minimizing the barriers of distance and cost as well as the usability of interference. Agyen-Gyasi, Lamptey & Frempong (2012) observed that the library's effectiveness was traditionally measured in relation to completeness and balance of collection, the adequacy of acquisitions, cataloguing, etc.

### METHODS

The study population embraced all registered and functional telecommunication firms in Port Harcourt, Nigeria. As a macro study; it adopted the entire population (census), however, 5 managers were selected from each of the quoted telecommunication firms in Port Harcourt Nigeria giving us a sample of 120. The study utilized structured-close ended questionnaire as a means of generating primary data from the respondents of the study. The validity of the instrument was determined by experts in the field of measurement and evaluation studies. Reliability in this study was determined using the Cronbach's Alpha coefficient with the aid of SPSS version 23. One hundred and twenty (120) copies of structured questionnaire were administered to the respondent while one hundred (100) copies were retrieved, cleaned and qualified for use. Measures of central tendencies and measures of dispersions were used in analyzing the respondent's demographics. More so, the simple Regression Analysis was used in testing the various hypotheses in other to ascertain the relationship between the predictor variable (Digital Information Accessibility) and the criterion variable (Information Management Success).

**Table 3.1 Reliability Coefficients of variable measures**

S/No	Dimensions/Measures of the study variable	Number of items	Number of cases	Cronbach's Alpha
1	Indexing/Cataloguing	5	120	0.861
2	Search Optimization Techniques	5	120	0.781
3	Information Architecture	5	120	0.789
4.	Information Availability	5	120	0.806
5	Information Accessibility	5	120	0.819

Source: SPSS Output, 2025

**RESULTS**

**Table 2: Correlation matrix between indexing/cataloguing and the Measures of Information Management Success**

			Indexing/Cataloguing	Infor. Availa.	Infor. Accessibility
Spearman's rho	Indexing/Cataloguing	Correlation Coefficient	1.000	.732**	.718**
		Sig. (2-tailed)	.	.000	.000
		N	140	140	140
	Information Availability	Correlation Coefficient	.732**	1.000	.719**
		Sig. (2-tailed)	.000	.	.000
		N	140	140	140
	Information Accessibility	Correlation Coefficient	.718**	.719**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	140	140	140

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source: Research Survey, 2025**

**H<sub>01</sub>:** There is no significant relationship between indexing/cataloguing and information availability of telecommunication firms in Port Harcourt, Rivers State.

The result of correlation matrix obtained between indexing/cataloguing and information availability was shown in Table 2. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. The correlation coefficient of 0.732 confirms the direction and strength of this relationship. The coefficient represents a strong positive correlation between the variables. The test of significance shows that this relationship is significant at  $p\ 0.000 < 0.01$ . Therefore, based on observed findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between indexing/cataloguing and information availability of telecommunication firms in Port Harcourt, Rivers State.

**H<sub>02</sub>:** There is no significant relationship between indexing and information accessibility of telecommunication firms in Port Harcourt, Rivers State.

The result of correlation matrix obtained between indexing/cataloguing and information accessibility was shown in Table 2. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. The correlation coefficient of 0.718 confirms the direction and strength of this relationship. The coefficient represents a strong positive correlation between the variables. The test of significance shows that this relationship is significant at  $p\ 0.000 < 0.01$ . Therefore, based on observed findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between indexing/cataloguing and information accessibility of telecommunication firms in Port Harcourt, Rivers State.

**Table 3: Search Optimization Techniques and measures of Information Management Success**

			Search Optimization	Infor. Availability	Infor. Accessibility
Spearman's rho	Search Optimization Techniques	Correlation Coefficient	1.000	.683**	.637**
		Sig. (2-tailed)	.	.000	.000
		N	140	140	140
	Information Availability	Correlation Coefficient	.683**	1.000	.719**
		Sig. (2-tailed)	.000	.	.000
		N	140	140	140
	Information Accessibility	Correlation Coefficient	.637**	.719**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	140	140	140

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source: Research Survey, 2025**

**H03:** There is no significant relationship between search optimization techniques and information availability of telecommunication in Port Harcourt, Rivers State.

The result of correlation matrix obtained between search optimization techniques and information availability was shown in Table 3. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. The correlation coefficient of 0.683 confirms the direction and strength of this relationship. The coefficient represents a substantial positive correlation between the variables. The test of significance shows that this relationship is significant at  $p < 0.000 < 0.01$ . Therefore, based on observed findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between search optimization techniques and information availability of telecommunication firms in Port Harcourt, Rivers State.

**H04:** There is no significant relationship between search optimization techniques and information accessibility of telecommunication firms in Port Harcourt, Rivers State.

The result of correlation matrix obtained between search optimization techniques and information accessibility was shown in Table 3. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. The correlation coefficient of 0.637 confirms the direction and strength of this relationship. The coefficient represents a substantial positive correlation between the variables. The test of significance shows that this relationship is significant at  $p < 0.000 < 0.01$ . Therefore, based on observed findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between search optimization techniques and information accessibility of telecommunication firms in Port Harcourt, Rivers State.

**Table 4.21: Correlation matrix between information architecture and the measures of information management success**

			Information Architecture	Infor. Availability	Infor. Accessibility
Spearman's rho	Information Architecture	Correlation Coefficient	1.000	.780**	.568**
		Sig. (2-tailed)	.	.000	.000
		N	140	140	140
	Information Availability	Correlation Coefficient	.780**	1.000	.719**
		Sig. (2-tailed)	.000	.	.000
		N	140	140	140
	Information Accessibility	Correlation Coefficient	.568**	.719**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	140	140	140

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Research Survey, 2025

**H<sub>05</sub>:** There is no significant relationship between information architecture and information availability of telecommunication firms in Port Harcourt, Rivers State.

The result of correlation matrix obtained between information architecture and information availability was shown in Table 4.21. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. The correlation coefficient of 0.780 confirms the direction and strength of this relationship. The coefficient represents a strong positive correlation between the variables. The test of significance shows that this relationship is significant at  $p < 0.000 < 0.01$ . Therefore, based on observed findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between information architecture and information availability of telecommunication firms in Port Harcourt, Rivers State.

**H<sub>06</sub>:** There is no significant relationship between information architecture and information accessibility of telecommunication firms in Port Harcourt, Rivers State.

The result of correlation matrix obtained between information architecture and information accessibility was shown in Table 4.21. Similarly displayed in the table is the statistical test of significance (p - value), which makes possible the generalization of our findings to the study population. The correlation coefficient of 0.568 confirms the direction and strength of this relationship. The coefficient represents a moderate positive correlation between the variables. The test of significance shows that this relationship is significant at  $p < 0.000 < 0.01$ . Therefore, based on observed findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between information architecture and information accessibility of telecommunication firms in Port Harcourt, Rivers State.

## DISCUSSION OF FINDINGS

The findings of this study revealed a significant positive relationship between digital information accessibility and information management success of telecommunication firms in Port Harcourt. This suggests that as telecommunication firms employ the trend of digital information accessibility; the quality of business decisions would be improved, as well as increased organizational performance and by extension business success is assured. This finding is consistent with the work of Ibrahim (2024), as he found at that; electronic information resources are vital and are the backbone of any dynamic collection, most of the electronic information resources are full text databases, electronic books are not publicly available free of charge and they are expensive, and they offer creative possibilities for expanding access as well as changing learning behaviour and academic research in Universities.

Similarly, the finding is also in alignment with the study of Umar & Ibrahim (2023) when they affirmed the importance of digital information accessibility in their work as they stressed that; availability and utilization of electronic information resources is key to the success of students' academic activities most especially in the areas of research in any institution and the library plays the central role in making information available and accessible.

Furthermore, Aguola & Aguola (2002) asserted that availability of electronic information resources is about information being accessible as needed, when needed, where needed. The objective of availability is to enable access to authorized information or resources. Availability, in the context of a computer system, refers to the ability to a user to access information or resources in a specified location and in the correct format. Chandrasekhar (2006) observed that the availability of electronic resources depend on the availability of funds as well as the demand for their use Aguolu & Aguolu (2002) argued that availability should be viewed from both national and instructional levels. They attributed the lack of availability of information resources to the steady proliferation of universities: federal, state, and private, along with increases in students and faculty, and the diversification of courses and academic and research programmes, without adequate information resources to meet the actual and information needs. They identify obstacles to the development of adequate information resources.

### **CONCLUSION**

The idea which necessitated this study was to examine the relationship between digital information accessibility and information management success of telecommunication in Port Harcourt. The study concluded that an effective adoption of digital information accessibility is positively related to information management success among Telecommunication Firms in Port Harcourt. Specifically, the study concludes that indexing/cataloguing positively enhances information management success among Telecommunication in Port Harcourt. Also, search optimization techniques positively enhance information management success of Telecommunication Firms in Port Harcourt. Again, Information architecture positively enhances information management success of Telecommunication Firms in Port Harcourt.

### **RECOMMENDATIONS**

Based on the discussion and conclusion above, the following recommendations are hereby made:

- i. The leadership of telecommunication firms in Port Harcourt should implement indexing/cataloguing in order to enhance information management success of the telecommunication firms in Port Harcourt.
- ii. They are encouraged to adopt search optimization techniques so as to enhance information management success of telecommunication firms in Port Harcourt.
- iii. They are also encouraged to leverage on information architecture in order to enhance information management success of telecommunication firms in Port Harcourt.

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