

# Electronic Information Resources (EIR) Adoption in Private University Libraries: The Moderating Effect of Productivity and Relative Advantage on Perceived Usefulness

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## ABSTRACT

The study tested a hybrid model with constructs drawn from the Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) theory in order to examine the moderating effect of productivity and relative advantage (RA) on perceived usefulness (PU) vis-à-vis electronic information resources (EIR) adoption in private university libraries in Ogun and Osun States of Nigeria. The descriptive research design was adopted in the study. The population consisted of 61 (55.0%) librarians and 50 (45.0%) library officers (totaling 116—100%) in Babcock University, Bells University, Covenant University, Bowen University, Oduduwa University, and Redeemer's University. Purposive sampling procedure was adopted after which total enumeration was used since the total population is small. The questionnaire was used for data collection. Of the 116 copies of the questionnaire administered, 111 (95.7%) were found usable. The instrument was structured based on a 4-point Likert agreement scale of Strongly Agree, Agree, Disagree, and Strongly Disagree. Data were analyzed using descriptive statistics like tables of frequency counts and percentage. The findings revealed that productivity and relative advantage are significant moderators of perceived usefulness of EIR adoption in private university libraries in Ogun and Osun States, Nigeria.

**Keywords:** Adoption, electronic information resources (EIR), perceived usefulness, productivity, relative advantage, private university libraries

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## 1. INTRODUCTION

It's obvious that we are in the era powered by technological innovations as predicted several decades ago. Due to the unprecedented changes occasioned by digital technology, every organization that is seeking relevance in its industry today has a touch of information and communication technology (ICT) embedded in its products and/or services. As part of efforts aimed at blazing the trail, universities are increasingly taking advantage of modern technologies for the provision of speedy and unhindered access to information resources and services.

Unlike federal universities, private universities are privately owned and funded by individuals. The need to carve a niche for themselves, attract attention for good profit-making, and possibly dominate the Nigerian higher educational scene are among the facilitating indices of modern technology adoption in private universities in Nigeria. Private universities in Nigerian are important higher institutions of learning established to complement their federal and state counterparts. Though they are profit-oriented, the provision of high human resources for the socio-economic and political development of Nigerian society is their central goal. Private universities play a pivotal role towards the realization of sustainable development in the Nigerian economy. According to Omuta (2010), Igbinedion University, Okada, Babcock University, Ilisan-Remo, and Madonna University, Okija were the first set of private universities in Nigeria licensed in 1999 to operate at the time when it was widely claimed that the vast majority of Nigerian university graduates were unemployable.

There are 27 private universities approved by National University Commission (NUC) across South-Western Nigeria with Ogun and Osun States having the majority. The authors' preliminary investigation shows ICT dominance of private universities in Ogun and Osun States in preponderance to others in the region. It is this high concentration and perceived availability of modern ICT facilities in these private universities that prompted the researchers to investigate the moderating effect of productivity and relative advantage (RA) on perceived usefulness (PU) to electronic information resources (EIR) adoption in private university libraries in Ogun and Osun States, respectively, using

professional librarians as well as library officers as the study population.

Presently, evidence of the inclusion of EIR in university library collections and services in Nigeria abound. Aina (2014) defines EIR as systems in which information is stored electronically and made accessible through electronic systems and computer networks. Basically, EIR are in the form of e-books, e-journals, articles, newspapers, theses, dissertations, databases, and CD-ROMs, which are likely to be the alternative to print media (Adeniran, 2013). Since users' perceptions about innovation are subjective, library personnel views regarding usefulness of EIR differ significantly. The extent of EIR acceptance/adoption in Nigeria university libraries is a function of several factors which could be attitudinal/behavioral, financial, organizational, or technological in nature.

Central to these factors is an individual's prejudiced perception of what he/she considers useful. Whether positive or negative, it is this perception that informs library personnel's PU of EIR. In agreement, Bugembe (2010), citing Phillips et al. (1994), concurs that usefulness is a prospective adopter's subjective probability that applying the new technology from foreign sources will be beneficial personally and/or to the adopting company's wellbeing, or that using the technology would improve the way a user could complete a given task. People tend to use or not to use a system application to the extent they believe it will help them perform their job better (Davis, 1989).

Thus, to ascertain what stimulates individuals' intentions to either accept or reject technological innovations, a number of influential acceptance models/theories have been developed over the years for explaining and predicting usage behavior. These models/theories have their origins in the disciplines of psychology, sociology, and information systems (Venkatesh et al., 2003). Among the best known of these are the Technology Acceptance Model (TAM) (Davis, 1989), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), the Diffusion of Innovation (DOI) theory (Rogers, 2003), and so on.

Employing these models/theories, researchers have tried to establish the rationale behind technology diffusion and acceptance in organizations, with special emphasis on e-resources, e-learning, and e-services. Examples of these studies are: students and faculty's

perceptions of usability and usefulness of digital libraries resources employing TAM's PU and PEOU (Matusiak, 2011); the moderating role of perceived risk on customers adoption of e-services using TAM (Featherman & Fuller, 2003); mediating influences (direct and indirect) of PU and PEOU on customers' self-service attitudes towards online portals (Hartmann et al., 2013); students' behavioral intentions to use e-learning (Park, 2009); determinants of e-library end-users acceptance and use of academic libraries employing SO-UTAUT (Ayele & Sreenivasarao, 2013); predictive influences of TAM's PU and PEOU on user acceptance of digital library systems in a cross-country analysis (Miller & Khera, 2010); acceptance and use of self-service banking technologies extending the TAM (Janelle & Fogarty, 2006); employees' intentions to use e-learning systems using IDT and TAM (Lee, Hsieh, & Hsu, 2011); Bugembe's (2010) coverage of quality of work, productivity, and job performance as determinants of perceived usefulness, and so on.

These efforts notwithstanding, what informs users' perceived usefulness towards technology adoption from an institutional viewpoint has received less attention—the crux of this study. To ensure PU is captured and extended beyond the frontiers of individuals' biased views, the concept of productivity was integrated into the current study to give PU an organizational outlook. Also, the perceived advantages of EIR have been (un)consciously highlighted in many studies, especially in comparison to print resources (e.g. Kumar & Singh, 2011; Aina, 2014; Salaam & Aderibigbe, 2010; Gathoni et al., 2011) without a theoretical foundation. Thus, the current study proposes a model that seeks to examine the moderating effect that productivity and RA (an innovation attribute in Diffusion of Innovation—DOI) theory) exert on PU (a base construct of the Technology Acceptance Model—TAM) toward the adoption of EIR in private university libraries in South-West Nigeria.

## 2. THEORETICAL BACKGROUND

### 2.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by Davis (1989). It has its root from the

Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975). TAM was developed with perceived usefulness (PU) and perceived ease of use (PEOU) as its base constructs. While the former is defined as the degree to which a person believes that using the system will enhance his or her job performance, the latter is defined as the extent to which a person believes that using the system will be free of effort. TAM theorized that perceived usefulness is facilitated by perceived ease of use, which in turn shapes users' attitudes and behavioral intentions to use a system. In other words, one's actual use of a system is influenced directly or indirectly by the user's attitude and behavioral intentions which are informed by what users consider useful.

According to Davis, the ability of a system to enhance the job performance of individuals with relatively less effort will facilitate its adoption. Since its development, it has drawn unmatched attention from researchers globally. TAM has been reported as the most widely used and robust theoretical model in information science (Mather, Caputi, & Jayasuriya, 2002) with high predictive and explanatory capabilities. Also, Venkatesh and Bala (2008) posit that as of December 2007, the *Social Science Citation Index* listed over 1,700 citations and *Google Scholar* listed over 5,000 citations to the two journal articles that introduced TAM. It was reported to account for 36% of the variance in usage (Davis, 1993). For Al-Shafi and Weerakkody (2009), TAM provides factors which lead to Information System acceptance, and provides room for extensions and elaborations better than other competing models. Oye, Iahad, and Ab.Rahim (2012), citing Bagozzi (2007), confirm that TAM is one of the most profound frameworks frequently used in information system studies to predict and explain the use of computer-based applications and solutions. (See Fig. 1)

The need to increase the model's explanatory and predictive power has led to subsequent adaptations (like TAM2—Venkatesh & Davis, 2000; and TAM3—Venkatesh & Bala, 2008). In all these modifications, the two constructs (PU and PEOU) were retained, suggesting their importance in system adoption and use. In the current study, perceived ease of use is not taken into consideration since the focus of the study is to give PU an organizational view towards EIR adoption in private universities in the Ogun and Osun states of Nigeria.

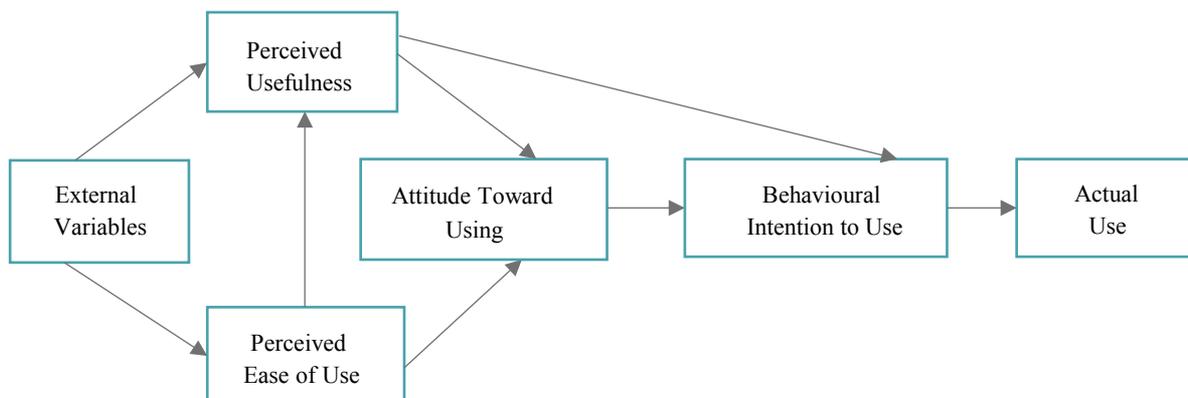


Fig. 1 The Technology Acceptance Model (TAM). Source: Davis (1989)

## 2.2. Diffusion of Innovation (DOI)

The Diffusion of Innovation (DOI) theory, developed by Rogers (1962), remains one of the oldest information system theories in the field of social sciences. The theory seeks to explain how, why, and at what rate new ideas and innovations/technology spread through cultures. It was developed with five main elements: innovation, adopters, communication channels, time, and social system. Rogers (2003) sums these up in his definition of diffusion as a process in which an innovation is communicated through certain channels over time among the members of a social system. The attributes of innovations according to the theory includes five characteristics of innovations: (i) relative advantage, (ii) compatibility, (iii) complexity, (iv) trialability, and (v) observability. Based on individual perception, Rogers (2003) argues that innovations offering more relative advantage, compatibility, simplicity, trialability, and observability will be adopted faster than other innovations. He further reports that 49-87% of the variance in the rate of adoption of innovations is explained by these five attributes. Rogers' diffusion of innovations theory is the most appropriate for investigating the adoption of technology in higher education and educational environments (Medlin, 2001; Parisot, 1995).

## 2.3. Relationship Among Constructs

Perceived usefulness is the degree to which an individual believes that using a particular system would

enhance his or her job performance within an organizational context (Davis, 1989). In other words, the extent of an individual's conviction about a system performance potential enhances his/her intention to use it. Relative advantage, on the other hand, is the degree to which an innovation is seen as being superior to its predecessor (Rogers, 2003).

Researchers have shown that the constructs employed in TAM are fundamentally a subset of perceived innovation characteristics in DOI (Lee, Hsieh, & Hsu, 2011). Also, PU and RA have both been reported as the strongest and most influential constructs in their respective model/theory for predicting usage/adoption intention (e.g. relative advantage—Agarwal, 1998; Compeau & Higgins, 1995; Plouffe, Hulland, & Vandenbosch, 2001; Kulviwat et al., 2007—or perceived usefulness—Davis & Venkatesh, 2000; Cowen, 2009; Abadi, Ranjbarian, & Zade, 2012). PU has been captured in other models/theories as performance expectancy in UTAUT (Venkatesh et al., 2003) and relative advantage in DOI (Rogers, 2003; Moore & Benbasat, 1996; Kulviwat et al., 2007).

Despite the perceived similarity, Lee, Hsieh, and Hsu (2011) posit that there is no clear-cut theoretical relationship between TAM and DOI. Comparatively, Kulviwat et al. (2007), citing Karahanna et al. (2001), assert that while PU reflects the belief that a technology helps perform a function more effectively, RA compares the degree to which an innovation is perceived to

be better than its precursor. This position is supported by Moore and Benbasat (1996) who reveal further that there exists an important distinction between the two. The definition of PU by Khayati and Zouaoui (2013) (the gain in performance that an individual believes he/she can win when using the technology) led additional credence to the argument. A further difference was shown by Rogers (1983) who states that RA is expressed in terms of economic profitability, status giving, or in other ways. The current study therefore agrees with the streams of research (e.g. Kulviwat et al., 2007; Karahanna et al., 2001) that show that PU and RA are two distinct but complementary constructs; consequently, RA, defined in this study as the degree to which the performance potentials of EIR facilitate library personnel adoption attitude for institutional efficiency, is theorized to moderate PU.

Productivity on the other hand is not a base construct of any known acceptance model/theory. Since the study intends to examine the effect of PU on EIR adoption, productivity is theorized to moderate PU understanding from an organizational perspective rather than from an individual subjective standpoint. Thus, productivity as a scientific concept is assumed to be helpful in arriving at a logical definition of PU of EIR. But most importantly as an objective concept, it can be measured against a set or universal standard (Syverson, 2011) thereby deemphasizing discriminatory perceptions. To this end, Rogers (1998) posits that productivity is a required tool in evaluating and monitoring organizational effectiveness. This is consistent with Davis's (1989) position on PU. In essence, productivity, defined in this study as the degree to which library personnel believe that the use of EIR improves the overall efficiency of their institutions, is postulated as a measure of effective resource use for institutional efficiency.

### 3. OBJECTIVE

The broad objective of the study is to ascertain the effect of PU on EIR adoption among personnel in private university libraries in Ogun and Osun States of Nigeria, considering the moderating influence of productivity and RA.

The specific objectives of the study are to:

- i. ascertain if productivity is a significant moderator

of PU in relation to EIR adoption among personnel in private university libraries in Ogun and Osun States of Nigeria.

- ii. find out if RA is a significant moderator of PU proportionate to EIR adoption among library personnel in private universities in Ogun and Osun States of Nigeria.
- iii. find out the level of personnel's PU of EIR vis-à-vis adoption in private university libraries in Ogun and Osun States of Nigeria.

## 4. RESEARCH QUESTIONS

The following research questions are formulated to guide the study:

- i. What is the level of productivity moderation on PU in relation to EIR adoption among personnel in private university libraries in Ogun and Osun States of Nigeria?
- ii. What is the extent of RA moderation on PU proportionate to EIR adoption among personnel in private university libraries in Ogun and Osun States of Nigeria? ; and
- iii. What is the level of personnel's PU of EIR adoption in private university libraries in Ogun and Osun States of Nigeria?

## 5. LITERATURE REVIEW

### 5.1. Electronic Information Resources (EIR)

The emergence of EIR is a response to the challenge of obsolescence of information. The information that is considered useful today may be very inconsequential in the foreseeable future. As volatile as is the term information, so are its definitions, connotations, usefulness, and value. This is what may have led Ifidon and Ahiauzu (2006) to conclude that information is a slippery term that is loaded with several implications.

On EIR aptness to users' information needs, Okite-Amughoro et al. (2014), citing Togia and Tsigilis (2009), remark that EIR contain current information because they are able to be updated frequently. This is a unique attribute of EIR among other information carrying media. The authors further state that EIR offer advanced search capabilities; they offer flexibility

in the storage of search results; and they allow access to information without the restrictions of time and location. The up-to-datedness of electronic information resources make them key for libraries to respond to the changing information needs of users.

Das and Maharana (2013) describe them to include OPAC, CD-ROMs, online databases, e-journals, e-books, Internet resources, etc. EIR are systems in which information is stored electronically and made accessible through electronic systems and computer networks (Aina, 2014). One thing common to all EIR is that they are electronic in nature. While some are online, others reside in off-line media. Earlier, Al Fadhli and Johnson (2006) assert that Internet resources are the most efficient means of electronic document delivery.

The need for good Internet connectivity has been supported by initiatives such as the Kenya Education Network (KENET), whose aim is to enhance Internet access for Kenyan Universities (Odero-Musakali, Damaris, & Mutula, 2007). The rationale behind this consortium is to ensure the availability and accessibility of electronic information resources beyond the four walls of a library building or a single institution. Information that is available but not accessible to users is of no value (Omeluzor, Madukoma, Bamidele, & Ogbuiyi, 2012) irrespective of the location. This is a clear demonstration of universities' usefulness perceptions of electronic information resources to the intellectual development of individuals.

Across the many empirical tests of TAM, perceived usefulness has consistently been a strong determinant of usage intentions, with standardized regression coefficients typically around 0.6 (Venlathesh & Davis, 2000). Ahmed and Panda (2013) studied awareness and use of electronic information resources by faculty members of Indian institutes in Dubai international academic city. The findings show that 100% of their respondents agreed and felt that electronic resources are useful to their work. If the construct plays this fundamental role in shaping usage intention, it can be used to ascertain EIR adoption in private university libraries.

## 5.2. Productivity and Perceived Usefulness

Sometime the term performance is confused with productivity. In an attempt to distinguish these concepts, Ricardo and Wade (2001) opine that performance and productivity are two different things. They

defined productivity as the ratio that represents the volume of work done within a specified period while performance is an indicator of productivity, consistency, and quality of work. The extent of availability of these attributes could moderate library personnel PU of EIR. Productivity is thus the outcome of motivation (Dwirantwi, 2012). Implicitly, EIR capacity to increase productivity is a motivation that could shape library personnel PU of EIR. In an attempt to ascertain what informs distance students' use of electronic information resources in two study centres of the National Open University of Nigeria (NOUN), Damilola (2013) reveals that a majority of the respondents, 109 (42.8%), use EIR due to their level of facilitating information.

EIR help to expand access, increase usability and effectiveness, and establish new ways for individuals to use information in order to be more productive in their endeavours (Negahban & Talawar, 2009). EIR are becoming more and more important for the academic community (Kumar & Kumar, 2008). Odewale and Oyewumi (2010) assert that the frequency of access and use of web-based electronic databases are instrumental in decision-making. In essence, the quality of decision made is a function of available information. This quality of information in turn is beneficial to library personnel and organizational efficiency. Butressing this claim, Kumar and Singh (2011) affirm that EIR play a pivotal role in enhancing research and development activities and improving the productivity of an individual.

EIR are contributing worth and value to the intellectual output of library personnel, students, researchers, and academic institutions globally with the aid of the Internet. Shamsul (2009), commenting on the role of EIR, states that academic staff need to use EIR to: be informed, enhance their knowledge, meet specific needs, educate themselves, teach and learn, research, and disseminate information. From a research perspective, Okiki and Asiru (2011) posit that one of the strongest factors that influence the use of EIR is the need to carry out research. Usually, research efforts are time-bound. The up-to-datedness attribute of EIR make them paramount to any meaningful research endeavour. The acceptance and subsequent adoption of EIR among private university libraries is therefore necessary for global access to current and up-to-date information for expanding the frontiers of knowledge.

### 5.3. Relative Advantage and Perceived Usefulness

Relative advantage is a construct in Diffusion of Innovation (DOI) theory (Rogers, 2003) as well as Perceived Components of Innovation (PCI) (Moore & Benbasat, 1991). Inferring from the study of Plouffe, Hulland, and Vandenbosch (2001) where PCI was tested, Kulviwat et al. (2007) reveal that RA is the model's most powerful predictor of adoption intention. Usually, theoretical constructs considered to be the strongest in a model attract huge attention from scholars and researchers.

Rogers (2003) describes RA as the belief of a potential adopter that an innovation is superior in some ways to what it is intended to supersede. All technological innovations have peculiar competitive advantages in certain instances which may not be applicable in all contexts (e.g. location and period). In the same vein, EIR do not have universal gains. The rate of technological diffusion and integration, quality of available skill, and infrastructural facilities differ greatly from one society to another. The extent of availability of these factors determines the RA of a given innovation.

The use of EIR is perceived to hold many advantages, some of which are at the individual, organizational, or community levels. Vasishta and Navjyoti (2004) broadly detailed the following as the gains of EIR: maintenance of updated information, rapid and accurate information retrieval, distribution, compatibility with search engines, cost factor, multiple user access, manageability, availability, technology savvy, convenience, and space saving. Similarly, Tyagi (2011) adds better access to information than in the print medium, time savings due to easy access, access to current information, collaboration with distance colleagues, and access to comprehensive information.

The emergence of networked information services has prompted a comprehensive review of the library and information science profession (Etim, 2004). The emergence of EIR has tremendously transformed ways of handling and managing information in Nigerian academic environments and university libraries in particular (Ani & Ahiauzu, 2008). This has facilitated a paradigm shift from manual ways of carrying out information services powered by analog data to electronic ways of accessing and retrieving information driven by electronic gadgets (Eze & Uzoigwe, 2013).

The adoption of information technology and their products in libraries has modernized the way they acquire, store, and disseminate information to their users and the way patrons require and use information. The numerous advantages and performance benefits of EIR notwithstanding, levels of PU among users vary considerably. Besides the library users who need to be educated on the use of these technologies for maximum exploitation of library resources and services, many library personnel (the supposed educators) are yet to come to terms with the relative importance of these media to their job, institutions, and the profession in general. It has been established from the literature that RA complements PU. EIR capability to increase productivity is therefore a motivating factor that could also shape library personnel's PU. (See Fig. 2)

## 6. METHODOLOGY

A descriptive survey research design of correlational type was adopted for the study. The population consists of 167 library personnel in the 13 private universities in Ogun and Osun States of Nigeria. The nature of data the study intends to elicit informs the adoption of multi-stage sampling techniques. First, based on the perceived extent of ICT diffusion and integration, from preliminary investigation, 6 private universities (Covenant University, Ota, Babcock University, Ilishan-Remo, and Bells University, Ota, all in Ogun State, as well as Bowen University, Iwo, Oduduwa University, Ipetumodu, and Redeemer's University, Ede, all in Osun State) have been purposively selected to provide the data and institutional setting for the study. According to Aina (2002) purposive sampling procedures ensure that we get at least some information from respondents who are crucial to a study. Since the population was small, total enumeration was further employed.

The research instrument employed to collect data was the questionnaire. Due to the nature of data the study intends to elicit, the study adapted the instrument developed for TAM2 by Venkatesh and Davis (2000). The instrument was measured on a 7-point Likert agreement scale where 1 = strongly disagree, 2 = moderately disagree, 3 = somewhat disagree, 4 = neutral (neither disagree nor agree), 5 = somewhat

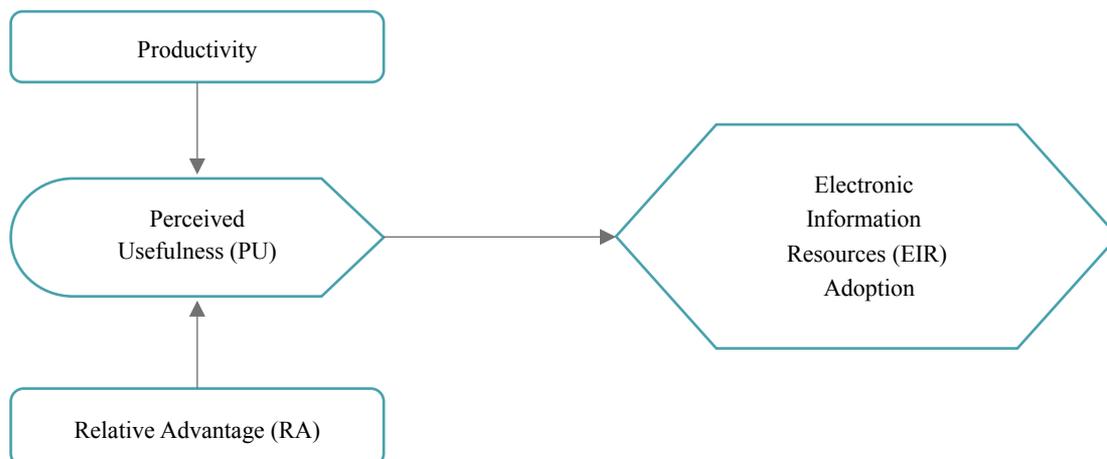


Fig. 2 The proposed model for productivity and relative advantage on perceived usefulness of EIR adoption. Source: Researchers

agree, 6 = moderately agree, and 7 = strongly agree. Of the 116 copies of the questionnaire administered, 113 were found usable, representing 97.4%. According to Malaney, 2002, Evans, Peterson, & Demark-Wahnefried, 2004, as cited in Dulle, Minish-Majanja, & Cloete, 2010, 60% is the standard acceptable for most research studies, hence the number is considered adequate for analysis. Descriptive statistics such as tables of frequency counts and percentages were used to analyze the data using the Statistical Package for Social Sciences (SPSS).

Table 2 presents the distributed questionnaires and the return rate by universities. Observably, Bells University, Redeemer's University, and Bowen University had the highest return rate of 100% each. This is followed by Babcock University with 94.7%. Next is Oduduwa University with 94.1%. Covenant University is ranked the least with 90.9%. Generally, the returned rate is high.

## 7. DATA ANALYSIS AND RESULTS PRESENTATION

Table 3 shows that 61.3% of the respondents are male while 38.7% are female. This suggests that there are more males than females among the population of

study. 54.1% of the respondents, comprising the majority, are master's degree holders. Ranking least in the distribution is Ph.D. holders with 3.6%. Further, 55.0% of the respondents are professional librarians while the library officers account for 45.0%. Finally, library personnel with working experience of between 0 and 5 years number more with 36.9% while those between 26 and 30 years as well as 31 and above account for 1.8%, respectively. This is an indication that library personnel who joined the libraries when ICT had little relevance to library functions in Nigeria are close to their retirement age, paving the way for the younger generation who are in tune with technology in their daily lives.

## 8. ANALYSIS OF RESEARCH QUESTIONS

**Research Question One:** What is the level of productivity moderation on PU in relation to EIR adoption among personnel in private university libraries in Ogun and Osun States of Nigeria?

Table 4 gives the analysis of the predicting effect of productivity to the perceived usefulness of EIR adoption. 44 (39.6%) and 56 (50.5%) respondents who ticked SA and A respectively note that when EIR increases the quality of their job output they will be

**Table 1.** Population of Private University Libraries in Ogun and Osun States of Nigeria

S/N	University	State	Yr. est.	Librarian	Lib. Officer	Total
1	Adeleke University, Ede	Osun	2011	4	4	8
2	Babcock University, Ilishan-Remo	Ogun	1999	14	24	38
3	Bells University, Otta	Ogun	2005	8	2	10
4	Bowen University, Iwo	Osun	2001	12	8	20
5	Covenant University, Otta,	Ogun	2002	17	5	22
6	Crawford University, Igbesa	Ogun	2005	5	4	9
7	Crescent University, Ogun	Ogun	2005	4	10	14
8	Fountain University, Osogbo	Osun	2007	3	2	5
9	Joseph Ayo Babalola University, Ikeji-Arakeji	Osun	2006	6	3	9
10	Hallmark University, Ijebu Itele	Ogun	2015	3	2	5
11	Mcperson University, Seriki Sotayo, Ajobo	Ogun	2012	3	3	6
12	Oduduwa University, Ipetumodu	Osun	2009	5	12	17
13	Redeemer's University, Ede	Osun	2005	7	2	9
<b>Total</b>				<b>91</b>	<b>81</b>	<b>172</b>

**Table 2.** Questionnaire Distribution and Response Rate

S/N	University	Sample	Returned	(%)
1	Babcock University	38	36	94.7
2	Bells University	10	10	100
3	Bowen University	20	20	100
4	Covenant University	22	20	90.9
5	Oduduwa University	17	16	94.1
6	Redeemer's University	9	9	100
<b>Total</b>		<b>116</b>	<b>111</b>	<b>95.7</b>

encouraged to adopt them. This option is rated highest. This is followed by 44 (39.6%) and 52 (46.8%) respondents who reveal by indicating SA and A respectively that if EIR enable them accomplish tasks

more quickly they will be motivated to adopt them. Next is 40 (36.0%) and 56 (50.5%) respondents who by selecting SA and A show that if EIR will allow them to accomplish more work than would otherwise be

**Table 3.** Respondents' Demographic Information

<b>Sex</b>	<b>Frequency</b>	<b>(%)</b>
Male	68	61.3
Female	43	38.7
<b>Total</b>	<b>111</b>	<b>100</b>

<b>Educational qualification</b>	<b>Frequency</b>	<b>(%)</b>
OND/Diploma	5	4.5
HND	9	8.1
B.Sc	33	29.7
Master Degree	60	54.1
Ph.D	4	3.6
Others	-	-
<b>Total</b>	<b>111</b>	<b>100</b>

<b>Job status</b>	<b>Frequency</b>	<b>(%)</b>
Librarian	61	55.0
Library Officer	50	45.0
<b>Total</b>	<b>111</b>	<b>100</b>

<b>Working experience</b>	<b>Frequency</b>	<b>(%)</b>
0-5	41	36.9
06-10	32	28.8
11-15	23	20.7
16-20	5	4.5
21-25	5	4.5
26-30	2	1.8
31 and above	3	2.7
<b>Total</b>	<b>111</b>	<b>100</b>

**Table 4.** Respondents' Level of Productivity of Perceived Usefulness to EIR Adoption

Item	SA		A		D		SD		Total
	N	%	N	%	N	%	N	%	
The productivity of EIR will:									
enable me accomplish tasks more quickly	44	39.6	52	46.8	8	7.2	7	6.3	111
allow me to accomplish more work than would otherwise be possible	40	36.0	56	50.5	10	9.0	5	4.5	111
reduce the time I spent on unproductive activities	42	37.8	53	47.7	11	9.9	5	4.5	111
increase the quality of my job output	44	39.6	56	50.5	7	6.3	4	3.6	111

SA=Strongly Agree A=Agree D=Disagree SD=Strongly Disagree

possible using other resources, they will be inspired to adopt them. Lastly, 42 (37.8%) and 53 (47.7%) participants reveal that the reduction of the time spent on unproductive activities that EIR offer will induce them to adopt them.

**Research Question Two:** What is the extent of RA moderation on PU proportionate to EIR adoption among personnel in private university libraries in Ogun and Osun States of Nigeria?

Table 5 presents the analysis of RA as a predictor of PU of EIR adoption in private university libraries in Ogun and Osun States. 64 (57.7%) and 37 (33.3%) respondents who opt for SA and A respectively indicate that they will consider EIR adoption if they are capable of improving their job performance. For 39 (35.1%) and 53 (47.7%) participants who tick SA and A independently, they reveal that EIR ability to make their job easier to do will inspire their decision to adopt them. 27 (24.3%) and 54 (48.6%) respondents are of the opinion (having selected SA and A) that EIR capacity to address their job-related needs will stimulate their adoption. Interestingly, 53 (47.7%) and 16 (14.4%) respondents who settle for D and SD respectively show that they are not expecting their job to be error-free when considering EIR adoption. This is however against the 22 (19.8%) and 20 (18.0%) respondents who indicate SA and A respectively.

**Research Question Three:** What is the level of personnel's PU of EIR adoption in private university libraries in Ogun and Osun States of Nigeria?

Table 6 reveals the agreement level of items measuring PU on EIR adoption among library personnel in private university libraries in Ogun and Osun States. From the breakdown, 108 (97.3%) respondents indicate SA. For these respondents, the relevance of EIR to their job will determine whether or not to adopt them. 81 (73.0%) and 26 (23.4%) respondents who specify SA and A respectively show that if EIR possess job effectiveness potentials, they will consider them useful for adoption. 58 (52.3%) and 47 (42.3%) respondents have shown from the analysis that the time saving factor of EIR will encourage them to contemplate their adoption. Also, 70 (63.1%) and 34 (30.6%) who respond positively by ticking SA and A correspondingly are of the view that if EIR support critical aspects of their job, they will judge them worthy of adoption. 93 (83.8%) and 9 (8.1%) respondents who indicate SA and A respectively reveal that if EIR improve the quality of the work they do, they will be positive about their adoption. In the same vein, 64 (57.7%) and 36 (32.4%) participants through SA and A demonstrate that the greater control EIR have over their job will inform their PU of them.

**9. DISCUSSION OF FINDINGS**

The aim of the study is to develop a model integrating productivity alongside two constructs (relative advantage and perceived usefulness) from two theoretical paradigms (TAM and DOI ) in order to identify key determinants of EIR adoption in private university

**Table 5.** Respondents' Level of Relative Advantage of Perceived Usefulness to EIR Adoption

Item	SA		A		D		SD		Total
	N	%	N	%	N	%	N	%	
The relative advantage of EIR will:									
make my job error-free	22	19.8	20	18.0	53	47.7	16	14.4	111
improve my job performance	64	57.7	37	33.3	4	3.6	6	5.4	111
address my job- related needs	27	24.3	54	48.6	18	16.2	12	10.8	111
make it easier to do my job	39	35.1	53	47.7	11	9.9	8	7.2	111

SA=Strongly Agree A=Agree D=Disagree SD=Strongly Disagree

**Table 6.** Respondents' Level of Perceived Usefulness to EIR Adoption

Item	SA		A		D		SD		Total
	N	%	N	%	N	%	N	%	
I will consider EIR useful if they:									
offer greater control over my job	64	57.7	36	32.4	7	6.3	4	3.6	111
save my time	58	52.3	47	42.3	3	2.7	3	2.7	111
support critical aspects of my job	70	63.1	34	30.6	5	4.5	2	1.8	111
enhance my effectiveness on the job	81	73.0	26	23.4	2	1.8	2	1.8	111
improve the quality of the work I do	93	83.8	9	8.1	5	4.5	4	3.6	111
are relevant to my job	108	97.3	-	-	2	1.8	1	0.9	111

SA=Strongly Agree A=Agree D=Disagree SD=Strongly Disagree

libraries in Ogun and Osun States, Nigeria. From the analysis of research question one, it is evident that productivity is a strong moderator of PU. This is an indication that the paramount consideration for ascertaining the productivity potential of EIR are increases in the quality of job output as well as the capacity to allow more work to be accomplished than would otherwise be possible.

This result confirms with that of Wu, Chou, Weng, and Huang (2011) where it was revealed that when users consider a system to contributive to the execution of tasks both in terms of quality and quantity, they will perceive an improvement of work efficiency. This result is reflected in Negahban and Talawar (2009), who reveal that the use of EIR is necessary for users mainly

because they provide better, faster, and easier access to information than information accessed through print media. Substantiating EIR productivity potentials, Dongardive (2015) asserts that electronic resources play a pivotal role in enhancing the research and development activities and improving the productivity of an individual. Earlier, Davis, Bagozzi, and Warshaw (1992) reveal that previous studies have empirically indicated that perceived output quality has a positive relationship with PU, which is postulated to be a predictor of EIR adoption in the private university libraries in this study.

From the analysis of research question two, RA was found to be a significant moderator of PU vis-à-vis EIR adoption among library personnel in private university

libraries. Of the items measuring RA as a moderator of PU towards EIR adoption, improvement of job performance took the pride of place, suggesting that high performance prospect is a strong motivation for EIR adoption among library personnel in private university libraries in Ogun and Osun States, Nigeria. The result conforms to that of Lee, Hsieh, and Hsu (2011) where RA had significant positive effects on PU.

This implies that when library personnel perceive more performance benefits in the use of EIR than other information platforms, they will form an intention to use them. This was the positions of Shih (2007) and Lee (2007) who reveal that RA positively affects users' intention to use the system across different participants. Like PU (individual subjective judgement), what constitutes the RA of a given technology differs among individuals due to factors like technology exposure, skills, funds, and the nature of tasks at hand. Kulviwat et al. (2008) had shown that although RA was expected to have an effect on attitude toward adoption, it was not clear if it would be a direct or indirect effect through PU or both. The focus of this study was not to compare the RA and PU empirically but to ascertain the moderating effect of the former on the latter with respect to EIR adoption attitude.

Also, the study has shown that irrespective of the comparative advantages EIR offer, they are prone to errors. This finding corroborates those of Ugwu and Onyegiri (2013), Iwehabura (2009), and Kanyengo (2006). However, the study further shows that when considering EIR adoption, respondents are not expecting EIR to be error-free. This suggests that the advantages of EIR outweigh the challenges associated with their use. Implicitly, the perceived flaws associated with EIR do not hinder library personnel PU of EIR. This outcome is congruent with Venkatesh and Davis (2000) who show that if a system produces effective job-relevant results that the user desires, but does so in an unclear way, the system users are unlikely to understand how useful the system really is.

Drawing from the data provided by the respondents in relation to research question three, the study reveals that all the items measuring PU in relation to EIR adoption in private university libraries were positively and affirmatively answered with conspicuously low responses for D and SD. It can therefore be concluded that library personnel in private university libraries

in Ogun and Osun States will judge EIR adoption in terms of PU components of relevance, quality, effectiveness, job support, and the greater control they have on their jobs. This indicates that the PU of EIR among library personnel in private university libraries is high. This finding endorses that of Ahmed and Panda (2013) who show that 100% of the respondents in their study agreed and felt that electronic resources are useful to their work. Zaremohzzabieh et al. (2015) reaffirm that several studies (e.g., Davis & Venkatesh, 2004; Kim, Mannino, & Nieschwietz, 2009; Loo, Yeow, & Chong, 2009; Sentosa & Mat, 2012; Teo & Noyes, 2011; Wang & Wang, 2010) reveal that PU effectively justified the intention to use an IT system. In an earlier similar study, Teo and Schaik (2009) admit that PU variables explain about 69% of the variance in attitude towards computer use among pre-service teachers.

The effect of PU on attitude has been validated in many studies (Chau & Hu, 2002). It is posited that attitude towards using a new information system is determined by the users' perception of usefulness and that attitude is in turn a key determinant of actual usage of the new information system (Davis, 1989). The finding of Bugembe (2010) reveals that there was a significant positive correlation between PU and attitudes towards using the system. This implies that if library personnel in private university libraries perceive the usefulness of EIR to be high, their attitudes towards adopting them will also be high.

## 10. MODEL VALIDATION AND RESEARCH CONTRIBUTIONS

Diffusion and integration (adoption) of technological innovation is a complex process influenced by variety of factors. However, for what determines intention to use, there is a consensus among researchers (with few exceptions for perceived ease of use, e.g. Snicker, 2013; Oye, A.Iahad, & Ab.Rahim, 2012) that PU is the/ an (most)important predictor of intention to use (Os-ubor & Chiemek, 2015; Sentosa & Mat, 2012; Abadi, Ranjbarian, and Zade, 2012; Teo & Noyes, 2011; Wang & Wang, 2010; Bugembe, 2010; Cowen, 2009), with divergent opinions as to its determinants. Hence, through our proposed model (Fig. 2), we theorized that productivity and RA will positively moderate PU

towards EIR adoption in private university libraries. Empirically, our findings from research questions 1 and 2 have clearly shown that productivity and RA are strong moderators of PU towards EIR adoption in private university libraries. This result undoubtedly led credibility to the high PU of EIR among the study respondents as research question three found, thus validating our model.

As suggested, there is improved understanding of complex technological innovations when two or more theoretical models are integrated (Chen, Gillenson, & Sherrell, 2002; Wu & Wang, 2005). By examining two constructs from two major theoretical paradigms, TAM (Davis, 1989) and DOI (Rogers, 2003), alongside productivity (an organizational concept) on PU of EIR adoption, the study explicitly provides strong empirical evidence for identifying key predictors of EIR adoption which may not be peculiar to private university libraries alone but academic libraries in general. Additionally, the literature has not provided sufficient empirical insight into EIR adoption within the private university library setting as the current study has attempted. This research endeavor is thus a pioneering effort towards exploring EIR implementation and integration within the library domain. Significantly, the study will be contributive to literature within the purview of the proposed model.

## 11. LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDIES

The need to reduce the scope of this study to realistic and manageable limits due to funds and other logistics constraints led to studying six out of the thirteen private university libraries in two South-Western States in Nigeria. The result was a small population. Additionally, the rate of ICT diffusion and integration among the private university libraries in the States selected informs the use of purposive sampling technique. This may be biased. To make up for these inadequacies, randomization of sample is recommended from a broader scope involving an entire geopolitical zone to corroborate the findings of the current study. The findings of this study can further be subjected to empirical validation through a comparative study (e.g. private vs. public university libraries) using our model.

Also, one construct each was employed from the two theoretical paradigms (TAM and DOI) alongside our self-proposed productivity examined in this study. This may not provide enough empirical evidence for definitive conclusions; hence further research is required to incorporate more innovation characteristics like compatibility, complexity, and trialability in DOI as well as perceived ease of use and attitude in TAM for an all-inclusive understanding of EIR adoption among library professionals.

Furthermore, effort has been made to ensure validity and reliability of data and findings, but some inadvertent omissions caused by the researcher or the respondents or system failure may have occurred which may include: using the wrong term to capture an expression in the questionnaire, which might result in filling in or supplying the wrong information by the respondents; hastily ticking options in the questionnaire without properly examining them; and inconsistencies in the responses provided by the respondents, resulting in difficulty in data analysis. To compensate for these perceived flaws, other data collection methods (e.g. interviews and observations) should be employed to ensure valid data are elicited.

## 12. CONCLUSION

From the inferences drawn from the answers (findings) to the research questions formulated to guide the study, the ability of EIR to enable library personnel to accomplish tasks more quickly over and above other information carriers/media, the improvement of quality of job output, job performance prospects, goal-relevance, and the comparative ease of carrying out tasks are among productivity and RA attributes that EIR promises. These in turn shape library personnel's electronic information resources PU. By implication, therefore, the higher the level of PU of EIR, the higher the positive adoption attitude of library personnel in private university libraries in Ogun and Osun States, Nigeria.

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## Appendix

### MEASUREMENT SCALES AND RELIABILITY COEFFICIENTS

#### SECTION A: Demographic information

1. Sex: Male [ ] Female [ ]
2. Highest educational qualification: OND/Diploma [ ]      HND [ ]      First Degree [ ]  
Master's Degree [ ]      Ph.D [ ]      Others [ ]
3. Job status: \_\_\_\_\_
4. Working experience: \_\_\_\_\_
5. Name of library: \_\_\_\_\_

#### SECTION B: Productivity and EIR ( $\alpha = 0.95$ )

- i. EIR enables me accomplish tasks more quickly
- ii. EIR allows me to accomplish more work than would otherwise be possible
- iii. EIR reduces the time I spent on unproductive activities
- iv. EIR increases the quality of my job output

#### SECTION C: Relative Advantage (RA) and EIR ( $\alpha = 0.76.$ )

- i. EIR improves my job performance
- ii. EIR addresses my job-related needs
- iii. EIR makes my job error-free
- iv. EIR makes it easier to do my job

#### SECTION D: Perceived Usefulness of EIR ( $\alpha = 0.82.$ )

- i. EIR offers greater control over my job
- ii. EIR saves my time
- iii. EIR supports critical aspects of my job
- iv. EIR enhances my effectiveness on the job
- v. EIR improves the quality of the work I do
- vi. EIR are relevant to my job

#### Note:

*\*EIR enables me accomplish tasks more quickly: the degree of promptness EIR enable library personnel completes tasks.*

*\*EIR improves my job performance: the qualitative incremental advantages the use of EIR helps library personnel contribute to organisational growth.*

*\*EIR saves my time: the time-saving potential of EIR.*

*All items are measured on a 4-point Likert agreement scale with the following scoring pattern: Strongly Agree = 4, Agree = 3, Disagree = 2 and Strongly Disagree = 1.*