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Original Research

Computer Self-efficacy, Computer Literacy Skills, Cognitive Skills and Use of Electronic Resources by Social Science Doctoral Students in Nigerian Federal Universities

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Abstract

This study investigated the effects of computer self-efficacy, computer literacy skills, and cognitive skills on the use of electronic resources among social science doctoral students in Nigerian federal universities. The methodology adopted was the survey research design of the correlational type and a stratified random sampling technique was used to select 2,108 from the population size of 3,342 in 33 faculties of social sciences. Results of the research revealed that there were significant relationships among computer self-efficacy, computer literacy skills, and cognitive skills on the use of electronic resources among social science doctoral students. Computer self-efficacy, computer literacy skills, and cognitive skills have a significant joint effect on the use of electronic resources among Social Science doctoral students in Nigerian Federal Universities. It was therefore recommended that curriculum upgrades be done from undergraduate to postgraduate level that will inculcate the use of computers for learning and various presentations to enhance computer self-efficacy, computer literacy skills, and cognitive skills of doctoral students.

Keywords: Computer Self-Efficacy, Computer Literacy Skills, Cognitive Skills, Social Science, Doctoral Students, Nigeria, Federal Universities.

Introduction

The relevance of Information and Communications Technology (ICT) in the universities and for academic purposes cannot be downplayed. Use of desktop computers, laptops, netbooks, and hand-held electronic devices which include smartphones, tablets, iPods, e-readers, and iPads are used for learning and carrying out various academic activities - research,

seminars, project writing, term papers, and other academic presentations, cannot be overemphasized in all citadel of learning and at all levels that engages in teaching, learning, and research activities (Haleem, Javaid, Qadri & Suman, 2022; Karcher et al., 2022). An integral part of doctoral students' academic work involves research activities that are beyond theory but critical, in-depth, and application of research results for development (Mydin & Surat, 2021). They are the major clientele that visit the university library's reference, serials, system, and research sections where they access the current electronic resources, and retrieve and publish research papers (Thanuskodi, 2012; Ismail, Abiddin & Hassan, 2011). The availability of all these electronic devices and accessibility to information in various databases through electronic library resources has drastically changed the information-seeking behavior of students to conduct research (Azonobi, Uwaifo & Tella, 2020). Electronic resources are invaluable research tools that complement the print-based resources in a traditional university library. Their advantages include access to information that might be restricted to the user due to geographical location or finances, access to more current information, and provision of extensive links to additional resources or related content (Fidelugwuowo, 2022).

The use of computers, laptops, netbooks, smartphones, tablets, iPods, e-readers, and iPads requires a certain level of computer self-efficacy (CSE) by individuals. Computer self-efficacy is the confidence that someone has that he/she can use the computer to carry out some tasks effectively and it has a prominent role in tertiary education (Weigold & Weigold, 2021). Performance of various degrees of computer tasks is dependent on some factors which include attitude, motivation, expectations of the individual, belief in one's ability, and computer literacy skills (Achukwu, Nwosu, Uzoekwe & Juliana, 2015). The ease, speed, and accuracy with which tasks are accomplished regardless of time, space, and distance have brought unprecedented transformation to the academic life of students especially doctoral students (Okoye, et al., 2023). Information needed can be easily accessed, retrieved, saved for future referral, or printed. The majority of doctoral students prefer to download and save accessed materials for easy retrieval for future use and reference (Emeahara & Ajakaye, 2022; Onah, Adayi, Okonkwo & Onyebuchi, 2020). The development encountered in the application of computers has brought about new technologies such as e-learning and e-teaching which include the use of videos for student engagement, virtual connection with other students and lecturers, student engagement using flipped classrooms, use of videos to develop student statistical research skills and application of artificial intelligence such as ChatGPT (Haleem et al, 2022).

There are challenging factors that are associated with the use of these electronic information resources such as computer self-efficacy, computer literacy skills, psychological and social factors, fear of use, search skills, and user behavior (Azonobi et al. 2020). To achieve positive educational, and career goals and outcomes, individuals' perception and ability to use the computer to carry out various simple tasks such as booting a computer, using Microsoft Office, and formatting a computer; to average and complex operations such as installing a software package, downloading and saving documents, using software packages for data analysis etc must be positive (Sigit, Sarwenda, Endra & Ratna, 2021). Doctoral students' perceived usefulness and ease of use of electronic resources must exceed the challenges of use to function effectively and efficiently to achieve their goals. Skillful access and use of a wide variety of electronic resources as learning and research tools must be learned and understood (Odede, 2018)

Research can be conducted successfully regardless of factors such as time and distance if

there is access to electronic resources, but a major requisite to accomplish postgraduate research is computer literacy skills for this technology-driven age (Ankrah & Atuase, 2018). Computer literacy is the ability or possession of required knowledge-(skills and competence to know when information is needed and define the type, where to get the information- general Google search or specific databases, the search strategies and terms, identifying and accessing the information, retrieve the information-save, download or print the information, using a computer system) to use the computer in any of its form and technology, whether as digital palm device, a laptop, desktop, tablet, smartphone or smartwatch etc efficiently to accomplish a definite task (Osunwusi & Abifarin, 2013). Computer literacy refers to the knowledge and capabilities to make use of computers and other technologies efficiently. Computer literacy can also take into account the comfort level of the individuals that they have in making use of computer literacy programs and applications (Aitokhuehi & Ojogho, 2014).

Postgraduate students need to possess knowledge and skills for critical thinking to solve complex problems which is connected to cognitive abilities (Finn et al. 2014). Measures of cognitive abilities are used to assess various mental skills such as processing speed (PS how efficiently information can be processed), working memory (WM) capacity how much information can be simultaneously processed and maintained in mind) and fluid reasoning (FR how well a novel problem can be solved). These three interrelated cognitive abilities predict individual differences in performance on numerous measures (Cowan, 2005; Gathercole, Pickering, Knight & Stegmann, 2004; Engle, Tuholski, Laughlin & Conway, 1999). Cognitive skills determine how an individual thinks, (analytical, creative, and practical), learns (early literacy, early numeracy, and early science), understands, and relates (social-emotional development). Cognitive skill is a major component of general intellectual functioning (Tan, Kilani, Markov, Hein & Grigorenko, 2023).

The academic environment is more digitized than it was many years ago. The ability to explore the digital environment as a result of rapid technological change and increasing information resources made available and accessible in various databases in electronic library resources for research purposes makes information literacy skills a requisite to academic success (Echem & Wokoma, 2022). Electronic resources are online or internet information resources that cover a very wide range of knowledge such as bibliographic databases, electronic reference books, search engines for full-text books, and digital collections of data (Wagay & Sehgal, 2021).

Electronic databases include TEEAL, JSTOR, African Journals Online (AJOL), E-Journals, and project MUSE (Ankrah & Atuase, 2018) and they cover a wide range of disciplines, such as physical sciences, engineering, health, education, arts, agriculture, and information sciences.

The Statement of the Problem

The importance of the use of electronic resources cannot be underestimated as it determines the overall academic success or outcome of the postgraduate students. Some challenging factors must be critically considered and resolved to allow for optimal use, and their absence could lead to the under-utilization of resources (Azonobi et al. 2020; Ankrah & Atuase, 2018).

Research has been carried out on how some of these factors affect the use of electronic resources such as attitude, motivation toward the use of electronic resources, poor internet connectivity, performance expectancy, social influence, irregular power supply, low levels of

awareness, lack of access, loss of access to the content due to cancellation of subscription. Some other studies have also studied the effect of each and all of the factors such as expectations of individuals, belief in one's ability, cognitive abilities inhibit the use of electronic resources, academic achievement and output of postgraduate students (Okogwu, 2019; Bokoh, Akhalumhe & Bello, 2021; Ruzegea & Msonde, 2021; Mashaba & Pretorius, 2023; Bello & Ajoviyon, 2021; Ajegbomogun, Achigbue & Diyaolu, 2022; Achukwu et al., 2015). This study seeks to investigate the effect of each of the computer attributes- computer self-efficacy, computer literacy skills, and cognitive skills that are critical factors to the use of electronic resources affect the use of electronic resources by doctoral students in the faculty of social sciences in Nigerian universities and their joint effect also, which no research has put the factors together to study among doctoral students. The relevance of the findings of this research will proffer solutions to the challenges being encountered both by stakeholders' sectors in the social sciences and social science doctoral students in Nigerian Federal Universities.

The Study Objectives

The main objective of the study was to establish the effects of computer self-efficacy, computer literacy skills, and cognitive skills on the use of electronic resources among social science doctoral students in Nigerian Federal Universities.

The following null hypotheses were formulated and tested at a 0.05 level of significance to guide the conduct of the study.

1. There is no significant relationship between computer self-efficacy and the use of electronic resources among social science doctoral students in Nigerian Federal Universities.
2. There is no significant relationship between computer literacy skills and the use of electronic resources among social science doctoral students in Nigerian Federal Universities.
3. There is no significant relationship between cognitive skills and the use of electronic resources among social science doctoral students in Nigerian Federal Universities.
4. Computer self-efficacy, computer literacy skills, and cognitive skills do not have a significant joint effect on the use of electronic resources among social science doctoral students in Nigerian Federal Universities.

Literature Review

Electronic resources

Development in the field of information, communication, and technology (ICT) concerning libraries experienced dramatic change that cut across all the services offered by the library. The extent of the use of computers to meet the needs of users has extended beyond just the type and print mode in the 21st century (Uchechukwuka, 2023). Both the service provider and the clientele need to have the computer knowledge needed to offer the services and to use the services (Essien, Lu, Abredu & Zotoo, 2022; Barrios Aguirre, Forero, Castellanos Saavedra & Mora Malagón, 2021). The academic library serves a community of intellectuals that are from different fields of knowledge, races, ethnicities, and languages intending to meet and satisfy the information needs of library users. Therefore, the library in the quest to meet the needs of individual clientele provides electronic resources that provide a library user with specific information to meet their specific needs (Atanda & Olafimihan, 2022). An electronic information resource is defined as a resource that requires computer access or any electronic product that delivers a collection of data, be it text referring to full-text bases, electronic

journals, image collections, other multimedia products, and numerical, graphical, or time-based made available to library users through a computer-based information retrieval system. (Joshi, 2019). Some electronic information resources are housed in subject-specific databases (Adenariwo & Sulyman, 2022).

Use of electronic resources and computer self-efficacy

Individuals can display either high self-efficacy (positive perception) or low self-efficacy (negative perception) as regards the use of computers. Individuals with positive perceptions of computer use are always eager to utilize the computer for various academic work and explore more tasks that the computer can be used to accomplish. The belief that he/ she can use it and uses it, motivates and enables the development of skills while individuals with low self-efficacy or negative perception of computer use believe that they cannot utilize the computer for any task, they shy away from the use of computer and achieves little with the use of computer (Thongsri, Shen & Bao, 2020). Positive perception towards computer use motivates an individual to explore new techniques, and access and use electronic library resources. Self-efficacy has been found to have the highest influence on the use of e-resources and the adoption of e-learning (Oghenekaro, 2017).

The academic environment is a highly literate society that encompasses teaching, learning research, and social and cultural interaction among people of different backgrounds, races, ethnicities, and education levels (Zhang, 2019). Therefore, for easy interaction and progress, doctoral students must possess the required knowledge and skills to confidently and efficiently use computers to access, search, and retrieve needed information. The use of electronic resources by research scholars and postgraduate students revealed that the majority of the students use e-resources for writing papers because of fast access (Madhusudhan, 2010; Thanuskodi, 2012). Some elements that also mediate the use of electronic information resources by postgraduates in universities include social, psychological, and user behavior (Azonobi et al. 2020).

Studies have reported findings on the use of electronic information resources among students, Uwaifo and Azonobi (2014) revealed that postgraduates use electronic resources because of fast accessibility, low cost, and contribution to meeting their information needs. The electronic information mostly used are electronic journal articles, electronic books, electronic theses, dissertations etc. An investigation into the knowledge and use of electronic resources in Jamaican community colleges by Deans and Durrant (2016), revealed that students are increasingly using internet search engines for research purposes rather than online databases. Results also indicated that electronic library resources such as the OPAC, are being underutilized by community college students. Ndubuisi and Udo (2013), reported findings of a study on empirical analysis of motivation, challenges, and techniques in the use of electronic information resources by postgraduate library users in Nigerian Federal Universities. It was found that postgraduates were motivated to use electronic information resources in their libraries because they are found to be informative, easy to access and use, save time, are less expensive, and achieve more.

Use of electronic resources and computer literacy skills

Computer literacy is defined as the ability to use computers at an adequate level for creation, communication, and collaboration in a literate society Computer literacy is the

knowledge and ability to use computers and technology efficiently. Computer literacy can also be referred to as the comfort level someone has by using computer programs and other applications that are related to computers (Yeşilyurt & Vezne, 2023; Vodă, Cautisanu, Grădinaru, Tănăsescu & de Moraes, 2022). Computer literacy means possessing basic knowledge of the operations of a computer and being able to operate a computer or other computer-associated devices such as tablets, netbooks, iPods, iPads, and smartphones (Babalola & Omolafe, 2022).

Tharanganie, Wickremasingh & Lakraj (2011, cited in Enyi, 2022) asserts that a student is considered to be computer literate if he /she possesses the following skills; basic hardware and basic operating system functions-identifying computer parts, powering up and shutting down the computer, opening/saving files, and recognizing different file types, word processing-create, save, print document, insert tables/charts/labels/symbols, format page layout (margins, page number, and page borders), spreadsheet- create/save/print spreadsheets, insert tables/ charts, insert function and formula, graphic presentation -create/save/print slide shows, insert new slide/layout/tables/charts and create animations, databases-design basic databases with queries and reports/forms, internet and e-mail-surfing the internet and sending email messages.

Doctoral research involves total commitment and dedication to ensure that the course is accomplished as required or else the required degree may not be awarded. Doctoral students are faced with different complexities, challenges, risks, and opportunities. The originality of research should not be in doubt in a doctoral program (Edwards, 2014). The more challenging criteria at times for doctoral students could be a demonstration of important skills such as intellectual quality, confidence, independence of thinking, competent and efficient use of the computer to present research (using computer applications during pre-field, post-field, defense) enthusiasm, commitment and the ability to adapt to changing circumstances and opportunities Darling-Hammond, Flook, Cook-Harvey, Barron & Osher, 2019).

There must be no doubt that doctoral student demonstrates competence and depth of knowledge in the use of computers to carry out necessary tasks and regard access to and use of electronic resources and possessing needed computer literacy skills as a requisite. Collaboration and knowledge-seeking beyond the boundary of a researcher's school are also needed and the use of computers affords all the necessary access and collaboration needed at all times and everywhere. The doctoral degree is considered the pinnacle of academic study; therefore, a researcher must be ready to undertake the challenge and complete it with dedication and commitment (Gelling & Rodríguez-Borrego, 2014).

The developments in scientific publishing and the pricing policies of publishers posed new challenges and opportunities for academic libraries in purchasing and managing serials within their restricted budget (Yakubu, 2023). Gakibayo, Ikoja-Odongo and Okello-Obura (2013) cited by Agboke, Undie and Ezeibe (2020) revealed that beyond having basic computer knowledge library users must be trained on a wider range of ICT applications for them optimally utilize electronic resources. In a study conducted on the use of computers by students of Mbara University, 83.7% of respondents had training in the use of computers. While a small percentage of 16.3% of respondents claimed that they had no training in the use of computers. The study revealed inadequate computer skills as only a small number of 11% of respondents rated themselves as experienced followed by beginners; the majority were at an intermediate level. The findings revealed a lack of retrieval skills as a barrier to e-resource utilization.

Okuonghae, Igbinovia and Adebayo (2021) in their study of technological readiness and

computer self-efficacy as predictors of e-learning adoption by LIS students in Nigeria, found that there is a significant positive relationship between computer self-efficacy and e-learning adoption by LIS students in Nigeria. This implies that the higher the level of students' computer self-efficacy, the more their level of adoption of e-learning will improve. A study by Omosekejimi, Eghworo and Ogo (2015) at the Federal University of Petroleum Resources (FUPRE), Nigeria cited by Alabi (2021), revealed the significant impact of the use of e-resources on the educational performance of students and low skills in the use of electronic library resources and recommended acquisition of relevant computer skills to improve the use of electronic resources.

Use of electronic resources and cognitive skills

Understanding how to access electronic resources using a computer, seems like a puzzle that only geniuses can solve to some individuals. This could be because they did not grow up having access to or using technology (Wang, Lee & Lo, 2023). Computer usage requires problem-solving skills, the ability to process text and symbols, and the development of various technical and cognitive skills. There was once a time when computer skills were an optional skill set. Computer literacy is a mandatory skill for success in school, the workforce, and everyday life (Cadiz-Gabejan & Takenaka, 2021).

Cognitive skills could influence individuals learning, confidence, and attitude toward the use of electronic devices such as computers. This starts from childhood and could extend to growing years if the negative attitude is not overcome. In reading comprehension, mental imagery is the key to complete immersion but this is subservient to decoding, both of which are needed for problem-solving at various levels of computer operations (Mak, De Vries & Willems, 2020; Leopold, Mayer & Dutke, 2019). The relationship between some independent variables and information retrieval skills is interfering with users' characteristics such as cognitive abilities. Some cognitive processes involved in information retrieval include learning, comprehension, and speed in spotting information. These factors have a role to play in the effectiveness of users during a search process (Al-Maskari & Sanderson, 2010). There are different levels of cognitive abilities for individual users of information systems which influence the performance of the cognitive processes of information retrieval (Kim & Allen, 2002 cited in Adekannbi & Oluwayinka, 2016). Cognitive abilities influence search performance in a variety of information systems. Individuals with varied levels of cognitive abilities will adopt different search strategies when searching a bibliographic information system and the display of the search vocabulary in two dimensions are for users with lower levels of cognitive abilities, while others facilitated the searching of users with higher levels of cognitive abilities (Joksimovic, Mills, Gasevic & Siemens, 2023).

Materials and Methods

The survey research design of the correlational type was adopted for the study. The reason is that the researchers are interested in examining the effect of computer self-efficacy, Computer literacy skills, and cognitive skills on the use of electronic resources among Social Science doctoral students in Nigerian Federal Universities.

Sampling procedure and sample

A stratified random sampling technique was used to select a population sample of 2,108

from the population of 3,342 in 33 faculty of the social sciences in the Nigerian Federal Universities.

The departments of Economics, Political Science, Geography, Sociology, Psychology, and Demography/ Social Statistics were selected from the faculty of the social sciences. From the population of doctoral students in each department, the population size for this research was selected based on the percentage proportion of 65 percent. The 65-percentage proportion was used to select the sample size for each department. The research instrument used was a questionnaire. Questionnaires were administered to the sample size from each department and retrieval and response rates were recorded

Correlation, in statistics, is a predictive relationship between two variables. It shows the nature, direction, and strength of the association between two factors by using this measure of dependence. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increases as the other decreases (Kumar & Gautam, 2020). Correlation and regression analyses were the types of inferential statistics used to analyze the relationship between dependent and independent variables. Demographic variables were also collated and results were explained in the result.

Research instrument

A questionnaire was used for data collection which was distributed to doctoral students in Federal universities. The reliability and validity of the research Instrument were conducted for the different sections of the questionnaire and reported. The first part of the questionnaire contained personal factors of the respondents such as gender, age, marital status, and mode of study, and was reported using frequency (%) distribution. The second part measures the computer self-efficacy of respondents, it has 29 items with a reliability coefficient of 0.78 using the Cronbach- alpha method. The third part measures the computer literacy skills of the respondents. It has 29 items with a reliability coefficient of 0.84 using the Cronbach- alpha method. The fourth part measures the cognitive skills of the respondents. It has 21 items with a reliability coefficient of 0.82 using the Cronbach-alpha method and the last part measures the frequency of use of electronic resources by the respondents. It has 15 items. The response format include: Daily=5; Weekly=4; Monthly3; Quarterly =2 and Never =1. It has a reliability coefficient of 0.74 using the Cronbach alpha method. Parts B, C, and D of the questionnaire have response formats ranging from strongly disagree (SD)=1 to strongly agree (SA)=5. Doctoral students' consent was obtained to fill out the questionnaire, and confidentiality and anonymity of research participants and data collected were followed to ensure ethical considerations.

Academic Disciplines of Doctoral Students in Nigerian Federal Universities. The copies of the questionnaires were administered to sampled 2,108 social science students out of which 1,961 responded yielding a 93 percent response rate (Table 1).

Table 1
Questionnaire Administration and Retrieval of Doctoral Students in Nigerian Federal University

S/N	Academic	Population	Percentage Population Proportion	Sample	Questionnaire Administration & Retrieval	Response Rate (%)
1	Economics	435	65	283	263	92.9
2	Political Science	725	65	471	450	95.9
3	Geography	580	65	377	325	86.2
4	Sociology	850	65	553	538	97.3
5	Psychology	420	65	273	250	91.6
6	Demography/ Social Statistics	232	65	151	135	89.4
Total		**3242**		**2108**	**1961**	**93.02**

Results

The data collected from 1961 respondents were analyzed using correlation analysis and regression analysis. The demographic results were explained using percentages. It was revealed that 824 (42%) were female while 1,137 (58%) were male. Their marital status showed that 926 (47.2%) were married, 981 (50%) were single and 54 (2.8%) were widowed. Out of the 1,961 respondents, 1275 (65%) studied full-time and 686 (35%) on a part-time basis. The distribution of their job status revealed that 1,196 (61%) were employed and 765 (39%) unemployed. Their ages ranged from 28 to 46 years with a mean age of 32.68 years and a standard deviation of 6.25 years.

The purpose of the use of electronic resources by the respondents was for doing class assignments/ class work, writing conference/ seminar papers, research work, research grant funding, doctoral fellowship programs, and job opportunities. The library electronic resources most frequently used by the respondents were TEEAL, JSTOR, African Journals Online (AJOL), E- E-Journals, World Bank Group, Global Development Network (GDNET), and Data Archive.

Table 2 shows the mean and standard deviation scores of computer self-efficacy (CSE), computer literacy skills (CLS), and cognitive skills (CS) by academic discipline of the respondents. The respondents from Demography/Social Statistics, Economics, and Geography used electronic resources (UERs) more, exhibited more computer self-efficacy (CSE), and demonstrated more computer literacy skills (CLS) than their counterparts from Political Science, Sociology, and Psychology. The respondents from Demography/ Social, Statistics, Psychology, and Geography had more cognitive skills compared to their colleagues from the Economics, Sociology, and Political Science disciplines.

Table 2
Mean and Standard Deviation Scores of the Variables of the Study by Academic Discipline of the Respondents.

	UELR		CSE		CLS		CS	
Discipline	Mean (x)	SD	Mean (x)	SD	Mean (x)	SD	Mean (x)	SD
Economics	48.25	8.11	210.70	11.21	76.84	9.11	72.46	9.80
Political Science	42.44	6.72	80.11	10.28	60.28	8.32	73.20	8.88
Geography	46.10	7.10	198.72	12.32	74.11	7.42	76.33	7.92
Sociology	43.28	6.75	98.72	11.41	68.33	6.48	74.24	6.66
Psychology	44.32	8.25	190.10	14.22	70.82	7.22	78.40	9.22
Demography/ Social Statistics	49.80	9.12	211.40	10.45	78.24	8.42	80.22	8.44
Overall	**49.80**	**8.31**	**164.96**	**10.88**	**71.44**	**8.72**	**78.81**	**8.55**

Hypothesis 1
There is no significant relationship between computer self-efficacy and the use of electronic resources among social science doctoral students in Nigerian Federal Universities.

The result revealed that there was a significant positive relationship between computer self-efficacy and the use of electronic resources among social science doctoral students in Nigerian Federal Universities ($r = .468$; $p < 0.05$). The result showed that computer self-efficacy is positively associated with the use of electronic resources among social science doctoral students in Nigerian Federal Universities (Table 3).

Hypothesis 2
There is no significant relationship between computer literacy skills and the use of electronic resources among social science doctoral students in Nigerian Federal Universities.

From the result, there was a significant positive correlation between computer literacy skills and the use of electronic resources ($r = .476$; $p < 0.05$) among social science doctoral students in Nigerian Federal Universities. The result means that computer literacy skills and the use of electronic resources among social science doctoral students in Nigerian Federal Universities are positively associated (Table 3).

Hypothesis 3
There is no significant relationship between cognitive skills and the use of electronic resources among social science doctoral students in Nigerian Federal Universities.

The research result showed that there was a significant positive correlation between cognitive skills and the use of electronic resources ($r = .0.480$; $p < 0.05$) among social science doctoral students in Nigerian Federal Universities. The result means that cognitive abilities development depends on performance in the use of electronic resources among social science doctoral students in Nigerian Federal Universities (Table 3).

Table 3
Showing the Relationship Between Computer Self-Efficacy, Computer Literacy Skills, Cognitive Skills and Use of Electronic Resources Among the Respondents

S/N	Variable	Mean (x)	Std. Deviation	UELR (r)	P-value
1	Computer self-efficacy	164.96	10.88	0.468	0.000
2	Computer Literacy Skills	71.44	8.72	0.476	0.002
3	Cognitive Skills	78.81	8.55	0.480	0.001
4	Use of Electronic Library Resources	45.70	8.31	1.000	_

Hypothesis 4

Computer self-efficacy, computer literacy skills, and cognitive skills do not have a significant joint effect on the use of electronic resources among social science doctoral students in Nigerian Federal Universities.

The result of effects of independent variables on use of electronic library resources of the respondents showed that computer self-efficacy (B=0.4472, t=4.77, p<0.05) computer literacy skills (B=0.4222, t=4.75, p<0.05) and cognitive skills (B=0.4624, t=4.12, p<0.05) individually has a significant effect on the use of electronic resources among social science doctoral students in Nigerian Federal Universities. The relative effect: of each independent variable on the dependent variable is computer self-efficacy (Beta = 0.3821) has a relative effect of 38.21%, computer literacy skills (Beta = 0.4426) have a relative influence of 44.26%, and cognitive skills (Beta = 0.5298) has a relative influence of 52.98%. These independent variables have a relative influence on the use of electronic resources among social science doctoral students in Nigerian Federal Universities (Table 4).

Table 4
Relative Effects of Independent Variables on Use of Electronic Resources

Variables	B	SE(B)	Beta	T	P-value
Constant	8.1351	1.9801	-	4.11	0.000
Computer self-efficacy	0.4472	0.1022	0.3821	4.77	0.000
Computer Literacy Skills	0.4222	0.0931	0.4426	4.75	0.000
Cognitive Skills	0.4624	0.1121	0.5298	4.12	0.000

B=Unstandardized Regression Coefficient, SE= Standard Error of (B), Beta= Standardized Regression Coefficient, SE= Standard Error of (B)

Summary of regression analysis from Table 5 showing the joint effect of computer self-efficacy, computer literacy skills, and cognitive skills on the use of electronic resources by social science doctoral students in Nigerian Universities. From the table, it was revealed that computer self-efficacy, computer literacy skills, and cognitive skills had a significant joint relationship with the use of electronic resources by social science doctoral students in Federal Universities in Nigeria (adjusted R^2 =0.7951, P<0.05). The result also showed that computer self-efficacy, computer literacy skills, and cognitive skills had a significant joint effect on the use of E-library resources (F= 64.60, df=3; 2104, p<0.05) by Social Science Doctoral Students in Nigerian Universities. The results further revealed a coefficient of multiple correlations

(adjusted R = 0.7951 and adjusted R^2 of 0.6321). It can be inferred from the result that 63.21% of the variance in the use of electronic library resources by Social Science Doctoral Students in Nigerian Universities was accounted for by the three independent variables when taken together. Any other variable not included in the study may have accounted for the remaining variance.

Table 5

Summary of Regression Analysis of Use of Electronic Resources by Social Science Doctoral Students in Nigerian Federal Universities

Model	DF	SS	MS	F ratio	P
Due to regression	3	1294.880	431.630	11.57	0.000
Residual	2104	78,605.150	37.307		
Total	2107	12,076	327.777		

Adj. R. =0.7951; Adj R^2 =0.6321, SEE=6.1079, DF= Degree of freedom= 5, 2104; F= 11.57, SS= Sum of Squares, MS=Mean sum of Squares, SEE=Standard Error of Estimate, α= 0.05 level of Significance P= Probability Value

Discussion

The research result showed that there was a significant positive relationship between computer self-efficacy and the use of electronic resources among social science doctoral students in Nigerian Federal Universities. It could be deduced from the result that as computer self-efficacy improves among doctoral students so also the use of electronic resources among social science doctoral students in the Nigerian Federal Universities. Computer self-efficacy has been found to predict students' behavioral intention to use technology for learning (Chao, 2019; Dwivedi, Rana, Chen & Williams, 2011). Computer self-efficacy and technological adoption for electronic learning and use of resources are significantly related especially among students in tertiary institutions (Saadé & Kira, 2009).

A study by Sharma, (2009) cited by Ankrah and Atuase, (2018) on the use of e-resources by postgraduate students, revealed that the use of e-resources was low compared to the investment in acquiring and setting it up. The study recommended that training programs be organized and infrastructure be provided for better use of e-resources campus-wide. It was found that students' level of computer self-efficacy is a significant determinant of the degree of use of electronic resources. It was found that a high level of computer self-efficacy is positively associated with electronic resources' use. Students who possess computer self-efficacy are more likely to engage in the use of e-resources that are technologically inclined (Umar, Azeez & Haruna, 2020).

According to a study conducted by Ndubuisi and Udo (2013) on empirical studies of motivation, challenges, and strategies in the use of e-resources among postgraduate library users in the Southeast Nigerian Federal Universities. The study explores several factors that motivate postgraduate researchers to use e-resources available in the university and revealed that postgraduate students were motivated to use e-resources in their university because they found e-resources easily accessible, easy to use, save time, and less expensive. Sadiku, Issa & Mohammed (2019) also reported that computer self-efficacy has a high impact on the level of use of electronic resources. Several research results also reported that information technology (IT) of which computer literacy skills are part, significantly predicted the level of use of electronic resources. Research results also showed that ICT skills, underutilization of e-resources, and computer literacy skills affect the utilization of electronic resources (Umukoro

& Tiamiyu, 2017; Daramola, 2016). Research findings also reported that lack of ICT skills, lack of information retrieval skills, and low level of cognitive abilities among students affect their use of electronic resources (Adekanbi & Oluwayinka, 2016).

From the study, it was revealed that computer literacy endears a student to use electronic library resources because of the ease with which they can access, retrieve, and use needed information. There is increased productivity achieved within little time as regards their research work. Students who lack necessary computer literacy skills also have less interest in using computers or even accessing the electronic resources available in the institution. This is in line with the study carried out by Issa, Blessing and Daura (2009) cited by Sadiku, Issa and Mohammed (2019), on the effects of information literacy skills and the use of e-library resources among students of the University of Ilorin, Kwara State, Nigeria. The findings revealed that most students are aware of the electronic resources, but are not utilizing them due to their lack of computer skills. Urhiewhu and Omah, (2016) also identified low computer literacy skills of users as one of the factors responsible for the under-utilization of electronic resources apart from some other factors such as poor internet facilities, and insufficient computers. Umukoro and Tiamiyu, (2017) also found out that computer literacy skills among other factors also affect the utilization of electronic resources by students.

From the research result, it was revealed that cognitive skills affect the use of electronic resources. Consistent use of electronic library resources for various research activities improves the ability to further use various e-resources available and breaks the barrier of inability. This is corroborated by research findings that awareness of electronic resources, education level, Information Literacy (IL) competency, individual experience, and frequent usage were factors that contributed to the effective utilization of e-resources available (Ruzegea & Msonde, 2021; Osinulu, 2020).

Cognitive barriers which include the inability to articulate one's information needs, unawareness of information sources, low self-efficacy, and poor search skills among others were identified as hindrances to information seeking in the digital environment, the use of computers, and in effect use of electronic resources. With consistent use of computer and electronic resources, cognitive barriers could be reduced and abilities develop as students consistently use the e-resources made available to them (Yusuf, Owolabi, Aregbesola, Oguntayo, Okocha & Eyiolorunse, 2016).

The result of the relative effects of independent variables on the use of electronic resources of the respondents showed that computer self-efficacy, computer literacy skills, and cognitive skills individually have a significant effect on the use of electronic library resources among social science doctoral students in Nigerian Federal Universities. The relative effect of each of the independent variables on the dependent variable are computer self-efficacy (Beta = 0.3821) has a relative effect of 38.21%, computer literacy skills (Beta = 0.4426) have a relative influence of 44.26%, and cognitive skills (Beta = 0.5298) has a relative influence of 52.98%. These independent variables have a relative influence on the use of electronic resources among social science doctoral students in Nigerian Federal Universities.

Computer self-efficacy is a very important factor that relatively affects the utilization of electronic library resources in this present technological-driven world. A favorable attitude towards computers means ease of use and utilization of e-resources while a negative attitude means low computer self-efficacy and this affects the utilization of electronic resources

provided by the institution. Bello and Ajoviyon (2021) revealed that computer self-efficacy determines the use of electronic resources among students in higher institutions. Students who are at ease using electronic resources for various reasons and especially for academic purposes have high self-efficacy while those who find electronic resources difficult to use have low self-efficacy. High computer self-efficacy increases the chances of students using electronic resources for various academic purposes while low computer self-efficacy could also mean low utilization of electronic resources.

Computer literacy skills affect the use of electronic resources. Post-graduate students' utilization or lack of use of electronic resources will depend on their competence of computer literacy skills. Lack of computer literacy skills leads to low usage of electronic resources while the use of e-resources becomes more effective for research purposes, especially among postgraduate students (Ratcliff, Swartz & Ivanitskaya 2013; Mollel & Mwantimwa, 2019). Cognitive skills develop with consistent practice and use of the skills, these three independent variables have a relative influence on the use of electronic resources by social science doctoral students.

Conclusion

Some studies have found that the lack of adequate hands-on skills required to retrieve information from subscribed electronic information resources has inhibited the use of computers, therefore the need for computer training to enhance student's information and communication technology skills to have access to the use of electronic resources in an institution does not commensurate with the investment of their acquisition (Madondo, Sithole & Chisita, 2017; Sharma, 2009). It was recommended that proper instructional and computer literacy skill training is needed and welcomed by students.

Technological advancement has brought about a paradigm shift in all areas of global life especially the education sector, which starts from the primary up to the tertiary level. The use of computers for teaching, learning, research, and social interaction has been profoundly established by the recent COVID-19 pandemic that ravaged the world and caused a total distancing in all interactions, even education. This research revealed that computer self-efficacy, computer literacy skills, and cognitive skills affect the use of electronic resources.

Therefore, the reason for university management is to ensure that computer-based tests are conducted for all students at all entry levels, (undergraduate and postgraduate) to enhance students' computer proficiency and ascertain that computer skills necessary for academic research is possessed by students. Higher institution curriculum should be designed by stakeholders to include some practical computer application courses, especially at the doctoral level necessary to advance their knowledge of computer application beyond the intermediate level. This will increase confidence, and ease of use and break cognitive barriers to the use of electronic resources for academic achievement. Consistent use of computers for various activities helps develop cognitive abilities in children and adults thereby continuous development of computer literacy skills, enhancing confidence, competence, and ease of use of computer knowledge and applications for academic research.

Information and Communication Technology (ICT) has established lifelong learning (LLL) of computer knowledge from the basic to the intermediate and up to the professional level which also has different branches of knowledge application in different education fields. The need to have adequate and increasing knowledge of computer operations and applications among social

science doctoral students cannot be overemphasized. Therefore, university administrators, management, faculty members, librarians, and all stakeholders should encourage and promote the development of computer self-efficacy, literacy skills, and cognitive abilities through curriculum upgrades, investment in electronic resources, and easy access to the resources. Courses that will help doctoral students advance beyond entry level should be taught and applications should be allowed to make research work easy and use of electronic resources provided by the university.

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