

Digital Literacy Influence on Research Productivity of Librarians in South-South Nigerian Federal Universities

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Abstract

This research descriptively fathomed out how digital literacy impacted research productivity of librarians in South-South Nigerian federal universities. Population was 91 librarians while sample was 71 librarians. A validated questionnaire was utilised for data sourcing. Ninety-one questionnaire copies were distributed to the librarians, out of which 71 copies were retrieved and found fit for analysis. The rate of response was 78.02%. Weighted mean, standard deviation, simple percentages and linear regression were employed for data analysis, the outcome of which suggested that the librarians possessed low levels of both digital literacy and research productivity. Though the librarians' digital literacy positively influenced their research productivity, the influence was not significant.

Keywords: Influence, Digital Literacy, Research Productivity, Librarians, Federal Universities, South-South Nigeria

Introduction

A university library is a library which provides information resources to cater for the information needs of individuals who engage in teaching, learning, research and any other person who provides services which support these activities in a university. A university library performs this function through the utilisation of the expertise and knowledge of a group of personnel, of which the professional group are referred

to as librarians. A librarian is an individual who has been trained in Library and Information Science in any recognised tertiary educational institution, holds a bachelor or a postgraduate degree, executes collection development and knowledge organisation and renders reference and bibliographic services (Saidu et al., 2020). Regarded as their professional duties, librarians in universities around the world perform similar functions. However, the recent developments such as explosion of online or digital information resources, rising library user population, integration of electronic collection development, creation of electronic databases and institutional repositories in university libraries and many more, have compelled librarians in universities to possess the ability to manipulate information and communication technology (ICT) to effectively meet not only university library patrons' information needs but also their own information demands. They need to know how to use computers and related technologies to identify need for online or electronic information or resources, access, locate, retrieve, organise, store and disseminate relevant online or digital information to university library patrons. This ability is referred to as digital literacy.

Digital literacy is used in this study to mean the skill that enables an individual to use diverse forms of information and communication technology to work with data and information to meet personal, institutional, corporate, organisational or societal needs. Digital literacy is when one has and puts to use the knowledge and specialty required to manipulate digital tools and to use electronic

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and online materials in a way that produces the expected result (Yo, 2021). It is the ability to use digital facilities to search, evaluate, generate and disseminate information effectively and efficiently (Agina-Obu & Okwu, 2023). It covers a broad range of skills, including computer literacy, ICT literacy, information literacy and media literacy (UNICEF, 2019). OECD (2016) also associated four skills with digital literacy, including skill to access online information; skill to create ICT products and services; and skill to process complex information so as to communicate with an individual or a group with a view to solving problems. Digital literacy is likely to help an individual engage in academic tasks such as research.

Research could be defined as an organised and procedural approach to identify the cause of a problem with a view to solving a problem, or improving an undesirable condition or a harmful situation affecting the well-being of people in society. It is described as a meticulous and watchful means of examination which is primarily intended to look for and discover new details, information and facts (Basiru et al., 2018). This discovery in research is referred to as findings. These findings are published as articles in journals, proceedings of conferences, textbooks, chapters in textbooks and so on. The totality of these scholarly papers produced by an academic is known as research productivity.

Scholars have offered several definitions of research productivity and most of these definitions tend to view research productivity as the sum of papers which contain the output of research undertaken by an academic or other individuals involved in a related activity. Research productivity is said to be composed of the sum of books, chapters in books, articles in journals, monographs, occasional papers, technical reports, papers delivered at workshops and conferences and patents (Olakunle & Olanrewaju, 2019). In the same vein, Rashi (2011) identifies the following as examples of research productivity: books, academic journal articles, conference proceedings, seminar papers, book chapters, monographs and works of art. Research productivity is most often evaluated by counting the number of papers published over a period of time (Creswell, 2014). Globally, librarians in the employ of universities have been researching and disseminating their discoveries. While the levels of digital literacy may differ from librarian to librarian in a university, scholars have

opined that digital literacy could help librarians in higher educational institutions to publish more academic papers and therefore, encouraged them not only to acquire ICT skills but higher ICT skills (Green, 2010; Olakunle & Olanrewaju, 2019). This is imperative as Ezeani et al. (2018) observed that it is a global requirement for librarians in universities, including those in Nigerian universities, to conduct research and publish papers to earn promotion in their job.

Statement of the Problem

Although studies have provided a hint on how digital literacy impacts publication output of librarians in Nigerian public universities, these studies appear to have only engaged librarians in South-East, North-East and South-West Nigerian public universities (Adamu & Babalola, 2022; Agbo et al., 2020; Madukoma et al., 2023). No research seems to have carried out same study with librarians in South-South Nigerian federal universities. Therefore, this research made an attempt to understand how digital literacy impacted publication output of librarians in South-South Nigerian federal universities.

Objectives of the Study

The study principally intended to understand how digital literacy impacted the publication output of librarians in South-South Nigerian federal universities. Its specific goals were to

- Assess the level of digital literacy possessed by librarians in South-South Nigerian federal universities;
- Determine the level at which librarians in South-South Nigerian federal universities publish; and
- Evaluate how digital literacy influences the publication output of librarians in South-South Nigerian federal universities.

Research Questions

The following questions were raised to find answers to:

- What level of digital literacy is possessed by librarians in South-South Nigerian federal universities?

- At what level do librarians in South-South Nigerian federal universities publish?
- How does digital literacy influence the publication output of librarians in South-South Nigerian federal universities?

In addition, the study was also intended to test this hypothesis:

Ho₁: Digital literacy does not significantly influence publication output of librarians in South-South Nigerian federal universities.

Review of Related Literature

Level of Digital Literacy of Librarians in Public Universities

A great deal of research has thrown light on the digital literacy level possessed by librarians in universities around the world. Empirical results have varied over the years, with some findings suggesting high level of digital literacy; some, moderate level; whereas others, low level. A number of studies have rated the level of their digital competence high. For example, Bello et al. (2013) discovered that 120 librarians in six South-Western Nigerian federal universities were armed with high ICT aptitude. A subsequent study rated the ICT literacy level of 134 librarians in university libraries in Maharashtra, India, as satisfactory (Bansode & Viswe, 2017). A concurrent research generated a very impressive result, suggesting that nearly all members (99%) of a sample of 80 librarians in the University of the Punjab, Pakistan, were computer literate (Iqbal & Khan, 2017). In the year that followed, Oyedokun et al. (2018) associated 122 professional and their para-professional counterparts of the University of Ilorin, Kwara State University and Al-Hikmah University with high ICT competence. Tiemo's (2019) study established that 26 academic and non-academic library personnel at Federal University Otuoke, Bayelsa State, Nigeria, possessed high expertise for managing online resources and services. In the succeeding year, Ahmed and Sheikh (2020) discovered that there was high ICT proficiency among librarians in the University of Punjab, Pakistan, with their information retrieval skill relatively higher than their computer and information storage skills. The same year was also connected with result indicating

that 77 librarians in three South-eastern Nigeria federal universities greatly possessed ICT literacy skills (Agbo et al., 2020). The study which followed also arrived at a similar result showing that 203 academic librarians in South-Western Nigerian public universities possessed a high ICT skill (Madukuma et al., 2023). The year was also known for a finding which indicated that the generality of the members of a sample of 113 professional and para-professional counterparts in Francis Sarwuan Tarka University Library and Benue State University Library possessed ICT competencies which could empower them to perform library operations (Idachaba et al., 2023). On the other hand, there is a body of research which ascribes a moderate level of digital literacy to librarians in universities. One of these highlights that a larger proportion of 53 librarians in four public universities and eight private universities in Karachi, Pakistan, possessed moderate ICT skills (Ansari, 2013). Same level of skill for executing different ICT-oriented jobs was also tied to 102 librarians in Kerala University (Seena & Sudhier, 2014). However, a mixed result revealed that 74 librarians in eight universities (public and private) in Edo and Delta States, Nigeria, possessed both moderate and low digital literacy competence (Emiri, 2015). In a succeeding study, nearly half of a sample of 111 librarians in government-owned and non-government-owned Nigerian universities rated their digital literacy level moderate, while few librarians rated theirs excellent (Okeji et al., 2019). However, over half of a sample of 108 librarians and six university library heads in six federal university libraries in South-West Nigeria rated the level of their ICT skill moderate in the same year (Quadri & Garaba, 2019). The following year came with finding showing that 135 librarians in 15 higher educational institutions in Katsina State of Nigeria have the minimum ICT skills needed to render virtual information services (Manzo, 2020). In the accompanying year, Sakhawat et al. (2021) reported that 231 librarians and lecturers at the University of Agriculture, Faisalabad in Punjab, Pakistan, had an average level of ICT skills. Still, studies rate the level of librarians' digital literacy low. For instance, Ademodi and Adepoju (2009) found that the level of computer skill among 24 academic librarians in six tertiary institutions of learning in Ondo and Ekiti States, Nigeria, was low. Same result was linked with 255 librarians and library officers in 17 public and private universities in North-Central Nigeria (Obaji, 2014). A subsequent finding revealed that 33 librarians

in five Anambra State-based universities in Nigeria had weak ICT skills (Nkamnebe et al., 2015). Same outcome was linked with 95 librarians in six South-South Nigerian federal universities (Endouware & Dushu, 2021). In a relatively-current investigation, Chukwueke and Idris (2023) established the same finding with 109 librarians in libraries in higher institutions of learning in Taraba State of Nigeria.

Level of Research Productivity of Librarians in Public Universities

Research has established high, moderate and low publication output of librarians in universities across the globe. A number of studies have generated findings suggesting that their level of research output is high. Okonedo et al. (2015) ascribed a high level of research productivity to 142 librarians in South-Western Nigerian government-owned universities. This was followed by a finding suggesting a significant rise in the publication output of 69 librarians in universities in Punjab, Pakistan, who had M. Phil or Ph. D (Sulehri et al., 2017). A study by Adegbaye et al. (2019) yielded mixed findings, suggesting that 100 librarians in eight universities (five private and three public) in Ogun State, Nigeria, produced fairly-high research output in journal articles, but low publication in textbooks, jointly-authored books, book chapters, monographs and conference proceedings. On the contrary, conference papers of 160 librarians in 13 government-owned universities in North-Central Nigeria were more, followed by book chapters and co-authored textbooks, textbooks and lastly, by journal articles (Hungwa et al., 2020). Further mixed findings by Akinola and Ngeme (2021) suggested that, from 2010 to 2015, librarians who worked in universities in Ekiti, Ondo and Osun States of Nigeria had high publication output in journal articles, book chapters, co-authored textbooks and conference/seminar/workshop papers, but low research output in technical reports, working papers, monographs, textbooks, patents, scientific peer-reviewed bulletins and certified inventions. Simultaneous result suggested that, the publication output of 124 librarians in South-West Nigerian federal universities, was high (Adepeju & Awogbami, 2021). Over the years spanning 2016–2020, an increase in the quantity of publications of librarians in 32 recognised tertiary educational institutions in Norway (10 universities and 22 colleges) was then discovered

(Laskowska, 2019). In an accompanying study, American researchers identified high level of scholarly output with 85 scholarly communication librarians, mostly those with academic posts and with affiliations with Carnegie Classification research universities or M. A/ Ph. D-awarding institutions (Hollister & Jensen, 2023). In the same year, another Nigerian study demonstrated from an assessment of the effect of physical work environment on publication output of librarians that 312 librarians in South-Western Nigerian universities were highly productive in terms of the number of publications (Adetayo et al., 2023). Unlike these findings, a number of studies have also reported moderate publication productivity among librarians in universities. One of these showed that the level of publication productivity of 203 librarians in 18 government-owned universities in South-West Nigeria was moderate in terms of number and quality (Madukoma et al., 2023).

In other studies, the publication output level of librarians in universities degenerated. Earlier, Ogbomo (2010) found that the generality of the librarians and Library and Information Science teachers at Delta State University, Abraka, Nigeria, did not research and publish sufficiently. A continental-based study then revealed that librarians in 60 Southern African public universities produced minimal research output from 2002 to 2011 (Ocholla et al., 2013). The research by Oni and Eziam (2014) followed suit, crediting a few librarians from a study of 55 librarians in five university libraries (one federal, one state and three private) in Edo and Delta States, Nigeria, with possessing 21 and more publications. Tsafe et al. (2016) found that most of every librarian in 16 universities in seven North-Western Nigerian states published at least one article from 2000 to 2012, with male and senior librarians publishing much more than their female and junior colleagues respectively. Similar finding was connected with 47 librarians and four heads of university libraries in the University of Ghana, Kwame Nkrumah University of Science and Technology, University of Cape Coast and University for Development Studies in Ghana, who had low research output, with higher-ranked librarians and librarians in public universities out-publishing lower-ranked colleagues and librarians in private universities respectively (Fiawotoafor et al., 2019). In the same year, Orji, Anunobi and Chinwe (2019) discovered that 104 librarians' publications in five South-South Nigerian federal universities did not only receive low citations but

also made low research impact. About the same time, an analysis of 1,106 journal articles of librarians in 153 Nigerian universities suggested few scholarly-productive librarians from 2000 to March 2018 (Okeji, 2019). After this research, 30 librarians at Niger Delta University, Bayelsa, Nigeria and at Delta State University, Abraka, Nigeria, were found to have published at a low level (Igere, 2020). A following study found that 190 librarians in 14 North-Eastern Nigerian government-owned universities generated publications at a very low level (Babalola & Bakum, 2022). This research was conducted in the same year and in the same Nigerian region with that by Umar and Ibrahim (2023), demonstrating that three hundred and sixty-six librarians in seven federal universities published at a very low level.

Influence of Digital Literacy on Research Productivity of Librarians in Public Universities

Empirical findings indicate that digital literacy influences research productivity of librarians in government-owned universities across the globe. Research has uncovered that online information resource usage self-efficacy made a significant contribution to the stock of papers lecturers in Nigerian Universities of Agriculture had published (Ajegbomogun & Popoola, 2014). A subsequent research established that 77 librarians in three South-East Nigerian federal universities produced enough publications by utilising their ICT skills (Agbo et al., 2020). In a related development, researchers made the finding that ICT skills significantly influenced publication productivity of 190 librarians in fourteen North-East Nigerian government-owned university libraries (Adamu & Babalola, 2022). Researchers also arrived at the same finding, suggesting that ICT skills positively and significantly impacted publication productivity of librarians in South-West Nigerian government-owned universities (Madukoma et al., 2023). Furthermore, research revealed that web 2.0 skills of 421 academic staff in six North-Central Nigerian universities (federal, state and private) positively and significantly correlated with their academic output (Madu et al., 2017). Same strong and significant link between digital literacy and research productivity of Filipino faculty members at Laguna State Polytechnic University was also reported (Yazon et al., 2019). In a related investigation, web-based information literacy was found to have helped 480 senior and junior lecturers in the

University of Port Harcourt, University of Calabar, Delta State University and Niger Delta University, Nigeria, to improve the sum of their publications (Anekwe, 2018).

Methods

The study was planned to be carried out descriptively. This choice was made because the research was meant to assess how digital literacy impacted the publication productivity of librarians based on their opinions. The choice aligns with Nworgu's (2015) position that the aim of a survey research design is to collect and systematically describe information and facts about a given population. Ninety-one librarians in six South-South Nigerian federal universities made up the study population, while total enumeration sampling method was used to draw a sample of 71 librarians. This technique was adopted because the population elements were small and manageable. A questionnaire was used to gather data. It was divided into two sections: A and B. Section A covered demographic details about the study respondents while Section B was partitioned into five clusters: A, B, C, D and E. Cluster A which had ten items and dealt with "Digital Literacy of Librarians", was weighted on a scale of Agreed (2) and Disagreed (1); Cluster B with ten items, covering "Level of Librarians' Digital Literacy", was weighted on a scale of Very High, High, Low and Very Low; Cluster C with 18 items focused on "Research Productivity of Librarians"; and Cluster D dealing with "Level of Librarians' Research Productivity" was weighted on a scale of Very High (81 and above), High (61–80), Low (41–60) and Very Low (Below 40). This classification scheme was adopted from Madu and Akinboro's study (2012). On the other hand, Cluster E which contained ten items, covering "Influence of Digital Literacy on Librarians' Research Productivity" was weighted on a scale of Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1).

The instrument was validated by two senior Library and Information Science lecturers and one senior Measurement and Evaluation lecturer at Niger Delta University, Bayelsa State, Nigeria. The instrumentation process skipped pilot testing on the strength of the assertion that validity tends to make an instrument reliable (Nworgu, 2015). The researchers made visits to the nearby university libraries and distributed 55 copies of the questionnaires to the librarians while 36 soft copies of the instrument were emailed to research assistants in the distant university

libraries who helped with data collection. Questionnaires filled out instantly were immediately retrieved by the researchers while the rest were retrieved and sent to the researchers via courier and third party by the research assistants. In all, a total of 91 questionnaire copies were administered to the librarians. Data collection took two months and a half. Seventy-one questionnaire copies were finally retrieved and verified suitable for the purpose of data analysis. This gave rise to response rate of 78.02%. Analysis was performed on the data by means of weighted mean, standard deviation, simple percentages and linear regression.

Cut-off point of 1.50 was set for Cluster A, while 2.50 for Cluster B and E. The decision rule adopted was that Cluster A items whose weighted means were less than 1.50 would be regarded as “Disagreed” while those whose means were equal to or greater than 1.50 would be considered as “Agreed”. With respect to Cluster B

and E, items with means less than 2.50 would be viewed as “Disagreed” while those with means equivalent to or exceeding 2.50 would be regarded as “Agreed”. The grand mean in Cluster E was to be interpreted in a way that if it was less than 2.50, the influence was to be regarded as “negative”, whereas, if it was equal to or greater than 2.50, the influence was to be regarded as “positive”. The aggregate means in the two clusters were interpreted in the same way. In determining how digital literacy influenced the librarians’ publication output based on R^2 value, the study adopted the rule whereby R^2 values of 0.75, 0.50 and 0.25 are viewed as substantial, moderate and weak respectively (Sarstedt & Mooi).

Results

Research Question 1: What level of digital literacy is possessed by librarians in South-South Nigerian federal universities?

Table 1: Mean Ratings of Responses on Level of Digital Literacy Possessed by Librarians in South-South Nigerian Federal Universities

Sr. No.	Items	Mean	Standard Deviation	Remark
1.	Skill to install basic computer software.	1.45	0.15	Very Low
2.	Skill to use basic computer software.	1.49	0.15	Very Low
3.	Skill to use basic computer hardware.	1.47	0.15	Very Low
4.	Skill to define an appropriate search query online.	2.35	0.24	Low
5.	Skill to access or locate relevant online information.	2.49	0.25	Low
6.	Skill to evaluate online information.	3.44	0.44	High
7.	Skill to download online information.	3.45	0.35	High
8.	Skill to save downloaded online information.	3.47	0.35	High
9.	Skill to retrieve online information saved on the computer and external storage devices.	2.42	0.24	High
10.	Skill to synthesise online information for use.	2.48	0.24	Low
	Grand Mean and Standard Deviation	2.45	0.25	Low

Table 1 reveals that the grand mean of 2.45 falls within the range of 1.50–2.49, which was earlier set as “Low Level”. Thus, librarians in South-South Nigerian federal universities possess a low digital literacy level.

Research Question 2: At what level do librarians in South-South Nigerian federal universities publish?

Table 2: Percentage Responses on Level of Research Productivity of Librarians in South-South Nigerian Federal Universities

<i>Sr. No.</i>	<i>Number of Respondents</i>	<i>Percentage of Respondents</i>
VH (81 and above)	4	5.63%
H (61-80)	6	8.45%
L (41-60)	41	57.75%
VL (Below 40)	20	28.17%
Total	71	100%

Note: VH (Very High); H (High); L (Low); VL (Very Low)

Table 2 indicates that a larger proportion of the respondents fall within the limit of “41-60”, which was earlier established as “Low”. Thus, the level at which librarians in South-South Nigerian federal universities publish is low.

Research Question 3: How does digital literacy influence the publication output of librarians in South-South Nigerian federal universities?

Table 3: Mean Ratings of Responses on How Digital Literacy Influences Research Productivity of Librarians in South-South Nigerian Federal Universities

<i>Sr. No.</i>	<i>Items</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Remark</i>
1	Digital literacy increases my published local journal articles.	4.45	0.45	SA
2	It helps me to increase my published international journal articles.	3.48	0.35	A
3	It helps me to publish more monographs.	1.43	0.14	SD
4	It helps me to publish more textbooks.	2.33	0.23	D
5	It enables me to publish more book chapters.	3.43	0.34	A
6	It empowers me to publish more occasional papers.	2.57	0.26	A
7	It enables me to have more published conference papers.	4.41	0.44	A
8	It helps me to publish more indexes to information resources.	1.35	0.14	SD
9	It enables me to publish more book abstracts.	2.57	0.26	A
10	It helps me to publish more bibliographies.	0.55	0.06	SD
Grand Mean and Standard Deviation		2.66	0.27	A

Note: SA (Strongly Agree); A (Agree); D (Disagree); SD (Strongly Disagree).

Table 3 reveals that the grand mean of 2.66 exceeds the benchmark of 2.50. This means that digital literacy positively influences publication output of librarians in South-South Nigerian federal universities.

Hypothesis 1 (HO₁): Digital literacy does not significantly influence publication output of librarians in South-South Nigerian federal universities.

Table 4: Summary of Linear Regression Analysis of How Digital Literacy Significantly Influences Research Productivity of Librarians in South-South Nigerian Federal Universities

ANOVA						
Model	Sum of square	DF	Mean Square	F-Cal	F-Crit	Sig.
Regression	654.437	1	654.437	4.123	3.980	0.05
Residual	10953.140	69	158.741			
Total	11607.577	70	813.211			

R =0.237 R-Square =0.056, Adjusted R Square =0.043, =1.454, St. Err. Est. = 12.599

Table 4 shows that the R-Square is 0.056. This is less than 0.25, which is considered as a weak R-Square value. Digital literacy contributes only 5.6% change in the variation in the publication output of librarians in South-South Nigerian federal universities. Therefore, digital literacy does not significantly impact publication productivity of the librarians.

Discussion

The study was meant to provide understanding as to how digital literacy influences publication productivity of librarians in South-South Nigerian federal universities. It demonstrated that the librarians possess a low level of digital literacy. The finding is consistent with fallouts of a body of research ascribing a low level of digital literacy to librarians in Nigerian universities and related academic institutions in Ondo and Ekiti States (Ademodi & Adepoju, 2009); to librarians in North-Central Nigerian government-owned universities (Obaji, 2014); to librarians in universities in Anambra State, Nigeria (Nkamnebe et al., 2015); to librarians in South-South Nigerian federal universities (Endouware & Dushu, 2021); and to those in higher educational libraries in Taraba State of Nigeria (Chukwueke & Idris, 2023). On the contrary, the result is out of tune with findings from studies linking high digital literacy skill with librarians in South-Western Nigerian federal universities (Bello et al., 2013); with librarians who work at the University of Ilorin and Kwara State University in Nigeria (Oyedokun et al., 2018); with librarians at Federal University Otuoke, Bayelsa State, Nigeria (Tiemo, 2019); with librarians in South-Eastern Nigeria federal universities (Agbo et al., 2020); and with those in South-Western Nigerian government-owned universities (Madukoma et al., 2023). The low digital literacy level possessed by the librarians in this study could be attributable to their seeming tendency to resist change and lukewarm attitude to develop their digital competence.

The research also revealed that the research output of the librarians is low. This agrees with outcomes of studies which link low publication output with librarians at Delta State University, Abraka, Nigeria (Ogbomo, 2010); with librarians in government-owned universities in Edo and Delta States of Nigeria (Oni & Eziam, 2014); with librarians in North-Western Nigerian universities (Tsafe et al., 2016); with librarians in Ghanaian public universities

(Fiawotoafor et al., 2019); and with librarians at Niger Delta University and Delta State University, Nigeria (Igere, 2020). Moreover, it resonates with the result obtained from the African-wide study that librarians in 60 public universities in South Africa generated minimal research output over the years spanning 2002–2011 (Ocholla et al., 2013). In contrast, the result varies from findings from investigations attributing high publication output to librarians in South-West Nigerian public universities (Adepeju & Awogbami, 2021; Adetayo et al., 2023; Okonedo et al., 2015); to higher-degree holding librarians in universities in Punjab, Pakistan (Sulehri et al., 2017); and to scholarly communication librarians in Carnegie Classification research universities or higher degree-awarding institutions (Hollister & Jensen, 2023). The research productivity of the librarians turned out low probably because most of these librarians seem to see publishing as an exercise which they should engage in when their promotion is due, and not necessarily as an integral part of their academic career. In addition, the Nigerian federal government has not incorporated research allowance into their salaries, and this could have also prevented this group of academics from contributing massively to the stock of literature in the field of Library and Information Science.

Furthermore, the study shows that digital literacy has a positive influence on the publication output of the librarians. This is in line with findings indicating a positive link between web 2.0 skills and publication output of teaching personnel in North-Central Nigerian government-owned universities (Madu et al., 2017); between web-based information literacy and research output of South-South Nigerian government-owned university teachers (Anekwe, 2018); and between information and communication technology skill and research output of librarians in South-West Nigerian public universities (Madukoma et al., 2023). The current research result could have turned out this way because nearly every successful academic research, writing and publication engagement in this 21st century requires the skill to manipulate information and communication technologies to take advantage of the vast amount of information and information resources available on the Internet and other technological devices. This could explain why digital literacy of the librarians helps them to publish more papers

Finally, the investigation brought to light that digital literacy has no significant impact on publication output of the librarians. This disagrees with findings indicating a significant contribution of online resource usage self-efficacy to publication output of lecturers in Nigerian Agricultural Universities (Ajegbomogun & Popoola, 2014); a significant relationship between web 2.0 skills and academic output of lecturers in North-Central Nigerian government-owned universities (Madu et al., 2017); between digital literacy and publication output of Filipino lecturers at Laguna State Polytechnic University (Yazon et al., 2019); between ICT skill usage and publication productivity of librarians in South-East Nigerian federal universities (Agbo et al. 2020); and between ICT skill and research output of librarians in North-Eastern Nigerian government-owned universities (Adamu & Babalola, 2022); and between ICT skill and research productivity of librarians in government-owned universities in South-West Nigeria (Madukoma et al., 2023). The finding that digital literacy does not significantly affect publication output of the librarians may be because other factors play a key role in contributing to research output of academics. An academic publishes papers extensively not necessarily because such an academic has digital literacy but probably because that academic is also ambitious about publishing his findings; desirous of being recognised in his field; has research orientation, enjoys conducting research as part of his career, etc. This may be accountable for the present research result.

Conclusion

This research attempted to understand how digital literacy impacted publication output of librarians in South-South Nigerian federal universities. The study provided the understanding that these librarians publish few papers and have limited skills to manipulate digital technologies as well as to use these technologies to exploit electronic or online information resources. Although their digital literacy helps them to publish more papers, it does not enable them to publish profusely.

Recommendations

Having seen the research outcome, the researchers hinted that:

- Librarians in South-South Nigerian federal universities should undergo self-sponsored computer training to improve the level of their digital literacy;
- The librarians should collaborate with librarians who are highly productive in terms of research so as to learn the art of academic writing and publishing.

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Questionnaire on Influence of Digital Literacy on Research Productivity of Librarians in South-South Nigerian Federal Universities

Section A: Demographic Profile of Librarians

Institutional Affiliation: Kindly use a tick (✓) to indicate the name of your university in the boxes below:

☐	Federal University Otuoke
☐	University of Port Harcourt
☐	Federal University of Petroleum Resources
☐	University of Benin
☐	University of Calabar
☐	University of Uyo

Section B: Influence of Digital Literacy on Librarians' Research Productivity

Cluster A: Digital Literacy of Librarians

The table below shows the likely digital literacy you possess. Kindly make use of a tick (✓) to express your

agreement with the digital literacy you have on the scale of Agree (2) and Disagree (1).

S/N	Items	A	D
1.	I have skill to install basic computer software.		
2.	I am able to use basic computer software.		
3.	I have competence to use basic computer hardware.		
4.	I have expertise to define an appropriate search query online.		
5.	I have skill to access or locate relevant online information.		
6.	I possess skill to evaluate online information.		
7.	I have skill to download online information.		
8/	I am armed with skill to save downloaded online information.		
9.	I can retrieve online information saved on the computer and external storage devices.		
10.	I have potential to synthesise online information for use.		

Cluster B: Librarians' Level of Digital Literacy

The four-point scale in the following table indicates the possible level of your digital literacy. Please use a tick (✓) to rate the level of your digital literacy on the scale of Very High (4), High (3), Low (3) and Very Low (1).

Cluster D: Librarians' Level of Research Productivity

The four-point scale in the following table describes the possible level of your research productivity. Kindly use a tick (✓) to point out the level of your research output on the scale of Very High (81 and above), High (61-80), Low (41-60) and Very Low (Below 40).

Research Productivity Levels	Responses
VH (81 and above)	
H (61-80)	
L (41-60)	
VL (Below 40)	

Cluster E: Influence of Digital Literacy on Librarians' Research Productivity

The rating scale in the table below shows the level of your agreement with the probable influence of your digital literacy on your research productivity. Please use a tick (✓) to indicate the influence on the scale of Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1).

Sr. No.	Items	SA	A	D	SD
1.	Digital literacy increases my published local journal articles.				
2.	It helps me to increase my published international journal articles.				
3.	It helps me to publish more monographs.				
4.	It helps me to publish more textbooks.				
5.	It enables me to publish more book chapters.				
6.	It empowers me to publish more occasional papers.				
7.	It enables me to have more published conference papers.				
8.	It helps me to publish more indexes to information resources.				
9.	It enables me to publish more book abstracts.				
10.	It helps me to publish more bibliographies.				

Appendix B: Sample Distribution of Study Respondents

Sr. No.	Names of Universities	Number of Respondents	Percentage of Respondents
1.	Federal University Otuoke	8	11.27%
2.	University of Port Harcourt	13	18.31%
3.	Federal University of Petroleum Resources	13	18.31%
4.	University of Benin	10	14.08%
5.	University of Calabar	14	19.72%
6.	University of Uyo	13	18.31%
Total		71	100%