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Indices of Research Visibility of Library and Information Science Professionals in Imo State.

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Abstract

This study investigated relationship issues in research visibility of Library and Information Science professionals in Imo State. It examined the indices for measuring research visibility of library and information science professionals; and established the relationships between use of research databases, academic networking sites, institutional repository, social media and research visibility of library and information science professionals. The study adopted correlational research design. The population of the study was 228 Library and Information Science professionals in Imo State which was also used as the sample. However, 152 copies of submitted instrument were used for the study. The instrument for data collection was an online Google form rated using four-point scale which was distributed through NLA Imo State Chapter WhatsApp group and individually. Data collected were analysed using mean and standard deviation for research questions while the hypotheses was tested using Pearson Product Moment Correlation (PPMC). The findings of the study revealed that; there are factors considered in research visibility of library and information science professionals; there is a low extent of utilization of most of the indices studied for research visibility. Result of the hypotheses showed that there is a significant relationship between use of research databases, academic networking sites, institutional repository, social media and research visibility of library and information science professionals. The researchers recommend Library and Information Science professionals should increase their use of research databases, academic networking sites, institutional repository, social media for research visibility.

Keywords: Research, Visibility, Databases, Networking Sites, Institutional Repository, Social Media, Library Professionals, Utilization

Introduction

Research productivity is one of the criteria for recruitment, promotion and academic advancement of Library and Information Science professionals as they have academic status. One thing is to publish and another is to make it visible globally. Institutions leverage on the research productivity of their staff to become visible. Research leads to the development and increase in the visibility of an institution and subsequently its ranking. The individual staff members also benefit as it leads to their career development and contribution to the community. It also makes them famous and they become authorities in their fields. Hence, a researcher occupies a very significant position in an institution. Dang (2017) opines that through research, an academic encourages collaborations with other institutions and increases institutional visibility. Impact of research is far reaching as it does not only stop in the institutions but extends to the communities as new knowledge that brings about new ideas and innovations.

Certain factors are used to determine the visibility of publications. Visibility is not all about quantity of researches online but the quality. Quality researches can lead to the researcher getting promotions and obtaining grants. These instruments often involve information about publications and citations in peer reviewed journals. Assessment of the impact of a scholar's work can be measured using factors such as; the number of peer-reviewed publications, citations to the publications and the influence of the publications.

Apart from publishing in peer reviewed journals, researchers now engage in self-archiving of their publications. Friday and Ugwuowo (2022) define self-archiving as the process of storing and disseminating research papers or ideas through online platforms. This entails creating profiles by registering in networks referred to as Academic Social Networks (ASN). French and Fagan (2019) identified a variety of Academic Social Networks (ASN) are available to researchers for creating and managing their online scholarly identities as: Academia, Google Scholar, ResearchGate, ORCID etc.

Recently institutions of higher learning especially universities have a collection of intellectual outputs in the form of textbooks, journals, articles, thesis and dissertations,

technical reports etc. emanating from their institutions in digital format. This is referred to as institutional repository. Egbe and Okeoma (2020) defined institutional repository as an electronic archive of the scholarly output of an institution, stored in a digital format, where search and recovery are allowed for its national or international use. The availability of these intellectual outputs increases the visibility of the institution.

Research is about producing new information and knowledge and social media offers unique opportunities to present new content. Social media is defined by Jaring and Back (2017) as user-centred internet-based tools that foster online collaboration, sharing, communication, participation and creation of user-generated content. Social media are categorized according to their services such as: social networking (e.g., Facebook, LinkedIn), microblogging (e.g., Twitter), blogging, photo sharing (e.g., Instagram, Pinterest), video sharing (e.g., YouTube), and crowdsourcing. Some of the benefits of using social media in academia, include promoting research and increasing visibility, building networks, reaching new audiences (both within and outside academia), sharing information and keeping up-date with the latest news and developments.

It is believed by researchers that the visibility of their research works hinges on these constructs – databases, academic social networks, institutional repositories and social media – to an extent. This is the reason for carrying out this research to ascertain the actual position.

Statement of the Problem

The parlance “publish or perish” used in higher institutions for academic staff has led to academics delving into researches in order not to be stagnated in their career. Most of these publications are carried out for promotions without the researchers caring if they are visible globally or not. That is to say that several research works are published every day by researchers, however many of these works remain invisible. This situation is predominant in Africa and other developing countries. According to Venitha cited in Dang (2017), stated that research capacity in the form of published peer reviewed articles, master’s and doctoral output is disturbingly low in Africa, with African universities producing less than 1% of global scholarly articles. This point to the fact that despite many valuable research findings

churned out worldwide, many researchers in Africa were not getting sufficient access to these research findings. Equally, the valuable research findings stemming from Africa were not reflected in the global scholarly articles.

It is noteworthy that scholarly articles are used in ranking universities. It is disheartening to note that the best ranked universities in Nigeria are nowhere to be found in the 1st 1000th in the world. For instance, the 2019 edition of the “Top 100 Best Universities in Nigeria” by the Ranking Web, Webometrics, placed University of Ibadan first, University of Nigeria, Nsukka, second and Obafemi Awolowo University, Ile-Ife third while among world universities, the trio came 1145th, 2125th and 2244th respectively (Olusegun, 2019; The Nigerian Voice, 2019). This means that Nigerian and African universities are yet to register their presence fully on the web in the areas of academic activities as well as research output and impact, especially. A lot of resources are involved in researches and these should not be allowed to waste or be invisible.

Given this scenario, the researchers therefore wonder if Nigerian academic in general and Library and Information Science professionals in particular are acquainted with what they are expected to do and they extent they make use platforms that can enhance their visibility. This is the crux of this paper.

Research Questions

The following research questions guided the study:

1. What are the factors considered research visibility of library and information science professionals in Imo State?
2. To what extent does use of research databases relate to research visibility of library and information science professionals in Imo State?
3. To what extent does use of academic social networking sites relate to research visibility of library and information science professionals in Imo State?
4. To what extent does use of institutional repository relate to research visibility of library information science professionals in Imo State?
5. To what extent does use of social media and research visibility of library and information science professionals in Imo State?

Null Hypotheses:

The following null hypotheses were formulated and tested for the study:

Ho₁: There is no significant relationship between use of research databases and research visibility of library and information science professionals

Ho₂: There is no significant relationship between use of academic social networking sites and research visibility of library and information science professionals

Ho₃: There is no significant relationship between use institutional repository and research visibility of library and information science professionals

Ho₄: There is no significant relationship between use of social media and research visibility of library and information science professionals

Literature Review

Research Visibility

Research publications form an essential part of activities of research institutes, government agencies and tertiary institutions especially the academic staff. The impact of academics can be felt in the scientific community through effective research dissemination. Yliopisto (2019) stated that the choice of where to publish one's article is a vital factor contributing to the visibility of such articles. Visibility according to Hermann (2018) has become the new name of the scholarly reputational game and refers to allowing one's work in the scholarly market place. To be visible, Baro, Tralagba and Ebiagbe (2018) discovered that academic librarians in Africa upload papers to self-archiving platforms such as institutional repository, ResearchGate, academia.edu and personal websites/ servers. The lack of visibility of scholarly articles is not without implications. It has caused some senior scholars in some African universities not to have a significant citation impact (Rotich & Musakali, 2013). There is therefore need for scholars, library professionals in particular to make efforts to enhance their research visibility.

Indices for Measuring Research Visibility

There is virtually no aspect of life that assessment is not undertaken and the academia is no exception. There are a number of traditional methods that the scientific

community uses to measure academic success. These assessments are tied to the publishing process and the peer review procedure. Some of the traditional methods to measure academic success are tied to the journal title. For instance, Donato (2013) stated that the journal impact factor for many years has been the best tool available to determine the prestige of a journal. Reuters (2013) explained that the impact factor measures the frequency with which the "average article" in a journal has been cited in a particular year or period. According to Mingle, Acheampong and Acheampong (2020), citations have been used to measure relevance or impact of published works. Hence, most of the universities according to Ale-Ebrahim et al. (2013) encourage their researchers to publish high quality papers which can receive high citations and will reach the widest possible audience.

Scientometrics has come to play major roles in research impact. Vanclay (2013) recommended that authors aiming at high citations needed to submit articles to high impact factor journals. According to Yaminifrooz and Ardali (2018), one of the methods for evaluating scientific activities, research management and research impact is scientometrics which capacity is based on four indices identified as authors, scientific publication, citations and references. Summarizing the indices for measuring research visibility, Mingle, Achampong and Acheampong (2020) stated that regarding academic publications, web presence indicators may include: keywords (pointers to a scientists' area of specialization), choice of journal (journal impact factor), parent institution (website mentions/profiles and Institutional Repository), number of hits (total number of works/articles in a Google search); and citation counts (how many times an individual have been cited).

Research Databases

There are several databases which some journals use for indexing their publications. It has been observed that using such databases help to increase the visibility of the papers published therein. Agarwal *et al.*, (2016) were of the view that evaluating researchers and their research impact in modern times have become increasingly popular since a researcher's number of publications can easily be retrieved from any major research database such as Pubmed, Scopus, Web of Science. Lending his voice, Ogunleye (2019) stated that visibility of publications could be enhanced when journals use very popular

databases for publications. Such databases include Ulrich's Web, Web of Science and Scopus.

In its own right, the Web of Science, described as the most trusted publisher-independent citation database across the world, is acclaimed as the search engine which affords researchers great access, reliable discovery and assessment (Web of Science Group, 2019). However, Ocholla, Ocholla and Onyancha (2012) discovered that most journals where librarians publish are not indexed in popular databases such as Web of Science. According to Yliopisto (2019), Scopus automatically creates researcher profiles with author identifiers. This leads to an immediate and automatic registration of the profile in Scopus as soon as the author publishes an article in a journal that has been indexed by Scopus (Ogunleye, 2019). Open access publishing is a mechanism that offers the researcher the advantage of increased visibility towards gaining more citations on publication. Most authors are motivated to publish in an open-access journal for increasing visibility and subsequently a citation advantage (Jayaprakash, Rekha, & Rajendiran, 2013). Stressing the importance of Open Access, Enago Academy (2019) maintained that it allows researchers "free access, immediate usability, stimulating effects, improved impact, higher frequency of citations, wider search options, several modes of document availability, visibility and low cost of publishing.

Academic Social Networking Sites

In the use of Academic Social Networking Sites (ASNS), the onus lies mostly on the researcher to register in order to increase visibility. ASNS allow authors to connect with other researchers in their field, share their publications and a means through which researchers connect to profiles created by that helps to increase their visibility. This is possible by registering on Google Scholar, ResearcherID, Mendeley.com, LinkedIn and ORCID. Registration with Google Scholar, ORCID (Open Researcher and Contributor Id) and other research groups help researchers to achieve being more easily accessed, read and cited (Yliopisto, 2019). Baro, Tralagba and Ebiagbe (2018) stated that researchers can upload their pre or post-print version of their paper into self-archiving platforms such as kudos, ResearchGate, Mendeley.com, academia.edu etc. Ogunleye (2019) in his study

discovered that parallel publishing in electronic and online research communities such as the Academia.edu and ResearchGate before or after publication in journal outlets boosts visibility of such publications.

Several researches have been carried out on the use of academic social networking sites and some discoveries made. Baro and Eze (2017) studied academic librarians' perceptions of open access publishing in Nigeria and found that self-archiving options such as academia.edu and kudos were not popular among the academic librarians. Matthews (2016) conducted a survey from 2015-2016 and found that ResearchGate was more than twice as popular as Academia.edu and that ResearchGate was used particularly by researchers in the sciences. Bhardwaj (2017) compared four popular academic social networking sites (ASNSs), namely, ResearchGate, Academia.edu, Mendeley and Zotero in terms of features and services. The study revealed that ResearchGate scored the highest and was ranked "above average", followed by Academia.edu and Mendeley. A survey by Van Noorden (2014) found that ResearchGate was much better known to researchers than Academia.edu. Bosah, Okeji, and Baro (2017) found that the academic librarians in African universities know about IRs, ResearchGate and academia.edu

Institutional Repository

Higher institutions mainly universities collate the intellectual output of researchers. This is referred to as an institutional repository (IR). An institutional repository can be defined as a warehouse of all the information items generated by an institution. In the view of Chukwueke, Nnadozie and Okafor (2020) institutional repository is simply an online platform for collecting, archiving, preserving and making available in digitized form, the various intellectual, administrative and scholarly output of an academic, research, commercial, etc., establishment for present use and future reference. They went further to state that a university-based IRs customarily contains an abundance of pre-prints and post-prints, academic qualifications, conference proceedings, journal articles, book chapters, question papers, marking schemes, examination results, technical papers, research reports, on-going researches (work-in-progress), white papers, theses and dissertations, lecture notes, and other text-based forms of scholarly works.

The repository is an established means of disseminating research. Dang (2017) maintained that if IR is managed well and awareness of it created, the visibility of the institution will be enhanced which will in turn lead to international recognition. Notwithstanding the present large number of academic and research institutions in Nigeria, available records suggest that this phenomenon is still not widespread as only a few institutional repository are operational in the country's universities (Nwokedi & Emeahara, 2015). The result according to Chukwueke, Nnadozie and Okafor (2020) is that the volume of research output emanating from the institutions/country, most of which address local and regional developmental issues, continue to reside in obscurity and is not visible to those who may need them.

On the use of institutional repositories to enhance visibility, Bosah, Okeji, and Baro (2017) reported that academic librarians in African universities use institutional repositories and ResearchGate to self-archive their publications while the study of Baro and Eze (2017) found that almost half of the responding academic librarians in Nigeria did not know about the institutional repository in their institutions.

Social Media

Social media is mainly used for social interaction but recently researchers use social media to increase their visibility and that of their work as well as to expand the reach of events, such as conferences, meetings and workshops (Cojocar, 2020). Researchers now interact with colleagues on social media platforms and in the process share research outputs (University of Pittsburgh, 2016). This action leads to improved visibility of their publications and increases research impact.

Some authors have carried out researches on use of social media. The study of Nwachi and Igbokwe (2019) confirmed that the use of social media sites can improve and enhance research visibility and publicity hence they recommended that there is the urgent need for the use of social media platforms to create visibility and publicity of academic works in the universities. Uche and Udo-Anyanwu (2019) discovered that librarians in Imo State tertiary institutions make use of social media tools to a high extent.

Research Methodology

The study adopted survey research design. The population of the study was 238 Library and Information Science professionals in Imo State in the NLA which was also used as the sample. The instrument for data collection was an online Google form rated using four-point scale which was distributed through NLA Imo State Chapter WhatsApp group and individually. Only 152 responded to the instrument and analyses was done based on that. Data collected were analysed using mean and standard deviation for the research questions while the hypotheses were tested with Pearson Product Moment Correlation to establish the relationships between the variables

Data Analyses and Presentation

Table 1: Factors Considered in Research Visibility of Library and Information Science Professionals in Imo State

S/N	Items	Mean	Std. Deviation	Remarks
1.	Impact factors	2.51	.69	A
2.	Citation	3.93	1.18	SA
3.	Indexed journals	3.60	1.12	SA
4.	Journal base – local/international	3.39	.64	A
5.	Journals domiciled in institutions	2.94	.49	A
6.	Professional association owned journals	2.77	.33	A
7.	Scientometrics	2.05	.404	D
Grand Mean		3.03	.97	SA

Table 1 above showed that items 1 to 6 are the indices used to measure research visibility of Library and Information Science Professionals in Imo State with citation getting the highest mean score of 3.93. In item 7 mean score of 2.05 and SD .40 implied that the respondents disagree that Scientometrics is one of the indices for the measurement of visibility. However, the grand mean score of $3.03 > 2.5$ showed agreement that these are

indices for measuring research visibility of Library and Information Science Professionals in Imo State.

Table 2: Use of Research Databases for Research Visibility by Library and Information Science Professionals in Imo State

S/N	Items	Mean	Std. Deviation	Remark
1.	LIS professionals prefer using Web of Science to other databases.	2.11	1.27	D
2.	Scopus is gaining more popularity among LIS professionals.	3.95	1.16	SA
3.	Directory of Open Access Journals (DOAJ) is preferred among LIS professionals because of its accessibility.	3.47	.24	A
4.	JSTOR provides more access to journals than other databases.	2.47	.490	D
5.	Ulrich's Web as a database is not popular among LIS professionals.	3.22	1.22	A
6.	Science Direct does not include LIS journals.	2.34	.425	D
7.	EBSCOHost is specifically accessed by institutions only.	3.86	1.27	SA
8.	Educational Resource Information database is all encompassing.	2.27	1.20	D
Grand Mean		2.96	3.03	A

Table 2 reveals the mean scores of the items. From all indications, Scopus, Directory of Open Access (DOAJ), EBSCOHost are the major online databases acknowledged by the library and information science professionals. The grand mean score of 2.96>2.5 implied the respondents agree that use of research databases relate to research visibility of library and information science professionals in Imo State.

Table 3: Extent of Use of Academic Social Networking Sites for Research Visibility by Library and Information Science Professionals in Imo State.

S/N	Items	Mean	Std. Deviation	Remarks
1.	Google scholar	3.01	1.24	HE
2.	ResearchGate	3.06	.69	HE
3.	ORCID	1.78	1.18	LE
4.	Academia	2.11	.74	LE
5.	Kudos	1.08	1.27	VLE
6.	Mendeley	1.57	1.16	LE
7.	LinkedIn	2.18	.49	LE
8.	ImpactStory	1.06	1.34	VLE
Grand Mean		1.98	1.01	LE

Analyses in Table 3 indicate that the respondents use Google Scholar (3.01) and ResearchGate (3.06) to a high extent. ORCID, Academia (2.11), Mendeley (1.57) and LinkedIn (2.18) are used to a low extent while Kudos (1.06) and ImpactStory (1.06) are used to a very low extent. The grand mean score of 1.98 > 2.5 showed low extent of the use of academic social networking sites by Library and Information Science professionals in Imo State.

Table 4: Extent of Use of Institutional Repository for Research Visibility of Library and Information Science professionals in Imo State.

S/N	Items	Mean	Std. Deviation	Remarks
1.	Theses and dissertations,	2.88	1.14	HE
2.	Reports,	1.09	1.19	VLE
3.	Conference proceedings,	1.62	.49	LE
4.	Pre-prints	1.	.33	VLE
5.	Post-print journals	1	.40	VLE
6.	Presentations	1	.87	VLE
7.	Posters	1	1.53	VLE
8.	Textbooks	1.76	.73	LE
9.	Book chapters	1.62	1.09	LE
Grand Mean		1.37	.97	VLE

In Table 4 above, only these and dissertation has a mean score greater than the criterion mean of 2.50. Conference proceedings, textbooks and book chapters are used to a low extent while reports, pre-prints, post-print journals, presentations and posters are used to very low extents. The grand mean score of $1.37 > 2.5$ is a strong indication that institutional repository are used for research visibility by library information science professionals in Imo State to a very low extent.

Table 5: Extent of Use of Social Media for Research Visibility of Library and Information Science Professionals in Imo State.

S/N	Items	Mean	Std. Deviation	Remarks
1.	Facebook	2.07	.49	LE
2.	Twitter	1.44	.33	VLE
3.	WhatsApp	2.14	.40	LE
4.	Instagram	1.38	.87	VLE
5.	Telegram	1.98	1.53	LE
6.	YouTube	1.04	.73	VLE
7.	Weblog	1.07	1.09	VLE
8.	Wiki	1.05	1.67	VLE
Grand Mean		1.52	.89	LE

The result of data analysed in Table 5 shows that Facebook, WhatsApp and telegrams with mean scores of 2.07, 2.14 and 1.98 respectively are used for research visibility by Library and Information Science professionals in Imo State to a low extent. Twitter, Instagram, YouTube, weblog and Wiki having mean scores of 1.44, 1.38, 1.04, 1.07 and 1.05 respectively are used to a very low extent. Thus the grand mean score of $1.52 < 2.5$ implied low extent of use of social media for research visibility by library and information science professionals in Imo State

Testing of Null Hypotheses

Table 6: Test of significant relationship between Use of Research Databases and Research Visibility of Library and Information Science Professionals

Variables		Research Visibility of Library and Information Science Professional			
Use of Data Base	Pearson Correlation	1	.083**	-.151**	.544**
	Sig. (2-tailed)		.002	.000	.000
	N	152	152	152	152
	Pearson Correlation	.083**	1	.600**	.475**
	Sig. (2-tailed)	.002		.000	.000
	N	152	152	152	152
	Pearson Correlation	-.151**	.600**	1	.039
	Sig. (2-tailed)	.000	.000		.150
	N	152	152	152	152
	Pearson Correlation	.544**	.475**	.039	1
	Sig. (2-tailed)	.000	.000	.000	
	N	152	152	152	152

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

Table 6 above showed N-value of 152, correlation coefficient (Spearman rho) value of .039, p-value of .002<.05 which showed that there is significant relationship between use of research databases and research visibility of library and information science professionals. The null hypothesis is therefore rejected.

Table 7: Test of significant relationship between Use of Academic Social Networking Sites and Research Visibility of Library and Information Science Professionals

Variables		<i>Research visibility of library and information science professionals</i>			
		Item5	Item6	Item7	Item8
<i>use of academic social networking sites</i>	Correlation Coefficient	1.000	.048	.613**	.805**
	Sig. (2-tailed)	.	.001	.000	.000
	N	152	152	152	152
	Correlation Coefficient	.048	1.000	.576**	.113**
	Sig. (2-tailed)	.001	.	.000	.000
	N	152	152	152	152
	Correlation Coefficient	.613**	.576**	1.000	.540**
	Sig. (2-tailed)	.000	.000	.	.000
	N	152	152	152	152
	Correlation Coefficient	.805**	.113**	.540**	1.000
Sig. (2-tailed)	.000	.000	.000	.	
N	152	152	152	152	

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

Table 7 above showed N-value of 152, coefficient value of .805, p-value of .001<.05 which showed that there is a significant relationship between use of academic social networking sites and research visibility of library and information science professionals. The null hypothesis is therefore rejected.

Table 8: Test of significant relationship between Use Institutional Repository and Research Visibility of Library and Information Science Professionals.

Variables		<i>Research visibility of library and information science professionals</i>			
		Item9	Item10	Item11	Item12
<i>Use institutional repository</i>	Correlation Coefficient	1.000	-.056*	.127**	.652**
	Sig. (2-tailed)	.	.040	.000	.000
	N	152	152	152	152
	Correlation Coefficient	.056*	1.000	.780**	.026
	Sig. (2-tailed)	.000	.	.000	.000
	N	152	152	152	152
	Correlation Coefficient	.127**	.780**	1.000	.233**
	Sig. (2-tailed)	.000	.000	.	.000
	N	152	152	152	152
	Correlation Coefficient	.652**	.026	.233**	1.000
	Sig. (2-tailed)	.000	.003	.000	.
	N	152	152	152	152

*. Correlation is significant at the 0.05 level (2-tailed).

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

Table 8 above showed n-value of 152, coefficient value of .652, p-value of .003<.05 which showed that there is a significant relationship between use institutional repository and research visibility of library and information science professionals. The null hypothesis is therefore rejected.

Table 8: Test of significant relationship between Use of Social Media and Research Visibility of Library and Information Science Professionals

Variables		<i>Research visibility of library and information science professionals</i>		
		Item13	Item14	Item15
<i>Use of social media</i>	Correlation Coefficient	1.000	.561**	.195**
	Sig. (2-tailed)	.	.000	.000
	N	152	152	152
	Correlation Coefficient	.561**	1.000	-.103**
	Sig. (2-tailed)	.000	.	.000
	N	152	152	152
	Correlation Coefficient	.195**	-.103**	1.000
	Sig. (2-tailed)	.000	.000	.
	N	152	152	152

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

Table 9 showed n-value of 152, coefficient value of .195, p-value of .000<.05 which showed that there is significant relationship between use of social media and research visibility of library and information science professionals. The null hypothesis is therefore rejected.

Discussion of Findings

Indices for Measuring Research Visibility

The respondents agreed that impact factor, citation, indexed journals, Journal base – local/international, journals domiciled in institutions, professional association owned journals are indices for measuring research visibility. This finding is in agreement with Donato (2013); Vanclay (2013) and Mingle, Acheampong and Acheampong (2020) who identified these factors as essential in measuring research visibility. It however, disagreed with Yaminifrooz and Ardali’s (2018) submission that one of the methods for evaluating scientific activities, research management and research impact is scientometrics.

Use of Research Databases and Research Visibility of Library and Information Science Professionals

Findings of the study revealed that respondents agree that research databases are necessary for the research visibility and there is a significant relationship between use of research databases and research visibility of library and information science professionals. This finding corroborates that statement of Ogunleye (2019) that visibility of publications could be enhanced when journals use very popular databases for publications. Such databases include Ulrich's Web, Web of Science and Scopus. Agarwal *et al.*, (2016) were of the view that evaluating researchers and their research impact in modern times have become increasingly popular since a researcher's number of publications can easily be retrieved from any major research database such as Pubmed, Scopus, Web of Science. Despite this fact, Ocholla, Ocholla and Onyancha (2012) discovered that most journals where librarians publish are not indexed in popular databases such as Web of Science.

Relationship between Use of Academic Social Networking Sites and Research Visibility of Library and Information Science Professionals

It was discovered that library and information science professionals use academic social networking sites to a low extent although there is a significant relationship between use of academic social networking sites and research visibility of library and information science professionals. It was discovered that only Google scholar and ResearchGate were mainly used by the respondents. This finding supports the studies of Bhardwaj (2017) and Van Noorden (2014) whose studies revealed that ResearchGate scored the highest among other academic social networking sites. It also agrees with that of Baro and Eze (2017) that self-archiving options such as academia.edu and kudos were not popular among the academic librarians.

Institutional Repository and Research Visibility of Library and Information Science Professionals

The findings of the study indicate that institutional repository is used for research visibility to a very low extent though there is a significant relationship repository and research visibility of library and information science professionals. Infact it was discovered

that only theses and dissertations are uploaded in the institutional repositories where available. This finding negates the assertion of Chukwueke, Nnadozie and Okafor (2020) that institutional repository customarily contains an abundance of pre-prints and post-prints, academic qualifications, conference proceedings, journal articles, book chapters, question papers, marking schemes, examination results, technical papers, research reports, on-going researches (work-in-progress), white papers, theses and dissertations, lecture notes, and other text-based forms of scholarly works.. they also asserted that the volume of research output emanating from the institutions/country, most of which address local and regional developmental issues, continue to reside in obscurity and is not visible to those who may need them. The finding however does not agree with that of Bosah, Okeji, and Baro (2017) who reported that academic librarians in African universities use institutional repositories to self-archive their publications

Extent of Use of Social Media and Research Visibility of Library and Information Science Professionals

The findings of the study revealed that library and information science professionals use social media for research visibility to a low extent. It was further discovered that there is a significant relationship between use of social media and research visibility of library and information science professionals. This finding is not in tandem with Cojocar and Cojocar (2020) that recently researchers use social media to increase their visibility and that of Uche and Udo-Anyanwu (2019) that librarians in Imo State tertiary institutions make use of social media tools to a high extent. To buttress the findings of the present study, Jaring and Back (2017) stated that some of researchers use social media out of social pressure from peers, some out of curiosity, and some because they were involved in projects that required being present in social media. For instance, WhatsApp groups of institutions, associations and professional bodies etc.

Conclusion

The findings of the study revealed that there is a significant relationship between research visibility of Library and Information Science professionals in Imo State. There are indices for measuring research visibility of library and information science professionals in

Imo State. Indices of measurements of academic visibility of Library and Information Science Professional in Imo State are based on research database, social networking sites, institutional repositories, and social media. The adoption of mentioned indices will lead to academic visibility of library and information science professionals in Imo State.

Recommendations

Based on the findings of the study, the following recommendations have been made:

1. There should be awareness programmes by management of institutions on various visibility indices for academics in line with Library and Information Science profession. Library and information science professionals in Imo State should publish more with journals that have wider impact on academic profiling.
2. Library and information science professionals should publish their papers in journals indexed by online databases to enhance their visibility.
3. Library and information science professionals should register with more academic social networking sites to increase their visibility.
4. Management of Libraries should expand the contents of their institutional repository to accommodate the research works of their staff in general and library and information professionals in particular.
5. The use of social media sites can improve and enhance research visibility and publicity hence there is t need for the use of social media platforms to create visibility and publicity of library and information science professionals and not for social interactions alone.

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