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Finding the Association Between Information Literacy and Research Productivity: A Systematic Literature Review

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Abstract

The objective of this study was to analyze the published empirical research presenting the association of information literacy on the research productivity of professional groups (e.g. teachers, scientists, mathematicians, librarians etc.) The evidence based research was searched and retrieved by the researchers by using the 4 most relevant databases such as SCOPUS, Library, Information Science and Technological Abstracts (LISTA), HEC Databases, Library and Information Science Abstracts (LISA), as well as one scholarly search engine Google Scholar and by accessing the official websites of two journals' archival sections i.e. Journal of Information literacy and Library and Information Science Research. Literature was retrieved through the access of the Databases, provided by the central library of University of the Punjab, Lahore as well as the library of the University of Management & Technology Lahore. The time span for the literature search of this study was August 2023 to December 2023. Search was refined in the month of April 2024. Findings revealed that majority of the studies were published by the authors of under developing countries (i.e. 75% from Nigeria, 19% by Pakistanis while 6% were produced by the authors of the United States), addressing the groups of academicians, doctoral research students, engineers, scientists, mathematicians and information professionals. This study has drawn the consensus upon the findings of analyzed studies that the information literacy (IL) has strong association with research productivity (RP). To the best of researchers' knowledge, this is the first study of its nature that strives to collect and produce a systematic review of the literature based on empirical evidence of the significant role of information literacy/skills on the research productivity. Information literacy, Research productivity, Research output, Information fluency, Information competency, Systematic literature review

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Introduction

Information literacy (IL) for researchers in academia is substantial, as it plays a crucial role in enhancing research productivity and fostering critical skills. IL refers to the ability to locate, evaluate, organize, and effectively use information from various sources, is of great importance in the context of academic research as it enables researchers to access a wide range of relevant resources, select appropriate research design, fosters a mindset of continuous learning, encouraging researchers to adapt to new technologies, methodologies, and discoveries (Adekunle, 2022). Expanding the concepts discussed in prior definitions, ACRL produced a more comprehensive definition of IL as "Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning (ACRL, 2016)."

Researchers with sufficient IL are proficient for critical evaluation of the credibility, reliability, and relevance of information sources. Researchers can differentiate between reliable and questionable sources and ensure the quality of the information (Bapte, 2020). IL further empowers researchers to handle data effectively, ensuring its accuracy, integrity, and accessibility throughout the research lifecycle. Researchers with strong IL skills are able to conduct more efficient and effective literature reviews. They can identify key studies, synthesize information, and recognize gaps in existing knowledge, laying the foundation for their own research (Madu & Dike, 2012).

Information literacy (IL) is a considered cornerstone for researchers in academia, contributing significantly to research productivity by facilitating efficient information retrieval, critical evaluation, and the development of essential skills for rigorous and impactful scholarly work. Researchers who prioritize information literacy are better positioned to navigate the complexities of the information age and contribute meaningfully to their respective fields (Alimen & Ortizo, 2014).

The IL is a survival skill these days to lead a successful professional and personal life. According to Landøy et al. (2020), IL is a set of abilities requiring individuals to be familiar with when the information is needed, how to locate, evaluate, and effectively use the required information. Consequently, the production of research (RP), which is the number of publications per researcher, distinguishing it from impact as it is determined on the basis of number of books written, journal publications, number of grants won, number of publications cited, number of awards won gets improved through the sufficient IL skills (Anekwe, 2018). In the same way, as argued by (Steinerová, 2016) IL and RL are also well-connected phenomena, each deeply intertwined with the other. IL involves the skills needed to find, evaluate, and use information effectively, fostering critical thinking and discernment. While the RL, which includes the ability to formulate research questions, design studies, and analyze data, relies heavily on these IL skills. Conducting rigorous research requires the ability to locate and assess credible sources, a core component of IL. Conversely, engaging in research practices enhances one's ability to critically evaluate information, thereby strengthening IL. Together, they create a robust framework for acquiring and applying knowledge, essential for academic and professional success in an information-rich society. Systematic literature review (SLR) is crucial in research which is increasingly used by researchers as it provides a comprehensive and unbiased summary of existing research on a specific topic, helping to identify gaps in knowledge and areas that require further investigation. By systematically searching, appraising, and synthesizing relevant studies, an SLR ensures that the review is thorough and replicable, enhancing the reliability and validity of its findings. SLR is essential for advancing knowledge, guiding practice, and informing policy by providing a rigorous, unbiased, and comprehensive synthesis of research evidence.

Information literacy plays a pivotal role for production of research. Therefore, this systematic review leads researchers to carry out research in the area of IL and RP to examine the effect of independent variable on the dependent one.

Study Motivation

Many systematic literature reviews have been conducted on the topic of IL or RP, separately i.e. (Al-Azri et al., 2023; Jan et al., 2020; Khan et al., 2024; Mahapatra & Sahoo, 2023; Mahmood, 2016, 2017a, 2017b; Safdar et al., 2021; Silva et al., 2024; Silva & Cardoso, 2023), but to the best of our knowledge, not a single SLR could be traced which has addressed the association of IL with RP. Inasmuch, studies have proved a positive association of IL with RP which is of great importance for researchers for further research, it was the need of time to produce a systematic literature review on the mentioned variables.

The present study focuses on the specific objective i.e. to identify the level and extent of the association of information literacy (IL) with research productivity (RP), this study strives to address the following focused questions:

RQ 1: What is the level of IL in the selected studies?

RQ2. What is the level of RP in the selected studies?

RQ3. What is the extent of association of IL on RP?

Methodology

Systematically reviewing the specific literature according to the context, is regarded as an important function of research. It is necessary to build the advancement in knowledge on the earlier or present research work (Boell & Cecez-Kecmanovic, 2015; Boren & Moxley, 2015). A systematic review of literature enables the researchers to recognize the depth and breadth of the existing body of knowledge. A researcher can test specific hypotheses or develop new theories after reading, summarizing, analyzing and synthesizing the selected literature (Paré et al., 2015). It is an important method, used in research to identify, evaluate, and synthesize all available evidences related to a specific research question or topic. A systematic review is a critical component of the research process that helps to ensure that research is evidence-based, objective, and credible. It contributes to a specific area or field to constitute the reliable and evidence-based verdict by synthesizing the prior researches (Jesson et al., 2011). It restricts the researchers to follow a systematic and specified method of selecting literature for review which has comprehensive characteristics (Ali & Miller, 2017). It is systematic and critical assessment of prevailing literature on some predesigned research questions, selected from different relevant studies to represent an overall conclusion. The main objective of this SLR is to provide transparent and clear reporting, making it easier for the readers to consider the findings of selected studies according to the quality and reliability.

Several frameworks are used in systematic reviews. The SPICE framework, in the context of systematic reviews, stands for Setting, Perspective, Intervention, Comparison, and Evaluation. It is a mnemonic device designed to help researchers formulate focused and well-defined clinical questions when conducting systematic reviews. SPICE is mainly followed in healthcare and clinical researches as well as systematic review studies of social sciences, particularly of qualitative nature (Booth, 2006). Similarly, The PICO framework (Population, Intervention, Comparison, Outcome) is also considered essential for systematic literature reviews (SLRs) because it provides a clear and structured framework for formulating research questions and guiding the review process. We opted PICO protocol for our systematic review **"Appendix A"** to assess the relevant studies. Preferred Reporting Items for the Systematic Review and Meta-Analysis (PRISMA) is preferably followed in systematic reviews for the evaluation of randomized trails, reviews and particularly, as a basis of SLRs (Moher et al., 2015). Liberati et al. (2009) highlighted some important features of SLR i.e. clearly described specific objectives, focused research questions, systematic searching strategy to find out maximum number of relevant studies according to the inclusion and exclusion criteria, evaluation of validity of the results of targeted studies, and arrangement and combination of the characteristics and results of the included studies for review (p. 1). PRISMA includes four major

sections with subsections known as planning to cover the specified research objective and search approach, selection to sort and extrapolate the retrieved data, extraction to evaluate the content after having applied a robust criterion for the assessment and data synthesis that is used for analyzing the data viz-a-viz phase-to phase approaches for producing a concluding set of consecutive procedures (Khan et al., 2022).

This study follows the systematic literature review (SLR) method for extraction of the empirical studies for review. PRISMA is an evidence-based set of instructions which is followed at a large scale in the field of research to enhance the reporting of systematic literature reviews (SLR) meta-analysis. PRISMA flow diagram and its procedures (Figure. 1) have been adopted in this review study. The checklist consists of 16 items, including the title, abstract, introduction, methods, results and discussion.

Databases, journals considered for literature search

To reach the relevant empirical studies, following Databases were selected and searched on account of their extensive literature coverage and availability of access.

Scopus (3751 articles)
Library, Information Science and Technology Abstracts (LISTA) (29 results)
Library and Information Science Abstracts (LISA) (28 results)
Journal of information literacy (4 results)
Library and information research (18 results)
Google scholar (7419 results)
SpringerLink, Taylor & Francis Journals, Wiley-Blackwell Journals, Wolters Kluwer OVID SP.

A multi-phase search was done through all the above-mentioned databases to retrieve the relevant articles during the months of August to December 2023 for this review. Search was refined in the month of April 2024 to get maximum results.

Search strategy

As shown in the Tables. 1 and 2, a systematic search strategy was planned out using advanced search techniques and different possible keywords to find out the applicable studies according to the objectives. More than one search queries were developed to attain maximum results related to the objectives.

Table 1. *Literature Search* (First Phase Search conducted in August 2023)

Keywords used	Databases searched	Results
"Information literacy" AND "Research productivity"	SCOPUS	107
"Information literacy" AND "Research output"		116
"Information literacy skills" AND "Research productivity"		613
"Information literacy skills" AND "Research output"		570
"Information fluency" AND "Research productivity"		7
"Information fluency" AND "Research output"		**28**
"Information capabilities" AND "research productivity"		649
"Information capabilities" AND "research productivity"		1325
Total		**3751**

Table 2. *Literature Search* (Second phase search refined in December 2023)

Search Terms Used	Journal/Databases searched	Results
("information literacy" OR "information literacy skills" OR "information skills" OR "information capabilities" OR "information competencies" OR "information fluency") AND ("research productivity" OR "research output")	Library, Information Science and Technology Abstract (EBSCO LISTA)	28
	Library and Information Science Abstract (ProQuest LISA)	29
	Google Scholar	7340
	Journal of Information Literacy	4
	Library and Information Science Research	18
	Total	**7419**

Inclusion and exclusion criteria

As this study aims to explore the association of IL with RP, therefore only those studies were included to review which applied inferential statistics to determine the association, relationship or effect of IL with/on RP. The empirical studies which were available in full text, research papers of English language, published in any type of journal, studies which explicitly addressed the association, relationship or effect of IL with/on RP were considered to include in this systematic review. However, the papers other than English language, books, book chapters, thesis/ dissertations and reviews were excluded for this review. Furthermore, the studies selected for this systematic review, were on the basis of context and focus on IL and RP while those studies which have focused on other type of literacies like health literacy, digital literacy, statistical literacy, media literacy, computer literacy, workplace literacy etc. were excluded during screening. Two more studies were also excluded during the review as both had mentioned the word “effect” in title but didn’t any statistical test to measure the association or effect of IL with RP.

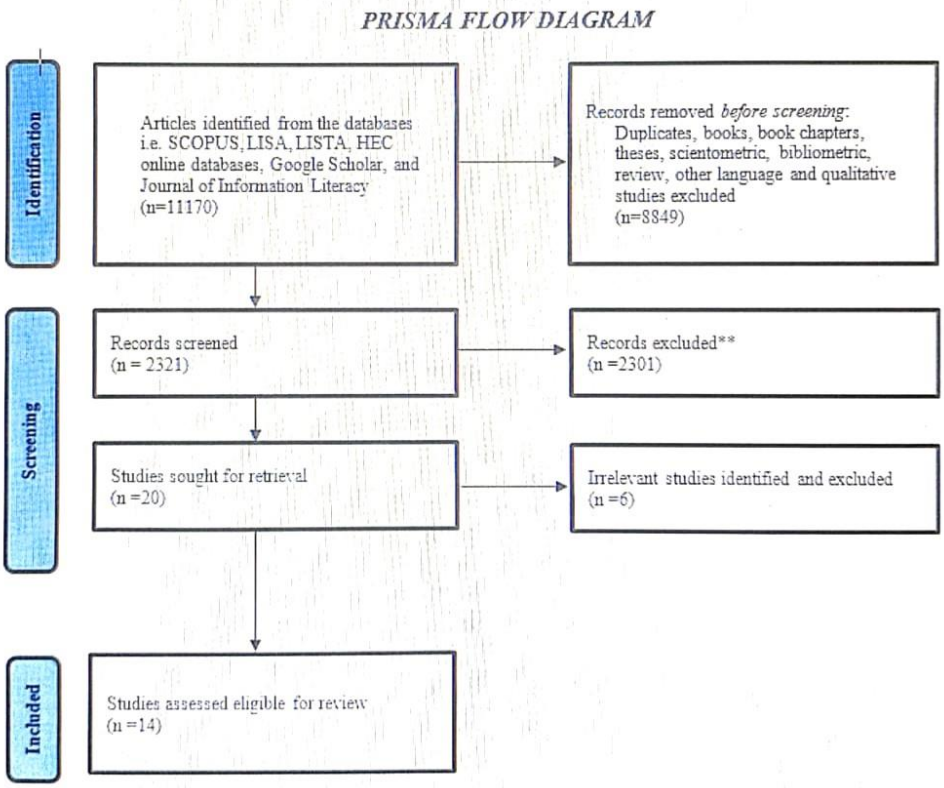
Selection of final studies

Using all the above stated strategies with different possible keywords and merging the results of both phases, a total of 11170 studies were retrieved. According to the selection criteria, a multistage screening was done to get the most relevant studies. In the light of inclusion and exclusion criteria, the downloaded studies were arranged by title and the studies which were not available in full text (n=2301) were excluded. In the second phase of screening, all the duplicates as well as books, book chapters, theses, conference papers, review articles, scientometrics, bibliometric studies, other than English language (n=8849) were eliminated. While finalizing the studies for this systematic review, researchers found 6 more irrelevant studies which were addressing different types of literacies and productivity (i.e. computer literacy, media literacy, worker productivity, labor productivity etc.) other than the targeted constructs of IL and RP were also removed.

After having multistage screening, we found 14 final studies for the review. A data collection table was developed to extract all the relevant information from each study including authors’

names with year of publication, title, population, sample size, method, tools used for data collection, type of relationship or effect, level of IL and level of RP (Table 4).

Figure 1



Quality appraisal measures

Assessment of the quality, reliability and validity of the relevant literature for a systematic review, also referred as "quality appraisal" is considered an imperative phase. Quality appraisal ensures the reliance and credibility as well as internal and external validity of the selected studies.

This methodological literature evaluation step helps guarantee the researchers that the data of the studies are highly reliable and matches with the topic of the conducted SLR. The quality and validity of research in a variety of domains, including the medical and health sciences, can be assessed using a variety of quality appraisal methodologies (Rafique & Mahmood, 2018). These tools typically include a set of assessment criteria that are specific to the research design and methodology used in the studies.

Considering the widely used "Quality Checklist for Questionnaire Survey" (Table. 3) designed by (Boynton & Greenhalgh, 2004), quality of the methodology of all the retrieved studies for this review was personally assessed by the authors.

Organization of the Selected Articles

All the final studies which measured the association or effects of information literacy (IL) on research productivity (RP), have been presented in Table 4. A total of 14 empirical studies were grouped into the table on the bases of different

possible keywords' search. Results have been formulated in Table 1 & 2 to achieve the objectives of the study. It is pertinent to mention, that this study was conducted during the month of August 2023 and refined in December 2023.

Table 3. *Quality Checklist for Questionnaire Survey*

Studies	Research question and design score (Out of 2)	Sampling score (Out of 2)	Instrument score (Out of 4)	Response score (Out of 1)	Coding and analysis score (Out of 2)	Presentation of results score (Out of 2)	Total score (Out of 13)
Adekunle (2022)	2	2	4	1	2	2	13
Adekunle and Madukoma (2022)	2	2	4	1	2	2	13
Akporhonor and Chiazor (2020)	2	2	4	1	2	2	13
Anekwe and Uzoamaka (2018)	2	2	4	1	1	2	12
Babalola and Umar (2021)	2	2	4	1	2	2	13
Madu and Dike (2012)	2	2	4	1	2	2	13
Naveed and Rafique (2018)	2	2	4	1	2	2	13
Malik et al. (2022)	2	2	4	1	2	2	13
Nwosu et al. (2015)	2	2	4	1	2	2	13
Okiki and Mabawonku (2013)	2	2	4	1	1	2	12
Olakunle and Olanrewaju (2019)	2	2	4	1	1	2	12
Simisaye and Popoola (2022)	2	2	4	1	2	2	13
Toyosi Afolabi and Oladokun (2020)	1	2	4	1	2	1	11
Kim et al. (2020)	2	2	3	1	1	1	10
Category Score (Quality Obtained)	27	28	55	14	24	26	174
Maximum Score by Category (Quality expected)	28	28	56	14	28	28	182

Table 4. *Final Studies which Revealed Association or Effect of Information Literacy (IL) with Research Productivity (RP)*

Author(s) & year of publication	Population	Sample size	Method	Data collection tool	Association of IL with RP	Level of IL	Level of RP	IV	DV	Beta & P-value	T-Value	R-Value
Adekunle (2022) Nigeria	1418 Doctoral students of six universities of Ogun State, Nigeria	309	Survey	Questionnaire	positive significant	High	Low	IL	RP	β= 18.759 p<0.05	5.385	(R2= 0.076, F (1,282) = 4.582,
Adekunle and Madukoma (2022) Nigeria	1418 Doctoral students of six universities of Ogun State, Nigeria	306	Survey	Questionnaire	positive significant	High	Low	IL, RSE	RP	β= 18.759 p<0.05	5.385	(R2= 0.076, F (1,282) = 4.582,
Anekwe and Uzoamaka (2018) Nigeria	2885 Academic Staff members of 2 federal and 2 state universities of Nigeria	480	Survey	Questionnaire	positive significant	High	Moderate	WBIL	RP	p=0.05	t-cal. value=2.23 t-crit. value=1.960	
Babalola and Umar (2021) Nigeria	4258 academic staff of six (6) federal universities of North-eastern, Nigeria	366	Survey	Questionnaire	No association	High	Low	ILS	RP	β=24.19 p>.005	4.644	R2=.002
Madu and Dike (2012) Nigeria	2810 Academic staff of 12 Nigerian Universities	421	Survey	a. Standard Information Literacy Test b. Academic Productivity Index	Significant correlation	Moderate	Moderate	IL	RP	β=0.81 p<.05	17.08	
Malik et al. (2022) Pakistan	Mathematics faculty members of 36 Public sector universities of Punjab Province of Pakistan	300	Survey	Questionnaire	Significant Positive	Reasonable	High	ILS	RP	β=0.97 p<.05	3.25	R2=.255

Akporhonor and Chiazor (2020) Nigeria	3,101 lecturers in 7 Polytechnics in Delta and Edo states, Nigeria	620	Survey	Questionnaire	Positive correlation	High	High	ILS	RP	M=3.64		R=0.244
Naveed and Rafique (2018) Pakistan	140 Scientists of PCSIR, Pakistan	121	Survey	Questionnaire	Positive correlation	Low	High	ILSE	RP	β=0.287 p<.05		
Nwosu et al. (2015) Nigeria	1038 academic staff members of Nnamdi Azikiwe University, Awka	158	Survey	a. achievement test b. research output index	Positive significant	Moderate	High	IL	RP	β=0.226 p<.05		
Okiki and Mabawonku (2013) Nigeria	Academic staff members from twelve federal universities in the six geo-political zones of Nigeria	1057	Survey	Questionnaire	Significant positive	High	High	ILS	RP	P<0.05		(r)=.473 R2=0.337
Olakunle and Olanrewaju (2019) Nigeria	782 academic staff in research institutes in South West Nigeria	782	Survey	Questionnaire	Significant positive	High	High	ILS	RP	p<0.05	2.91	r=0.557 (adjR2=0.15)
Simisaye and Popoola (2022) Nigeria	782 academic staff (746 researchers and 36 librarians) in research institutes in South West Nigeria	782	Survey	Questionnaire	Significant relationship	High	Low	ILS	RP	p<0.001 β=0.236	3.443	r=0.3661
Toyosi Afolabi and Oladokun (2020) Nigeria	177 Academic staff members of Lead City University Ibadan, Nigeria	71	Survey	Questionnaire	Significant positive	Moderate	Moderate	ILS	RP	β=1.546 p<0.05	6.778/21.081	R=0.937F=1.435
Kim et al. (2020) USA	81 students of Science, Technology, Engineering and Mathematics (STEM) of Queensborough Community College Bayside, New York, USA	81	Experimental survey	Questionnaire	Significant Positive correlation	Low	Low	IL	RP	p = .006		r=.31

Results

Summary of the Studies

By applying different searching techniques with all the possible keywords, literature for this systematic review was searched from six Databases. Figure 2 shows country wise distribution of research studies, covering the focused variables. It was explored that a large number of studies i.e. 79% (n=11) were produced by Nigeria followed by 14% (n=2) from Pakistan and 7% (n=1) from the United States which have discussed the association of IL with RP. As presented in Table 4, targeted population of the selected studies comprised of 57% academic staff members (n=8), 14% doctoral students (n=2), 7% science & technology students (n=1), 7% scientists (n=1), 7% lecturers (n=1) and 7% mathematics faculty members (n=1). Results revealed that the majority of selected studies 93% (n=13) have used survey questionnaires for data collection while only one study 7% (n=1) followed mixed methods approach to measure the association of IL with RP. This also demonstrates that although a large amount of research studies is available in the areas of IL and RP, separately, however, there is a dearth of studies focusing on relationship of these two variables.

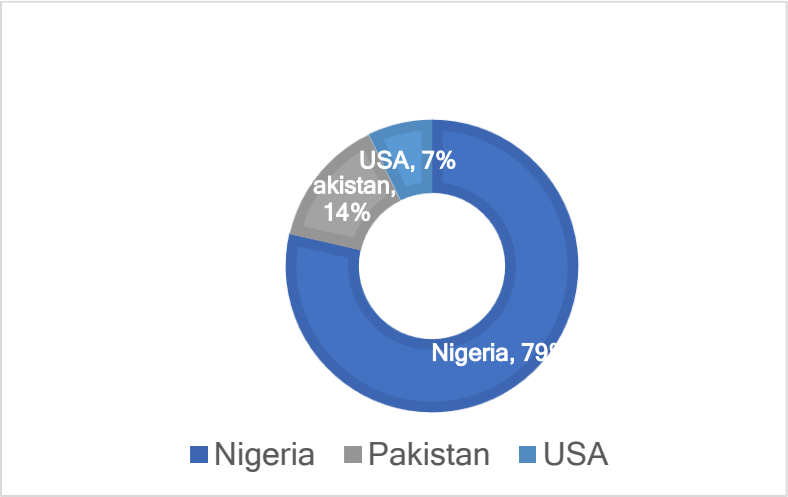


Figure 2. Geographical Distribution

Table 5. *Year Wise Distribution of Selected Studies*

Years	Number of Studies
2022	4
2021	1
2020	3
2019	1
2018	2
2015	1
2013	1
2012	1

Table 5 presents a holistic picture of the year wise distribution of the studies. As shown in the Table 5, comparatively a large number of studies (n=4) were produced in the year 2022 followed by (n=1) in 2021, (n=3) in 2020, (n=1) in 2019, (n=2) in 2018, (n=1) in 2015, (n=1) 2013 and (n=1) in 2012. It was also revealed that no study was produced on the specific variables before 2012 and during the years 2014 and 2016-2017.

Level of Information Literacy

Figure 3 demonstrates the level of IL discussed in the selected studies of this review. A number of 57% (n=8) of the selected studies (Adekunle, 2022; Adekunle & Madukoma, 2022; Akporhonor & Chiazor, 2020; Anekwe & Uzoamaka, 2018; Babalola & Umar, 2021; Okiki & Mabawonku, 2013; Olakunle & Olanrewaju, 2019; Simisaye & Popoola, 2022) have comparatively reported high level of IL, while 29% (n=4) (Madu & Dike, 2012; Nwosu et al., 2015; Toyosi Afolabi & Oladokun, 2020) measured a moderate level and 14% (n=2) (Kim et al., 2020; Naveed & Rafique, 2018) reported low level of the said variable.

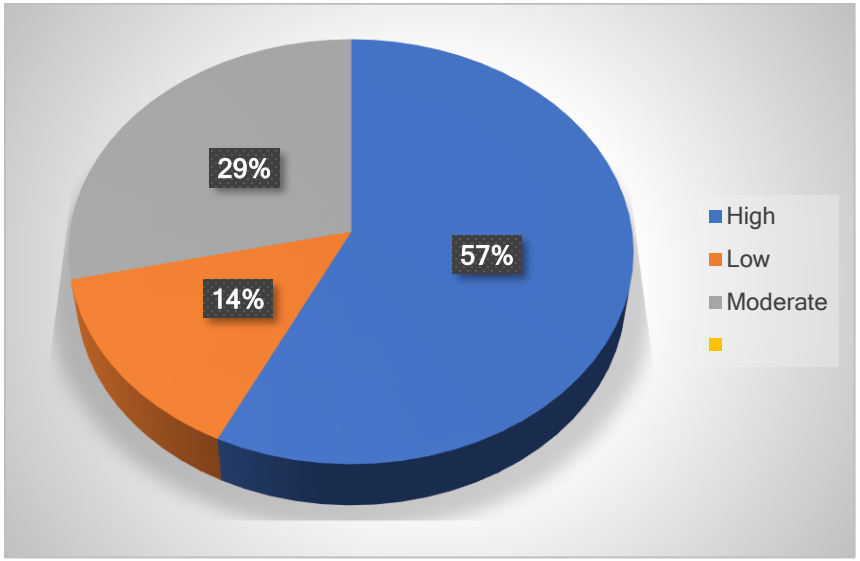


Figure 3. Level of Information Literacy

Level of Research Productivity

Figure 4 reveals the level of RP which has been reported in the selected studies of this review. It was revealed that 43% (n=6) studies i.e. (Akporhonor & Chiazor, 2020; Malik et al., 2022; Naveed & Rafique, 2018; Nwosu et al., 2015; Okiki & Mabawonku, 2013; Olakunle & Olanrewaju, 2019) reported high level of RP. Similarly, 36% (n=5) (Adekunle, 2022; Adekunle & Madukoma, 2022; Babalola & Umar, 2021; Kim et al., 2020; Simisaye & Popoola, 2022) discussed low level of RP while 21% (n=3) (Anekwe & Uzoamaka, 2018; Madu & Dike, 2012; Toyosi Afolabi & Oladokun, 2020) presented the moderate level of RP.

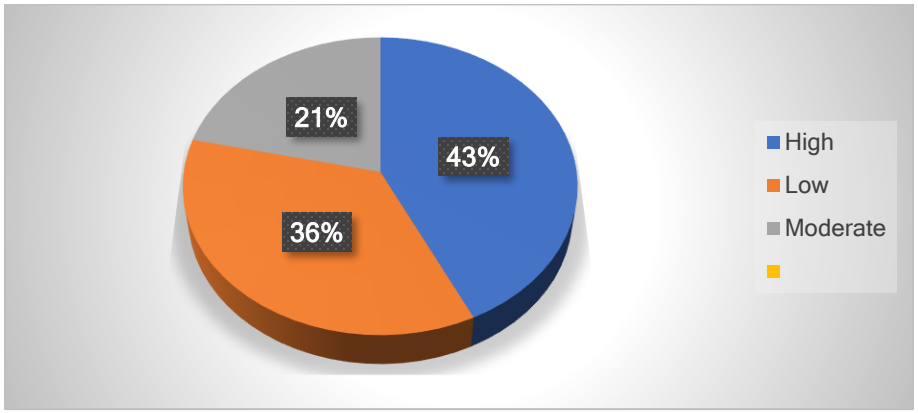


Figure 4. Level of Research Productivity

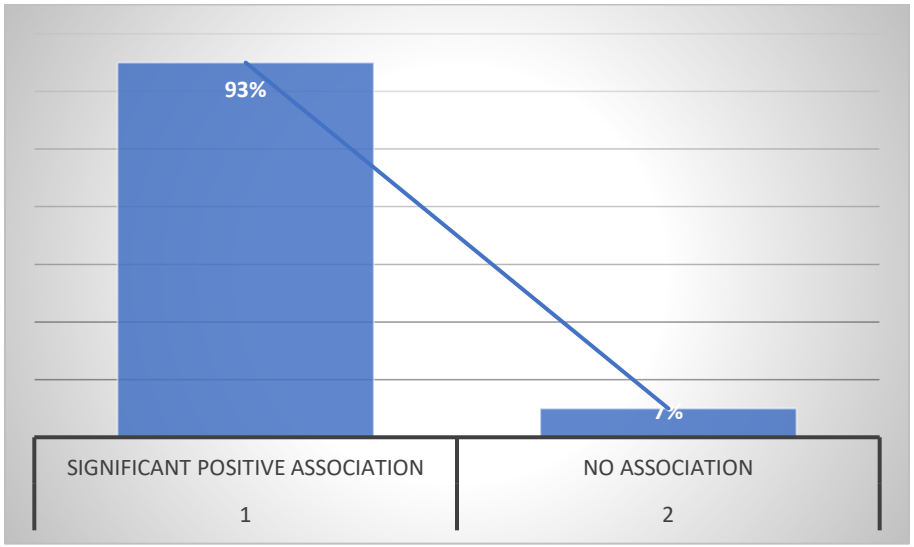


Figure 5. Association of IL with RP

As presented in Figure 4, a large number of studies (n=13) i.e. 93% have reported a positive significant association or correlation between IL and RP (Adekunle, 2022; Adekunle & Madukoma, 2022; Akporhonor & Chiazor, 2020; Anekwe & Uzoamaka, 2018; Kim et al., 2020; Madu & Dike, 2012; Malik et al., 2022; Naveed & Rafique, 2018; Nwosu et al., 2015; Okiki & Mabawonku, 2013; Olakunle & Olanrewaju, 2019; Simisaye & Popoola, 2022; Toyosi Afolabi & Oladokun, 2020). Results revealed that only one study i.e. 7% (Babalola & Umar, 2021) reported that there was no correlation of IL with RP.

Discussion and Implication

Discussion

To the best of researchers' knowledge, this is the first systematic review on the impact of information literacy (IL) on research productivity through the synthetic analysis of 16 empirical research articles published in peer-reviewed journals. The study found out that IL has a significant positive impact on the research output of researchers belonging to diverse disciplines. The study provides a holistic picture of the different studies published in worldwide existing literature offering insightful impacts. A substantial amount of literature is produced on the area of IL nonetheless the impact of IL on research productivity has not been identified through an in-depth SLR so to bridge this pertinent gap, the current study was conducted.

Information literacy nurtures a mindset of lifelong learning and plays an impactful role in enhancing research productivity by improving researchers' information retrieval skills, research expertise, and research sharing practices. In the current age of technological advancements, IL plays a significant positive role in refining research skills through innovative approaches. Hence, IL proficiencies need to be promoted among researchers so that they might produce impactful research having societal impact. IL skills also prove fruitful in keeping up-to-date with current happenings in the field for producing innovative research. Researchers who value the IL are more likely to

seek out new knowledge, explore emerging trends, and engage in professional development activities, ultimately enhancing their RP over the time.

Findings of the study empirically evidenced that IL skills play a vital role in the promotion of research culture as well as societal development in all walks of life. Research productivity plays a vital role in shaping the overall research culture by influencing knowledge advancement, competitiveness, collaboration, innovation, mentorship, research integrity, dissemination practices, resource allocation, global research engagement, and adaptability. A positive research culture, in turn, can strengthen and sustain high levels of RP within a community or institution (Alimen & Ortizo, 2014; Ghabban et al., 2016).

Consequently, IL and RP also provide research engagement which is essential for ensuring the relevance, impact, and ethical conduct of research. It can be helpful in enhancing collaboration, addressing real-world challenges, making informed decisions, and contributing to the broader societal and academic ecosystem. Researchers who work in collaboration with potential scholars, practitioners, and other active collaborators are able to produce insightful research contributions. These findings supports the results of the studies conducted by (Akporhonor & Chiazor, 2020; Malik et al., 2022; Okiki & Mabawonku, 2013; Olakunle & Olanrewaju, 2019; Simisaye & Popoola, 2022; Toyosi Afolabi & Oladokun, 2020). These authors also reported that IL has significant positive impact on the RP. However, it is worth noting that only a single study, conducted by (Babalola & Umar, 2021) reported that there was no association of IL with RP.

Theoretical implications

This systematic review provides valuable insights and contributes to the existing body of knowledge as it demonstrates deeper understanding of different IL frameworks and models in the context of research productivity. While synthesizing the results of various studies, this SLR identifies specific components of IL which have a significant impact on RP. This study may also help policymakers and educators to focus on key skills and competencies when designing IL programs.

Future researchers can use results of the current study to further explore the association between information literacy and research productivity. Since, there was diverse groups of population like doctoral students, academic staff members, mathematics faculty members, lecturers, scientists & students of science, technology, engineering and mathematics etc. whose studies were selected for this review, and after having a holistic picture of the targeted variables and on the basis of the findings, the study has displayed the multifaceted nature of the relationship between information literacy and research productivity. Moreover, this SLR has directions for further studies of other types of literacies i.e. research literacy, digital literacy, media literacy etc.

Practical implications

The study provides certain practical implications by offering data driven insights for management bodies. The findings of this systematic review offer a variety of features to the educators, academicians, researchers, scientists as well as library and information professionals to empower themselves with substantial IL skills and to produce quality of research. Moreover, results of this review study are fruitful for policymakers, educationists and authorities of the education field to design courses of IL, trainings and sessions and resultantly, to produce quality of research by offering research culture in diverse settings.

The higher education departments, institutions, researchers and educators can use the findings of this study to develop evidence-based policies for the enhancement of research culture for social improvement. Hence, this study provides pertinent theoretical and practical implications and is a valuable addition in the discipline of library & information management.

Limitations and further directions

An SLR is required to be conducted very carefully and according to the predesigned and specific variables, research questions and hypotheses. Researchers have tried their best to produce this systematic review

accordingly but there were some limitations which the researchers faced during the whole process.

There was a dearth of available empirical literature in the English language, covering the association between of IL and RP. Using a maximum number of keywords, an immense search was run in all the relevant databases and search engines to retrieve most appropriate research studies but there was an assumption that some apropos studies might have been snubbed. Although, there are several sub domains of information literacy i.e. digital literacy, computer literacy, media literacy, statistical literacy, and health literacy but the present study focused on the information literacy to investigate its relationship with the research productivity. This study has added a substantial amount of literature to the existing body of knowledge. It has opened new horizons for future investigators to further explore different dimensions of IL in the context of RP.

Conclusion

The main purpose of this systematic review was to gather and analyze all the available empirical studies of English language which have measured the effect or association of IL on/with RP and to produce a comprehensive review. On the bases of findings, it is concluded that the IL has a strong association with IL as well as exerts a positive and significant effect of the predictor variable (IL) on the outcome variable (RP), targeted in this systematic review. This systematic review is unique and represents an original contribution, as far as the authors are aware, as it is the first of its kind to address the research question.

References

ACRL. (2016). Framework for information literacy for higher education. from http://www.ala.org/acrl/standards/ilframework

Adekunle, A. P. (2022). Information Literacy, Critical Thinking and Research Productivity of Doctoral Students in Universities in Ogun State, Nigeria.

Adekunle, A. P., & Madukoma, E. (2022). Information Literacy, Research Self-Efficacy, and Research Productivity of Doctoral Students in Universities in Ogun State, Nigeria. *International Journal of Doctoral Studies, 17*, 479-511.

Akporhonor, B. A., & Chiazor, C. C. (2020). Information Literacy Skills for Research Output of Academic Staff in Polytechnics in Delta and EDO State. *Journal of Education in Developing Areas, 28*(1), 26-35.

Al-Azri, H. M., Alharrasi, N., & Al-Aufi, A. S. (2023). Information literacy and relation to workplace: a review of the literature. *Global Knowledge, Memory and Communication*.

Anekwe, J., & Uzoamaka, J. (2018). Impact of web-based information literacy on research productivity among academics in Nigerian federal universities. *International Journal of Multidisciplinary Research and Development, 5*(12), 218-226.

Babalola, Y. T., & Umar, M. Y. (2021). Influence of information literacy skills on research productivity of academic staff of federal universities in North-eastern Nigeria. *Library and Information Perspectives and Research, 3*(2), 12 – 22.

Boell, S. K., & Cecez-Kecmanovic, D. (2015). On being 'systematic'in literature reviews. *Formulating Research Methods for Information Systems: Volume 2*, 48-78.

Boren, S. A., & Moxley, D. (2015). Systematically reviewing the literature: building the evidence for health care quality. *Missouri medicine, 112*(1), 58.

Jan, T., Idrees, H., & Naveed, M. A. (2020). Impact of HEC electronic information resources on research productivity of academicians: A systematic review. *Pakistan library and information science journal.(51), 118*, 130.

Khan, A. M., Soroya, S. H., & Mahmood, K. (2024). Impact of information credibility on social media information adoption behavior: a systematic literature review. *Library Hi Tech, 42*(1), 261-283.

Kim, M., Franco, M., & Seo, D. (2020). Implementing information literacy (IL) into stem writing courses: Effect of IL instruction on students' writing projects at an urban community college. *Issues in Science and Technology Librarianship*(94).

Madu, E. C., & Dike, V. (2012). An Assessment of the Relationship Between Information Literacy Competencies and Academic Productivity Amongst Staff in Nigerian Universities in North Central Geographical Zone. *Journal of Emerging Trends in Computing and Information Sciences, 3*(2), 179-185.

Mahapatra, N., & Sahoo, J. (2023). Metrics employed in the evaluation of research productivity: A systematic literature review. *Journal of Librarianship and Information Science, 55*(3), 868-885.

Mahmood, K. (2016). Do people overestimate their information literacy skills? A systematic review of empirical evidence on the Dunning-Kruger effect. *Communications in Information Literacy, 10*(2), 3.

Mahmood, K. (2017a). Reliability and validity of self-efficacy scales assessing students' information literacy skills: A systematic review. *The Electronic Library, 35*(5), 1035-1051.

Mahmood, K. (2017b). A systematic review of evidence on psychometric properties of information literacy tests. *Library Review, 66*(6/7), 442-455.

Malik, A., Ali, S., Batool, S. H., & Ameen, K. (2022). Linking Information Literacy with Research Productivity: A Survey of Mathematicians in Pakistan. *portal: Libraries and the Academy, 22*(2), 475-498.

Naveed, M. A., & Rafique, F. (2018). Information literacy in the workplace: a case of scientists from Pakistan. *Libri, 68*(3), 247-257.

Nwosu, O. C., Obiamalu, A. R., & Udem, O. K. (2015). Relationship between information literacy skills and research output of academic staff in Nnamdi Azikiwe University Awka, Nigeria. *Journal of Applied information science and Technology, 8*(1), 89-108.

Okiki, O. C., & Mabawonku, I. (2013). *Impact of information literacy skills on academic staff research productivity in Nigerian Federal Universities*.

Olakunle, S. A., & Olanrewaju, P. S. (2019). Relationship Between Information Literacy Skills and Research Productivity of Researchers in Nigeria, and the Mediating Role of Socio-Economic Factors. *LIBRES: Library & Information Science Research Electronic Journal, 29*(1).

Safdar, M., Batool, S. H., & Mahmood, K. (2021). Relationship between self-efficacy and knowledge sharing: systematic review. *Global Knowledge, Memory and Communication, 70*(3), 254-271.

Silva, C. R. S. d., Teixeira, T. M. C., & Pinto, V. B. (2024). Research methodology in information literacy: a systematic review. *RDBCI: Revista Digital de Biblioteconomia e Ciência da Informação, 17*, e019014.

Silva, S. A. A. d., & Cardoso, A. M. P. (2023). Information literacy a systematic literature review. *RDBCI: Revista Digital de Biblioteconomia e Ciência da Informação, 18*, e020023.

Simisaye, A. O., & Popoola, S. O. (2022). Determinants of Research Productivity of Academic Staff in Nigerian Research Institutes. *Regional Journal of Information and Knowledge Management, 7*(1), 70-91.

Steinerová, J. (2016). *Open science and the research information literacy framework.* Paper presented at the Information Literacy: Key to an Inclusive Society: 4th European Conference, ECIL 2016, Prague, Czech Republic, October 10-13, 2016, Revised Selected Papers 4.

Toyosi Afolabi, M., & Oladokun, T. A. (2020). Information Literacy Skills, Availability of Information Resources as Factors Influencing Research Productivity of Academic Staff of Lead City University, Nigeria.

Appendix A

PICO Protocol

Supplementary Table 1: Summary of literature available on "finding the association between information literacy and research productivity"
N=14

P	I	C	O
Perspective/Population	**Intervention**	**Comparison**	**Outcome**
Doctoral students, academic staff members, mathematics faculty members, lecturers, scientists & students of science, technology, engineering and mathematics	Association of information literacy with research productivity	positive significant relationship	IL is significantly associated with RP

Publication Ethics and Declarations Section

- **Ethics approval:** As this is a systematic review article, so the Ethical review was not considered necessary.
- **Funding:** Not applicable for this section.

AI-generated content: This is confirmed that no AI tools have been used while conducting this systematic review.