

Information Literacy and Research Competence of Undergraduate in Oyo State, Nigeria

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Abstract

The current era of information explosion and inclination towards novelty characterized by 21st century places demands on students in term of research competencies in order to be relevant and productive both in the academic world and workplace. This triggered an inquiry into information literacy and research competence of undergraduates from universities resident in Ibadan. This study adopted a descriptive design, the population comprised of all 151 final year students in the faculty of Communication and Information Sciences Lead City University. Krejcie and Morgan sample table for known population and Bowley's population allocation formula was used to select 108 undergraduates for the study. Two research questions and one hypothesis were raised and answered using Frequency Count, Simple Percentage, Mean and Pearson's Product Moment Correlation analysis at 0.05 level of significance. The result showed that the level of research competency and information literacy skills of undergraduate were low. Also, information literacy positively correlated with research competence ($r = .549, p < 0.01$), This implies that, increase in information literacy will increase research competence. Among others it was recommended that qualitative content on research methodology should be introduced into undergraduate curriculum right from first year in the university which should be improved on throughout the course of the study. Information literacy skills course should be integrated into undergraduate curriculum and taught to students across departments and not just a one-off orientation programme.

Keywords: *Research Competence, Information Literacy, Nigerian Undergraduates*

Introduction

The quest to bring out innate potentials of students and nurture what has been brought out keeps dominating educational endeavors across nations. Higher education institutions are saddled with the responsibility of meeting societal needs by producing highly skilled and productive graduates who are problem solvers and act as a leader in different capacities. The educated graduate of the twenty-first century should therefore be equipped with a wide range of skills and

abilities, such as inquiry and research skills, in order to conduct systematic investigation and find long-term solutions to complex societal context-based problems.

Given this, the emergence of sophisticated technologies and science inclined industries, dynamics growth of scientific and technical information, creation of complex social and academic phenomenon requires the students to be versatile with skills of independent search activity and ability to propose and execute research enquiry. This heralded the fact that research competence is germane to undergraduate's scholarly emancipation.

The ability to acquire new knowledge, identify educational problems, synthesize and argue knowledge of research methodologies, and develop research for interpretation and distribution of results is defined as research competence (Castilo-Martinez and Ramirez-Montaya, 2021). Research competency is essential for interdisciplinary approach to phenomenon and provides opportunity for students to conduct their thesis, carry out independent research work and critically evaluate the result of their research outcomes.

Research competency for many professionals commences during their learning in higher institution, despite this many students seems incapable of planning and conducting a research work. Independent research competencies are critical for developing students' personal interest, leadership roles, and critical thinking. However, evidence exist to suggest that student's research competencies are low (Palermo, 2021). Also, the intellectualization of academic endeavors raises fundamentally new problems in training students who will become specialist in diverse fields, research competencies help prepare undergraduates for future professional activities. As the abundance of the graduates in the labor market lack competencies to solve professional problems by methods of scientific inquiry (Abu and Alheet,2019; Hosein and Rao, 2017). The switch from a traditional tutor-centered to a learner-centered learning system, as well as the increased use of technology in the classroom, have all been designed to effectively prepare undergraduates for potential career difficulties.

Higher institution of learning also aim at making undergraduates self-reliant, thinks critically and a lifetime learners so that they end up becoming productive and qualitative workforce in the international arena. To actualize this goal, research competence plays a very decisive role. Recognizing the importance of research, industrialized countries and developed nations of the

world have created laws, guidelines, and a plethora of models, standards, and frameworks to ensure that research skill acquisition training is carried out efficiently in their educational institutions.

In addition, advances in digital technologies altered how research was organized and conducted, contributing to the improvement of digital science. According to the international document "Plan S," Beginning in 2021, all publications based on the results of research funded by public or private grants from regional, international research councils and funding agencies should be published in open access journals, on open access platforms, or readily accessible through open access to storage without interference.

However, for research paper to be accepted and published in an open access journal, the outline and structure of the paper must align with international best practice. cursory observation shows that many undergraduates who might likely be working on thesis or research projects with intention to publish are not proficient about research procedures and lack competencies in conducting scientific research. Research competencies of students features as an important element for problems solving (Lopatovska and Sessions, 2016). There has been a rising recognition of the value of scientific inquiry in everyday life. However, students who are inclined to scientific study are few among undergraduate, Young people's enthusiasm for research is dwindling due to many factors. Clearly, not all smart learners link their learning to research. But, research competency has been described as sine qua none for professional emancipation. Yet, there is paucity of testaments regarding effective teaching and learning of research.

Many factors converge in the development of research competence, information literacy constitute an essential element in enriching research competence. According to Luo (2018), information literacy consists of skills that requires people to be aware when they need information and to be able to successfully find, assess, and use that information.

A person who is information literate must be able to not only recognize a need, but also find, evaluate, and apply information to productive ends (Association of College & Research Libraries, 2006). The "information age" has ended, and the "knowledge age" has begun, with the recognition that information cannot solve issues on its own, but that effective use of information can. As a result, undergraduates must be well-versed in knowledge (Farmer and Henri, 2018).

Similarly, in today's increasingly complex environment, there are numerous information options available, such as print materials, electronic, image, spatial, acoustic, visual, and quantitative.

The challenges a scarcity of information for research purposes, but rather an abundance of material in various formats, not all of which are equally valuable. The ability to act confidently and not be overwhelmed by information overload is crucial to academic performance and research competency of students in an era information explosion (Selikem, 2016). Increasing facilities including computers and electronic media which currently characterized modern higher institution is promising, in spite of its threat of information overload (Swapna and Biradar, 2017). This is mainly because, Information literacy education is not only a laudable goal, but it is also a necessary element in the making of knowledgeable researchers (Selikem, 2016).

On completion of undergraduate program, graduates are expected to be information provider through research and utilization of advanced literacy skills but they are often unable to fit in into this function effectively without being knowledgeable in information literacy during their studies. As a result, the curriculum is designed so that students can graduate as information literate individual. They should be able to determine reasons for needed information, place to locate it, how to appraise, use, convey information ethically, and how to use the knowledge to address research challenges. Information literacy education is the forerunner for actualization of projects which focuses on equipping prospective graduates with core 21st century skills through the application of various stages (Lynn, Mark, 2020; Okike, 2014). Unfortunately, the current state of affairs in Nigerian higher institutions suggests that the aim and objective of problem-based learning may not be realized.

The development of information literacy skills in order to boost research abilities is a critical problem. The effects of growing up with poor information literacy abilities are getting increasingly serious today. Students who are ill-equipped to participate in today's information-rich culture are increasingly ostracized. This means that, if we want learners be fully participants in tomorrow's workforce, effectively integration of information literacy skills instruction into both primary and secondary school curriculum must be achieved. Students must acquire a degree of information literacy that allows them to find, assess, and apply knowledge in order to excel in every facet of life (Chanchinmawia and Kumar, 2018).

Students will need information literacy skills to identify information needs, discover approaches to address gaps, establish methods for obtaining and gaining access to information resources, appraise, integrate, utilize, and consolidate information resources, and construct knowledge useful for research (Kimani, 2014). Higher education's evolving environment creates an uncertain information ecosystem, requiring students to take on more responsibility for creating new knowledge and utilizing information appropriately (Association of College Research Libraries, 2000).

Despite big expansion of educational sector in Nigeria, higher education institutions seem unable to boast of inventions worthy of international repute, inculcate spirit of scientific inquiries in students and equip them with ability to unraveled association behind natural and societal phenomenon through research. This pathetic situation degenerates into inability to break even in most industries, finding lasting solution to human sufferings and forecast possible relationships between variables which are capable of hampering scientific quest and national development. All these could be attributable to low research competence triggered by information illiteracy.

Imperatively, research competency of undergraduate student in most university has been adjudged to be very low as most students contract their assignment or thesis writing to a ghost writer, unable to develop testable hypothesis, orchestrate and execute research plans and procedure, engaged in academic writing and scholarly discussion. In view of these, the purpose of this research is to look into the impact of information literacy. on research competence among undergraduate in Ibadan, Oyo State.

Objectives of the study

1. To determine the level of research competency of undergraduates in Ibadan Oyo State.
2. To determine the level of information literacy of undergraduates in Ibadan Oyo State.
3. To examine the relationship between research competency and information literacy.

Research Questions and Hypothesis

1. What is the level research competency of undergraduates in Ibadan Oyo State?
2. What is the level information literacy of undergraduates in Ibadan Oyo State?

Hypothesis

H₀₁: there will be no significant relationship between information literacy and research competence.

Conceptual Framework

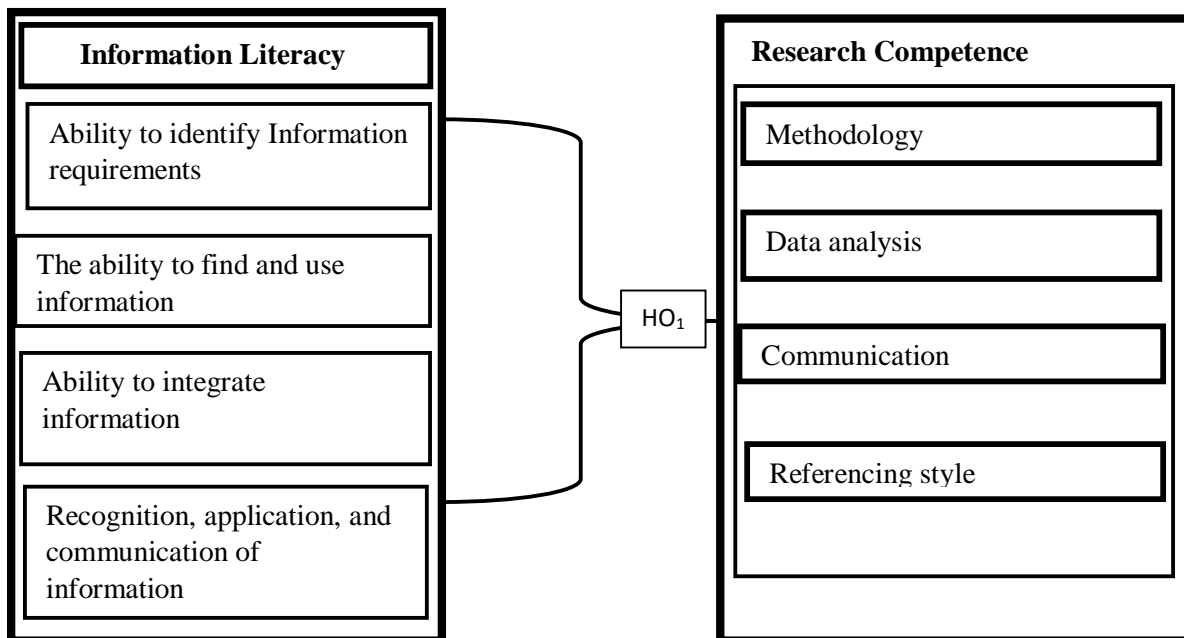


Fig 1.1: Proposed Conceptual Framework of the Study

Figure 1.1 shows conceptualization of the variables of the study. According to the conceptual model of the study, the dependent variable of this study is the research competence, measured with information seeking skills, methodology awareness, statistical analysis skills, problem solving skills, and communication skills. Information literacy is the independent variable in the study and it is measured with literacy awareness, library resources awareness, library information awareness, ICT skills and information searching, retrieving and evaluating skills. adapted from Doyles' (1999) theory of information literacy. Being competent and versatile in probing and providing solution to phenomenon using scientific method is a function of being information literate. The model also hypothesized that there will be a significant relationship

between information literacy and research competency of undergraduate students and this is depicted with H_{01} in the model.

Methodology

For this investigation, a descriptive survey design was used. The design is appropriate due to the fact that the researcher intended to describe and estimate the relationship between the variables. More so, the researcher has no intention of manipulating the variables. All 151 final year undergraduates in the four programme in the faculty of Communication and Information Sciences in Lead-City University Ibadan Oyo State. They are Health Information Management (67), Mass Communication and Media Technology (42), Library and Information Science (24) and Office and Information Management (18) respectively. Sample size for the study was 108 as determined from Krejcie and Morgan sample size table for a known population. Stratified proportionate random sampling was adopted and using Bowley population allocation formula, sample size of 48, 30, 17, and 12 was selected respectively.

Data were collected using questionnaire which was adapted from Doyle(1999) after extensive review of literature. The instrument used was on four-point scale; 4- highly skilled, 3 – moderately skilled, 2 – weakly skilled and 1 – not skilled. Copies of the questionnaire were administered to final year undergraduates in the faculty of Communication and Information Science. One hundred and eight (108) questionnaire were taken to the field, 104 were returned. Four out of the returned questionnaires were not properly filled; the remaining hundred were coded and used for data analysis. Descriptive and inferential statistics were used to analyze the study's data. To answer research questions, percentages, frequencies, and mean ratings were used, while Pearson Product Moment Correlation (PPMC) was used to analyze the hypothesis.

Result

One hundred and 108 questionnaires were taking to the field in order to have margin of error, 104 were returned. 4 out of the returned questionnaire were not properly filled, the remaining hundred were coded and used for data analysis. From the demographic angle, female participated more than

their counterparts in the study while majority of participants are undergraduates in their year two of study.

Research Question One: What is the level research competency of undergraduates in Ibadan Oyo State.

Table 1.1: Showing Participants Response Based on Level of Research Competency

S/ N	ITEMS	SA	A	D	SD	M	S.D
Research methodology							
1.	I can justify the choice of research design based on topic and objective of the study.	56 (56.0 %)	16 (16.0%)	28 (28.0 %)		3.993	.4364
2.	I can determine and select appropriate sample size using established techniques and formulas for research work.	58 (58.0%)	18 (18.0 %)	24 (24.0 %)		2.667	.4162
3.	I can collect data for a research works using different approach.	56 (56.0 %)	44 (44.0 %)			2.848	.5031
4.	I can develop, adapt or adopt an instrument for research work	68 (68.0 %)	30 (30.0 %)	2 (2.0%)		2.705	.4973
Criterion mean		3.0					
Data Analysis							
5.	I know when to use quantitative or qualitative analysis when conducting research work.	56 (56.0 %)	28 (28.0 %)	14 (14.0%)	2 (2.0%)	3.756	.8568
6.	Research questions or hypothesis determine the choice of data analysis	52 (52.0%)	24 (24.0 %)	20 (20.0 %)	4 (4.0 %)	2.475	.7500

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7.	I can determine and use appropriate test statistics to answer research questions or hypothesis	22 (22.0 %)	48 (48.0 %)	16 (16.0%)	14 (14.0%)	2.927	.8425
8.	I am familiar with many software packages for statistical analysis	10 (20.0%)	25 (50.0%)	10 (20.0%)	5 (10.0)	2.268	.9481
9.	I can interpret computer printout of analysis	20 (20.0 %)	34 (34.0%)	24 (24.0%)	2 (2.0 %)	2.244	.8755
Criterion mean		2.7					
Communication							
10.	I can present findings from research work using tables and graph.	16 (16.0%)	54 (54.0%)	28 (28.0 %)	2 (2.0%)	2.143	.5559
11.	I can explain the findings of research work to a layman	18 (18.0%)	58 (58.0%)	20 (20.0%)	4 (4.0 %)	3.190	.7068
12.	I know what it requires to publish a research finding in a journal	8 (8.0 %)	84 (84.0 %)	8 (8.0%)		2.119	.7341
13.	I can extract and report key findings from a research work	18 (18.0 %)	66 (66.0 %)	16 (16.0 %)		2.042	.4729
14.	I have the ability to present researching finding in a conference	42 (42.0%)	54 (54.0 %)	4 (4.0 %)		2.000	.6389
Criterion		2.3					
Referencing Style							
15.	It's easier for me to identify referencing style format for a research work.	58 (58.0%)	18 (18.0 %)	24 (24.0 %)		2.293	.4162
16.	I can reference author in research work using different style	56 (56.0 %)	44 (44.0 %)			2.548	.5031

17.	I can easily follow guideline for referencing	68 (68.0 %)	30 (30.0 %)	2 (2.0%)		3.405	.4973
18.	I can use acceptable styles to cite bibliographic references in research reports.	32 (32.0 %)	38 (38.0%)	30 (30.0%)		2.146	1.021 4
Criterion mean		2.6					
Grand mean		2.7					
Decision Rule		Note: Highly competent (HC) 3.50 – 4.0, Moderately Competent (MC) 3.0 – 3.49, Weakly Competent (WS) 2.0 – 2.99, Not Competent (NS) 1.0 – 1.99					

From the results in table 2, it was revealed that the items on research competence dimension of research methodology were rated between 2.6 to 3.9 with a criterion mean of 3.0. the criterion mean of 3.0 implies that undergraduates are moderately competent in research methodology. Though in responding to the item 'I can justify the choice of research design based on topic and objectives of the study recorded mean score of 3.9. The criterion mean for research methodology is higher than grand mean indicating that undergraduate research competence in respect to research methodology is relatively high. The items on data analysis with mean rating ranging from 2.2 to 3.7 with a criterion mean of 2.7 implies that undergraduates are weakly skilled in research competence in terms of data analysis. Also, the mean rating of 3.7 on item that bothers on knowing when to use quantitative or qualitative analysis when conducting research work indicate that though undergraduate are low skilled in term of data analysis, they are capable of knowing when to use either qualitative or quantitative methods. The mean rating on undergraduate research competence in respect to communication of result recorded a mean score ranging from 2.0-3.1 with a criterion mean of 2.3. The criterion means of 2.3 indicate that undergraduates are weakly competent in respect to communicating the result of a research work. However, the mean rating of 3.1 in terms of explaining research finding to a lay man indicates that they fare well in this regard. The criterion mean is also lower than the grand mean, an indication that undergraduate students are less skilled in communicating research work. The mean rating on referencing style ranges from 2.1 to 3.4 with a criterion mean of 2.6 implies that undergraduate research competence in terms of

referencing style is low. Also, the criterion is lower than grand mean, an indication that undergraduate research competence in term of referencing style is low.

From the table, it can be garnered that the grand mean recorded 2.7 while criterion means are 3.0, 2.7, 2.3, 2.6 for research methodology, data analysis, communication and referencing style respectively.

Research question two: What is the level information literacy of undergraduates in Ibadan Oyo State.

Table 1.2: Showing Participants Response Based on Level of Information Literacy

S/N	ITEMS	SA	A	D	SD	M	S.D
Ability to identify Information requirements							
1.	I can see how information and data are required to attain a given goal.	62 (62.0%)	24 (24.0%)	4 (4.0%)	10 (10.0%)	2.886	.6133
2.	I can define concept of a topic for a research presentation.	56 (56.0%)	34 (34.0%)	6 (6.0%)	4 (4.0%)	2.549	.6490
3.	I can identify information need through electronic discussions.	82 (82.0%)	12 (12.0%)	6 (6.0%)		3.570	.4236
Criterion mean		3.0					
The ability to find and use information							
4.	I can use proper search techniques to get the information I need.		6 (6.0%)	78 (78.0%)	16 (16.0%)	3.114	.4614
5.	I can tell the difference between primary and secondary information sources.		60 (60.0%)	12 (12.0%)	28 (28.0%)	3.182	.6152

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6.	I can develop information search techniques employing keywords and associated terms.	26 (26.0%)	58 (58.0%)	4 (4.0%)	12 (12.0%)	3.068	.7395
7.	My ability to select the most appropriate electronic resources is low	2 (2.0 %)	64 (64.0%)	28 (28.0%)	6 (6.0%)	3.455	.6838
8.	I can search internet sources for information resources by subject, title, and date.	43 (43.4%)	52 (52,5%)	2 (4.0%)		3.665	.568
Criterion mean		3.3					
Ability to integrate information							
9.	I can select information materials based on reliability, validity, accuracy, authority or bias	12 (12.1%)	13 (13.1%)	19 (19.0%)	55 (55.6%)	3.1833	1.073
10.	I am able to sift information resources obtained from the internet	23 (23.0%)	64 (64.0%)	8 (8.0%)	5 (5.0%)	3.3962	.59073
11.	I can evaluate the quality, reliability, and usefulness of online information resources.	24 (24.0%)	71 (71.0%)	5 (5.0%)		3.9104	.659
12.	Based on facts I found on the internet, I can come to a judgment.	32 (40.1%)	68 (69.4%)			2.8022	.494
Criterion mean		3.3					
Ability to integrate information							

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13.	I may combine fresh and previous knowledge to meet the study objectives.	32 (32.0%)	68 (68.0%)			2.8020	.494
14.	In a research project, I have the power to generate new knowledge.	34 (34.3%)	63 (63.6%)	2 (2.0%)		2.7111	.476
15.	I have the skill to manipulate digital text, images, and data as needed	39 (39.0%)	57 (57.0%)	4 (4.0%)		3.6832	.512
16.	I can use a range of information technology application in carrying court an assignment	38 (38.0%)	59 (59.0%)	3 (3.0 %)		2.6421	.543
	Criterion mean	3.00					
Recognition, application, and communication of information							
17.	I am capable of using information resources to resolve the issue at hand.	37 (37.0%)	59 (59.0%)	4 (4.0 %)		2.6443	.524
18.	I can construct a multimedia presentation using PCs and/or mobile technology.	38 (38.0 %)	51 (51.0 %)	4 (4.0%)	7 (7.0%)	2.7622	.744
19.	In the electronic realm, I am familiar with issues such as copyright, plagiarism, information privacy, and security.	38 (38.0%)	60 (60.0%)	2 (2.0 %)		1.6321	.507
Criterion mean		2.3					
Grand mean		3.7					
Decision Rule		Note: Highly Skilled (HS) ranges from 3.50 to 4.0, Moderately Skilled (MS) ranges from 3.0 to 3.49, Weakly					

	Skilled (WS) ranges from 2.0 to 2.99, and Not Skilled (NS) ranges from 1.0 to 1.99.
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The items on ability to identify the need for information were rated with a mean range from 2.5 to 3.5 and a criteria mean of 3.0, according to the results in table 1. The criterion mean of 3.0 show that undergraduate are moderately skilled in their ability to recognize the need for information, they can identify information need through electronic discussion (where they have the highest mean score of 3.5). the criterion mean is lesser than grand mean indicating that undergraduate students are moderately high. The items on ability to locate and access information with the mean rating from 3.0 to 3.6, the criterion mean of 3.3 indicates that undergraduates are moderately skilled in their ability to locate and access information. Also, the mean rating of 3.6 on the item focusing on searching information resources from electronic databases by subject, title and date indicated that undergraduates are highly skilled in this respect. The mean rating of 2.8 to 3.9 in respect to undergraduate ability to evaluate information shows that they are moderately skilled. The criterion means of 3.3 also shows that undergraduates are moderately skilled in evaluating information but highly skilled in respect to ability to assess the quality, accuracy and relevance of information resources found on the internet with mean rating of 3.9. The mean rating on undergraduate ability to integrate information ranges from 2.6 to 3.6 with criterion mean of 3.0. The criterion mean of 3.0 indicates that undergraduate are moderately literate in respect to ability to integrate information. However, the mean rating of 3.6 in respect to having skill to manipulate digital text, images and data as needed indicates that undergraduate students are highly literate in this respect. The mean rating ranging from 1.6 to 2.7 with criterion mean score of 2.3 in respect to ability to recognize, apply and communicate information ethically shows that undergraduate information literacy in this domain is weak.

Holistically, the grand mean recorded 3.7 while criterion means are 3.0, 3.3, 3.3, 3.0 and 2.3 for ability to recognize need for information, ability to locate and access information, ability to evaluate information, ability to integrate information and ability to organize, apply and communicate information ethically respectively. None of the domains of information literacy measured up with grand mean, an indication that information literacy is low among undergraduate. The lowest of which is the ability to organize, apply and communicate information ethically.

H₀₁: there will be no significant relationship between information literacy and research competence.

Table 3: Pearson’s Product Moment Correlation Showing the Relationship Between Information Literacy and Research Competence.

Variable	Mean	Std.Dv	R	r ²	Df	Sig	P
Research Competence	10.2700	1.36777	.549	.301	98	.000	<0.05
Information Literacy	1.81	.394					

Table 5 reveals that there was significant relationship between information literacy and research competence; $r_{(98)} = .594$, $p < 0.05$. thus, the null hypothesis was rejected. This implies that being information literate influence research competence. Further the table reveal than information literacy accounted for 30.1% in the variance of research competence $r^2 = 0.301$.

Discussion

The first research question examines the level of research competency of undergraduates in higher institutions residents in Ibadan Oyo State. The findings revealed that undergraduate research competence in respect to data analysis, communication and reference style is low. This findings corroborates the study of Yuri and Ighor(2017) who reported that research competency which is also conceptually referred to academic productivity is low among undergraduate. Most students reported that they are sparingly exposed to research related courses and are only to be taken during penultimate or terminal years in the university. The data analysis, communication

and reference style dimensions recorded the lowest, indicating that most undergraduate lack adequate skills needed to collect and analyses data, communicate the findings appropriately and adequately reference the sources thereby becoming relevant in the academic community. Its expedient to note that the low research competence of undergraduate also reflect in the quality of studies emanating from most higher institutions as many students are just getting familiar with intricates of research when they got to final year or when commencing second degree.

The second research question inquiry into level information literacy of undergraduates in Ibadan Oyo State. The result indicated that the level of information literacy of undergraduate is low. This result converge with the findings of Attama and Kingsley (2015) who found that information literacy skill of undergraduates is very low in most Nigeria universities. Consistent with this Aliyu, Chiwar and Anthony (2019) reported that undergraduates could not decipher their information needs and determine how to source and establish the validity of information gotten in the face of information explosion. Imperatively, undergraduates are not adequately literate enough to seek assess, validate information and use it for rigorous academic activities.

While the hypothesis bothers on relationships between information literacy and research competence. The result reveals that there is a linear relationship between information literacy and research competence. The more information literate undergraduates become, the more their research competent. This finding agrees with the work of Colucci (2020) which revealed that there is a significant relationship between information literacy and research competency of students in North Central Nigerian Universities. In a related study by Attama and Kingsley (2015), it was discovered that information literacy had positive relationship with research competencies of students in federal universities in Nigeria.

Conclusion and Recommendations

This study investigated information literacy and research competence of undergraduate in Oyo State, Nigeria. Three objectives were tested and theory of planned behaviour was used to anchor the study. Data were collected using standardized instrument while result indicated that the level of research competence and information literacy was low among undergraduates. Also, the result shows that there is significant linear relationship between information literacy and research competence. The 21st century is characterized by information explosion and flexible work

environment made possible through technology. Undergraduate are to be skillful in information literacy and competent to plan and conduct research without hitch. In view of these, the study recommended that:

1. Qualitative content on research methodology should be introduced into undergraduate curriculum right from first year in the university which should be improved on throughout the course of the study.
2. Information literacy skills course should be integrated into undergraduate curriculum and taught to students across departments and not just a one-off orientation programme.
3. Research competence should be emphasized on as a lifetime skill needed to thrive in the academic world and not just a skill to conduct project work during terminal years
4. Efforts should be geared toward making information literacy and research competence a compulsory general study which will serve as a criterion to high level courses.

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