JOLITT 1(2), 2017: Tella, Memudu, Adewojo pp. 127-151

IMPACT OF SEARCH ENGINES ON INFORMATION GATHERING AMONG UNDERGRADUATE STUDENTS AT THE UNIVERSITY OF ILORIN

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ABSTRACT

The study examined the impact of search engines on information gathering among undergraduate students at the University of Ilorin, Nigeria. Specifically, the study made effort to consider the level of awareness among the undergraduate students about search engines, users' frequency of using search engine, perception of users on effectiveness of search engines on information gathering, commonly used search engines and problems associated with the use of search engines. The study adopted a descriptive survey design using a sample of one hundred and eighty (186) randomly selected university undergraduates from twelve faculties in the university.Data was collected using a researcher designed questionnaire. Data collected was analyzed using frequency and percentage count while hypothesis was tested using chi-square. Findings from the study reveal that majority of the respondents were aware of search engines and use them between 0-5 hours weekly. The results also indicate that majority of the respondent perceive that the information gathered with the aid of search enginesis highly effective. In addition, google was indicated as the most common search engine used by undergraduate students, followed by Ask.com, yahoo,MSN, Bing and Excite. PDF while least used search engines among the students is ChaCha.com. The findings also show that the major problem associated with the use of search engine are ***inadequate knowledge of Boolean operators, inadequate***

***knowledge about keyword searching, little knowledge of proximity search term, non –use of truncation and wildcard in search process, slow connection, power outage, non-compatibility of some search engines with some websites are all significant problems associated* with the use of search engines by the respondents.** Based on the findings, it was recommended among others that the undergraduate students should be more educated on the available search engines and how effectively they can use the for information gathering.

Keywords: Search engines, Online information retrieval, Information gathering, Information search, Undergraduate Students.

Introduction

There are many internet-enabled services available today. One of the primary applications is for information retrieval. With the advancement of Web page development tools in both functionality and usability, individuals can publish information on almost any topic imaginable (Liaw& Huang, 2006; Sibuyi&Dehinbo, 2016). It is certain that with such diverse contents and the enormous volume of information on the Internet, retrieving relevant or needed information is far from assured (Sibuyi&Dehinbo, 2016). In other words, seeking resources on the World Wide Web is a significant task because there is such a vast amount of information available; but the growth of information and the increasing number of users requiring simultaneous access to it all add to its complexity (Gordon &Pathak, 1999). Thus, it is fair to say that Web information retrieval would collapse if search engines were not available. This is because search engines provide the best navigational tool on the World Wide Web.

Search engines are open access sites and are the most widely used resources for students' projects (Sahin et al, 2010). Many of them have open access on Internet Explorer programs, but some are customizable tools supplying multiple search engines like "Copernic". Resources which are accessed through these engines are mostly used by students for gathering the required information for their projects or assignments. Information obtained from these sites changes according to the student's level and the importance of the project content. By using different filters in the advanced search tabs, directly accessible resources provide more effective query results for specific types of documents such as documents with PDF, PPT, and DOC extensions. This makes it possible to access the information required or to extract unwanted resources.

Interestingly, trap/pop-up sites attract the students' attention and divert them into spending time on different subjects in different sites while working on the project. In this situation, most students get lost on the net and carried away with the attractiveness of the pop-ups and their lustful nature.

Essentially, search engines offer four main facilities: first, they gather Web pages from which an individual can retrieve information; second, they cluster Web pages into hierarchical directories; third, they provide hyperlinks to connect Web pages; and fourth, they allow individuals to issue queries, employing information retrieval algorithms to find for them, the most relevant Web pages (Gordon &Pathak,1999; Adepoju et al, 2014). In general, search engines are essential tools for finding resources on the World Wide Web; thus, the effective use of search engines for information retrieval (IR) is a crucial challenge for any Internet user.

Notably, there are two different approaches or paradigms to information retrieval. These are the system-focused approach and the user-focused approach. Several studies have been conducted based on the system-focused approach to investigate the usage or effectiveness of Web interaction on users' search for information (Dempsey, Vreeland, Sumner, & Yang, 2000; Gordon &Pathak, 1999; Greisdorf, 2003; Khoo, Myaeng, &Oddy, 2001; Mowshowitz& Kawaguchi, 2002; Savolainen, 1999, Tella, 2011). In contrast, only few studies adopt the user-focused approach to evaluate the effects/impact of search engines on individual information gathering/retrieval (Liaw& Huang, 2003; Spink, 2002). Although, it is somehow challenging for Web designers to develop and assess the effectiveness of search engines, based on the user-focused approach, understanding end-users' behavioral and cognitive attitudes toward search engines is still a critical issue that cannot be overlooked. In addition, most studies that have been conducted on search engines particularly in the context of the Nigeria university system and among the heavy users of information (the undergraduate students) seem to neglect the impact of search engines on information gathering and retrieval. Therefore it is considered very important at this point to investigate the impact of search engines on undergraduates' information gathering.

Search engines are among the most useful and high-profile resources on the Internet. The problem of finding information on the Internet has been replaced with the problem of knowing where search engines are, what they are designed to retrieve, and how to use them. There is no doubt that search engines are very effective in information retrieval. However, many users are still found struggling to retrieve and gather information

particularly from the online environment. This is not because of any other issue other than ignorance about the effectiveness of search engines and which particular to use to retrieve the needed information. Looking these statements above, this study is an attempt to fill these identified gaps, hence; the study examine the impact of search engines on individual information gathering behaviors.

Objectives of the Study

The main objective of the study is to examine the impact of search engines on the information gathering among undergraduate students at the University of Ilorin. The specific objectives of the study are to:

1. Determine the users' awareness on the available search engines.
2. Find out the frequency of using search engines by the users for information gathering.
3. Determine the perception of users on the effectiveness of search engines in gathering information.
4. Identify the commonly used search engines by the users.
5. Identify the problems associated with the use of search engines.

Research Questions

To achieve the objectives of this study, the following research questions were answered.

1. What is the users' awareness on the available search engines?
2. What is the frequency of using search engines by the users?
3. What is the perception of users on the effectiveness of search engines in gathering information?
4. What is the commonly used search engine by the users?
5. What are the problems associated with the use of search engines?

Literature Review

Search engine is a computer program that acts as a way of retrieving information from a database, based on certain criteria defined by the user. Merriam Webster Dictionary (2012) describes a search engine as a computer software used to search data (as text or a database) for specified information; *also* : a site on the World Wide Web that uses such software to locate key words in other sites. In other words, it is a computer program that has the capability of searching through large volumes of text or other data for specified key words and then retuning a list of files or documents where the key words were found. It also stated that search engines help users track down online information on a wide variety of topics and are valuable online sources of secondary data. Kimmon (2012) defines a search engine as a website that connects and organize contents from all over the internet.

According to Sibuyi and Dehinbo (2016), seeking resources on the World Wide Web is a significant task because there is such a vast amount of information available, but the growth of information and the increasing number of users requiring simultaneous access to it all add to its complexity (Gordon and Pathak, 1999). Thus, Sibuyi and Dehinbo (2016) explained that, it is fair to say that Web information retrieval would collapse if search engines were not available. Gordon and Pathak (1999) emphasized that, search engines offer four main facilities: first, they gather Web pages from which an individual can retrieve information; second, they cluster Web pages into hierarchical directories; third, they provide hyperlinks to connect Web pages; and fourth, they allow individuals to issue queries, employing information retrieval algorithms to find for them, the most relevant Web pages. In general, search engines are essential tools for finding resources on the World Wide Web; thus, the effective use of search engines for information Retrieval (IR) is a crucial challenge for any Internet user.

Notably, search engine helps to search information between different points therefore this makes the search engine a very powerful information system. People in different age groups and jobs, students and academics who do scientific research and projects prefer using the search engine because it is the easiest, fastest, and cheapest ways of accessing necessary information (Cloud, 1989). Even though the search engine is a very important and indispensable source for students, the issue of its impact of the information gathering of the undergraduate still remain blurred.

Related Studies

Sibuyi and Dehinbo (2016) investigated user search results preferences and incorporated them to significantly improve the relevance, accuracy, and filtering of search results. Akporobore and Oghale (2015)investigated the awareness, use and impediments of search engines by undergraduate students in Delta State University, Abraka. A descriptive study design was used for the study. The population comprised of the students in the Faculty of Social Sciences with the sample of 154. Three research questions were answered and two hypotheses tested at 0.05 level of significant. One instrument titled search engine use questionnaire (SEUQ) was used for data collection while percentages and mean rating were used to answer research questions; ANOVA was used to test the hypotheses. The findings demonstrated that undergraduate students' awareness of search engines was low in Delta State University, the test for hypotheses showed that there was a significant difference from the respondents' awareness of search engines according to their departments; Google was the most frequently

used search engine by the undergraduate students in Faculty of Social Sciences. The finding also revealed that information overload was the greatest challenge the undergraduate students encountered. Based on the findings, the implication of the study was that more practical aspects of search engines should be employed to promote greater awareness needed to improve the use of search engines.

Adepoju, Oyeabor, and Abioye (2014) examined the use of Web search engines by final year students to support learning and research in a Nigerian University. The frequency of usage of search engines, their level of satisfaction with search results, the effectiveness of the search engines as well as the relevance of results obtained by various search engines were investigated. The results showed that Google search engine was adjudged the best with highest frequency of usage and result retrieval outcome. Result from chi-square test indicates that there is no significant relationship between gender, schools and relevance of results returned by the search engines.

Georgas (2014) examines the information-seeking behavior of undergraduate students within a research context. Student searches were recorded while the participants used Google and a library (federated) search tool to find sources (one book, two articles, and one other source of their choosing) for a selected topic. The undergraduates in this study believed themselves to be skilled researchers, but their search queries and behaviors did not support this belief. Students did not examine their topics to identify keywords and related terms. They relied heavily on the language presented to them via the list of research topics and performed natural language or simple keyword or phrase queries. They did not reformulate or refine their research questions or search queries, did not move beyond the first page of results, and did not examine metadata to improve searches. When using Google, students frequently visited commercial sites such as Amazon; content farms such as About.com; and subscription databases such as JSTOR. This study concludes by offering suggestions for search interface improvement and pedagogical opportunities on which librarians may wish to focus or refocus. This article is the second in a series that examines student use of Google and a library (federated) search tool.

Jato and Oresiri (2013) examined students' use of search engines for information retrieval on the web in Adeyemi College of Education, Ondo. Survey research design was adopted for the study and data for study was obtained with the use of questionnaire instrument. Systematic random sampling technique was used to select the sample for the study. Copies of

questionnaire instrument were administered on the respondents in the lecture theater and the College Library; and the retrieved data was analysed in percentage (%) with the use of frequency table. The study revealed among others that majority of the respondents (63.12%) had no specific place for their online search; they used their mobile phones / laptop everywhere to search the internet. Only a very few of respondents (3.55%) used virtual library for their online search, many of the respondents (39.01%) used the search engine occasionally and majority of students (71.63%) used just one or two search engines on regular basis. Based on the findings, the researchers recommend that students should be enlightened on the importance of online resource for their academic success to propel them to use search engines often; and to use a lot of search engines from over 200 search engines available on the net to retrieve vital information. The librarians should embark on a serious publicity via the use of media such as flyers, notice board, face book, bulletins, seminars and others to attract students' patronage to the virtual library.

Liaw and Huang (2006) developed and examined an individual attitude model towards search engines as a tool for retrieving information. This model integrates individual computer experience with perceptions. In addition, it also combines perception theories, such as technology acceptance model (TAM) and motivation, in order to understand individual attitudes toward search engines. The results show that individual computer experience, quality of search systems, motivation, and perceptions of technology acceptance are all key factors that affect individual feelings to use search engines as an information retrieval tool. Again in 2006, based on the user-focused approach, Liaw and Huang (2006) investigated individual information retrieval behaviors using information processing theory. The results show that experience with search engines significantly affects users attitudes toward search engines for information retrieval, the query-based service is more popular than the directory-based service, users are not completely satisfied with the precision of retrieved information and the response time of search engines, and users motivation is a key factor that predicts their intention to use search engines for information retrieval. Furthermore, this study proposes a conceptual model for investigating individual attitudes toward search engines for information retrieval.

Peng et al. (2006) in their study of university students' attitudes and self-efficacy towards the search engines demonstrated the relationship between perceptions of the search engine and their internet attitudes and

self-efficacy. They showed that there is a positive effect if the students use the search engine as a functional tool or functional technology. In addition to those mentioned, there are many other useful studies which investigate the effects of internet and search engine on university students' self-efficacy and performance (Crews & Feinberg, 2002; Wu & Tsai, 2006; Wen & Tsai, 2006; Perry et al 1998; Wainer et al 2008; Odell et al 2000; Crouch, 2001; Mohammed & Al-Karaki, 2008).

Griffiths and Brophy (2005) reported results of two user studies of search engine use conducted to evaluate the United Kingdom's national academic sector digital information services and projects. The results presented here focus on student searching behavior and show that commercial Internet search engines dominate students' information-seeking strategy. Forty-five percent of students used Google as their first port of call when locating information, with the university library catalogue used by 10 percent of the sample. Results on students' perceptions of ease of use, success, time taken to search, and reasons for stopping a search were also presented.

Brophy and Bawden (2005) compared Google as an internet search engine with academic library resources in their study. Surprisingly, their finding showed that while Google is superior for coverage and accessibility, library systems are superior for quality of results, and that precision is similar for both systems. Finally, they concluded that using them together for a good coverage is important because both have many unique items. Lazonder (2000) investigated the novice users' training needs in searching for information on the www, noting that locating a website is more important than locating the information on a website.

Looking at all these relevance studies, it is observed that most of the studies seem to ignore the aspect of the impact of search engines on the information gathering particularly among the undergraduate students in Nigeria. Similarly, most of the studies on search engines and information retrieval were conducted in the advanced countries. Therefore, conducting this kind of study in Nigeria and among the population of the Nigeria university undergraduate students is an addition to the body of knowledge in this area.

Research Design

This study adopted descriptive survey design. This was with the view to generally gather data with the intention of describing the existing conditions of the impact search engines have on the information gathering and retrieval by the undergraduate students. The survey design was

considered as the best research design in this study as it allows the use of various data collection techniques such as questionnaires, interview and observations.

Population of the Study

The population of the study consists of undergraduate students of the University of Ilorin covering twelve (12) faculties in the university as at 2013/13 academic session when the data for the study was collected. According to the 2012/2013 annual report of the university, the total number of undergraduate students stands at 22,624 in all the twelve (12) faculties.

Sample and Sampling Procedure

The study adopted a simple random sampling technique to select the sample for the study. The total sample selected for this study was 204. Israel (2003) model for determining sample size was used to arrive at this actual sample for this study. The model states that taken sample size for ±3%, ±5%, ±7%, and ± 10% for precision levels where confidence level is 95% and P=.5. Going by the model ±7 was taken for precision with the population of students 22,624, the sample should be204. This justifies the sampleof 204 used in this study.

Research Instrument

A self-designed questionnaire was used as an instrument for collecting data in this study. The title of the questionnaire was tagged "Search Engine and Information Gathering Questionnaire". The questionnaire used was a close ended/structured questionnaire, it was divided into two section, A and B. Section A requires the respondents' bio-data information while section B is subdivided into five parts. Part i, ii, iii, iv and v based on the objectives and research questions of the study: part i: users' awareness on the available search engines; part ii: users' frequency of using search engine; part iii: perception of users' on effectiveness of search engines on information gathering; part iv: commonly used search engines by users; part v: problems associated with the use of search engines.

Validity of the Instrument

The instrument was validated to ensure both the content and construct validity. To achieve these, the instrument was given to two experts whose research area of interest is on the evaluation of search engines and online information retrieval, for scrutiny and expertise judgment and with the view of checking the appropriateness of the instrument before administration. The instrument before administration to the respondents was modified based on the experts comments, suggestions and observations.

Reliability of the Instrument

Reliability of an instrument reflects its stability and consistency within a given context. To achieve this in the study, the instrument was administered to twenty respondents out of the envisaged population. A split-half reliability method was used. Responses collected were subjected to Cronbach alpha. The overall reliability of the questionnaire returned a coefficient of r= 0.70. This was high enough for use in this study.

Data Collection Procedure

The copes of the questionnaires were administered by the researcher with the help of research assistants recruited in each of the participating faculty. The questionnaire was administered when student were in session because that is the time they could be easily reached. It took the researcher two weeks to administer the questionnaire. Out of two hundred (204) copies of questionnaires that were administered, one hundred and eighty-six (186) copies of the questionnaires were returned completely filled and good for data analysis. This gave a 93% response rate

Data Analysis

The data collected from the field was analyzed using descriptive statistics including simple percentage and frequency count with the help of Statistical Package for the Social Science (SPSS) Chi-square was also used to test the hypothesis about the level of awareness of the respondents on the various search engines. The results obtained are presented as follows:

Table 1: Respondents Demographic Distribution

Gender	**Frequency**	**Percentage**
Male	115	61.83
Female	71	38.17
Total	**186**	**100**
Age		
15-20	54	29.03
21-25	80	43.01
26-30	47	25.27
31 and above	5	2.69
Total	186	100
Level/year of study		
100/First year	35	18.8
200/Second year	38	20.4
300/third year	50	26.9
400/fourth year	32	17.2
500/fifth year	31	16.7
Total	186	100

The table 1 reveals that out of 186 respondents 115 (61.83%) respondents were male while 71 (38.17%) respondents were female. This indicates that there are more males that took part in the study. The table also shows that out of 186 respondents 54 (29.03) respondents fall within the age range of 15-20 years while 80 (43.01%) respondents falls within the age range of 21-25 years while 47 (25.27%) falls within the age range of 26-30 years while 5 (2.69%) falls in the age range of 31 years and above. This shows that majority of the respondents fall within the age of 21-25years.

The respondents' distribution by levels of study reveals that respondents in 300level constituted the majority with 50 (26.9%). This is followed by respondents in 200 level 38 (20.4%) while respondents in 100 level constituted 35(18.8%) of the sample. Respondents in 400level were the next with 32(17.2%) while respondents in 500 level were the least participants with31 (16.7%).

Users' awareness of Search Engine

Respondents were asked to indicate whether or not they were aware of the search engines. The result is presented in table 2.

Table 2: Users Awareness on the Availability of Search Engine

Item	Frequency	Percentage
Yes	183	98.39
No	3	1.61
Total	186	100

The table 2 shows that out 186 respondents (98.39%) were aware of the availability of search engine while 3 (1.61%) were not aware the availability of search engine. This indicates that majority of the respondents were aware of search engine.

Table 3: Users awareness on each search engine

S/N	Search Engine	High Aware	Fairly Aware	Not Aware
1	Google	185 (99.5%)	1 (0.5%)	0(0%)
2	Ask.com	165 (88.71%)	19 (10.22%)	2 (1.1%)
3	Yahoo	158 (84.95%)	22 (11.83%)	6(3.23%)
4	MSN	60 (32.25%)	80 (43.01%)	46 (24.73)
5	Bing	56 (30.11%)	66 (35.48%)	64 (34.41)
6	Excite	62 (33.33%)	77 (41.39%)	47 (43.39%)
7	AOL	55(29.6%)	100(53.8%)	31(16.7%)
8	CometBird	45(24.2%)	45(24.2%)	96((51.6%)
9	Baidu	40(21.5%)	50(26.9%)	96(51.6%)
10	AltaVista	50(26.9%)	60(32.3%)	86(46.2%)
11	DuckDuckGo	10(5.4%)	10(5.4%)	166(89.3%)
12	WolframAlpha	10 (5.4%)	10(5.4%)	166 (89.3%)
13	Yandex	8 (4.3%)	15 (8.1%)	163(87.6%)
14	Lycos	6 (3.2%)	20(10.8%)	160 (86.0%)
15	ChaCha.com	4 (2.2%)	12 (6.5%)	160 (86.0%)

The table 3 reveals that out 186 respondents 185 (99.5%) were highly aware of Google while just 1 (0.5%) were fairly aware and no one indicated not aware. Next to this,the result shows that 165 (88.7%) were highly aware ofAsk.com while 19 (10.2%) were fairly awareand 2 (1.1%) were not aware. The result reveals that 158 (84.9%) were highly aware of Yahoo while 22 (11.8%) respondents were fairly aware and 6(3.2%) were not aware. Results also show that 60 (32.3%) respondents were highly aware of MSN while 80 (43.0%) were fairly aware and 46 (24.7%) were not aware. A total of 56 respondents (30.1%) were highly aware of Bing search engine, 66 (35.5%) were fairly aware and 64 (34.4%) were not aware at all. The results on Excite show that 62 (33.3%) were highly aware, 77 (41.4%) were fairly aware while 47 (43.4%) were not aware. On AOL search engine, 55 (29.6%) of the respondents indicated they were aware of it, 100 (53.8%) indicated fairly aware while 31 (16.7%) indicated not aware. Responses to CometBird search engine show that 45 (24.2%) were highly aware of it, 45 (24.2%) were aware while 96 (51.6%) which is an average majority were not aware. Furthermore, the results on Baidu search engine show that 40 (21.5%) were aware, 50(26.9%) were fairly aware while an average majority 96 (51.6%) were not aware. On AltaVista, the results show that 50 (26.9%) were aware, 60 (32.3%) were fairly aware and 86(46.2%) were not aware. Responses to DuckDuckGo show that 10(5.4%) each, were aware and fairly aware while an overwhelming majority (166(89.3%) indicated they were not aware. Similarly, limited percentage of respondents 10

(5.4%) each indicated awareness and fairly awareness of WolframAlpha, while also greater percentage 166(89.3%) indicated non awareness of the search engine. For Yandex, 8 (4.3%) of the respondents indicated they were aware of it, 15 (8.1%) indicated they were aware while 163(87.6%) indicated they were not aware. A small proportion of the respondents 6 (3.2%) indicated they were aware of Lycos, 20 (10.8%) indicated not aware while 160 (86%) indicated they were not aware and lastly 4 respondents (2.2%) indicated their awareness of ChaCha.com, 12 (6.5%) were fairly aware while 160 (86%) were not aware. Altogether, the results implies that respondents have high awareness about search engines such as Google, Ask.com, Yahoo, MSN, Bing, and Excite while also having limited awareness about search engines such as WolframAlpha, Yandex, Lycos and ChaCha.com

Frequency of Using Search Engines

Respondents were asked to identify their frequency of using the search engines per hour per week. The result is presented in table 4.

Table 4: Users frequency of using search engine

S/N	Use of search Engine Per Hour/Week	Frequency	Percentage
1	0-5hours	127	68.3
2	6-10hours	41	22.0
3	11-15hours	9	4.8
4.	16-20hours	9	4.8
	Total	186	100.0

Table 3 shows that out of 186 respondents 127 (68.3%) respondents indicated that they use search engine between 0-5 hours per week while 41 (22.0%) respondents indicated that they use search engine between 6-10 hours per week while 9 (4.48%) use search engine for 11-15 hours and 9 (4.84%) respondents indicated they use search engine between 16-20 hours per week. In summary, the results imply that majority of the respondents use search engine between 0-5 hours per week.

Perception of Users on Effectiveness of Search Engines on Information Gathering

Respondents were asked to indicate the effectiveness of each of the search engines for information gathering. The result is presented in table 5.

Table 5: Perception of users on effectiveness of search engines on information gathering

S/N	Search Engine	Highly Effective	Effective	Fairly Effective	Not Effective	Don't Know
1	Google	185(99.5%)	0 (0%)	1(0.5%)	0 (0%)	0 (0%)
2	Ask.com	180(96.8%)	4(2.2%)	0(0%)	0(0%)	2(1.1%)
3	Yahoo	158(84.9%)	10(5.4%)	9(4.8%)	0(0%)	6(3.2%)
4	MSN	115(61.8%)	4(2.2%)	1(0.5%)	0(0%)	46(24.7%)
5	Bing	110(59.1%)	12(6.5%)	2(1.1%)	0(0%)	64((34.4%)
6	Excite	105((56.5%)	30(16.1%)	4(2.2%)	0(0%)	47(25.3%)
7	AOL	101((54.3%)	50(26.9%)	4(2.2%)	0(0%)	31(16.7%)
8	CometBird	80(43.0%)	8(4.3%)	2(1.1%)	0(0%)	96(51.6%)
9	Baidu	80(43.0%)	8(4.3%)	2(1.1%)	0(0%)	96(51.6%)
10	AltaVista	90(48.4%)	15(8.1%)	5(2.7%)	0(0%)	86(46.2%)
11	DuckDuckGo	10(5.4%)	5(2.7%)	5(2.7%)	0(0%)	166(89.3%)
12	WolframAlpha	10(5.4%)	5(2.7%)	5(2.7%)	0(0%)	166(89.3%)
13	Yandex	8(4.3%)	8(4.3%)	7(3.8%)	0(0%)	163(87.6%)
14	Lycos	6(3.2%)	10(5.4%)	10(5.4%)	0(0%)	160(86.0%)
15	ChaCha.com	4(2.2%)	10(5.4%)	2(1.1%)	0(0%)	160(86.0%)

The table 5 reveals that out 186 respondents 185 (99.5%) indicated that search engine is highly effective while no respondents indicated not effective. Ask.com was indicated to be highly effective by 180(96.8%) respondents and 4 (2.2%) indicated its effective while not respondents indicated not effective. Similarly, Yahoo was indicated to be highly effective by 158 respondents (84.9%), 10 (5.4%) indicated it to be effective and 9(4.8%) indicated its fairly effective while 693.2%) indicated not effective. The results also demonstrate that 115(61.8%) respondents indicated MSN is highly effective and 4(2.2%) indicated its effective on respondents indicated not effective. A total of 110(59.1%) indicated Bing is effective and 12 (6.5%) indicated its effective while no respondents indicated its not effective. Excite was indicated to be effective by 105 respondents (56.5%) and effective by 30 (16.1%) respondents and 4(2.2%) indicated fairly effective while no respondents indicated not effective. Other search engines indicated to be effective by the respondents are CometBird 980 (43%), Baidu (80(43%), AltaVista 90(48.4%). However, DuckDuckGo, WolframAlpha, Yandex, Lycos and ChaCha.com were indicated to be non-effective by (89.3%), (89.3%), (87.6%), (86%) and (86%) respective in that order. The results imply that search engines such Google, Ask.com, Yahoo, MSN, Bing, Excite, AOL, CometBird, AltaVista and Baidu were indicated to be effective in that order while DuckDuckGo, WolframAlpha, Yandex, Lycos and ChaCha.com were not.

To go a little further, respondents were asked to identify the search engine they used most often. The result is presented in table 6.

Commonly Used Search Engines by Users

Table 6: Commonly used search engines by users

	Items	Frequency	Percentage %
i	Google	186	100
ii	Yahoo	180	96.8
iii	Ask.com	156	83.9
iv	Excite	148	79.6
v	AOL	91	48.9
vi	Bing	80	43.0

The table 6 reveals that out of 186 respondents, all of them (100%) indicated they commonly use Google while 180 (96.8%) indicated they commonly use Yahoo. A total of 156 respondents (83.9%) (6.99%) commonly use Ask.com. This is followed by Excite indicated commonly used by 148 (79.6%) and next is AOL commonly used by 91 respondents (48.9%) and Bing commonly used by 80 respondents 9(43%). This implies that Google, Yahoo, Ask.com, Excite AOL and Bing are indicated as the most commonly used search engines by the respondents.

Problems Associated with the use of Search Engines

Respondents were asked to indicate the problems they usually encounter using search engines. The result is presented in table 7.

Table 7: Problems associated with the use of search engine for gathering information

	Problems	Agree	Disagree
I	Inadequate Knowledge of Boolean Operators	129 (69.4%)	57 (30.7%)
Ii	Inadequate knowledge about Keyword Searching	176 (94.6%)	10 (5.4%)
iii	Little Knowledge of Proximity Search Term	148(79.6%)	38 (20.4%)
Iv	-	136(73.1%)	50 (26.9%)
V	Slow connectivity	184(98.9%)	2(1.1%)
vi	Power Outage	182(97.8%)	4(2.5%)
vii	Non compatibility of some search engines with websites	145(77.9%)	41(22.1%)

The results in table 7 show that the most prominent problem faced by the respondents in using search engines is slow network connectivity as agreed by 184 respondents (98.9%) while 2 (1.1%) respondents disagree. The second problem identified is power outage. This was agreed by (97.8%) and disagreed by 4 (2.5%) respondents. The next is inadequate knowledge of keyword searching which was agreed by 176 respondents (94.6%) and disagreed by 10 (5.4%) respondents. Little knowledge about proximity search terms is another impediment identified by the respondents; while 148 (79.6%) respondents agreed, 38 respondents (20.4%) disagreed. In addition, 145(77.9%) agreed that non compatibility of some search engine with some website was also identified and agreed as a problem 41 (22.1%) disagreed. Another problem identified is the non-use of truncation and wildcard in search process. A total of 136 respondents (73.1%) agreed while 50 respondents (26.9%) disagreed. Lastly, inadequate knowledge of Boolean Operators was identified and this was agreed by 129 (69.4%) and disagreed by 57 (30.7%) respondents. This implies that inadequate knowledge of Boolean operators, inadequate knowledge about keyword searching, little knowledge of proximity search term, non –use of truncation and wildcard in search process, slow connection, power outage, non-compatibility of some search engines with websites are all significant problems associated with the use of search engines by the respondents.

Testing of Hypothesis

The only hypothesis tested in the study stated that: There is no significant difference in the respondents' level of awareness of search engines based on the level of study.

Table 8: Chi-Square analysis of difference between undergraduates level of awareness of search engines based on level of study

Levels	HA	FA	NA	No	Df	Chi cal.	Chi table	Alpha	Remark
100	30	5	0	186	10	423.1162	18.307	0.05	Rejected
200	30	8	0						
300	35	15	0						
400	30	2	0						
500	30	1	0						

Table 8 reveals the chi-square calculated as 423.1162 greater than the chi-square table 18.307 which is significant at the alpha level, 0.05. This therefore means that the hypothesis which stated that "there is no

significant difference in the undergraduate awareness of search engines based on level of study" is hereby REJECTED. This hereby implies that there is significant difference in the awareness of search engines by the undergraduate students based on their level of study.

Discussion of Findings

The aim of the study was to examine impact of search engine on information gathering among final year undergraduate students in University of Ilorin. The main objective of the study is to examine impact of search engine on information gathering among final year undergraduate students in University of Ilorin. The specific objectives are; determine the users awareness on the available search engines, find out the frequency of using search engines by the users, determine the perception of users on the effectiveness of search in gathering information, identify the commonly used search engines by the users, find out the problems associated with the use of search engine. Generally, the results reveal that majority of the undergraduate students in University of Ilorin were aware of search engine; and not just aware but the awareness is high awareness about search engines such as Google, Ask.com, Yahoo, MSN, Bing, and Excite while also having limited awareness about search engines such as WolframAlpha, Yandex, Lycos and ChaCha.com; Majority of the respondents use search engine between 0-5 hours per week. Search engines such Google, Ask.com, Yahoo, MSN, Bing, Excite, AOL, CometBird, AltaVista and Baidu were indicated to be effective in gathering/retrieving information. Google, Yahoo, Ask.com, Excite AOL and Bing are indicated as the most commonly used search engines by the respondents. Inadequate knowledge of Boolean operators, inadequate knowledge about keyword searching, little knowledge of proximity search term, non –use of truncation and wildcard in search process, slow connection, power outage, non-compatibility of some search engines with websites are all significant problems associated with the use of search engines by the respondents. There is significant difference in the awareness of search engines by the undergraduate students based on their level of study.

The finding that majority of the respondents aware of search engine counteract Akporobore and Oghale (2015) report that undergraduate students' awareness of search engines was low in Delta State University, Nigeria. The variation in the report of the two studies can be attributed to so many factors. This can include the variation in connectivity in the two universities, the information gathering and retrieval skills of the undergraduates, or better still the available facilities in the two universities

bearing in mind that one own by the state while the other is own by the federal government. It is expected that the federal government own university will have better facilities than the state.

Majority of the respondents use search engine between 0-5 hours per week. The reason behind this results might be because respondents in this study usually get the needed information using search engine and that is they are using it to this extent. However, this contracts what Jato and Oresiri (2013) earlier that many of the respondents (39.01%) used the search engine occasionally and majority of students (71.63%) used just oneor two search engines on regular basis.

Search engines such Google, Ask.com, Yahoo, MSN, Bing, Excite, AOL, CometBird, AltaVista and Baidu were indicated to be effective in gathering/retrieving information. It is easy for the students to identify the search engines that is very effective and make use of such when necessary. In the light of this, identifying the effective ones is not unexpected since students have opportunity of using all availabile based on awareness. Doing so will enable them to identify the most effective.

Google, Yahoo, Ask.com, Excite AOL and Bing are indicated as the most commonly used search engines by the respondents. The report by Akporobore and Oghale (2015) that Google was the most frequently used search engine by the undergraduate students in their study lend credence to this current study except that other commonly used search engines were not identified. Similarly, finding by Adepoju, Onyeabor and Abioye (2014) which showed that Google search engine was adjudged the best with highest frequency of usage and result retrieval outcome support the current finding in this study.

Inadequate knowledge of Boolean operators, inadequate knowledge about keyword searching, little knowledge of proximity search term, non –use of truncation and wildcard in search process, slow connection, power outage, non-compatibility of some search engines with websites are all significant problems associated with the use of search engines by the respondents. The reason for this might be based on the fact that there is nothing good without some peculiar shortcoming. This is true of all technology. However, the result contradicts Akporobore and Oghale (2015) finding which revealed that information overload was the greatest challenge the undergraduate students encountered. This testify to the claim that technology no matter how good usually has side effect.

There is significant difference in the awareness of search engines by the undergraduate students based on their level of study. This corroborate the finding by Akporobore and Oghale (2015) whose test of hypotheses showed that there was a significant difference from the respondents' awareness of search engines according to their departments. The only variation here is that while the difference in the current study was conducted based on level of study, that of Akporobore and Oghale was focused on departments of the respondents.

Conclusion

This study has examines impact of search engine on information gathering among final year undergraduate students in University of Ilorin. The results have shown that majority of undergraduate students in University of Ilorin and were aware of search engines and they were highly aware of google. Result also show respondents have the perception that search engines are highly effective in information gathering. Result also reveals that undergraduate students in University of Ilorin commonly use google to gather information materials. Finally, the result reveals that the major problems associated with use of search engine among undergraduate students in university of Ilorin are Inadequate knowledge of Boolean operators, inadequate knowledge about keyword searching, little knowledge of proximity search term, non –use of truncation and wildcard in search process, slow connection, power outage, and non-compatibility of some search engines with websites.

Recommendations

Base on the findings in this study; it is recommended that university management should establish course that will teach the students how to use search engine to gather information. Such course should incorporate the use of natural language search, incorporating Boolean operators in search activities, knowledge about keyword searching, knowledge of proximity search term, and use of truncation and wildcard in search process.

Similarly, the issue about the slow connection and power outage should be improved upon by the university. This is because these factors are germane to the successful information search process using search engines in any situation and circumstances.

It should be noted as well that this study is limited to the undergraduate students in University of Ilorin. Therefore, it is suggested that research that focus on universities in each of the geo-political zones in Nigeria should be considered even with the inclusion of other categories of tertiary institution students such Polytechnic and College of Education

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Search Engine and Information Gathering Questionnaire

Dear respondent,

I am a student of Library and information science, Faculty of communication and information science, university of Ilorin, Ilorin, Nigeria. I am carrying out research on the impact of search engine information gathering among final year undergraduate students. The information provided will be held confidential and use for research purpose only. Your cooperation is highly needed in the completion of the questionnaire. You are to respond to the items by ticking the options applicable to you.
In sections A, B, C, D, AND E please fill and tick ☐ the option as apply to you.

Bio-data information
Institution.....
Department.....
Faculty .....

Age: 18-22 ☐ 23-27 ☐ 28-32 ☐ others ☐

Gender: MALE ☐ FEMALE ☐

SECTION A
USER'S AWARENESS ON THE AVAILABLE SEARCH ENGINES

1. Are you aware of the availability of search engines for information retrieval on the internet? Yes ( ), No ( )
2. If yes, rate your extent of awareness on the following search Engines

S/N	Search Engine	High Aware	Fairly Aware	Not Aware
1	Google			
2	Ask.com			
3	Yahoo			
4	MSN			
5	Bing			
6	Excite			
7	AOL			
8	CometBird			
9	Baidu			
10	AltaVista			
11	DuckDuckGo			
12	WolframAlpha			
13	Yandex			
14	Lycos			
15	ChaCha.com			

SECTION B
USER'S FREQUENCY OF USING SEARCH ENGINE
1, How often do you use search engines?
a, Everyday ( ) b. Weekly ( ) c. Monthly ( ) d. Yearly ( )
2, How often do you use search engines weekly?
a,0-5hours ( ) b. 6-10 hours ( ) c. 11-15hours ( )d. 16-20hours( )

SECTION C
PERCEPTION OF USERS ON EFFECTIVENESS OF SEARCH ENGINES ON INFORMATION GATHERING
1, Have you ever made use of search engine in the process of information gathering? Yes ( ), No ( )
2, In my opinion, the utilization of search engines in gathering information is effective? Yes ( ), No ( )
3, How effective is search engine in gathering of information? Indicate your responses to the following.

S/N	Search Engine	Highly Effective	Effective	Fairly Effective	Not Effective	—
1	Google					
2	Ask.com					
3	Yahoo					
4	MSN					
5	Bing					
6	Excite					
7	AOL					
8	CometBird					
9	Baidu					
10	AltaVista					
11	DuckDuckGo					
12	WolframAlpha					
13	Yandex					
14	Lycos					
15	ChaCha.com					

SECTION D
COMMONLY USED SEARCH ENGINES BY USERS
1. Whenever I am trying to gather information on the internet, I often make use of

S/N	Search Engine	Tick
1	Google	
2	Ask.com	
3	Yahoo	
4	MSN	
5	Bing	
6	Excite	
7	AOL	
8	CometBird	
9	Baidu	
10	AltaVista	
11	DuckDuckGo	
12	WolframAlpha	
13	Yandex	
14	Lycos	
15	ChaCha.com	

SECTION E
PROBLEMS ASSOCIATED WITH THE USE OF SEARCH ENGINES

	Problems	Agree	Disagree
I	Inadequate Knowle dge of Boolean Operators		
Ii	Inadequate knowledge about Keyword Searching		
iii	Little Knowledge of Proximity Search Term		
Iv	Non –use of Truncation and Wildcard in search process		
V	Slow connectivity		
vi	Power Outage		
vii	Non compatibility of some search engines with websites		

Others, please indicate.....