

**USAGE OF SEARCH ENGINES FOR RESEARCH BY POST-
GRADUATE STUDENTS OF MEDICAL INSTITUTIONS
IN KATHMANDU VALLEY**

A Thesis
Submitted to central department of library and information science
Tribhuvan University
Kirtipur

Submitted by
IRA GHIMIRE
Central Department of Library and Information Science
Tribhuvan University
Kirtipur

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ABSTRACT

Internet search engine usage behaviours of present day medical postgraduate students are valuable to improve the academic works. For this reason, this study was carried out among postgraduate medical students of two medical institutions of Kathmandu to know the behaviours of Internet search engine users.

The objective of the study was to investigate the Internet search engine usage behaviours and experiences among research postgraduate students of medical institutions.

This was a descriptive cross-sectional study. The data were collected from the purposively selected postgraduate medical students of two medical colleges namely Institute of Medicine, Tribhuvan University Teaching Hospital Library (IOM/TUTH) and National Academy of Medical Sciences (NAMS) of Kathmandu.

The medical institutions and respondents are selected by adopting purposive sampling techniques. Data were collected through semi-structured questionnaire. The target population was comprised of postgraduate students of Institute of Medicine, Tribhuvan University Teaching Hospital Library (IOM/TUTH) and National Academy of Medical Sciences (NAMS), Bir Hospital of Kathmandu. The actual sample of students for the study was excluded all those who had not yet been using search engines on the Internet. This was achieved during the questionnaire administration by determining whether an approached student had been using any search engines.

Findings incorporating are problems, 12 (40%) respondents encountered problem of coping with too much information followed by finding irrelevant information 8 (27%). This suggests correctly specify the search topic or terms. There were 29 (97%) respondents who didn't purchase web related materials and only 1 (3%) respondent purchased web related materials from the authority of websites or author. This indicates the low socio-economic status and currency restriction status of Nepal to purchase materials online. On knowledge of medical databases as per the research finding, 11 (37%) respondents were using HINARI, 4 (13%) used PUBMed and 3 (10%) used HINARI & PUBMed simultaneously. There were 12 (40%) respondents not using either of the medical databases in their academic works. This implies that still significant number of postgraduate medical students is not using medical databases due to various reasons.

PREFACE

Internet search engine usage is the basic requirement for postgraduate medical students in their research and academic works. Qualitative usage behaviours of students in enhance the quality of academic and research works. Knowing present behaviour status and suggesting facts on this issue was the motto of this research. This research was carried out in the context of thesis writing in Masters in Library and Information Sciences.

In Nepal, recently the use of search engine is increasing due to compulsion of thesis writing in masters and PhD programme under different universities. In addition, researchers, teachers, doctors and public health experts use the Internet search engine in these days to satisfy their information curiosity. However, its pace of use is slow and behaviours and experiences are different. Internet use in Nepal is still limited due to various reasons including technical one.

Here, I have examined the Internet search engine usage behaviour and experiences among the postgraduate research students. This study tries to investigate the extent of use, behaviours and experiences of search engines among the medical postgraduate students of TU teaching hospital and NAMS, Bir hospital libraries of Kathmandu.

Findings of study suggest the urgent need of imparting explicit education on computer, Internet, search engines and on their supporting tools in research and academic works among the medical postgraduate students of Kathmandu valley and needed others.

I hope, this research work carried out by me will be a milestone to assess the behaviours of Internet search engine users and concerned authority will adopt the findings.

Thank you

.....
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1. Internet Search Engine 2. Library and Information Science I. Title



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LIST OF ABBREVIATION

CERLIM	Centre for Research in Library & Information Management
CSALT	Centre for Studies in Advanced Learning Technologies
DM	Doctor of Medicine
EIS	Electronic Information Systems
et al	et alii (and others)
IE	Information Environment
IOM	Institute of Medicine
ISPs	Internet Service Providers
MD	Doctor of Medicine
MPH	Masters of Public Health
NAMS	National Academy of Medical Sciences
OPAC	Online Public Access Catalogue
SAARC	South Asian Association for Regional Cooperation
SD	Standard Deviation
SE	Search Engine
SHSU	Sam Houston State University
SPSS	Statistical Package for Social Sciences
TCP/IP	Transmission Control Protocol/Internet Protocol
TUTH	Tribhuvan University Teaching Hospital
TV	Television
UK	United Kingdom
URL	Universal Resource Locator
US	United States
USA	United States of America
WWW	World Wide Web

1. Chapter

INTRODUCTION

1.1. Background of the study

The Internet and World Wide Web (WWW or Web) are incredibly popular at homes and schools alike. Though Web application and services are available today, the primary use of the Internet, other than e-mail, is for information retrieval. With advancement of Web-developing tools, individuals have joined organizations to post or publish information on almost any imaginable topic. Thus, with such a tremendous amount of diversity content on the Internet, retrieving relevant information is far from assured. This situation is like having a TV set with a billion channels; one can press the remote control frantically until one's thumb falls off and still never find the desired channel. Fortunately, a great number of search engines on the Web can help Internet users find any information, anywhere on the Web, or even beyond it. It is fair to say that Web-based information retrieval would collapse if search engines were not available on the Internet. Regarding the major functions of search engines, Gordon and Pathak (1999) stated that they provided three chief facilities: (1) they gathered together a set of Web pages that form the universe from which a searcher could retrieve information; (2) they represented the pages in this universe in a fashion that attempted to capture their content; (3) they allowed searchers to issue queries; and (4) they employed information retrieval algorithms that attempted to find for them the most relevant pages from this universe (Liaw & Huang, 2003).

The Internet as a self-organising network of networks which, through the interconnectivity it provides between different computer platforms, has attracted the attention of a large number of users. The Internet also provides the infrastructure for the publication and distribution of different types of information and information services in various formats particularly through the World Wide Web (the Web), an interconnection of millions of web sites and web pages belonging to different organisations and providing different types of digital information contents and services (Obenaus, 1994).

The rapid development of the Web in the 1990s supported a new array of documentary and pictorial communications, as well as a continuing stream of innovative applications in such areas as electronic publishing, multimedia, digital libraries, distance education, knowledge mining and electronic commerce (Kling, 1999). The Web is fast becoming the first point of call for more people in all countries for finding information, because it is now the single largest information market where the supply of information meets the demand.

The rapid growth of the Internet and the Web is characterised by both digital information revolution and explosion. The digital information revolution and explosion manifest in the ever increasing quantities and array of new electronic information resources provided by computer networks and the Internet, including web pages, newsgroups, mailing lists, electronic archives, networked databases, software applications and business services. There is also a growing array of different Internet-base tools for finding, indexing, classifying and retrieving information on the Internet such as search engines and meta-search engines. Search engines and meta-search engines are Internet facilities to assist information seekers to find required information on the ever-growing Internet. A search engine is a set of computer programs that search for web pages on the Internet, index the pages in a database, and makes the database available for searching by information seekers through an appropriate use interface at its web site. Meta-search engines in turn provide user interfaces at their web sites for information seekers to search the databases of many search engines simultaneously.

The growth of world Web has been one of the most remarkable developments which have rapidly gained popularity and become most widely used application of the Internet. Today, the World Wide Web has emerged as the most powerful medium for the information publishing and access. A plethora of information sources for education and research are available on the Web including scholarly journals, technical reports, these, courseware, content pages, data set, patents, reference sources, discussion forum etc. as a result, the web has become an ocean of all kinds of information or data, making any query into the huge information reservoir extremely difficult. In order to overcome this difficulty in retrieving information from WWW, several companies and institutions have developed various search aids called as search engines, which are widely used

to find information on the Internet. The review of literature indicates that in the academic environment the teachers, research scholars and students also depend on search engines for retrieval of scholarly information on the web.

Search engine is a tool, which helps in retrieving information from the Internet. It is programmed in such a way that it indexes the Web and accordingly builds their databases. When the query has entered in the search engine, it checks with the query. Then relevant matches are retrieved and returned as 'hits' or 'search results'. In other words, search engine acts as a searchable index of the web pages of the world (Biradar & Kumar, 2008).

In Nepal, recently the use of search engine is increasing due to compulsion of thesis writing in masters and PhD programme under different universities. In addition, researchers, teachers, doctors, engineers, students, writers and others use the Internet search engine in these days to satisfy their information curiosity. However, its pace of use is slow and behaviours and experiences are different. Internet use in Nepal is still limited due to various reasons including technical one. Here, we are examining the Internet search engine usage behaviour and experiences among the postgraduate research students. This study tries to investigate the extent of use, behaviours and experiences of search engines by the medical postgraduate students of Kathmandu valley.

1.2. Statement of the problem

Studies of the use of Internet facilities by students and teachers to support teaching, learning and research in post-graduate medical institutions are presently few. In-depth studies of the use of specific Internet resources such as search engines are rare in Nepalese context. The problem towards which this study is directed is to collect and analyse empirical information on the use of Internet resources by postgraduate medical students in the medical institutions of Nepal and specifically, the use of search engines by postgraduate students of the medical institutions for finding sources of medical related-specific information on the Internet.

The digital information revolution has implications for the 'information literacy' skills expected of citizens in general, and students, teachers and researchers in particular. Performing tasks in the

home, at work, and in school and college is nowadays more challenging, because the growing alternative sources of information provided by the digital revolution makes a person's relative efficiency in performing the tasks. Most developing countries are presently positioned opposite to the developed countries on the digital divide, in terms of the levels of development of information technology infrastructure, Internet access, and the possession by citizens of information literacy skills. Through this type of research we can strengthen the development of Internet search engine usage behaviour among the research scholars and nation as well.

Although having sufficient search terms to find the few relevant documents among millions is vital, users use only about two keywords when searching the Internet. Many problems stem primarily from a lack of consistency between database systems. However, despite such common weaknesses, federated search systems can provide a relatively quick and simple mechanism for conducting a broad search of multiple resources in one step. We are not able to educate researchers on this matter. Majority of research students in Nepal are aware of Yahoo and Google meanwhile small search engines like Lycos, Hotbot, Northern light seems not in use.

Internet service itself is limited in Nepal. Its users are less in comparison to other developed countries. The literacy, Internet literacy, weak establishment of Internet services, lack of machines (computers) with common people, expensive tariff of Internet Service Providers (ISPs), load shedding of electricity and lack of other infrastructure are hindering the growth and development of Internet use. So, obviously, use of Internet search engine is low in student's research activities. Still, other some factors may have been involving in the use of Internet search engine. We are trying to find out those factors which have minimised the use of Internet use in research activities. They might be socio-demographic and psychological as well.

1.3. Objective of the study:

General objective

To investigate the Internet search engine usage behaviour and experiences among research postgraduate students of medical institutions in Kathmandu valley, Nepal.

Specific objectives:

- 1) To find out knowledge of students about different search engines available for research.
- 2) To find out the purpose of using search engines by medical postgraduate students.
- 3) To find out searching behaviour of postgraduate medical students of two medical institutions.
- 4) To discover whether students know or not about specific medical databases.
- 5) To find out problems faced by student during using search engine.
- 6) To analyse the findings with socio-demographic variables of postgraduate medical students.

Scope and limitation of the study:

This research is limited to post-graduate medical students of medical institutions of medical institutions in Kathmandu Valley with reference to National Academy of Medical Sciences (NAMS) and Tribhuvan University Teaching Hospital Library. The reason is due to lack of time, resources and usage of internet facilities in Nepal.

1.4. Significance of the study:

Internet has been developed in western countries and the same is imported in developing countries like Nepal without considering the infrastructure needed for this. An analysis of the users behaviour and experiences towards Internet search engine, their information literacy in IT and information need in Nepal on related topics will help to develop digital library and orientation programme in the coming days by librarians of Nepal. Hence, the benefit of Internet search engines can be utilized maximum by the medical institutions and other educational institutions of Nepal.

Findings of research on Internet search engine usage among postgraduate medical students show the status and characteristics on their behaviour and experiences. Seen deviations and shortcomings can be fulfilled by the conduction of Internet search engine training programmes to the research students by the concerned medical and other institutions where research is mandatory.

1.5. Definition of the Terms/Glossary:

Behaviour: The action or reaction of something (as a machine or substance) under specified circumstances by the medical postgraduate students on Internet search engine usage.

Experience: The accumulation of knowledge or skill that results from direct participation in events or activities of Internet search engine usage among postgraduate medical students.

Internet: A computer network consisting of a worldwide network of computer networks that use the TCP/IP network protocols to facilitate data transmission and exchange.

Search engine: Search engine is a tool, which helps in retrieving information from the Internet. It is programmed in such a way that it indexes the Web and accordingly builds their databases. When the query has entered in the search engine, it checks with the query. Then relevant matches are retrieved and returned as 'hits' or 'search results' (Biradar & Kumar, 2008).

Search engines are program that search documents for specified keywords and returns a list of the documents where the keywords were found. A *search engine* is really a general class of programs, however, the term is often used to specifically describe systems like Google, Bing and Yahoo! Search that enable users to search for documents on the World Wide Web.

Users: Users are those people who involve in Internet search during their research activities to find out relevant document according to their need.

1.6. Organization of the study:

Chapter 1: INTRODUCTION: Establishes the main objective of the thesis in accordance with the identified problem and discusses the Internet search engine usage situation in Nepalese academic institutions. Significance of the study has been elucidated.

Chapter 2: REVIEW OF LITERATURE: This chapter discusses about the Internet search engine usage behaviour and experiences in different countries in percentages.

Chapter 3: FOCUS OF THE STUDY: It provides central points of the research i. e. main research objective on the subject matter.

Chapter 4: METHODOLOGY: Elucidate the study design, data analysis procedure, study population, sampling and data collection procedure.

Chapter 5: ANALYSIS AND PRESENTATION: This chapter portrays different findings of study using different tables.

Chapter 6: SUMMARY, CONCLUSION AND RECOMMENDATION: This chapter provides a summary of findings and present recommendations based on findings to the concerned authority for potential improvements on Internet search engine usage among research students.

2. Chapter

REVIEW OF LITERATURE

The importance and wide ranging scope of the Internet for general communication, information retrieval and instructional delivery to support administrative, teaching/learning and research activities in tertiary educational institutions is acknowledged worldwide. The Internet is also acknowledged globally as a technology dominated by young people, and particularly students who, being more exposed to information technologies in educational systems, as well as being more willing to try new things than the older members of society, are more inclined to exploit Internet resources for education, social interaction and entertainment. This is clearly confirmed in the case of the US by the findings of the Pew Internet and American Life Project (2002). The study found that 86% of college students have gone online, compared with 59% of the general population; that 78% of college Internet users say that at one time or another they had gone online just to browse for fun, compared to 64% of all Internet users; that college Internet users are twice as likely to have ever downloaded music files; and that college students used the Internet nearly as much for social communication as they do for their education (Pew Internet and American Life Project, 2005).

A number of studies have investigated how the Internet is used among academics and students at the tertiary levels of education for such activities as communication, information retrieval, learning, teaching and research. Some of the studies have focused on Internet use alone, whereas others have investigated Internet use in the context of the array of information sources, including the Internet that students and their teachers could use in their learning, teaching and research. A nationwide study of the use of Internet services by Australian academics found that, contrary to expectations, email did not appear to have been used extensively by the academics to communicate among themselves, that as many as 25.7% had never used it to communicate with students, and that nearly a third reported that they were either non- or beginner-users of the Web (Applebee, Clayton, Pascoe & Bruce, 2000).

Regarding the use of search engines majority of the respondents (84.33%) reported that they use

search engines to retrieve information on the net and only a few of them mentioned that they have not used search engines (15.66%). Organization wise use of search engines analysis indicates that 100 % of students from Karnataka University, Mangalore University and Indian Institute of Science followed by the University of Mysore (91.66%) use search engines for retrieving information on the Internet. From the present study, it is found that overall, 84 % of the respondents used search engines to search and retrieve information on the Internet. (Biradar & Kumar, 2008).

How do users search information resources on the Internet? The respondents were shown a lists of nine search engines and were requested to indicate whether they use them most frequently, frequently or less frequently for information search. The results indicate that perhaps not unexpectedly, Google (72.85%) and Yahoo (53.57%) are most frequently used search engines while Altavista (32.14%), Lycos (31.42%), and Hotbot (30.71%) are used less frequently. The search engines viz, Excite (76.42%), Northern light (75%), Euroseek (73.57%) and Infoseek (67.14%) have not been used. (Biradar & Kumar, 2008).

Respondents were also asked to mention the major factor, which influenced the use of search engines. The result demonstrates that to full extent, majority of respondents mention that search engine is most popular (42.85%) followed by using the search engine more information can be accessed (42.14%) and easy to connect on the Internet (35.71%). To some extent 42.41% and 40.71% of respondents mentioned that search engine is most popular and it is user friendly respectively. On awareness of search strategy, 84.33% of respondents are aware of search strategy of different search engines and 15.66% of them are not aware of search strategy. In case of Karnataka University and Mangalore University and Indian Institute of Science the awareness of the search strategy of different search engine is 100%. (Biradar & Kumar, 2008).

Majority of the respondents reported that help feature in the internet was used to learn the search strategy of the particular search engine (32.85%). 31.42 % of the respondents reported that by reading articles/books on a specific search engine to some extent. It is also observed that respondents learnt search techniques of different search engines with the help of colleagues/friends (27.85%) followed by library staffs/commercial centres (27.14%) (Biradar & Kumar, 2008).

In USA Gang Luo from Thomas J. Watson Research centre did research in the topic 'iMed: An intelligent Medical Web Search Engine' and found out that iMed is a vertical search engine that crawls Web pages from a few selected, high-quality medical Web sites instead of the entire Web. In their experiments, they crawled 20GB of Web pages from WebMD, one of the most popular medical Web sites. They performed two kinds of experiments, one using short query scenarios and the other using long medical cases. It was found that searching for medical information on the Web is becoming popular and important these days. However, medical search has its own unique requirements that are not well handled by existing medical Web search engines. They presented iMed, the first intelligent medical Web search engine that extensively uses domain-specific medical knowledge and questionnaire to facilitate ordinary Internet users to search for medical information.

iMed uses several key techniques to improve its usability and the quality of search results. First, since ordinary Internet users often have difficulty in clearly describing their situations due to lack of medical background, iMed uses a questionnaire-based query interface to guide searchers to provide the most important information about their situations. Second, iMed uses medical knowledge to automatically form multiple queries from a searcher's answers to the questions. Using these queries to perform search can significantly improve the quality of search results. Third, iMed simultaneously returns diversified search results for the multiple queries. This greatly increases the probability of finding useful information. Lastly, iMed suggests diversified, related medical phrases for the multiple queries concurrently. These medical phrases are extracted from the MeSH ontology and can help searchers quickly digest search results and refine their queries. We evaluated iMed under a wide range of medical scenarios.

iMed uses a questionnaire-based query interface to guide searchers to provide the most important information about their situations. iMed requires no special user training, forms queries automatically, returns diversified search results, and suggests related medical phrases. These features are very attractive to the majority of Internet users who have little medical background. Our experiments with a wide range of medical scenarios demonstrate that iMed greatly improves user satisfaction by performing medical search effectively and efficiently.

In the UK, Armstrong, et al. (2001) surveyed 599 undergraduate and postgraduate students as part of a nationwide study of the use of different electronic information systems (EIS) by students, academics and library staff of 25 universities in the UK, and found that students concentrated on only a limited array of electronic information systems, particularly web information systems, and that search strategies used by the students were mostly ad hoc. The three most regularly used systems for postgraduate students were search engines, email and OPACs; whereas for the undergraduates, the rank order were email, OPAC and search engines. The study also found that postgraduate students used the systems mostly for assignments (mentioned by 55% of the respondents), background research (54%), job search (35%), planning (29%) and presentation (22%), whereas the undergraduate students used the systems mostly for their thesis (23%), background research and projects (17%) and assignments (14%) (Armstrong et al., 2001).

In a study in New York, the US, although there are variations in search engine use among the faculty, graduate and undergraduate students surveyed, there is convergence in means of overall satisfaction with the outcomes of their searches and trust in search engines in supporting their studies and research. The paper concludes with a discussion of the implications of the findings for future search engine research and information practitioners (Oya, 2009).

A study in Punjab, Pakistan was conducted having title 'Web search behavior of university students: a case study at University of the Punjab which found the following findings. The students were asked to mention the period, since they had been using the Web. The responses varied from up to one year to eight years. The analysis shows that 34 students had up to one year web searching experience, while 47 had more than five years experience. Majority of the students' web using experience rests in the period of 2 to 5 years. The analysis reveals that majority of the students (119) searched the Web at their homes. Fifty (25%) students searched the Web at university while only one student has mentioned that he used the Web at his office. Thirty (15%) students searched it both at home and university. On question, how often they used the Web, the results reveal that frequency of web searching is good enough among students as 62 (31%) students used it once a day, 27 (13.5%) used it twice a day, whereas 46 (23%) used it more than twice a day. This means that more than 65 percent students used it regularly. Students were

asked whether they buy web related books or magazines. Only 23 (11.5%) provided positive response as they buy web related material whereas 177 (88.5%) provided negative response.

Results show that popularity of search engines among students correspond to the global ratings. Google was the most favorite search engine followed by Yahoo as 97% respondents declare Google and 72% mentioned Yahoo all the time favorite. Others include MSN and Alta Vista. Bashir, Mahmood and Shafique (2008) also reported the same type of rating trend among PU students. The results on features that attract and appeal them reveal that the features most liked by students were ease in use (144, 72%), relevant search results (120, 60%), reliability (113, 56%) and speed (107, (53.5%) (Mahmood, 2009).

On different levels of sophistication when performing web searching task, the analysis reveals that students frequently used basic search features (Mean=3.86). However, the students used advance search to moderate extent (Mean=3.11) whereas little trend of browsing web directory has been noticed. Query formulation, number of queries, terms used in query are essential part of successful information retrieval and indicates the searching behaviour of different people varying in their levels of expertise, experience in using computers, the Web, and search engines. To explore this aspect, students were asked if they make use of more than one query. The respondents provided data demonstrates that students frequently made use of more than one query (Mean=3.43). On browsing hits, different studies of the use of web found that almost all users look at the first page of results only. Most users are satisfied that these initial ten or so results are good enough to answer their information need (Craven & Griffiths, 2002; Sullivan, 1998, 2002). Again the results of this study correspond to global trends as most of the students (112, 56%) generally browsed through first ten results. Fifty three (26.5%) students marked the second option (20 hits) (Mahmood, 2009).

The World Wide Web contains tremendous amount of information, however it should be admitted that the problem of discovering the relevant resources has become intense, as the quantity of its information grows, people's ability of finding relevant materials has decreased dramatically as Safari (2005) called it "a needle in the haystack." The students were asked whether they usually found the required information on the Web. The results state that to moderate extent they usually found the requiring information (Mean=3.74). They were also

inquired about their relevancy judging criteria. The responses demonstrate that students usually identified the relevancy by title (Mean=3.86) and highlighted words (Mean=3.46). Descriptions (Mean=3.35) and reading URLs (Mean=2.46) were little used. To identify the level of satisfaction about the information retrieved through the Web, a five point semantic differential scales was used. Descriptive statistics show that majority of the students were satisfied to moderate extent with the retrieved information (Mean=3.97, SD=0.826). The respondents were asked about their problems while searching the Web. To obtain the respondents' opinion five point Likert scale was used. Descriptive statistics of students' problems show that the problem of poor quality was little extent (Mean=3.43). However, students faced the difficulty in finding relevant information, problem of too much information and slow speed to moderate extent. The picture painted by the findings corresponds with global trends. Students use the Web for everything and especially for academic tasks, prefer particular favorite search engines, though the reasons they give for their preferences are common across almost all search engines. They usually perform basic search and satisfied with retrieved information (Mahmood, 2009).

In US, a study tested three meta-search engines with different user support tools that access by and large the same databases. Each meta-search engine provided user support in a different fashion. The main difference for the query formulation tools lies in how tailored the information was to the user queries, resulting in more or less effort required by the user. Different search engines also provide multiple or a single view of the results. The users' overall liking was the highest for the meta-search engine that customized the output of its support tools to their queries. Providing a good structure, even if there are many results, is especially important. This was reflected in the evaluation of the individual components (Leroya et al., 2006).

A study conducted in Pennsylvania University mentions that the Web and especially major Web search engines are essential tools in the quest to locate online information for many people. This paper reports results from research that examines characteristics and changes in Web searching from nine studies of five Web search engines based in the US and Europe. We compare interactions occurring between users and Web search engines from the perspectives of session length, query length, query complexity, and content viewed among the Web search engines. This study has shown the findings as (1) users are viewing fewer result pages, (2) searchers on US-based Web search engines use more query operators than searchers on European-based search

engines, (3) there are statistically significant differences in the use of Boolean operators and result pages viewed, and (4) one cannot necessarily apply results from studies of one particular Web search engine to another Web search engine. The wide spread use of Web search engines, employment of simple queries, and decreased viewing of result pages may have resulted from algorithmic enhancements by Web search engine companies (Jansen & Spink, 2005)).

In Greece, Emmanouel Garoufallou concluded librarians' familiarity with search engines and their views on the retrieved information in his research. The results indicated that participants were satisfied by the presentation, the visualization, the quality and value of results and they were very satisfied with the search engines' interfaces. Thus, most retrieved items were relevant and so the degree of precision was satisfactory. Users preferred mainly international search engines rather than Greek search engines. It was evident that most librarians were very satisfied with the performance of the search engines and felt that their queries had been answered successfully. A total of 16 librarians were asked to search for a specific topic using eight search engines; four international (google.com, altavista.com, yahoo.com, exalead.com) and four Greek (google.gr (searching only for Greek text), in.gr, robby.gr, find. gr). Eight questionnaires were completed by each participant; one for every search engine. A total of 128 initial searches were performed by the librarians, followed by 86 further searches with changed search terms. The librarians recorded their experiences in retrieving information and evaluated the first 20 results according to the criteria of precision, relevancy of the retrieved records and the way the results were displayed by each search tool. The purpose of the study was to evaluate as a means of improving their performance. This research attempts to record Greek librarians' views on search engines: their performance and characteristics (Garoufallou, 2012)).

Centre for Research in Library and Information Management of Manchester Metropolitan University in United Kingdom has studied search engine use 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 use Google as their first port of call when locating information, with the university library catalogue used by 10 percent of the sample. Results of students' perceptions of ease of use, success, time taken to search, and reasons for stopping a search are also presented. As part of its commitment to developing the use

of electronic resources and infrastructures, including the Internet, as an educational resource, the United Kingdom has expended considerable funds to facilitate the convergence of new learning environments with digital library services and to develop a coherent Information Environment (IE) to support higher education (Ingram & Grout, 2002).¹ The resulting IE is both an enabling infrastructure, designed to facilitate the interoperability of heterogeneous services, and an impressive collection of online resources. While it continues to expand in size, scope, and complexity, formative evaluation has been a key part of the IE. In recent years, a number of government-sponsored projects have sought to investigate and profile the way students use electronic information services within higher and further education. This article focuses on student Web searching behavior and reports on some of the related studies conducted at the Centre for Research in Library & Information Management (CERLIM) at the Manchester Metropolitan University and at the Centre for Studies in Advanced Learning Technologies (CSALT) at Lancaster University. The results of these studies are significant not only to the IE but also to other subject portal projects and to online library research in general. (Jillian, Griffiths & Brophy, 2005)).

Students' Use of Search Engines Dominates Their Information-Seeking Strategy Students were asked to find information on fifteen set tasks, designed to be typical of information seeking in an academic environment, and to complete a questionnaire after each task. Every time they started a new task we asked them where they went first to try to find relevant information. The following presents the most frequently cited starting points as found in the first EDNER study. 45 percent of students used Google as their first port of call when locating information. The second most highly used starting point was the university OPAC, used by 10 percent of the sample. Next comes Yahoo, used by 9 percent of the students as the first source they tried. Lycos was used first by 6 percent. AltaVista, Ask Jeeves, and BUBL were all used as a first resource by 4 percent (each) of the sample of students. (Jillian, Griffiths & Brophy, 2005)).

Results from the EDNER+ study found that 22 out of 38 participants use an SE every day, 2 use an SE three to six times a week, 9 use an SE once or twice a week, 2 use an SE every other week and 3 use an SE once or twice a month. Levels of use of the library OPAC recorded by the EDNER+ study showed that 4 out of 38 participants had never used the library OPAC, 4 only

use it occasionally, 10 use it once or twice a month, 3 use it every other week, 10 use it once or twice a week, 1 uses it 3 to 6 times a week, 5 use it every day and one participant failed to report his/her level of use. Bibliographic database use was recorded as follows. 21 out of 38 participants never use bibliographic databases, 3 use them occasionally, 6 use them once or twice a month, 3 use them every other week, 4 use them once or twice a week and 1 student reported that he/she uses them three to six times a week. Of the students who do use bibliographic databases, 3 stated that they use Web of Science, 3 stated that they use Emerald, and 2 listed FAME. All other bibliographic databases were only listed by one participant each: these included SOSIG, Ingenta, Butterworths, Lexis Nexis, and Questia Social Science Library (Jillian, Griffiths & Brophy, 2005)).

Perceptions of Use, Success, and Why Students Stop Searching When participants were asked how easy it was to locate information, the following responses were recorded. 50 percent found it easy to locate the required information, 35 percent found it difficult and 15 percent had no view either way. Students were also asked why they stopped trying to locate information, with the following reasons given. Found information = 70 percent, Unable to find Web site within time allowed = 15 percent, Could not find a Web site and gave up = 12 percent, and Technical problems affected search = 3 percent. These results raise a number of important and interesting issues. Students prefer to locate information or resources via a search engine above all other options, and Google is the search engine of choice. Students' use of academic resources is low. Students find it difficult to locate information and resources. Students may trade quality of results for effort and time spent searching. Students' use of SEs now influences their perception and expectations of other electronic resources (Jillian, Griffiths & Brophy, 2005)).

Another study carried out in Texas, USA. This study assessed student use of and satisfaction with the WebFeat federated search tool, which was implemented by the library at Sam Houston State University. Students voluntarily responded to an electronic survey, providing feedback on how often they conducted class research using the federated search tool, individual databases, and online search engines and how well each search tool satisfied their class research needs. Federated search systems—alternatively called metasearch systems—aim to search a collection of databases from one interface and present one set of results, thereby reducing the amount of

time and energy that a researcher must invest in learning and using individual database interfaces. Although federated search systems are, conceptually, an ideal way to simplify the search process, in practice they often suffer from certain weaknesses, including slowness, fewer advanced search refinements, and poor integration of results from multiple sources. Many problems stem primarily from a lack of consistency between database systems. However, despite such common weaknesses, federated search systems can provide a relatively quick and simple mechanism for conducting a broad search of multiple resources in one step (Korah & Cassidy, 2009)).

The librarians at SHSU gathered data via an electronic survey: An e-mail invitation to participate was distributed to a random sample of university students, faculty, and staff. The university's Office of Institutional Research supplied the population sample using the enrollment lists for the fall 2007 semester. The sample included 1,008 students from a list of enrolled freshmen; 3,026 students from a combined list of enrolled sophomores, juniors, and seniors; and 1,029 students from a combined list of enrolled masters and PhD students. Survey participation was not mandatory. A drawing for several prizes—including an Apple iPod Shuffle as the grand prize—was provided as an incentive to promote survey participation. The original survey invitation was distributed on March 20, 2008, with a reminder after two weeks and closure at the end of a month. A total of 475 student survey responses were analyzed. The survey contained a maximum of twenty-seven questions; however, the electronic format allowed “skip logic” to be used, whereby certain questions were presented or skipped on the basis of responses to previous questions. Therefore a given user might be asked to complete anywhere from nine to twenty-seven questions, depending on his or her class level, experience, etc. A student who had used all the different search tools referenced in the survey would probably be presented with the maximum number of questions, whereas a faculty or staff member who had not used the referenced tools would probably be presented with the minimum number of questions (Korah & Cassidy, 2009)).

The survey collected demographic information and then explored the respondent's experience using E-Z Search, individual electronic databases (e.g., JSTOR, EBSCO's Academic Search Complete, or any of the approximately 180 databases to which SHSU subscribed at the time), the library's online catalog, and Internet search engines. The authors also investigated comparative

satisfaction levels and preferences between these various search tools. Personal information for the prize drawing could be entered, but was not required for survey submission. A copy of the survey questions can be found online at http://library.shsu.edu/libfac/EZSearch_Survey.pdf. Red asterisks indicate questions where an answer was required; bracketed notes preceding a question indicate any “skip logic” that determined when that question was shown or not shown to the respondent. The study found almost 75 percent of students stated that they use E-Z Search in completing class assignments at least some of the time. At the undergraduate level, freshman, sophomores, and juniors relied on E-Z Search approximately 80 to 82 percent of the time for coursework. Use of E-Z Search by seniors was lower, approximately 65 percent. Seventy percent of masters students reported using E-Z Search at least sometimes, while 32 percent of these students used it often or always. Doctoral candidates also were prominent users of E-Z search, with 62 percent reporting use for academic initiatives (Korah & Cassidy, 2009)).

Retrieving sufficient relevant information online is difficult for many people because they use too few keywords to search and search engines do not provide many support tools. To further complicate the search, users often ignore support tools when available. Our goal is to evaluate in a realistic setting when users use support tools and how they perceive these tools. We compared three medical search engines with support tools that require more or less effort from users to form a query and evaluate results. We carried out an end user study with 23 users who were asked to find information, i.e., subtopics and supporting abstracts, for a given theme. We used a balanced within-subjects design and report on the effectiveness, efficiency and usability of the support tools from the end user perspective. We found significant differences in efficiency but did not find significant differences in effectiveness between the three search engines. Dynamic user support tools requiring less effort led to higher efficiency. Fewer searches were needed and more documents were found per search when both query reformulation and result review tools dynamically adjust to the user query. The query reformulation tool that provided a long list of keywords, dynamically adjusted to the user query, was used most often and led to more subtopics. As hypothesized, the dynamic result review tools were used more often and led to more subtopics than static ones. These results were corroborated by the usability questionnaires, which showed that support tools that dynamically optimize output were preferred (Gondy Leroy et al., 2006).

3. Chapter

FOCUS OF THE STUDY

1 .What is search engine?

Search engines are a program that search documents for specified keywords and returns a list of the documents where the keywords were found. A search engine is really a general class of programs; however, the term is often used to specifically describe systems like Google, Bing and Yahoo! Search that enable users to search for documents on the World Wide Web.

A web search engine is software code that is designed to search for information on the World Wide Web. The search results are generally presented in a line of results often referred to as search engine results pages (SERP's). The information may be a specialist in web pages, images, information and other types of files. Some search engines also mine data available in databases or open directories.

The usefulness of a search engine depends on the relevance of the result set it gives back. While there may be millions of web pages that include a particular word or phrase, some pages may be more relevant, popular, or authoritative than others. Most search engines employ methods to rank the results to provide the "best" results first. How a search engine decides which pages are the best matches, and what order the results should be shown in, varies widely from one engine to another. The methods also change over time as Internet usage changes and new techniques evolve. There are two main types of search engine that have evolved: one is a system of predefined and hierarchically ordered keywords that humans have programmed extensively. The other is a system that generates an "inverted index" by analyzing texts it locates. This first form relies much more heavily on the computer itself to do the bulk of the work.

General search

Generally, when a phrase is typed into a basic search bar, the engine will return links to web pages that contain all of the words in the phrase you searched but not in any particular order. The engine might display pages with the exact phrase first, but not always; web pages that contain most of the phrase but have a lot of traffic might trump web pages with the exact phrase. If it is important to find web pages that only contain the exact search phrase.

Basic searches will yield search results with websites in different languages. These are not very useful if user does not know the languages, and sometimes the computer's browser might not be able to display them. Sometimes search engines can do a decent job of translating a page from a different language, but often it's not even worth trying. Advanced searches can be used to limit the search results to pages written in the preferred language.

Advance search

Advanced searches allow specifying words that you do not want to be included in the search results. This is particularly handy in instances where you are searching for information about a topic about which a popular movie or book has been created. If you want the search engine to return web sites about the topic but not about the movie or book, you can use an advanced search to exclude the word "movie" or "book," or even the name of the movie's director or book's author.

The advanced search allows combining several search terms in order to tailor the search results to suit one's needs. One can choose to search all or any of the terms specified and can even choose terms to exclude from the search.

How does it work?

Web search engines work by storing information about many web pages, which they retrieve from the HTML itself. These pages are retrieved by a Web crawler (sometimes also known as a spider) an automated Web browser which follows every link on the site. Exclusions can be made by the use of robots.txt. The contents of each page are then analysed to determine how it should be indexed (for example, words can be extracted from the titles, page content, headings, or special fields called meta tags).

Data about web pages are stored in an index database for use in later queries. A query can be a single word. The index helps find information as quickly as possible. Some search engines, such as Google, store all or part of the source page (referred to as a cache) as well as information about the web pages, whereas others, such as AltaVista, store every word of every page they find. This cached page always holds the actual search text since it is the one that was actually indexed, so it can be very useful when the content of the current page has been updated and the search terms are no longer in it. This problem might be considered a mild form of linkrot, and Google's handling of it increases usability by satisfying user expectations that the search terms will be on the returned webpage. This satisfies the principle of least astonishment, since the user normally expects that the search terms will be on the returned pages. Increased search relevance makes these cached pages very useful, even beyond the fact that they may contain data that may no longer be available elsewhere.

The Institute of Medicine (IOM) was established in 1972 under Tribhuvan University with the mandate and the responsibility of training all the categories of health manpower needed in the country within the first decade of its establishment it developed a total of 17 campuses scattered over the country where, constituent campus are seven in number and affiliated campuses are ten in number.

Bir Hospital, the nation's oldest medical institute established in the year 1889 AD, has been developed into the National Academy of Medical Sciences (NAMS). It has been contributing much towards the delivery of health care in the country. It has currently 400 beds. The new Trauma and Emergency Block, which will be completely developed within a few months, will add further 200 beds. Beside the general medical service, Bir Hospital provides services in highly specialised areas like Neurology, Neuro-Surgery, Cardiology, Cardio-thoracic and Vascular Surgery, Burn and Plastic Surgery, Nephrology, Urology, G.I. surgery, Gastroenterology, Hepatology (separate unit) and Radiotherapy. The Bir Hospital, thus, provides services to the community in most medical and surgical specialty and super-specialties through emergency, outpatient and inpatient facilities. Majority of outdoor examination service and indoor beds in Bir Hospital are free. This is the only tertiary referral center in the country which provides such free service.

In Course of Development, Bir Hospital became NAMS on Mangsir 12 2059BS. Its basic

objectives are to produce trained manpower through higher education and research in the field of medical sciences, and to make available high quality health services to the general people. NAMS has the program of Post Graduate medical Education of basic specialist training of MD/MS and higher specialist training of FNAMS. It has also started Bachelor in Nursing courses in addition to PCL.

Bir Hospital is the embodied hospital of NAMS according to the act NAMS has 11 affiliated hospitals. They are:

BP koirala Memorial Cancer Hospital : bharatpur Chitwan

Kanti Children's Hospital: Maharajgunj, kathmandu

Mental Hospital: Lagankhel, Lalitpur

National Public Health Laboratory: Teku, Kathmandu

Nepal Eye Hospital: Tripureshwor, Kathmandu

Maternity Hospital: Thapathali

Patan Hospital: Lagankhel, Lalitpur

Shree Birendra Army Hospital: Chauni, Kathmandu

Sahid Gangalal National Heart centre: Bansbari

Shree Rana Ambika Shah Eye Hospital: Bhairahawa

Tilganga Eye Centre: Gaushala/Thapathali Kathmandu

4. Chapter

METHODOLOGY

The purpose of this study was to investigate the use of search engines in research project, learning activities, students' skill in the use of Internet search engine. Variables related to these aspects have been examined.

4.1. Research Design

Descriptive cross-sectional study was the research design adopted to cope the objective of the research.

4.2. Population

The population frame for this study comprised of only those post-graduate students of medical institutions involved in research work. Purposive sampling was used in this study i.e. those medical students willing to answer the questions were chosen as samples. Two medical collages i. e., Institute of Medicine, Tribhuvan University Teaching Hospital Library (IOM/TUTH) and National Academy of Medical Sciences (NAMS), Bir Hospital, Kathmandu were chosen as study institutions.

4.3. Sampling Procedure

The medical institutions and respondents are selected by adopting purposive sampling techniques. Data were collected through semi-structured questionnaire. The target population was comprised of postgraduate students of Institute of Medicine, Tribhuvan University Teaching Hospital Library (IOM/TUTH) and National Academy of Medical Sciences (NAMS), Bir Hospital of Kathmandu. The actual sample of students for the study was excluded all those who had not yet been using search engines on the Internet. This was achieved during the questionnaire administration by determining whether an approached student had been using any search engines.

4.4. Data Collection Procedure

Data were collected through the semi-structured questionnaire with the postgraduate students of medical institutions of Kathmandu Valley. The respondents were offered the questionnaire to fill up the questionnaire. The data were collected from the postgraduate medical students who visited the corresponding library within the last two months.

4.5. Data Analysis Procedure

The responses of the respondents were entered in SPSS 17 version. The fed data were edited, coded, tabulated and analyzed using descriptive statistical methods such as frequency distribution and percentage.

5. Chapter

ANALYSIS AND PRESENTATION

This section mainly deals with the analysis and interpretation of primary data taken from the postgraduate medical students visited two libraries of Institute of Medicine (IOM), TU and National Academy of Medical Sciences (NAMS), Bir hospital in Kathmandu valley. It is all about Internet search engine usage behaviour and experiences among research postgraduate medical students. Collected data are analysed and presented here with the help of tables in frequency, diagrams and percentage. This study deals with the following major aspects of Internet search engine behaviour and experiences.

- 1) Socio-demographic characteristics of the postgraduate medical students
- 2) Internet search engine related usage behaviours and experiences.

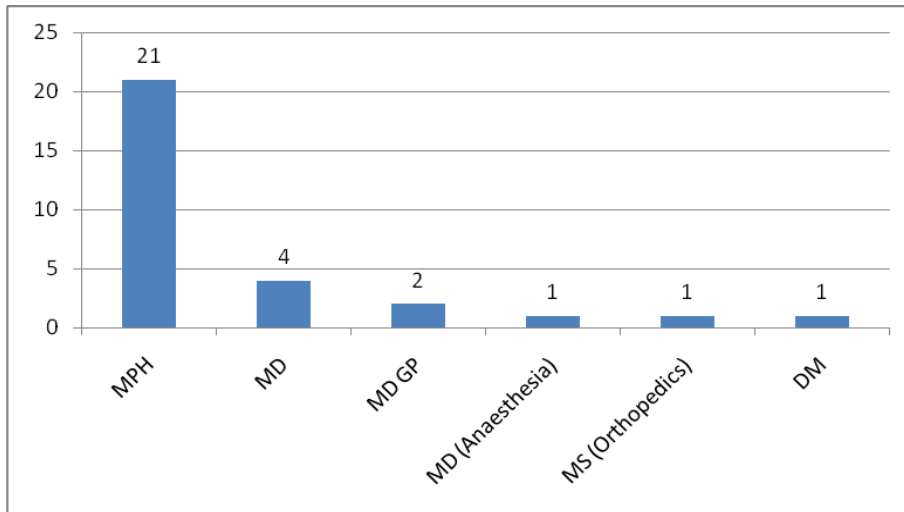
5.1 Socio-demographic characteristics of the postgraduate medical students

The ages of the respondents were grouped into three categories as per the table below. There were 16 (54%) of more than 29 years age, 13 (43%) in the age group 25-29 years and 1 (3%) respondents were in the age group 20-24 years (Table 1).

Table 1: Age group distribution of the respondents (n=30)

Respondents' Age Group	Frequency	Percent
20-24 years	1	3
25-29 years	13	43
> 29 years	16	54
Total	30	100

Figure 1: Number of respondents from different specialisation group (n=30)



3.2 Internet search engine related usage behaviours and experiences

5.2.1: Duration of experience in Internet use

There were 25 (83%) respondents using search engine for more than 25 months and the number of internet users from 13 to 24 months was 5 (17%). There were no other answers except these two (Table 2).

Table 2: Respondents' experience on the duration of search engine use (n=30)

Duration of experience	Frequency	Percent
13-24 months	5	17
More than 24 months	25	83
Total	30	100

5.2.2: Learn to use search engine

There were 11 (37%) respondents learnt by Trial and error, 10 (34%) respondents learnt with their friends, 7 (23%) respondents learnt at a computer school and 2 (6%) respondents learnt by other means (Table 3).

Table: 3 Respondents learnt to use search engine (n=30)

Learn to use search engine	Frequency	Percent
Taught by friends	10	34
At a computer school	7	23
Trial and error	11	37
Others	2	6
Total	30	100

5.2.3: Preferred search engine

Respondents were asked about their preferred search engines while searching materials from the web in their works. Out of all 25 (84%) preferred Google as their main search engine. Yahoo users were 4 (14%) and Bing user was 1 (3%) [Table 4].

Table 4: Preferred search engines of respondents reflected by the survey (n=30)

Name of preferred search engines	Frequency	Percent
Google	25	84
Yahoo	4	13
Bing	1	3
Total	30	100

5.2.4: Preferred the selected search engine

Respondents used search engine by 13 (43%) due to quality of items, being users friendly by 8 (27%), feeling speed of access by 8 (27%) and used just of habit by 1(3%) (Table 5).

Table 5: Respondents preferred the selected search engine by different characteristics (n=30)

Preferred to select search engine	Frequency	Percent
Quality of items	13	43
Users friendly	8	27
Speed of access	8	27
Just out of habit	1	3
Total	30	100

5.2.5: Use of search engine together at a time

There were 10 (33%) respondents who used 3 search engines together at a time, 8 (27%) respondents used one search engine at time, 6 (20%) respondents used two search engines at once and 6 (20%) used more than three search engines at once (Table 6).

Table 6: Number of search engines used by respondents together at a time (n=30)

Search engine together at a time	Frequency	Percent
One	8	27
Two	6	20
Three	10	33
Three	6	20
Total	30	100

5.2.6: Types of search

Out of 30 respondents, 18 (60%) used advanced search, 11 (37%) respondents used basic search and 1 (3%) used web dictionary to search their needful materials (Table 7).

Table 7: Types of search by the respondents during their work (n=30)

Search performed	Frequency	Percent
Basic search	11	37
Advance search	18	60
Web dictionary	1	3
Total	30	100

5.2.7: Problems encountered in using search engine

In problems, 12 (40%) respondents encountered problem of coping with too much information, 8 (27%) users encountered finding irrelevant information, 4 (13%) respondents encountered the problem in selecting search words, 2 (7%) respondents encountered inactive dead links and 4 (13%) didn't find any problems in search engine (Table 8).

Table 8: Problems encountered by respondents in using search engine (n=30)

Encounter problem	Frequency	Percent
Coping with too much information	12	40
Selecting search words	4	13
Finding irrelevant information	8	27
Inactive dead links	2	7
No problems	4	13
Total	30	100

5.2.8: Times spend in Internet search engine

Out of total, 14 (47%) respondents spent 3 to 4 hours per day, 12 (40%) respondents 1 to 2 hours per day by, 2 (7%) respondents spent 5 to 6 hours per day, 1 (3%) spent more than six hours per day and 2 (3%) spent less than 1 hour per day (Table 9).

Table 9: Respondents spent their time in search engine during academic works (n=30)

Time spend in search engine	Frequency	Percent
One to two hour per day	12	40
Three to four hour per day	14	47
Five to six hour per day	2	7
More than six hour per day	1	3
Less than one hour	1	3
Total	30	100

5.2.9: Reasons for using particular search engine

According to reasons for using particular search engine, 15 (50%) users searched engine to learn about a subject, 12 (40%) respondents used for doing project or research work, 2 (7%) used for doing course assignment and 1 (3%) used for other purpose (Table 10).

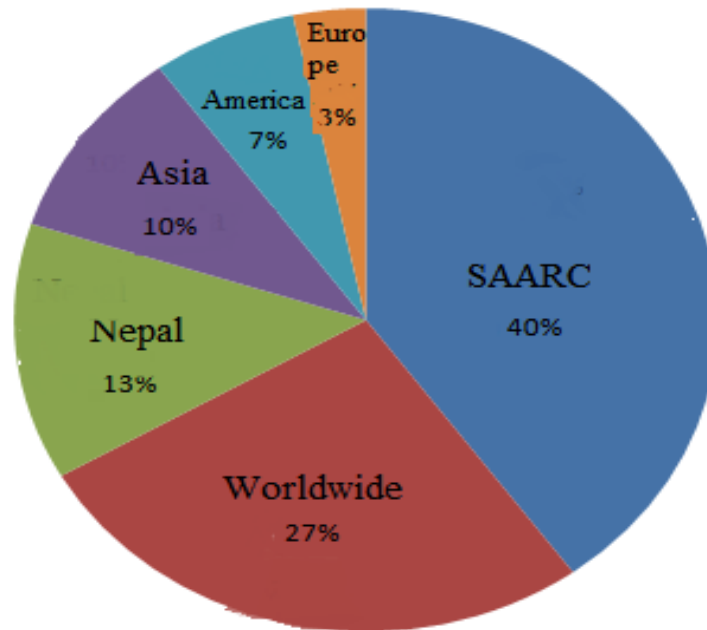
Table 10: Reasons of using search engines by postgraduate medical students (n=30)

Usage of search engine	Frequency	Percent
Doing project/research work	12	40
Doing course assignment	2	7
Learning about a subject	15	50
Others	1	3
Total	30	100

5.2.10: Regions of search engine

Respondents found their materials from SAARC region were 12 (40%), while 8 (27%) searched materials from worldwide search. Four (13%) preferred Nepal as region of search, 3 (10%) preferred Asia, 2 (7%) preferred America and 1 (3%) chosen Europe to search materials (Figure 2).

Figure 2: Respondent's preferred region of web search while searching materials (n=30)



5.2.11: Location of web use

Out of total respondents, 23 (77%) used Internet search engine in their home and 7 (23%) respondents used web at university library. No respondents found to be used other locations (Table 11).

Table 11: Location of web used by the respondents (n=30)

Location of use	Frequency	Percent
Home	23	77
University library	7	23
Total	30	100

5.2.12: Purchase of web related material

There were 29 (97%) respondents who didn't purchase web related materials and only 1 (3%) respondent purchased web related materials from the authority of websites or author (Table 12).

Table 12: Respondents' web related material purchasing behaviour (n=30)

Materials purchasing status	Frequency	Percent
Yes	1	3
No	29	97
Total	30	100

5.2.13: Number of hits

There were made 5 hits by 19 (63%), more than 15 hits by 6 (20%) and 10 hits by 5 (17%) respondents during using search engines in their academic works (Table 13).

Table 13: Hits made by respondents during one issue of their academic work (n=30)

Number of hits	Frequency	Percent
5 hits	19	63
10 hits	5	17
More than 15 hits	6	20
Total	30	100

5.2.14: Finding status of required information

Respondent 18 (60%) found required information on web, 10 (33%) respondent found information moderately and 2 (7%) respondent found few information on the web (Table 14).

Table 14: Status of required information found on web by the respondents (n=30)

Require information	Frequency	Percent
Few	2	7
Moderately	10	33
Maximum	18	60
Total	30	100

5.2.15 Relevancy judging criteria

Out of 30 respondents 14 (47%) judged relevancy of their needed information by title, 8 (27%) by highlighted words, 7 (23%) description and 1 (3%) by reading the URLs (Table 15).

Table 15: Relevancy judging criteria on the web search among respondents (n=30)

Judging criteria	Frequency	Percent
Title	14	47
Highlighted words	8	27
Description	7	23
Reading URLs	1	3
Total	30	100

5.2.16: Use of supporting tools

Out of all respondents 16 (53%) use supporting tools while searching materials whereas 14 (47%) did not use supporting tools.

5.2.17 Knowledge of medical database

Knowledge of medical databases as per the research finding, respondents using HINARI database were 11 (37%), PUBMed database by 4 (13%) and HINARI & PUBMed database simultaneously by 3 (10%). There were 12 (40%) respondents not using either of the databases (Table 16).

Table 16: Knowing status of medical databases among the respondents (n=30)

Medical databases	Frequency	Percentage
HINARI	11	37
PubMed	4	13
HINRI and PubMed	3	10
Not knowing medical databases	12	40
Total	30	100

6. Chapter

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The Internet and World Wide Web are incredibly popular at homes and schools. Though Web application and services are available today, the primary use of the Internet, other than e-mail, is for information retrieval. Internet search engine usage is necessary for research and academic purposes. In Nepal, its facility is limited in University and colleges. Still, research students are using Internet during their academic works to retrieve information. Internet use should be increased qualitatively and quantitatively to upgrade the research and academic works. Internet search engine usage behaviours of present day students are valuable to improve the situation. For this reason, this study was carried out among postgraduate medical students of two medical institutions of Kathmandu valley, Nepal.

Studies of the use of Internet facilities by students and teachers to support teaching, learning and research in post-graduate medical institutions are presently few. In-depth studies of the use of specific Internet resources such as search engines are rare in Nepalese context. The problem towards which this study is directed is to collect and analyse empirical information on the use of Internet resources by postgraduate medical students in the medical institutions of Nepal and specifically, the use of search engines by postgraduate students of the medical institutions for finding sources of medical related-specific information on the Internet.

The general objective of the study was to investigate the Internet search engine usage behaviour and experiences among research postgraduate students of medical institutions.

This was a descriptive cross-sectional study. The data were collected from the purposively selected postgraduate medical students of two medical collages namely Institute of Medicine, Tribhuvan University Teaching Hospital Library (IOM/TUTH) and National Academy of

Medical Sciences (NAMS) of Kathmandu. The data were collected from the postgraduate medical students who visited the corresponding library within the last two months.

Among responded students 25 (84%) preferred Google as their main search engine followed by Yahoo 4 (14%) and Bing 1 (3%). Google search engine has been using by over 85% as shown by the other studies revealed by literature review.

In problems, 12 (40%) respondents encountered problem of coping with too much information followed by finding irrelevant information 8 (27%). This suggests correctly specify the search topic or terms.

Respondents found their materials from SAARC region were 12 (40%), while 8 (27%) searched materials from worldwide search. Four (13%) preferred Nepal as region of search, 3 (10%) preferred Asia, 2 (7%) preferred America and 1 (3%) chosen Europe to search materials.

Out of total, 23 (77%) used Internet search engine in their home and 7 (23%) respondents used web at university library. It implies that still; libraries of medical colleges of Kathmandu are not feasible to use Internet for research works.

There were 29 (97%) respondents who didn't purchase web related materials and only 1 (3%) respondent purchased web related materials from the authority of websites or author. This indicates the low socio-economic status and currency restriction status of Nepal to purchase materials online.

Among all respondents, 14 (47%) judged relevancy of their needed information by title, 8 (27%) by highlighted words, 7 (23%) description and 1 (3%) by reading the URLs. This suggests that there is need of education of putting appropriate specific topic on the browser's search bar to retrieve useful information.

On knowledge of medical databases as per the research finding, 11 (37%) respondents were using HINARI, 4 (13%) used PUBMed and 3 (10%) used HINARI & PUBMed simultaneously. There were 12 (40%) respondents not using either of the medical databases in their academic

works. This implies that still significant number of postgraduate medical students is not using medical databases due to various reasons.

The huge gap between Librarian and student was found; hence to overcome this Librarian can help students in many ways to search information.

Conclusion

Internet search engine usage is necessary for research and academic purposes. In Nepal, its facility is limited in University and college. Still, research students are using Internet during their academic works to retrieve information. Internet use should be increased qualitatively and quantitatively to upgrade the research and academic works. The general objective of this cross-sectional study was to investigate the Internet search engine usage behaviour and experiences among research postgraduate students of medical institutions. The findings of research have revealed some useful findings about the Internet search engine usage behaviours and experiences.

Findings incorporating are problems, 12 (40%) respondents encountered problem of coping with too much information followed by finding irrelevant information 8 (27%). This suggests correctly specify the search topic or terms. There were 29 (97%) respondents who didn't purchase web related materials and only 1 (3%) respondent purchased web related materials from the authority of websites or author. This indicates the low socio-economic status and currency restriction status of Nepal to purchase materials online. On knowledge of medical databases as per the research finding, 11 (37%) respondents were using HINARI, 4 (13%) used PUBMed and 3 (10%) used HINARI & PUBMed simultaneously. There were 12 (40%) respondents not using either of the medical databases in their academic works. This implies that still significant number of postgraduate medical students is not using medical databases due to various reasons.

Recommendation

Recommendations are made based on the findings of this study are as follows:

- Librarians should run the programs that bring awareness to the students about the medical search engines.
 - Internet searching education should be imparted to postgraduate medical students about correctly specifying the search topic or terms and other relevant procedures.
 - Librarian should make effort to strengthen internet facility in library to make it user friendly, equipped with other associated facilities.
 - Convertible restriction status of Nepal to purchase materials online. This should be addressed by government to make easier purchasing process with the consultation of relevant stakeholders.
 - Librarians should provide orientation before master's research work of student.
 - They should run orientation program for research doing student to let them know where to find appropriate information for specific research.
- Librarians should provide knowledge about different search engine and medical databases.

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APPENDIX I: QUESTIONNAIRE

Interview Schedule for Internet Search Engine Usage among Postgraduate Medical Students of Medical Institutions in Kathmandu Valley

Department of Library and Information Science
Tribhuvan University

Name of researcher: Ira Ghimire

Interview date: Start time: Finish time: Total duration of time:

A. Socio-demographic characteristics

1. Name:
2. Age:
3. Sex:
4. Religion:
5. Caste:
6. Permanent Address:
7. College/Institution's Name:
8. Specialisation:

B. Internet Search Engine related characteristics

Tick correct one answer. In case of others write specified answer.

9. How long experience do you have on Internet use?
 - a. Less than 6 months
 - b. 7-12 months
 - c. 13 – 24 months
 - d. More than 24 months
10. How did you learn to use search engine?
 - a. Taught by a friend

- b. At a computer school
 - c. Trial and error
 - d. Read a book
 - e. Others (Specify.....)
11. Which search engine do you prefer in your research work?
- a. Google
 - b. Yahoo!
 - c. Bing
 - d. AltaVista
 - e. MSN
 - f. Others (Specify.....)
12. What is the reason that you preferred the selected search engine?
- a. Quality of items
 - b. User friendly
 - c. Speed of access
 - d. Just out of habit
 - e. Others (Specify.....)
13. How many search engines do you use together at a time?
- a. One
 - b. Two
 - c. Three
 - d. More than three
14. What type of search do you perform?
- a. Basic search
 - b. Advanced search
 - c. Web dictionary
 - d. Query
15. What are the problems do you encounter in using search engines?
- a. Coping with too much information
 - b. Selecting search words
 - c. Finding irrelevant information

- d. Inactive/dead links
 - e. No problems
16. How much time do you spend in search engine during your postgraduate programme?
- a. One to two hour per day
 - b. Three to four hours per day
 - c. Five to six hours per day
 - d. More than six hours per day
17. Why did you use search engines?
- a. Doing project/research work
 - b. Writing term paper
 - c. Doing course assignment
 - d. Learning more about a subject
 - e. Others (Specify.....)
18. Which region do you prefer for searching information?
- a. Nepal
 - b. SAARC region
 - c. Asia
 - d. Europe
 - e. America
 - f. Worldwide
19. Where is the location of your web use?
- a. Home
 - b. University library
 - c. Cyber cafe
 - d. Others (Specify.....)
20. Do you purchase web related material for your research?
- a. Yes
 - b. No
21. How many browsing hits do you make for one issue of research activity?
- a. 5 hits
 - b. 10 hits

- c. 15 hits
 - d. More than 15 hits
22. Do you usually find the required information on the Web?
- a. Few
 - b. Moderately
 - c. Maximum
 - d. Not at all
23. What are your relevancy judging criteria on the web search?
- a. Title
 - b. Highlighted words
 - c. Descriptions
 - d. Reading URLs
24. Do you use support tools while searching materials?
- a. Yes
 - b. No
25. What are the specific medical databases that you know?

Thank you for precious time devoting in answering this questionnaire.

APPENDIX II: BIO-DATA

Name: Ira Ghimire
Sex: Female
Date of Birth: December 12, 1986
Address: Bharatpur Municipality – 8, Chitwan
Telephone No.: 056-524787 (R)
E-mail id.: ghimireira9@gmail.com
Education: SLC
+ 2 (English)
Bachelor of Arts (English)
Masters in Library and Information Science [MLISc (Ongoing)]