Unraveling the dilemma of the information search process
: The application of Wilson's model in a Ghanaian University setting

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ABSTRACT

The paper seeks to unravel the challenges students encounter when seeking for information with emphasis on the search process for effective information search activities. Survey data was collected from 190 postgraduate students in University of Ghana. The study revealed that not all the students adhered strictly to Wilson's 8-step information search process all the time and as a result one out of three of the students were never satisfied with their information searches. Satisfaction with search results was significantly tied to adherence to the search process (r=0.200, p<0.05), the person who conducted the search (χ^2=26.3, df=8, p<0.05) but not the level of use of the library system. The academic environment mostly influenced the information needs of the students and yet their search efforts were challenged mostly by constraints within the university environmental particularly inadequate technological infrastructure. The study concludes that the use of Wilson's information search process leads to satisfaction with search outputs. Recommendations have been made to enhance information search activities of students and information seekers in general.

Keywords

Information need, information search process, University of Ghana, Library systems, information

seeking behaviour, Wilsons's model.

Introduction

Information is very vital in the life of individual, organization and a nation as a whole. It plays a crucial role in decision making. It may be considered as a building block of knowledge. Students need information for academic and non- academic purposes. The need and the seeking of information may arise when the student realizes that he or she lacks the required knowledge to accomplish a task. Students for example need information to learn, write thesis, complete assignments, make presentations etc.   Marchionini (1995) noted that information seeking is a spontaneous and necessary activity for the survival of every individual. Information seeking

behaviour is the tenacity of seeking for information in order to satisfy some goal (Patitungkho and Deshpande, 2005).

Information seeking behaviour involve a lot of activities, including a set of actions that an individual takes to articulate his or her information needs, seek information, evaluate and choose information, and consequently utilize this information to satisfy his/her information needs (Majid and Kassim, 2000). It is imperative that these activities are well understood by information providers in order to meet the needs of users. In the process of seeking information, students may consult manual information sources such as a newspaper, textbooks or the Internet (Wilson, 2000). For most postgraduate students in University of Ghana, the first point of contact to seek information is the Internet, mostly using Google. This is not surprising as the frequency of use of the Internet has greatly increased (Abels, 2004). Majid and Kassim (2000), however, noted that this source may be expensive, complex or difficult for the student to obtain and use. Hence, the role of libraries become imperative in satisfying the information needs of students.

The University of Ghana Library System (UGLS) consists of the central library - Balme Library, one of Africa's most distinguished research libraries. It consists of 6 departments and 1 special library for the physically handicapped. The library's collections include more than 100 thousand books, 500 microfilms, CD's, tapes and impressive holdings of rare books, prints and archives. The library also offers access to extensive electronic resources and has an Online Public Access Catalogue (OPAC) christened UGcat which helps users to search and retrieve information resources. The Balme Library coordinates from the main Legon campus a large number of libraries attached to the various Schools, Institutes, Faculties, Departments and Halls of Residence of the University, most of which are autonomous. The Library is the nerve centre for academic work in the University. All academic related functions such as teaching, research and learning find their support-base in the library where all types of documents, are organised for easy access to members of the University community. In addition, the School of Graduate Studies has set up a computer laboratory e-resource center with Internet connection to complement information provision for postgraduate students. Currently, the central library has about 40 paid journal databases, 2 online journals, 12 free electronic journal databases and 2 trial electronic databases which are all accessible to students (Balme Library, University of Ghana, 2009).

The library system provides special training for graduate students on how to access information in electronic format such as CD-ROM, the Internet and online databases. This is to impart literature search skills to the students and also create awareness of the services of the University of Ghana Library System (Balme Library, University of Ghana, 2009). Therefore it is expected that postgraduate students especially will rely on the library system for their information needs. However, it appears most of them have not been using the library system for their information needs. This may be attributed to inadequate user orientation (Tiefel, 1995) and lack of

collaboration between the library and lecturers. The postgraduate students have repeatedly expressed dissatisfaction with their inability to conduct effective information searches. This may be due to the lack of or inadequate skills to carry out information searches. It appears that even though some of the students have knowledge in information searches, their approach or information search activities do not seem to follow any tried and tested process or model, as a result most of their searches are not effective and the students are unable to achieve the desired results.

Information needs and seeking behaviour is a well researched area. However, most of these studies have been conducted in the developed world and a few developing countries (Callinan, 2004; Jamali and Nicholas, 2008; Timmers and Glas, 2009; Mnubi-Mchombu and Mostert, 2011; Majid and Kassim, 2000; Fidzani, 1998). Only a few studies have been identified to have been conducted in Ghana (Badu, 1991; Alemna and Skouby, 2000; Sulemani and Katsekpor, 2007; Tackie and Adams, 2007; Nikoi, 2008). Even with these studies the focus was not on the application of information models and the emphasis was only on the information need and seeking behaviour and not the search process. It is in this regard that the context of information needs and information search process of postgraduate students of University of Ghana is being investigated.

The purpose of this study therefore is to:

   i.   ascertain the context of information needs of the postgraduate students
   ii.   determine the level of use of the information search process among   the postgraduate students
   iii. find which barriers affect postgraduate students information search process
   iv.   to make recommendations for enhancing effective information search skills of the postgraduate students.

This rest of the paper has been divided into four parts. The first part reviews literature on information needs and information seeking behaviour and a conceptual framework on information search process which was adopted for the study. Part two is the methodology used for the study. The third part focuses on data analysis and discussion of findings. The final part is the conclusion and recommendations

Literature Review

Information needs and information seeking behaviour is one the areas that scholars have researched. Yousefi and Yousefi (2007) studied information needs and information seeking behaviour of professionals at an Iranian company. Their findings indicate a distinct information needs and information seeking behaviour of those in the categories of Social Science and

Engineering. On the other hand, there are many similarities in information seeking behaviour of those in the categories of Social Science and Accounting and Trade. In addition, engineering group showed some resemblance in information needs and behaviour than in the other two groups.

Patitungkho and Deshpande (2005) investigated the Information Seeking Behaviour of Faculty Members of Rajabhat Universities in Bangkok. It was found that, forty one percent (41%) of faculty members consult a knowledgeable person in their field for their information needs. It was also realized that faculty members seek information when preparing for lectures. In addition it was found that most (57%) faculty members rely on textbooks for their information needs. The study also indicated that 42% of faculty members have been relying on electronic databases for their information needs Faculty members have also adopted the Internet trace materials from the library via Google.com. In an another study by Alemna and Skouby (2000) on the information needs and information-seeking behaviour of members of Ghana's legislature, it was reported that, most of the members of Parliament information needs arise when preparing for parliamentary debates, speeches and questions. In addition it was found that 81 % of Members of Parliament were aware of the services provided by the parliamentary library. However, they noticed that more than half of this number (68 per cent) was not satisfied with the library's services therefore leading to the fewer number (41%) of Members visiting the library for their information needs. Their findings also indicated that most Members of Parliament were aware of the Internet as a source of information but few could access it.

Fidzani's (1998) study on information needs and information-seeking behaviour of graduate students at the University of Botswana showed that journals, library books and textbooks are the most popular sources of information for course work and research. The conclusion was that, there is the need for awareness creation and use of resources and services available at the library. Majid and Kassim (2000) also reported from their study on the information-seeking behaviour of International Islamic University Malaysia Law Faculty Members that, the majority (72.9%) of the faculty members most of the time first consult their personal collections for their information needs and only 42.2% 'always' visited the International Islamic University Malaysia (IIUM) library to satisfy their information needs. The study also found Online Public Access Catalogue (OPAC) and CD-ROM as the most frequently used IT-based sources and facilities. Guest (1987) also conducted a similar study and noted that the majority (85%) of the respondents relied on their personal collection as a major source for information for teaching and research.

In addition, Sethi (1990) also explored information-seeking behaviour of social science faculty members in Indian universities. It was realized that indexing and abstracting sources, book reviews, conference proceedings, dissertations and theses, newspaper clippings and other non-book sources are the least used source by faculty members. On the contrary some scholars, found, non-

traditional literature such as unpublished conference and symposia papers, research proposals, policy guidelines, and project reports were equally popular among the scholars (Prasad, 1998).

Conceptual framework

Over the years, scholars have developed various models to study the information needs and information seeking behaviour of information users. Among them include Wilson (1981), Kuhlthau's (1991), Ellis's (1989 and 1993). For the purpose of the study Wilson's (1981) was adopted to study the information seeking process of postgraduate students of the University of Ghana. Wilson's (1981) information seeking behaviour model is premised on two main propositions: first, that information need is not a primary need, but a secondary need that evolves out of an individual's basic needs; and second, that in the effort to discover information to satisfy a need, the enquirer is likely to meet with barriers of different kinds (Wilson, 1999). Wilson mentioned these basic needs as; physiological, cognitive and affective. He also noted that the context of any one of these needs may be the person him- or herself, or the role demands of the person's work or life, or the environments (political, economic, technological, etc.) within which that life or work takes place (Wilson, 1999) (Figure 1).

Figure 1: Wilson's Information Search Model.
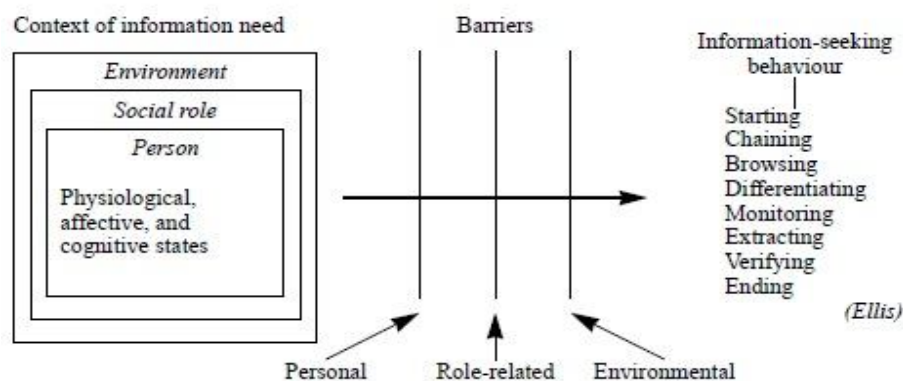
Source; Wilson (1999, pp.252)

The model points out those obstacles that hinder the search for information will arise out of the same set of contexts. These obstacles may be personal, role related and environmental. The model in line with Ellis (1989) suggests an information searching process which include; Starting, Chaining, Browsing Differentiating, Monitoring Extracting, Verifying and Ending. Starting: the various avenues the user utilises to begin seeking information, for example, surfing the internet. Chaining: following footnotes and citations in known material or 'forward' chaining from known

items through citation indexes (Järvelin and Wilson, 2003); Browsing: 'semi-directed or semi-structured searching' (Ellis,1989); Differentiating: using known differences in information sources as a way of filtering the amount of information obtained (Järvelin and Wilson, 2003); Monitoring: employing current awareness searching; Extracting: identifying and taking out the relevant material in an information source; Verifying: ensuring the accuracy of information; Ending: concluding the search process with satisfied or dissatisfied results.

Methodology

This study adopts the survey approach. Specifically the cross-sectional approach was adopted as data was collected once. The use of survey research design was found appropriate because this study is cross-sectional in nature and cross-sectional surveys have been found to be suitable in helping researchers to analyse a phenomenon, identify and explain statistically, issues such as the context of information needs and search process of the postgraduate students by using a cross-section of the population at one point in time (Robson, 1993). The population for this study was the postgraduate students of the University of Ghana, 2011/2012 academic year who numbered 4,462 (University of Ghana Basic Statistics, 2011). This population was chosen because most of them are writing their theses and dissertations which require a lot of information. In addition, students at this level are supposed to consult journal articles for most of their assignments. The convenience sampling technique which is believed to give every element an equal opportunity to be selected (Malhotra, 2007) was used to select 190 students (4.3%) who responded to a questionnaire. This sample size was chosen due to Neuman (2007) assertion that researchers should use their discretion to select sample size.

The choice of questionnaire as the data collection instrument is consistent with survey approach (Neuman, 2007); and most of the questions were adopted and adapted from various authors including Fidzani (1998), Alemna and Skouby, (2000) and Sahu (2006). Descriptive   statistics together with the chi square test and the Spearman's ranked correlation coefficient were employed (where necessary and at the 95% significance level) to analyse and presents the results. The respondents were made up of 130 (68.4%) males and 60 (31.6%) females; they ranged in age from 20 years to 40years and above with over a third of them, that is 71 (37.8%) within the age bracket of 26-30years. The respondents were made of 78 (41.5%) MA, 82 (43.6%) MPhil, 20 (10.6%) MBA, 4(2.1%) MSc, 3 (1.6%) PhD and 1(0.5%) MFA students on various programmes with their specializations ranging from Accounting, Archives Administration, Biochemistry, Development Studies, Economic Library Studies, Psychology, Marketing, Political Science, to Sociology among others.

Results and Discussion of findings

The results of the study have been discussed under four thematic areas namely information need, context of information need, the barriers to information search and information search process.

Information Needs of the Students

The data on information need of the postgraduate students revealed that the kind of information the students needed most was academic (76.1%) with the least being entertainment (1.6%). This only re-emphasizes Wilson's (1999) notion that the environment drives information need; and Sethi's (1990), Prasad's (1998), Majid and Kassim's (2000), Wilson's (2000), and Patitungkho and Deshpande's (2005) studies which revealed that academics need academic information such as textbooks, research reports, journals, dissertations and theses and many others. In effect information need was influenced by the type of or prevailing environment.

The study also revealed that the period the postgraduate students needed information most was when writing theses/dissertation (34.9%) and not when preparing for lecture as was reported by Patitungkho and Deshpande (2005). This was so perhaps because of the literature review and the importance of research in graduate studies. Quite surprisingly the postgraduate students least needed information when preparing for examinations (8.6%) perhaps because they depended mostly on their lecture notes to prepare and write examinations. This presupposes that students rarely read outside their lecture notes and hardly seek further readings or information to supplement lecture materials when preparing for examinations.

The most used source to locate information on relevant reading materials for studies by the postgraduate students was the Internet (68.4%) (Wilson, 2000; and Abels, 2004) whilst the least used was the UGLS (6.8%). It was noted that even though the majority of the postgraduate students were aware of the services of the UGLS, their level of use of the library system was very low-to-moderate (82.4%) (Alemna and Skouby, 2000; and Majid and Kassim, 2000). A very weak (9.3%) correlation was found between satisfaction with search results and level of use of the UGLS ($r=0.093$, $p>0.05$). This indicates that the postgraduate students did not find the UGLS very useful in meeting their information needs. The reasons cited for the low-moderate patronage of the main University Library and dissatisfaction with the UGLS include lack of current books, difficulty in locating materials, cumbersome procedure and inability to access e-resources off-campus, among other reasons. The data for the study also highlighted the reasons for the low-to-moderate use of the UGLS in that the, there was also a very weak relationship between the level of use of the search processes and the level of use of the UGLS ($r=0.063$, $p=0.407$). One possible explanation for these findings is that even where students used the search processes within the UGLS, they could not achieve satisfactory results.

Context of Information Need

According to Wilson (1999) the basis of information need could be personal, social role and environmental. For the personal needs, the data for the study revealed that the innate desire or the physiological need of the postgraduate students was the most compelling reason why they seek for information (55.4%) as noted by Marchionini (1995). Thus the students seek for information because they need it and not because of a goal-oriented purpose such as learning or cognitive (41.1%) as noted by Patitungkho and Deshpande's (2005) or for affective reasons (2.2%) as indicated (Table 1).

Table 1: Context of Information Need

Personal Need		Social Role Need		Environment Need	
Because I need it (Physiological)	103 (55.4%)	Student only	57 (31.0%)	Academic	157 (83.1%)
Because I am required to (Affective)	4 (2.2%)	Student/worker	122 (60.9%)	Political	6 (3.2%)
For learning (Cognitive)	79 (42.4%)	Student leader	6 (3.3%)	Economic /business	20 (10.6%)
Total	186	Other	8 (4.9%)	Other	6 (3.2%)
	(100%)	**Total**	184 (100%)	**Total**	189 (100%)

Source: Fieldwork, 2012

The social factor that most influenced the postgraduate student's information need was their role as student-worker (60.9%) and not because they were students only (31.0%), or a student leader (3.3%) or held other social positions. This is also an indication that most of the postgraduate students work and schooled at the same time, thus very few students pursued postgraduate studies on full-time study leave basis and their status or social-role (Wilson, 1999) as student/worker influences their information need since they have to seek information to perform the dual roles as students and also meet the expectations of their employers.

On the environmental factors, the study revealed that the university environment (83.1%) that the students find themselves in, most influenced their information need and not because of the

economic/business (10.6%) or political (3.2%) activities they indulge themselves in. Thus information need is context-specific or environment driven (Wilson, 1999).

Barriers to the Information Search Process

Information seeking is most challenged by several factors that may be context specific among others. Wilson (1999), however, summarises all the barriers to information searching into three namely personal, role-related and environmentally induced. This study found that the postgraduate students were most challenged by environmental (78.6%) constraints within the University system rather than personal (5.8%) or role-related factors (3.2%). Very few (9.5%) of the students indicated that they did not encounter barriers to their information search activities. The environmental challenges the students faced were mainly technological such as lack of access to the Internet and the online e-resources because of poor connectivity and inadequate computing/Internet access points, cumbersome password system, lack of off-campus access, lack of technical support and difficult following ICT procedures of the UGLS (Majid and Kassim, 2000, Wilson, 1999), and difficulty in locating print materials in the libraries, which are mostly outdated. As a result of these challenges, only 22.2% of the respondents were able to fully utilise the 8-search process in their information search activities. Thus the majority (77.8%) of the students were environmentally challenged by constraints within the University setting particularly poor and inadequate ICT infrastructure and could therefore not fully apply the entire spectrum of Wilson's search processes to achieve effective and satisfactory information search results.

The innate desire to search for information was challenged 49.2% of the time ($p>0.05$) by the environment, the social status of the information seeker was challenged 48.2% of the time ($p<0.05$) and academic environment itself environmentally challenged the effort of the student in searching for information 68.3% of the time ($p>0.05$). It was also observed that only 9.7% of the students even when they were challenged by the environmental factors still achieved a high satisfaction with their information search activities. Thus there could be satisfaction even in the midst of challenges.

The study also revealed that more females (92.3%) than males (72.1%) were significantly (χ^2 =8.73, df=3 and $p<0.05$) challenged by the University environment in their information search efforts but no significant relationship was observed between the age (χ^2 =5.34, df=12 and $p>0.05$), programme of study (χ^2 =8.62, df=15 and $p>0.05$) and the barriers encountered. In effect, attempts at addressing the environmental challenges to enhance information search for academic work must be all inclusive and gender specific in order not to create an imbalance or disadvantage any of the sexes.

Information Search Process

Wilson's (1999) information search model identifies 8 systematic search processes aimed at enhancing information search activities. The data for the study revealed that the postgraduate students applied a range of the Wilson's information search processes but did not adhere strictly to all the activities or steps all of the time.

Table 2: Use of the Information Search Process

Search Activities	Yes	No	Total
Starting	175 (94.1%)	11 (5.9%)	186 (100%)
Chaining	133 (71.5%)	53 (28.5%)	186 (100%)
Browsing	147 (79.9%)	37 (20.1%)	184 (100%)
Differentiating	142 (77.6%)	41 (22.4%)	183 (100%)
Monitoring	142 (78.5%)	39 (21.5%)	181 (100%)
Extracting	177 (95.7%)	8 (4.3%)	185 (100%)
Verifying	164 (88.6%)	21 (11.4%)	185 (100%)
Ending	142 (80.2%)	34 (19.2%)	176 (100%)

Source: Fieldwork, 2012

The students undertook extracting (95.7%) more than any other activity and even though 94.1% start their search activity, only 80.2% actually ended their search activity indicating that close to 2 out of 5 (19.2%) of the students never concluded their information search activities (Table 2).

Interestingly, the majority (94.4%) of the postgraduate students personally conducted their information searches, very few students that is 5 (2.6%) each either delegated their information search activities to library staff or friends to carry out on their behalf. The study further revealed a significant relationship between age of the student and the person who conducted the search (X^2=15.65, df=8 and p<0.05). It was observed that the younger students (90-100%) conducted the information searches themselves whilst the older students (40years +) sometimes delegated their search activities to library staff and friends. There was, however, no significant relationship between the person who carried out the information search and the programme of study; and also between the sex of the students even though more males (95.8%) than females (90.7%) personally conducted their own information searches.

Table 3: Level of satisfaction with search results and number of search processes used

Level of satisfaction	Number of search processes used					Total
	Any 1-2 (low)	3-4 (fair)	5-6 (average)	7 (high)	8 steps (full)	
Not very satisfied	-	2(1.1%)	5(2.7%)	3(1.6%)	-	10 (5.4%)
Not satisfied	-	-	-	2 (1.1%)	-	2 (1.1%)
Somewhat satisfied	-	5 (2.7%)	20 (10.8%)	12 (6.5%)	10 (5.4%)	47 (25.3%)
Satisfied	2 (1.1%)	1 (0.5%)	42 (22.6%)	31 (16.7%)	31 (16.7%)	107 (57.5%)
Very Satisfied	1 (0.5%)	1(0.5%)	4 (2.2%)	5 (2.7%)	9 (4.8%)	20 (10.8%)
Total	3 (1.6%)	9 (4.8%)	71 (38.2%)	53 (28.5%)	50 (26.9%)	186 (100%)

Source : Fieldwork, 2012

The data for the study revealed that even though the majority (68.3%) of the respondents were satisfied with their effort after completing their information search activities, quite a number of them 57 (31.7%) were not really satisfied with their information search activities (Table 3). Thus about a third or one out of three of the students was somewhat not satisfied with his/her information search activities. A significant and positive correlation of 0.20 (p=0.006) was recorded for the relationship between number of search processes used and the level of satisfaction with search results. The higher the number of processes the students used in searching for information the more satisfied they were with their information search activities.

The number of search processes used was not significantly dependent on the sex of the students (X^2=3.62, df=4 and p>0.05), even though more males (28.6%) than females (23.7%) used all the 8-step processes all the time. Also, the number of search processes used was not signifincalty dependent on the age of the students even though older students (33.3%) used all the 8-step processes all the time than the younger students (X^2=13.7, df=8 and p>0.05). Similarly, even though more PhD students (33.3%) used the 8-step processes all the time than students on the other programmes of study, there was no significant relationship between number of processes used and the programme of study of the students (X^2=14.4, df=20 and p>0.05).

Satisfaction with search results was significantly tied to the person who conducted the search (X^2=26.3, df=8 and p<0.05). Thus those students who were very satisfied (100%) or satisfied (97.1%) with the search results were those who personally carried out their own information searches rather than delegate the search activities to a library staff (7.0%) or to a friend (2.9%). Satisfaction with search results was not significantly (p>0.05) tied to the sex, age and programme of study of the students.

Conclusion and Recommendations

The study has established that even though there were barriers to information searching, adherences to Wilson's (1999) 8-step process enhances the search results and brings satisfaction to the information seeker. The results showed that the students had an innate desire to seek for information, yet the University as an academic environment most influenced their information need but at the same time constrained or created barriers to their information search efforts. The findings emphasized Wilson's information search model as relevant and applicable to the information search activities of the student and that when the correct steps are followed, the search activities could be satisfying and effective. The results of this study thus have implications for developing effective information literacy curriculum by information professionals, the need for Management to make University settings information seeking friendly as well as the postgraduate students' ability and willingness to religiously adopt scientific approaches (such as Wilson's 8-step approach) rather than ad-hoc approaches at all times in their information search activities. The researchers, however, acknowledge that this model is not necessarily the only blueprint to guide information search processes. And whilst the environment might in all situations most influenced an individual's context of information need, the environmental conditions might not always create barriers to information searching activities. In a technologically challenged setting especially from a developing country's context as in the case of the University of Ghana and those other universities in Ghana, the environment is the greatest barrier to information search activities.

The researchers make the following recommendations for enhancing the information search activities of students and information seekers in general:

i.   **Inclusion of Information Literacy skills training in curriculum**

The University management and the Graduate School should consider including information literacy skills training for all graduate students in order to enhance their ability to conduct effective information searches for their theses/dissertations. This will go a long way to improve students research output and general academic performance. Also the Graduate School, the UGLS and lecturers should collaborate to provide the information literacy skills training for the postgraduate students.

ii.   Creation of an information seeking friendly environment

The study recommends that the management of the University of Ghana and the Graduate school must endeavour to create an environment that is information-seeking friendly. The academic environment is information demanding yet the system can be counterproductive if the necessary structures (technological infrastructure) are not put in place. Access, skills, systems and procedures which militate against student's effort at accessing information must be addressed by the University management.

iii.   Improve on the UGLS

The management of the University of Ghana should improve on the entire UGLS by way of collections and procedures in accessing materials both print and e-resources. Although there is an off-campus access to the UGLS, the cumbersome processes and the frequent breakdown of the link, does not encourage students to patronize the system. There is therefore the need for the Management of the University to overhaul the entire UGLS from the physical set-up, the personnel in terms of skills training to be able to aid student information searches as well as access (24hours and off/on campus facilities).

iv.   Improve the Collections of the UGLS

The management of the UGLS should enhance their collections both print and electronic to attract users and encourage patronage. The low-moderate patronage of the UGLS is worrying giving that the library system is the heart of academic institutions.

v.   Promote the services of the UGLS

The management of the UGLS must develop and pursue strategic library services promotion aimed at achieving 100% awareness and significantly higher level of patronage. The fact that about 17.4% of the postgraduate students were not aware of the UGLS is worrying. It is therefore recommended that in order for the University to reap the huge investments in the UGLS, the management of UGLS must ceaselessly promote the library services for the realization of its objectives.

References

Abels, E. ,2004. Information seekers' perspectives of libraries and librarians. *Advances in Librarianship*, 28 (1):151-170.

Alemna, A.A and Skouby, K.E, 2000. An investigation into the information needs and information-seeking behaviour of members of Ghana's legislature. *Library Management*, 21(5):235-240.

Badu, E.E 1991. The information seeking habits of graduate students in the University of Ghana. *Education Libraries Journal*, 34 (2): 35-39.

Balme Library, University of Ghana (2009) *About Us*. Available at: www. http://library.ug.edu.gh/screens/balme/about_us.html (accessed 12 November 2012).

Balme Library, University of Ghana (2009) *Services*. Available at: www. http://library.ug.edu.gh/screens/balme/about_us.html (12 November 2012).

Sulemani S.B and Katsekpor S.A. ,2007. Information Seeking Behavior of Health Sciences Faculty at the College of Health Sciences, University of Ghana. *Information Development,* Vol 23   (1): 63-70.

Callinan JE, 2004. Information-seeking behaviour of undergraduate biology students; a comparative analysis of first year and final year students in University College Dublin. *Library Review*, 54 (2): 86-99

Ellis D ,1989. A behavioural approach to information retrieval design. *Journal of Documentation*, 46 (3): 318-338.

Fidzani, B.T, 1998. Information needs and information-seeking behaviour of graduate students at the University of Botswana. *Library Review,* 47 (7): 329–340.

Guest, S.S. ,1987. The use of bibliographic tools by humanities faculty at the State University of New York at Albany. *Reference Librarian,* 18 (1):157-172.

Jamali, H.R and Nicholas, D .,2008. Information-seeking behaviour of physicists and astronomers. Aslib Proceedings: *New Information Perspectives,* 60 (5): 444-462.

Järvelin, K. and Wilson, T.D, 2003. On conceptual models for information seeking and retrieval research. *Information Research*, Vol.9, No.1paper163. Available at http://InformationR.net/ir/9-1/paper163.html (accessed 2 January 12)

Majid, S. and Kassim, G.M,2000. *Information*-Seeking Behaviour of International Islamic University Malaysia Law Faculty Members. *Malaysian Journal of Library and Information Science,* 5 (2): 1-17.

Malhotra NK (2007) *Marketing research, an applied orientation* (5th ed.). London: Pearson Prentice Hall.

Marchionini, G. 1995. *Information seeking in electronic environments.* Cambridge: Cambridge University Press.

Mnubi-Mchombu, C. and Mostert, J., 2011. Information seeking behaviour of orphaned and vulnerable children's caregivers in Namibia. *Library Review*, 60 (5): 396-408.

Neuman, W.L., 2007. *Basics of Social Research: Qualitative and Quantitative Approaches*. 2nd ed.- Boston: Pearson Education, Inc.

Nikoi, S.K., 2008. Information needs of NGOs: a case study of NGO development workers in the northern region of Ghana. *Information Development*, 24 (1) pp. 44–52.

Patitungkho, K. and Deshpande, N.J ,2005. Information Seeking Behaviour of Faculty Members of Rajabhat Universities in Bangkok. Webology, 2 (4) Available at: http://www.webology.org/2005/v2n4/a20.html (accessed 12 November 2012).

Prasad, H.N,1998. Information seeking behaviour of physical scientists and social scientists: a report. *Annals of Library Science and Documentation*, 45(2):41-48.

Robson, C., 1993. *Real world research*: *A resource for social scientists and practitioner researchers.* Oxford: Blackwell Publishers.

Sahu, H. K., 2006. *Information Seeking Behavior of Users in Astronomy Information Centres and Libraries in India: The Impact of New Information Technology*. Unpublished Thesis, University of Pune, Pune.

Sethi, A.,1990. *Information seeking behaviour of social scientists: an Indian conspectus.* New Delhi: Hindustan Publishing Corporation.

Tackie, S.N and Adams, M.,2007. Information needs and information seeking behaviour of engineers in Ghana: a case of study of the Volta River Authority. *African journal of Library Archives and Information Science*, 17 (2):69-78.

Tiefel, V. M., 1995. Library user education: examining its past projecting its future. *Library Trends*, 44 (2): 318-38.

Timmers, C.F and Glas, C.A.W., 2010. Developing scales for information-seeking behavior. *Journal of Documentation*, 66 (1): 46-69.

University of Ghana, 2011. *University of Ghana Basic Statistics*. Accra: University Press. Available at: http://www.ug.edu.gh/ugdocs/Basic_Statistics_2011.pdf (accessed 12 November 2012).

Wilson ,T. D. ,1999. Models in Information Behaviour Research. *Journal of Documentation*, 55(3): 249–270.

Wilson, T.D .,2000, Human information behavior. *Information Sciences*, 3 (2):49-55.

Yousefi, A. and Yousefi, S., 2007. Information need and information seeking behavior of professionals at an Iranian company, *Library Student Journal*, 1(2):123-126.