



University of Brighton

**The Impact of UK Education on the Information Behaviour of Graduate Students
from Saudi Arabia**

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A thesis submitted in partial fulfilment of the requirements of the University of
Brighton for the degree of Doctor of Philosophy

June 2020

Declaration

I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree and does not incorporate any material already submitted for a degree.

Signed

Dated

Acknowledgements

I would like to thank and express my deepest gratitude to my supervisor, Dr Roger Evans and my second supervisor, Dr Lyn Pemberton, because without their encouragement, guidance, and criticism, this thesis would not have been possible. I would also like to thank them for their patience, support, and supervision that were extended in every possible manner to refine my thoughts for this thesis. Moreover, I am also thankful to everyone in the School of Computing, Engineering and Mathematics, and all my colleagues in Brighton for their encouragement and inspiring support. It would not be wrong to say that one of the main reasons behind the successful completion of this thesis are my parents who continuously supported me and gave me the right advice. I also want to thank my sisters, Areej and Lina for their love, understanding, and support in completing my PhD. Finally, I would like to thank my friends in Brighton and London for supporting me through thick and thin and for providing valuable criticism as true friends.

Abstract

The Saudi Arabian government seeks to improve the country's educational system in order to prepare its young population to become global citizens and diversify the economy. Saudi students tend to pursue education from the UK as they get more effective access to information for improving their learning outcomes, exploiting both paper-based and digital resources. The UK-based universities typically provide a virtual learning environment through digital devices provided to the students for attaining wider information sources through the internet. However, in the UK, Saudi students still face barriers in finding and using information, due to their cultural differences, language difficulties, and inadequate interaction with the faculty.

Although previous studies have provided information about the information-seeking behaviour and related barriers for Saudi students in UK education institutions, the detailed insights and practical data have not been obtained to validate these findings. Moreover, the research literature does not provide solutions to resolve the barriers in accessing information. This study has conducted primary research for obtaining realistic and updated information on the impact of an UK education on the Saudi students' information-seeking attitudes and their strategies for overcoming the barriers in accessing information resources, via a comparative study. This study has also explored the information behaviour among Saudi Arabian students to understand what barriers and strategies they employ while studying in Saudi Universities. This comparison of the two groups has facilitated the investigation of the key factors and barriers that influence their information behaviour based on a model constructed by Urquhart and Rowley (2007). Finally, this study has presented some practical recommendations for developing a more effective and supportive learning environment for information seeking by Saudi students.

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Chapter 1: Introduction

1.1 Introduction

Effective higher education can have a significant impact on the professional development of the individual, as well as the social and economic development of their country. When attained from a foreign country, the nature of the higher education becomes quite important from the perspective of the personal and professional skills of the student. In this regard, the prime objective and expectation a country has in sponsoring its students to study abroad is to receive the benefits of their improved professional skills. For example, in the year 2005, a scholarship programme was started in Saudi Arabia, the King Abdullah Scholarship Program (KASP), sponsoring the higher education of Saudi students in foreign countries. In 2007, 5,000 Saudi students were sent to the UK for higher studies. This sponsorship programme has received huge investment from the Saudi government (Smith and Abouammoh, 2013). The prime objective behind the programme is that the government will attain several benefits, including the development of a range of skills in students, e.g., writing, creativity, problem solving and so on. This thesis reports on an investigation into the impact of the UK educational experience for Saudi graduate students on another key academic skill, i.e., information retrieval.

Recent advances in information technology, particularly since the advent of the Internet, have led to widespread changes and opened up large numbers of possibilities for individuals searching for information and data. The Internet has made the flow of information quicker, easier and more cost effective. However, there has been an absence of any significant positive impact on the educational field, which indicates the existence of a search skills gap (Blaxter, Hughes and Tight, 2010). Researchers must focus on improving their search skills, so that they can access relevant

information and data, in order to arrive at solutions to their questions and problems.

In relation to this, one of the most important steps in improving the search skills gap, one that needs to be planned carefully, is the collection of relevant data from authentic sources. This must be planned carefully as it serves as the basis of the entire research work. Nowadays, much of this information gathering takes place online, as more and more information sources have moved online. This poses a problem for any information seekers who do not possess the requisite skills for efficient and effective online searches. If a researcher is not aware of techniques or search tools – such as the use of keywords, Boolean searches, fuzzy searches and other methods – it becomes difficult to retrieve the information that is desired.

The challenge is not limited to retrieval of relevant information; it also includes the problem of identifying whether or not the sources found are reliable and authentic. Lack of availability of proper information or questionable reliability and authenticity of the sources obtained clearly affects the validity of research findings. If the basis for the research is not correct, the findings are also likely to be incorrect. In this respect, when conducting online searches and accessing websites, researchers need to be actively considering various factors such as safety and security, reliability, and authenticity.

Researchers new to the Internet clearly face particular challenges while searching for suitable information sources on the Web, and may find it quite overwhelming to be exposed to such an enormous wealth of largely unstructured information. This may also be the case where the researcher is not new to the Internet itself but has limited knowledge about the tools that are best for retrieving the required relevant information. The availability and richness of information on the

Web is quite astonishing; it can also be intimidating if the researchers are not aware of the manner in which they can best access the information they require.

The extent of the challenges outlined above, or even that such significant challenges exist at all, may not be immediately obvious to researchers from developed countries. However, the problem of conducting online searches is a major issue for researchers in less developed countries. Previous research suggests that there exists a significant gap in online search skills between researchers in less developed countries and their counterparts in the developed world (Bhagavan, 2016).

There are various reasons for this gap. In less developed countries, a major reason for the search skills gap is poor infrastructural facilities, both in terms of institutions and for the researchers themselves (Bhagavan, 2016). In relation to the institutions, the cause of poor infrastructural facilities can be related to a lack of knowledge about technological advances and a shortage of capital available for integration of the latest technology. It is often observed that less developed countries use technology that is outdated and lacks support from the government in terms of incentives, exemptions and subsidies for investing in the latest upgrades (Bhagavan, 2016). Researchers undertaking search work lack proper IT support and access to sources that would enable them to acquire the proper skills and information required for making successful online searches.

Further, the low-income level of individuals in developing countries, and inadequate allocation of budgets for conducting research, adds to the issue of lack of infrastructural facilities for researchers. Owing to this, researchers often cannot gain access to all the crucial databases (Gal et al., 2015). For many less developed countries, it has become essential for them to take steps to improve their

online search skills, and specific training methods and appropriate IT support would enable researchers to conduct better online research.

Infrastructure issues such as these are relatively straightforward in that they are clear to appreciate and can be improved with funding and planning. However, it may be that there are other more subtle reasons for differences in performance in information seeking. These could include knowledge of resources, judgement of the quality and prestige of information, thoroughness of search processes, mismatch in language between researcher and information content and other influencing factors that are often emphasised in the teaching of research skills in the UK and other countries' universities.

Thus, it is necessary to explore if and how exposure to a UK higher education (HE) experience impacts the information-seeking behaviour of non-UK students, and hence whether Saudi Arabia's spending in this area is justified by results. This project investigates the difference made to Saudi students' information-seeking behaviour by their educational experiences in the UK. And the results in this area are its key contribution to knowledge.

1.2 Research Background

1.2.1 Information and its Use in Academic Contexts

Traditionally, information used in academic work was contained in printed form, in books and journals. This was housed in libraries and arranged according to classification systems such as the Library of Congress or Dewey Decimal systems. A lot of research was conducted to develop models of information behaviour based on printed sources, and these are briefly reviewed in Chapter Three.

Printed information enjoys significant prestige, and it is still usual for students in KSA to be required to include printed information sources rather than relying on the Internet.

Abdulgahni, Ahmad and Salah (2014) highlight that considering the significance of information technology for researchers, the Ministry of Education in Saudi Arabia has been playing a key role in the development of IT infrastructure to ensure that researchers and educational institutions have adequate access to IT and related tools. For this purpose, it has established an effective network for IT infrastructure in 22 universities across the Kingdom. This has facilitated the universities having access to about 114,000 journals and online books. The literature explains that the emergence of IT in the field of education has paved the way in a number of educational institutions for the implementation of IT, with these institutions developing IT programmes that facilitate and guide students and future researchers regarding the essential skills for making effective use of IT tools in research. The administration of the education system in Saudi Arabia is heavily centralised, with all the educational policies controlled by the government and supervised by the Supreme Council of Education. The infrastructure of IT has widened to a considerable extent in the Kingdom, particularly during the last three decades, and has gained a significant place in educational policy. It was initially introduced as a tool for storing and processing information related to the records of the students, teachers and administration; however, with time, its application has been widened and it has become a chief source of information for students and researchers. The development of the IT infrastructure by the government of Saudi Arabia has also facilitated the use of computers for hard sciences, in support of scientific experiments (Smith and Abdulrahman, 2013.).

Since the mid-1980s, information has become digital in form, accessed via the World Wide Web. Info accessed via the Web can take many forms – digital books, digital journals, websites,

encyclopaedias and so on. The Internet has changed the world as no other technology before it. More information than ever before is available to individuals: a simple click can bring an unprecedented wealth of information to one's computer and even one's phone. The systems and methods for indexing the Internet for search have changed significantly over its history. Methods differ in terms of data structures, features extracted and the infrastructure needed. According to Wardrip-Fruin (2003, p. 792) "The World-Wide Web (W3) was developed to be a pool of human knowledge, and human culture, which would allow collaborators in remote sites to share their ideas and all aspects of a common project". The last two decades have witnessed many significant attempts to make this knowledge discoverable. These attempts broadly fall into two categories: (1) full classification of web pages in hierarchical categories (directory structure), supported by the likes of Yahoo! and the Open Directory Project, and (2) full-text index search engines, such as Excite and Google.

The first of these is a method of arranging web pages in which subject-matter experts collect and annotate pages for each category, much like the way in which books are classified in a library. Natural language processing (NLP) techniques include document classification, clustering and re-ranking, applied as a post-process to the search results produced by a generic web browser. With the rapid growth of the Web, however, the popularity of this method declined. First, the strictly manual editorial process could not cope with the increase in the number of web pages. Second, the user's idea of what sub-trees to seek for a particular topic was expected to be in line with the editors', who were responsible for the classification.

Although early users of the Web often used hierarchically arranged information, a significant majority of people nowadays know only the second approach, which presents the user with a keyword search interface and uses a precomputed web index to algorithmically retrieve and rank

web pages that satisfy the query or the search. Search engines are the most widely used method for navigating the Internet. The earliest search engines had to handle orders of scale more documents than any previous information retrieval systems. Indices of today's search engines are several orders of magnitude larger; Google registered around 3,000 billion web pages in the year 2014 alone.

1.2.2. Information Infrastructure in Saudi Arabia

In the perspective of Ageel (2011), the all-pervading nature of information technology and easy access to developing innovations in technology has led to a rapid incorporation and integration of technologies in the workplace. One of the fields that has been most influenced by technology is the field of education. The emergence of the World Wide Web as a prevailing and universal method of acquiring and sharing information, possessing a high level of accessibility to users, and serving as an innovative way of facilitating learning, has paved a way for teachers to examine the application of technology in their research and pedagogy. As an outcome of this trend among the teachers, an increasing number of higher educational institutions were witnessed in the country (Ageel, 2011).

However, the literature asserts that despite this rise in the integration of IT in higher educational institutions, a number of issues exist, because of the limited IT infrastructure in less developed countries, such as Saudi Arabia. As a part of its initiatives for the development of IT infrastructure, the Saudi government has promoted the use of computers in educational institutions by providing computer labs and training courses for future graduate students in universities, and training for teachers on how to guide and facilitate students in being able to make the most effective use of this tool (Alshumiam and Alhassan, 2014). Some private companies have also developed e-learning

material and additional software for researchers to be able to enhance the quality of their research through these sources.

A report by CITC Publications on the ITC workforce in KSA (2015) explains that key metrics offering a measure of the vibrancy and impact of the IT sector in Saudi Arabia have been established to ensure the effective promotion of IT expenditure, IT gross value added, and IT investments required for a well-developed IT infrastructure in the country. IT expenditure by Saudi Arabia in 2014 was estimated to be SAR 111.98 billion particularly on telecommunication services and hardware formed 65% and 23%, respectively, while IT services and software accounted for 8% and 4%, respectively. Among all the GCC countries, Saudi Arabia is the largest IT spender; its IT expenditure for the year 2014 was larger than the combined IT expenditure by all the other GCC nations. On the other hand, the investment made by the Kingdom in IT in that year amounted to SAR 17.83 billion mainly on IT communication (20%), public services (25%), finance (11%) as well as miscellaneous requirements (32%) (CITC Publications, 2015). This was followed by investments in the IT equipment that formed about 26% of the total share, amounting to SAR 4.58 billion. The remaining 27% of the IT investment was made in communication equipment, an amount of SAR 4.86 billion.

Key aspects of the IT infrastructure in Saudi Arabia that have facilitated its promotion and widened access to IT in the field of education and research have been vibrant IT services, a thriving telecommunication sector, and the expansion of the ecosystem of institutions that provide support to IT innovation and entrepreneurship (CITC Publications, 2015). Other factors that support the IT infrastructure in the Kingdom include expansion in Internet usage and online engagement, growth in scientific research, widespread smart device adoption, focus on intellectual property creation,

and consolidation of e-government services. The penetration of mobile broadband in the country has surged from 9.7% in the year 2010 to 94.5% in the year 2014 (CITC Publications, 2015). In the year 2018, the users of mobile internet have obtained to be increased up to 28.5 million, and this rate is predicted to get raised up to 35 million till the year 2023 (Puri-Mirza, 2019). Moreover, the range of users of mobile-internet got raised up-to 20.2 million in the year 2018 in the Kingdom for seeking and accessing information (Statista, 2019).

Alzharani (2011) further highlights that the IT infrastructure in the country is also experiencing a stage of technology disruption, which is aligned to a shift to new technical platforms established on cloud services, mobility, machine-to-machine communication, social technologies, analytics solutions and big data. The country has also been exploring the viability of a range of IT solutions that can be collectively termed 3rd Platform Technologies. The mobile device-based solutions supported in increasing the Compound Annual Growth Rate (CAGR), i.e. a return rate on investment of the Saudi IT market (Alzharani, 2011). This aspect is supported by the illustration that the mobile device management solutions, i.e. software applications used for the management of components and requirements of mobile devices such as tablets and smartphones, have resulted to a CAGR of 82.7% during the years 2012 to 2017 (Alzharani, 2011).

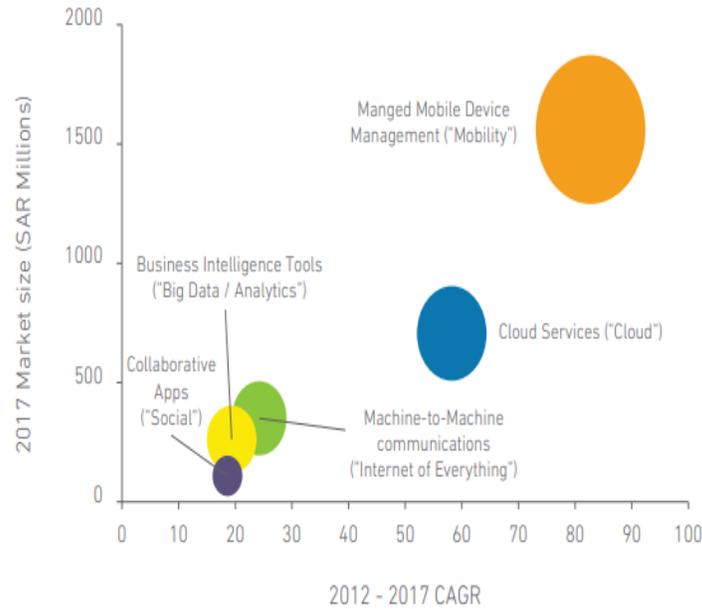


Figure 1.1 Reported expenditure on 3rd Platform Technologies for the years 2012 to 2017 (inSARMillions)

(Source:http://www.citc.gov.sa/en/reportsandstudies/Reports/Documents/ICTInvestments_EN.pdf)

1.2.3 Online Research in KSA

Alzahrani (2011) in his research states that the government of Australia, a developed country, has undertaken highly significant initiatives in respect of the promotion of online research, wherein it has offered extensive support to institutional repositories and open access. However, in contrast, the situation in less developed countries is that the application of Internet does not have a very long history, despite its recognised significance in facilitating research and the educational system (Alzahrani, 2011). The literature highlights that the government of Saudi Arabia has, however, implemented initiatives to run activities related to research databases, along with the establishment of electronic repositories. The Open Directory of Open Access Repositories (OpenDOAR) list includes the establishment of four open repositories in the Kingdom: King Saud University,

University of Dammam, Umm-Al-Qura University, King Fahd University of Petroleum and Minerals (Ahmad, Aqil and Siddique, 2012; Alzahrani, 2011). The findings of previous studies reveal that both these universities have access to adequate information resources, budgets, research publishing infrastructure, and human and structural capabilities, in comparison to the other universities in Saudi Arabia. However, in respect of online facilities for conducting research there is a need to improve the infrastructure in a number of key areas. The areas highlighted in this respect include computerisation of activities related to research publication, creation and updating of a reviewer database, providing access to online resources to researchers free of cost, and access to a fast and reliable Internet connection (Alzahrani, 2011).

The Ministry of Education in Saudi Arabia has established the National Centre of e-Learning and Distance Learning for the development of a repository for online material to promote research in different academic disciplines. King Saud University in Riyadh has developed and implemented a highly worthwhile initiative to support a culture of on-campus online learning and research. The project consists of three components: educational technology with the help of teaching studios and educational auditoria, training and control, and support with the help of protection and surveillance (Alkrajji and Eidaaroos, 2016).

In addition, the development of the Saudi Digital Library (SDL) also signifies a highly significant national project for the promotion on online research, dedicated to supporting the research needs of students, professionals and researchers. The SDL has access to more than 24,000 complete books from various scientific and academic disciplines and provides a subscription to about 300 local, international and regional publishers. The increasing investment in and development of IT infrastructure by the government of Saudi Arabia has led to a gradual transformation from

conventional learning to contemporary educational institutions and universities supporting distance and off-campus learning for academic researchers and research professionals in the Kingdom (Alkraihi and Eidaros, 2016).

The findings of this thesis further reveal that the SDL has emerged as one of the major gateways for academics and researchers in Saudi Arabia, providing access to more than 310,000 scientific references encompassing all academic disciplines, and thus serving as the largest academic information resource among all the Arabian countries. The following figure displays the search engine in the SDL (Alkraihi and Eidaros, 2016).

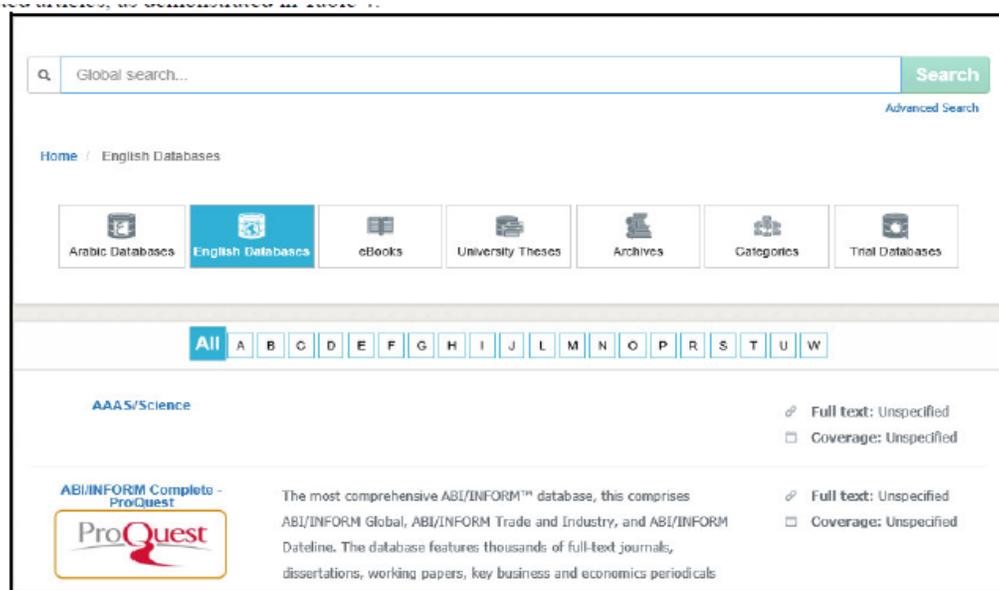


Figure 2. A snapshot of the search engine in the Saudi Digital Library (SDL).

Figure 1. 2 Search engine in the SDL

(Source: [https://www.researchgate.net/publication/320197576 Trends and Issues in Education Technology Research in-Saudi-Higher A Meta-Analysis Rreview](https://www.researchgate.net/publication/320197576_Trends_and_Issues_in_Education_Technology_Research_in-Saudi-Higher_A_Meta-Analysis_Rreview))

A research study conducted by Alshayea (2013) on the trends and patterns of academic research in Saudi Arabia revealed that a majority of the articles reviewed in the study, about 88.46% of the

total number of examined articles, did not use any theory, not even any theory based on a socio-technical system, thereby suggesting an absence of a coherent theoretical and conceptual framework that might have directed the researchers in their methodology and interpretation of the gathered data. The examination of the reviewed research papers demonstrated an acute lack of innovation and critical depth in analysis, and the absence of an identified research gap (Alshayea, 2013). The research examined demonstrated a lack of effective background study or incorporation of comprehensive theoretical and conceptual literature to support the research findings, which can be directly attributed to the absence of adequate access to sources of secondary data that are accessible through online research. This study thus highlights the need for more robust and wider incorporation and promotion of IT infrastructure to facilitate online research in the Kingdom, wherein significant academic research is being conducted but lacks coherence, credibility and relevance in academic fields.

1.2.4 Knowledge Gap

Although the absence of access to adequate IT infrastructure and facilities may hamper research in a developing country like Saudi Arabia, the government of the Kingdom has undertaken significant initiatives to overcome this issue. This suggests that for improvement in academic research, we might need to look elsewhere, to the area of skills and knowledge among researchers. Despite the presence of IT infrastructure and online databases, even though on a preliminary basis, they cannot be optimally utilised in the absence of the skills and knowledge required to make judicious use of such sources (Ageel, 2011). It is essential to have well-developed knowledge and awareness regarding the application of Internet-based tools so that academics and researchers can make effective use of such sources to retrieve relevant and valid information.

1.3 Research Aim and Objectives

1.3.1 Research Aim

The high-level aim of this thesis is to investigate the information behaviour of research students from Saudi Arabia in order to gauge the influence and effectiveness of the sorts of research skills training provided in UK universities. For this purpose, this research undertakes a comparative study of Saudi-based students and those who have been exposed to a UK education. In other words, the aim of the research study is to investigate the influence of UK education on Saudi Arabian postgraduate students in terms of their information-seeking behaviour and the influencing factors on information seeking. Postgraduate students have been chosen rather than undergraduate since it is mainly at the postgraduate level, Masters or PhD, that Saudi funding is directed. In addition, formal research skills are not extensively used in many undergraduate courses, whereas they are the key at graduate level.

1.3.2 Research Objectives

The specific objectives of the study are:

1. To identify the information needs of postgraduate students in terms of fulfilling their academic purposes (for example, coursework, projects, theses, dissertations).
2. To investigate the differences in information-seeking behaviour strategies among postgraduate students in Saudi Arabia and Saudi students in the UK in terms of their ability to search for content online for the purpose of research.
3. To identify the factors that influences the information-seeking behaviour of Saudi Arabian postgraduate students in KSA and in the UK.
4. To understand the barriers experienced by Saudi Arabian graduate students trying to find information related to their academic study within the Saudi and UK education systems.

5. To understand the impact of the UK education system on Saudi graduate students' information-seeking behaviour.
6. To provide recommendations for enhancing the information-seeking behaviour of graduate students in KSA, and for improving the information environment.

1.4 Research Questions

The question motivates this research is: what is the value of the UK higher education experience for KSA students and how is this evidenced in the specific area of information behaviour?

Some sub-questions were also developed to help in addressing the main research question:

1. What are the differences in information-seeking behaviour strategies between the graduate students of Saudi Arabia and Saudi students in the United Kingdom?
2. What are the key factors that influence information-seeking behaviour in graduate students (cognitive, research environment, role-related, faculty members, instructors, demographics)?
3. What are the key barriers experienced by Saudi Arabian graduate students in the UK during online information seeking? How do these barriers affect their information seeking?
4. What are the procedures that can be implemented by research institutes or universities in order to improve the information-seeking behaviour of students from Saudi Arabia?

1.5 Research Significance

The findings of this research will thus help in providing a detailed understanding of the factors helping and hindering the development of search skills among researchers in Saudi Arabia and in the possible impact of a UK-based education on these skills. They will also help in identifying and exploring the most suitable policy and academic measures that might be adopted by educational

institutions and the government to enhance the skills of researchers in regards to conducting online research, enhancing the quality and credibility of their research. More broadly, it will help the Saudi government to decide whether the substantial investment on UK education pays dividends in the development of information-related skills.

As this research undertakes a comparative examination of search skills in developed and developing countries, it allows for examination of gaps in skills and the need for improvement in them among researchers in less developed countries, thus helping in identifying factors hindering them and ways in which these can be removed. The results of this research will also serve as a sound source of information for future researchers into this topic.

The information-seeking behaviour of students is not a new domain of research. Plenty of studies have been undertaken in the past exploring this issue. Among these studies, some have focused on explanation of the issue from sociological and psychological perspectives (Zhang and Goodson, 2011; Wu, Garza and Guzman, 2015), whereas others have focused on seeking information about the behaviour in regard to growing use of technology (Al-Moumen, Morris and Maynard, 2012). Among these studies, a common thread is that they try to explain the socialisation process of every individual that moves from one culture to another, their resulting need for information and their behaviour in seeking it.

The present study will report on the impact of education on the graduate student from Saudi Arabia in the United Kingdom, in terms of their information-seeking behaviour and the factors that influence it. This research contributes to this body of knowledge because it specifically studies the impact on Saudi Arabian students who are studying in the UK, in comparison with Saudi students

who are studying in Saudi Arabia itself. The main emphasis is on explaining and discovering their information-seeking behaviour with respect to their strategies, attitudes, factors influencing them and the barriers that they face. The research specifically seeks to overcome the knowledge gap on the aspect of UK education's impact on the Saudi Arabian students' information-seeking behaviour during their graduation

This study extends information-seeking behaviour models to include the type of behaviours that are appropriate to seeking academic information, and also widens their scope through studying the precise behaviour of students from Saudi Arabia.

1.6 Research Design and Methodology

A mixed approach was adopted in this study, in which both primary and secondary data are taken into consideration. Secondary data was collected from a review of the literature on similar contexts, while primary data was collected via a survey conducted with Saudi postgraduate students from UK universities and graduate students from a Saudi university. In addition to this, semi-structured interviews, face-to-face interviews and online interviews were conducted to provide rich explanatory data, in addition to the data collected from the survey.

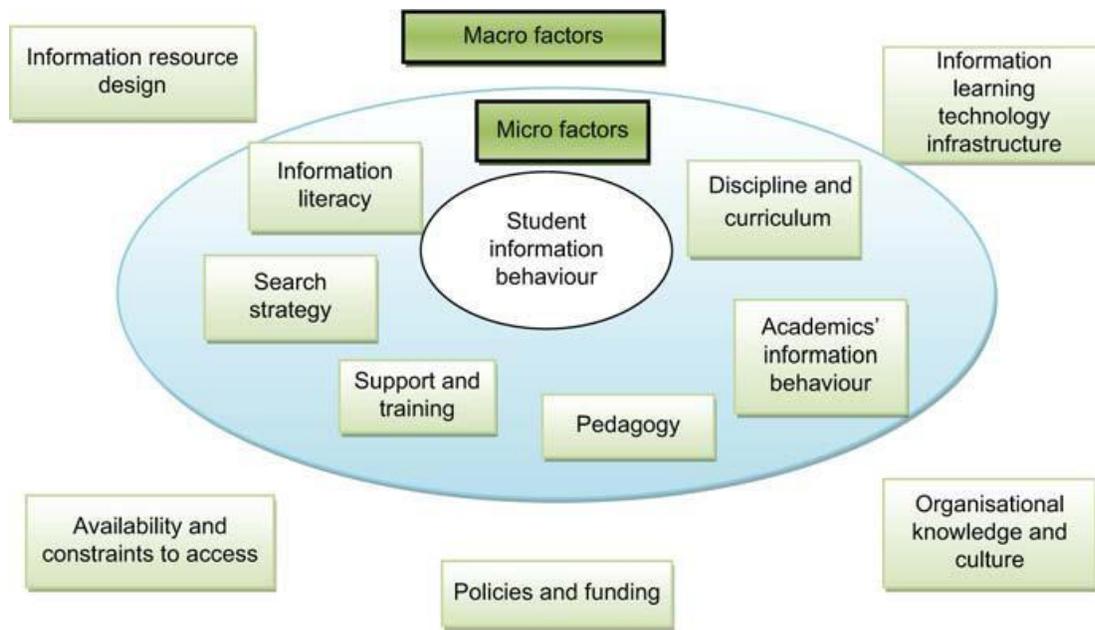


Figure 1. 3 Information behaviour model - *Rowley and Urquhart (2007)*

The model constructed by Rowley and Urquhart (2007) is used in this study, for a number of reasons. Firstly, the framework that is provided is general and has several aspects included in earlier models, suggesting soundness. The second reason is the model is diagrammatically presented, which helps the researcher to interpret the relationships between the variables. The third reason is the model is mainly used to analyse and investigate the behaviour of students in terms of information-seeking. Finally, this approach is a relatively recent model proven to be relevant to the electronic environment. In order to make sure that as many relevant factors as possible are covered in the questionnaire and interviews, I based our research instrument design on their model.

1.7 Structure of the Thesis

The thesis is organized into eight chapters, whose key purpose and contents are listed below.

Chapter 1: Introduction. This chapter familiarizes readers with the aim and objectives of the research, and outlines the background to the research.

Chapter 2: Context and Background. This chapter is included to introduce the reader to pertinent social, cultural and educational aspects of Saudi Arabia.

Chapter 3: Literature Review. This chapter outlines models and frameworks for assessing information-seeking behaviour and previous studies in the area.

Chapter 4: Research Methodology. This chapter presents a detailed discussion of all the tools and procedures used in the research.

Chapter 5: Results the Quantitative Study. Findings are presented here, based on a survey of post graduate students from Saudi Arabia.

Chapter 6: Results of the Qualitative Study. This chapter presents findings gathered from interviews with post graduate students from Saudi Arabia.

Chapter 7: Discussion. In this chapter we consider the significance of the findings and their relation to previous work.

Chapter 8: Conclusion. This chapter includes implications, limitations, and recommendations and further work.

Chapter 2: Context and Background

This chapter explores the background and context to the study. It outlines the contextual framework for the research, which allowed for generation of the desired amount of data used to solve the research problem in the most effective and efficient manner. This chapter reflects on the context of Saudi Arabia and its education system, which helps in setting out the background to the research. This chapter also reflects on information services and provision in Saudi Arabia, so that the information-seeking behaviour of Saudi students in the UK can be assessed.

2.1 The Context of Saudi Arabia

The Kingdom of Saudi Arabia is a country in the Middle East, ruled by the Al Saud family since 1932 (Blanchard, 2015). It is the 14th largest country in the world and exercises a significant amount of political, economic, military and social influence owing to its position as the birthplace of Islam and home to holy sites like Mecca and Medina, as well as its huge oil reserves (Turay, 2010; Blanchard, 2015). Culturally, Saudi Arabia belongs to a group of countries typically referred to as the “Arab world”. The Arab world includes 22 countries that were part of the League of Arab States formed in Egypt in 1945. The overall population of Arab nations is estimated to be 423 million as per the report of the year 2019 (World Population Review, 2019). Further, presently, the Saudi population is estimated to be 34,504,223 in the year 2019 (Worldometers, 2019).

Many countries belonging to the Arab world are considered to be technologically and academically advanced; Saudi Arabia is one of these. In fact, within the Arab world, Saudi Arabia is one of the most affluent countries and is often considered to be a forerunner in the region in terms of technological and educational reforms. Saudi Arabia also has one of the fastest-growing

populations and highest percentages of young people among the general population, with close to 40% of the population belonging to the under 15 age group (Turay, 2010). Education of this rapidly growing segment of the population is one of the key priorities of the Kingdom.

2.1.1 The Saudi Arabian Education System

The progress of Saudi Arabia's education system can be traced back to independence in 1932, following the abolishment of the Ottoman Empire and the subsequent unification of the regions of the Arab peninsula (Royal Saudi Embassy in the USA, 2015). After this event, a new and advanced education system was developed from scratch, with the very first secular university being constituted in 1957. Today, the Saudi higher education system consists of 25 public universities and a vast number of colleges and private universities. There are about one million students, compared to only 7,000 in 1970, indicating the growth of education in the kingdom (Royal Saudi Embassy in the USA, 2015). According to World Bank (2015) statistics, Saudi Arabia's average tertiary education enrolment of 51% for the period 2005 to 2009 is comparable to that of the United Kingdom.

The system of education in Saudi Arabia is predominantly based on enabling students to embody the theoretical and practical values of Islam, along with equipping them with the right knowledge and technical skills to remain competitive in the international market (World Data on Education, 2011). Students in Saudi Arabia undergo six years of elementary education beginning at the age of six, followed by three years of intermediate education and another three years of high school education (World Data on Education, 2011). After finishing high school, students can choose between four years of undergraduate studies in social sciences or five to six years in the fields of engineering, medicine and pharmacy (World Data on Education, 2011). Master's degree

programmes and doctoral programmes take two and three years, respectively, to complete, similar to programmes in Western countries (World Data on Education, 2011). Arabic is generally the language of instruction even at advanced levels (Heyn, 2013). There are separate schools and colleges for male and female students; with gender segregation being strictly enforced at all levels (Al-Saif, 2013). Learning is generally assessed with the help of periodic systematic assessment tests and a final examination at the end of the year (World Data on Education, 2011).

2.1.2 Information Services and Provision in Saudi Arabia

Information services and resources have always been at the centre of education and knowledge in the Arab world, with scholars tracing Islamic libraries to as early as the medieval period (Spiegel, 2011). Saudi Arabia is home to some of the most prominent Islamic libraries, with the mosques of Mecca and Medina considered some of the earliest and most well-known libraries of the Arab world (Avrin, 2010). As information services have continued to grow and evolve in the rest of the world, libraries and information services in the Arab world have also undergone radical transformations, with Saudi Arabia at the forefront of such developments.

According to Khurshid (2002), information services in Saudi Arabia have always been forerunners in terms of content and technology. Internet penetration in Saudi Arabia is high, reported as around 60.5% in 2013, one of the highest penetration rates in the Arab region (Internet World Stats, 2013). Most university libraries in Saudi Arabia have sophisticated information systems and digital resources.

Apart from sourcing their own research, resources and services, many of the universities in the Kingdom also belong to the Saudi Digital Library (SDL) initiative launched by the Ministry of

Higher Education, which aimed to create a large digital collection that can be shared by multiple universities, in order to enhance their information services and provision (Saudi Digital Library, 2015).

Yet, despite all these developments, some researchers, such as Al-Suqri (2010), consider that information services in the Arab world lack adequate organisation and research. Most of the journals in the Arab world are published in Arabic, and it remains the main language for information science research and communication in many universities. Attempts to establish universally accepted bibliographic standards for Arabic resources have not met with any considerable success (Khurshid, 2002). Additionally, being a conservative country, Internet use is heavily monitored through strict censorship rules, and information considered sensitive or undesirable is often blocked by the government (Black, 2009). Consequently, students from Saudi Arabia often struggle in Western universities due to their unfamiliarity with non-Arabic systems and the uncensored availability of resources.

2.1.3 Information-Seeking Behaviour of Saudi Students within their Home Country

Several research studies have been carried out on the information-seeking behaviour of Saudi Arabian users in general. These have focused on myriad aspects and contexts such as the information-seeking behaviour of Saudi Arabian women with respect to health information (Farih et al., 2014), the behaviour of Saudi Arabian physicians when searching for information on drug information centres (Abou-Auda, 2008), the information-seeking behaviour of primary care doctors regarding health information using technological resources (Alghanim, 2011) and the information-seeking behaviour of the general public with respect to religious information seeking on social media (Almobarraz, 2014). The findings of these studies shed light on the information

needs and strategies of users in different contexts. The findings also reveal that lack of awareness, lack of access and cultural inhibitions create barriers for information seeking for Saudi Arabian users.

There have also been some studies with a specific focus on the information-seeking behaviour of students within the academic context of Saudi Arabia. One of the prominent studies in this regard is that by Al-Saleh (2004), who studied the utilisation of electronic information resources by Saudi Arabian students in three Saudi universities, and found that the rate of usage was low due to language problems, lack of skills, insufficient instructions and low levels of perceived usefulness. However, more recent studies, like the one by Hussain and Ahmad (2014) that analysed the information-seeking behaviour of teachers and students in King Saud University, have found that the popularity and preference for electronic information sources, including the Internet, have been increasing. This indicates changing trends among Saudi Arabian students. There is also evidence that the number of Saudi students who intend to use e-learning is rising, key motivators for it being perceived ability to be useful, perceived convenience of use, enjoyment, attitude, computer self-efficacy and self-efficacy in the process of e-learning (Alenezi et al., 2010). These findings, although not directly connected with the topic of information-seeking behaviour, provide an image of increasing acceptance of information technology and services among Saudi students. At the same time, other studies suggest that students from Saudi Arabia, particularly female students, are not very comfortable using certain aspects of technology such as social media openly, due to cultural inhibitions, and often end up disguising their identity (Al Khaddaf, 2010). This indicates a clash between the desire to embrace change and the need to conform to societal norms while seeking information.

This idea is further reinforced by Almeahmadi, Hepworth and Maynard (2014), who studied the information-sharing behaviour of female academics in Saudi Arabia and found that although participants shared information as part of their personal and professional life, they also exhibited a tendency to withhold information. Withholding of information typically occurred due to competitiveness or in order to avoid upsetting others and respecting their feelings. This indicates the role of culture in information-seeking and sharing behaviour, given that Saudi Arabia is considered to be a collectivistic society where people attempt to maintain group harmony, avoid conflict and save face (Trompenaar, 1998; Hofstede, 2013).

However, a major caveat of these studies is that they are conducted within the context of Saudi Arabian society, where users are already familiar with aspects like culture, norms, systems and language, and hence unlikely to experience barriers related to these. While the findings provide valuable information on Saudi Arabian students regarding the information-seeking behaviour of students in Saudi Arabia, they may not be accurate in contexts or cultures that are unfamiliar to the students. For instance, Alqahtani (2011) contends that Saudi Arabian students experience more specific barriers and issues in Western countries like the UK compared to students from other international locations. Given the cultural and pedagogic differences between Saudi Arabia and the UK, this is not surprising. Before delving into the reasons for this, it is necessary to understand the differences between the systems of Saudi Arabia and the UK.

2.2. The UK Context

The UK's education system is comprised of five stages: elementary level education, primary education, secondary education, further education (FE) and higher education (HE) (Gov.UK, 2012). Elementary education starts for children at the age of three and continues to the age of five,

after which they are placed in primary schools. Primary school education continues to the age of 11, after which secondary education continues until the children attain the age of 16 (Gov.UK, 2012). The primary and secondary stages are mandatory for all children between the ages of five and 16, while the remaining two stages are optional (Gov.UK, 2012), the mandatory age of school leaving for the students is presently 18 in the UK (Gov.UK, 2019).

After finishing secondary education, culminating in GCSE (General Certificate of Secondary Education) exams, students who are looking for academic opportunities may attend further education institutes, while others may attend work-based training. Work-based training generally comes under the further education system and is provided by FE colleges and adult and community learning institutions (Gov.UK, 2012). Higher education begins at age 18, and is provided by universities. The UK HE system has been aligned to other European states through the Bologna process (The Europe Unit, 2005). According to the Bologna agreement, undergraduate studies take three years to finish, a master's takes one or two years, and doctoral studies last three years in UK institutions. Although religious schools consist of a third of all state-funded schools in the UK, religion is not a dominant aspect of education in the UK (Harrison, 2011). This is in direct contrast to the education system of Saudi Arabia, where religion is at the core of the system. Gender segregation is uncommon within the education system in the UK.

2.2.1 Information Services and Provision in UK HE

Traditionally, information resources and services in the UK have been provided by public libraries run by local governments and monitored by the central government, as well as academic libraries run by universities (Department for Culture, Media and Sport, 2014). Both public and academic libraries in the UK have standardized systems and use internationally recognized coding standards

such as MARC (Machine-Readable Cataloguing) for cataloguing their resources (Kesselman and Weintraub, 2004).

Public libraries in the UK are highly advanced and have been delivering a comprehensive range of information services to the public for over 150 years (Department for Culture, Media and Sport, 2014). In recent times, most public libraries have also embraced technology, and now offer digital resources, computer facilities, Wi-Fi access and automated systems. Academic libraries in the UK strive to give a wide scope of information resources and services to users. Most higher education institutions in the UK are research-intensive (Research Information Network, 2010). Consequently, providing adequate information resources and services has always been a high priority for them. According to a report by the Research Information Network (2010) on the information services provided by four prominent universities in the UK, all universities provide students with digital resources, tools, training, bulletins, databases, virtual research environments, and other information resources and services.

Students in the UK also use the Internet and social media extensively for their information needs. According to Internet Live Stats (2014), the UK has one of the highest Internet penetration rates, with close to 90% of people having Internet accessibility. The number of Internet users in the UK was around 57,075,826 in 2014, with a 3% annual growth rate (Internet Live Stats, 2014), indicating that within the next few years, almost every household in the UK will have Internet access. Hence, it is likely that the Internet and its associated technologies like social media and mobile Web play a critical role in the information-seeking behaviour of students in the UK.

2.2.2 Information-Seeking Behaviour of UK Students

Unlike research into the information-seeking behaviour of Saudi Arabian students, there is no lack of research exploring the information-seeking behaviour of students of the UK. Ample studies have focused on the needs, strategies and barriers faced by UK students while seeking information. A common theme of these studies in recent times has been the increasing patronage of electronic resources and the Internet by students. According to the outcomes of a study by ONS (2019), smartphones are being used by 78% of the adults in Britain in the year 2018. Furthermore, approximately 42% of adults used to access tablet devices for seeking internet-based information across the UK (ONS, 2019). However, it is further reported that 26% of adults are not using security features currently emerged in smartphones in terms of cyber-security applications (ONS, 2019a). Thus, the training need is found in regard to make secure information searching for the students.

On the other hand, according to a report by the Research Information Network (2010), British students indicated that they did not find the information-seeking skills training provided by the libraries useful, as they were found to be confident in their own abilities to search for the required information. A prior study by the Research Information Network (2007) on the utilization of libraries in HE institutions and UK's information services had highlighted similar findings. The study reviewed the behaviour of 2,250 students and found that they had adapted very well to digital content and resources and were eager for more. The study also found that most researchers use electronic tools to locate information, and print catalogues were rarely used.

At the same time, given the ease of uncensored access to information within the UK, researchers have expressed concerns about the quality of information that is being received by students. Bawden and Robinson (2009) suggest that the abundance of information readily available to

students may lead to ‘information overload’. They argue that modern-day Internet technologies based on the dynamic Web 2.0 concept allow information to be altered by anyone over time, making the relevance of such information questionable. Even within academic libraries, students are sometimes said to be overwhelmed by the range of systems and points of entry that they have to navigate to find relevant information (Research Information Network, 2010).

In addition to this, a critical barrier faced by international students while studying in the UK is language. Unfamiliarity with the language makes it tough for a student to have effective communication with other students and teachers, which restricts their understanding and knowledge level. This situation can be critical from the perspective of the level of confidence of the student. Overall, however, research shows that UK students are unlikely to face the same barriers that students from Saudi Arabia face, not only because of fewer access restrictions and better availability of information but also due to their cultural conditioning.

2.2.3 Saudi Arabian Students in the UK

The Ministry of Education of Saudi Arabia considers education the main basis for the creation of valuable human capital. Towards this, a considerable amount, accounting for around 25% of the overall national budget of Saudi Arabia, is spent on education (Gov.UK, 2015). This is very high compared to countries like the US, which allocate around 2% of their budget to education (Penn State, 2013). The Ministry also introduced the National Commission for Assessment and Academic Accreditation (NCAAA) in 2004 for quality assurance in the educational sector (Al-Shehri and Al-Alwan, 2013, p. 77). However, meeting the demand for HR due to the rapidly increasing population remains a problem for the Saudi Arabian education system.

According to Onsman (2011), native Saudi Arabian instructors often lack experience, and non-native instructors who have sufficient experience can lack the cultural know-how required to teach in Saudi Arabia. This is corroborated by Alhwairini and Foley (2012), who argue that there is a misalignment between the expected quality and the actual quality of programmes provided by many Saudi Arabian universities. Consequently, students from Saudi Arabia are routinely sent abroad for further study through aid and scholarship programs funded by the government (UNESCO, 2013). Due to the availability of large funds for education, universities in Saudi Arabia have the ability to sponsor highly performing students who want to study abroad. The King Abdullah scholarship programme, established in 2005, allows large numbers of students to study abroad, with the stipulation that they return to Saudi Arabia upon graduation to fulfil its needs for faculty staff (Alamri, 2011).

According to various reports, Saudi Arabian students form a huge chunk of the foreign student population in Western countries. Project Atlas (2014) estimates the number of Saudi Arabian students in the US to be around 53,919, and places Saudi Arabia at the fourth position in terms of international student enrolment. The Canadian Bureau for International Education (2014) places Saudi Arabia in the top five countries that make up 60% of the international student population in Canada. Similarly, Saudi Arabia is at the seventh position in with respect to international student enrolment in the UK (UK Council for International Student Affairs, 2015). Furthermore, trends show that the number of Saudi students travelling to Western countries is increasing every year, with the global mobility of the students almost doubling from 44% in 2004/05 to 82% in 2011/12 (World Education News and Reviews, 2012).

The US and the UK remain the most popular destinations for students from Saudi Arabia, and universities in Saudi Arabia conduct orientation and cross-cultural programmes to help students prepare for their studies in these countries. Yet studies indicate that students from Saudi Arabia continue to struggle in Western universities and are often unable to deal with the requirements of academic rigour (Heyn, 2013). One of the likely contributing factors in this regard is said to be their inability to seek and obtain relevant information. In order to analyse the rationales behind this, it is useful to compare the differences between the pedagogic systems and cultures of the UK and Saudi Arabia in depth. This will help in analysing the information-seeking behaviour of Saudi Arabian students in the UK.

2.2.4 Differences between the Education Systems of the UK and Saudi Arabia

From a structural perspective, there are few similarities between the education systems of the UK and Saudi Arabia, particularly when it comes to higher education. Both systems have provision for master's degrees lasting two years and doctoral degrees lasting at least three years. Both systems include advanced curricula with a focus on embedding technological advancements to aid learning. However, apart from these, there are very few similarities between the systems of the countries. Religious education needs are lower in the United Kingdom, despite the presence of 'faith schools', which enrol only a minority of students (Harrison, 2011). In contrast, Saudi educational institutions are highly influenced by Islamic curricula. The strategic programme of the Ministry of Education of Saudi Arabia expressed its academic vision as "engendering a new generation of male and female youth who embody the Islamic values in their persons, both theoretical as well as practical" (UNESCO, 2011, n.p.). Study of Islam is a prominent part of the Saudi educational system and memorization of large parts of the holy Qu'ran and the practical application of Islam in daily life form the crux of the curriculum. These foundational differences in the basic objectives lead to

several other differences between the educational systems of the UK and Saudi Arabia, key among these being pedagogic differences and cultural differences, which manifest themselves in the classroom behaviour of students.

2.2.5 Differences in Online Search Skills between Researchers in Less Developed Countries and Development Countries

According to a number of researchers (Bassett and O’Riordian, 2002; Berry, 2004; Nosek, Banaji and Greenwald, 2006; Mondria, Wu and Zhang, 2010; Morville and Wickhorst, 2013; Panter, 2013; Power, Karthik and Subramanian, 2014; McCutcheon et al., 2015; Jääskelä, Nykänen and Tynjälä 2018), search engines have become ever more ubiquitous tools for users exploring information on the World Wide Web. They are broad information tools which provide easy access to students for the purposes of occupational learning, educational learning and private use. According to the many studies (Willison and O’Regan, 2007; Hair, Celsi, Ortinau and Bush, 2008; Ritchie, Lewis, Nicholls and Ormston, 2013; Hewson and Stewart, 2016), search engines provide vast amounts of information, which varies in terms of both quality and quantity.

Mathwick and Rigdon (2004), along with Herring, Barab, Kling and Gray (2004), have proved that in developed countries students are provided with a wide range of e-learning tools, compared to under-developed countries. Students are provided with generic and specialized search engines through which they can categorize and document the articles or information needed. In countries such as the US and the UK, students are allowed to access multiple search engines worldwide and are also provided with critical thinking skills, which help them to evaluate the information based on relevance and credibility. In developing countries, students are less well aware of critical

thinking, which results in incorrect use of resources, which in turn has serious consequences for research, resulting in research of poor quality.

Studies by McCutcheon et al. (2015) and Jääskelä, Nykänen, and Tynjälä (2018) show that in higher education in developed countries students are using search engines frequently. However, they are finding it difficult to select adequate sources and online information due to less accessibility. Herawan et al. (2017) and O'Sullivan and Dallas (2017) both mention that it is essential not only to search for the required information but to comprehend it by linking it with research. Students in under-developed countries often face problems in comprehending information due to lower reading and writing proficiency. Especially in Saudi Arabia, students are more inclined to use their mother tongue, i.e., Arabic, which hinders them in exploring online information in English. Linguistic skills must be taught in order to enhance the reading, writing and listening proficiency of research students.

Studies by Nosek, Banaji and Greenwald (2006), Mondria, Wu and Zhang (2010), Morville and Wickhorst (2013), and Panter (2013) have all raised questions related to reading skills and how they affect the search skills of students in both developed and under-developed countries. The major aspects such as the use of keywords, reading skills and the formation of proper sentences with the support of keywords and effective vocabulary are needed for students to make effective searching of information on internet sources. Bulkow, Urban and Schweiger (2012) depicted that according to the dual processing theory, Web users tend to synthesis the information in two ways, systematically and heuristically. Heuristic evaluation relies upon using of limited keywords or characters for getting cures and evaluating any published records for seeking information (Bulkow, Urban and Schweiger, 2012). However, in systematic processing, on the other hand, users conduct

an extensive evaluation of the information sources and collected information. Systematic processing is highly trustworthy because it involves detailed review and evaluation of sources and the relevance of the acquired data. The systematic process is often seen to be lengthy and slow, but it offers the correct and relevant information as per the expectations of users (Bulkow, Urban and Schweiger, 2012).

2.2.6 Differences in Search Skills between Developed and Under-Developed Countries

According to studies by Willison and O'Regan (2007), Hair, Celsi, Ortinau and Bush (2008), Ritchie, Lewis, Nicholls and Ormston (2013), and Hewson and Stewart (2016), Web information searching, or e-learning require good search skills, which help in formulating relevant knowledge as per the requirements of a researcher or a student. When students are unable to narrow down information, they start to find it difficult to manage the generalized data. They can be overwhelmed by the results which are provided by the search engine. When students are not provided with the resources necessary to manage information, they have a problem in maintaining the data intelligently (Hewson and Stewart, 2016). In developing countries, students use the simpler and basic forms of information search tools, which lead to inefficiency in their research. A majority of queries that are searched by students in under-developed countries are simple keywords which do not elaborate on the topic or its related terms. Students in developing countries also show inflexibility due to less access to Web-based technology (Govender and Govender, 2014). They tend to stick with a particular search strategy, which results in a lack of success. According to Alexopoulou, Morris and Hepworth (2014), in developed countries, students are provided with more alternatives and are instructed in multiple ways to explore alternatives. Students are taught about the formulation and reformulation of queries, which results in a supportive Web searching environment (Alexopoulou, Morris and Hepworth, 2014).

As mentioned by Jääskelä, Nykänen and Tynjälä, (2018), the most significant factors which affect search effectiveness are level of expertise, domain knowledge and advanced search techniques. Domain knowledge refers to the knowledge of an individual about a specific topic. Those students who are experts search for information more efficiently than people who have no knowledge about the domain. The study by Willison and O'Regan (2007) found that domain knowledge has a significant impact on search behaviour, and results in positive or negative search performance. If the students that are conducting research have accurate domain knowledge then they perform better. Students that do not have domain knowledge are unable to search efficiently and this results in poor outcomes. Lohan, Traynor and Martin (2015) described how domain experts employ various search abilities, including:

- Journal articles searching
- Author-based searching
- Citation searching
- Known items searching
- Footnote follow-up

Hence, the level of domain knowledge affects the number of terms or the types of terms which are selected and incorporated for the purpose of searching. This creates potential benefits for students who are experts compared to students who are non-experts. Willison and O'Regan (2007) suggest that students in under-developed countries must be taught expert search strategies in order to improve their search results.

2.2.7 Differences in Libraries and Online Virtual Learning Environments between Developed and Less-Developed Countries

According to Celsi, Ortinou and Bush (2008), the library plays a major role in online searching. In developing and developed countries, universities and colleges provide virtual learning tools, and a library environment in which students can experience a quality environment along with access to multiple journals. Hewson and Stewart (2016) note that the emergence of digital technology increased the provision of electronic resources such as online catalogues, e-books, e-journals, reference management systems, online web pages and bibliographic databases. These sources allow researchers to access relevant information more easily, and to explore an in-depth perspective regarding the phenomena they are interested in. The researcher gets quality materials and the bibliographic tools necessary to create and update a personal collection for future use. A study by Parascript (2017) shows that digital learning through mobile applications facilitates students with the opportunity of improving learning outcomes by seeking pertinent and detailed information through the internet. According to the study of Willison and O'Regan (2007), domain knowledge has a significant impact on search behaviour and results in positive or negative search performance. Library access and efficient management systems result in enhancing academic outcomes for students. Library access increases self-reporting behaviour and prioritizes indirect tools, through which students can find relevant information about the phenomena they are researching. Mertler (2008), however, notes that, on the contrary, graduate students are not provided with a library support environment, which hinders them from future achievement. There is limited access to e-resources for students in developing nations due to which they face difficulties in obtaining information and knowledge about their academic subjects to achieve effective learning outcomes.

Study by McCutcheon et al. (2015) suggests that under-developed countries need to focus on establishing academic libraries by utilizing emerging technologies. Digital technology has revolutionized overall student learning behaviour. According to a study by Nicholls and Ormston

(2013), online searching tools, such as the web-based searching engine, help to provide quality learning to students, via the creation of metadata, teaching information, managing resource licenses and maintaining digital repositories. Academic libraries aim to satisfy the need of students and researchers so that they can contribute to institutional development. Baba, Jain and Howlett (2001) noted that students prefer more qualitative information when they are looking for exploratory topics. Universal access to resources not only provides benefits to students in term of accessing journals worldwide but also supports them to use other information resources such as news, books, articles and videos to seek extensive knowledge about the subject area. However, as argued by O’Sullivan and Dallas (2017), the development of academic libraries is often costly and requires a large budget, which is often out of reach for developing countries. Therefore, the drivers of cost and budget affect the implementation of a virtual learning environment, a lack of which results in poor student research outcomes.

2.2.8 Differences in the Design of Digital Information Systems and Strategic Internet Search Skills between Developed and Less-Developed Countries

According to Morville and Wickhorst (2013) designing any digital library or information system requires the most basic objective, which is facilitating students’ access to information. This includes the organizing, labelling, and navigation of information, as well as searching for information, which needs to be properly addressed in order to avoid any type of hindrance. The structure and organisation of content must be based on specific criteria which can be explored by students. The labelling system needs to be efficient and it must determine the terms, such as options, categories and linkages. The overall virtual environment must be user-friendly and the navigation system must provide comfortable ways of searching. According to Mondria, Wu and Zhang (2010), under-developed countries are often unable to provide digital learning and access to information

by electronic devices such as mobiles and tablets. Students are provided with manual libraries, and even if they are provided with online search facilities then they are less effective at using them compared to students from developed countries. The study by Jääskelä, Nykänen and Tynjälä (2018) outlined multiple Internet search skills and the differences among skills between developed and under-developed countries. These skills include:

Formal Internet skills – According to study by Nosek, Banaji and Greenwald (2006), formal Internet skills are associated with the knowledge of hypermedia structure that comprises graphics, texts, videos, audio and programs and involve the orientation and navigation of data. In developed countries, students are taught these skills and this result in better research outcomes. Study by McCutcheon et al. (2015) has shown that students in developing countries are not provided with formal Internet skills, which creates problems in orientation and navigation. The specifications of the formal internet skill involve knowledge related to general hypermedia like text and graphics that helps users to navigate and browse the information from the internet easily. Thus, this specific set of skills is inevitable for users to attain a fundamental understanding of internet searching (McCutcheon *et al.*, 2015).

Operational Internet skills –In developed countries, students are provided with modern technology that ensures quality outputs. In developing countries, students are provided with basic skills for using Internet tools, but they are of lower efficiency compared with developed countries. The operational skill is specified in terms of attaining proper command on browsing internet through knowing its core functionality of sorting, personalising and arranging the information that is to be searched. In this regard, proper knowledge of the use of pertinent keywords and filter of sources such as news, books and articles must be known to the users (Van Deursen, Courtois and van Dijk, 2014).

Information Internet skills – Information Internet skills refer to skills which users are required to have in order to fulfil their information needs. These skills allow them to get transparent, reliable and accurate information; this is also referred to as the staged approach (McCutcheon et al., 2015). The information internet skills can be specified as means of the skills through which users can customise the information as per their needs and interest by forming specific phrases through key words and attaining access to the sources (Van Deursen, Courtois and van Dijk, 2014).

Strategic Internet skills – Study by Herring, Barab, Kling and Gray (2004) describe how strategic skills involve the capacity to use online tools in order to achieve the desired goals. This involves using the Internet for the purpose of knowledge collection, which allows the decision-maker to reach towards optimal outcomes. Buchanan, Krantz and McGraw (2016) determined that strategic Internet skills provide students with a direction which helps them to achieve their goals. The specification of strategic internet skills involves the skills that are related to optimising internet search, using brief and to the point phrases through logical thinking to do searches and to find optimal solutions to fulfil the information searching related needs (Buchanan, Krantz and McGraw, 2016).

2.2.9 Pedagogic Differences

Perhaps the biggest difference between the educational systems of the UK and Saudi Arabia is the concept of gender segregation. In the UK, male and female students are rarely segregated except for certain gender-specific sports and activities. On the other hand, gender segregation is enforced, accepted and a norm in Saudi Arabian institutions (Wagemakers, Kanie and Geel, 2012). Male and female students at all academic levels are mostly segregated, and separate schools, colleges and universities exist for both genders (UNESCO, 2011). Even the faculty members in education institutions are hired according to their gender. There are only five universities in the Kingdom that

allow admission of students from both genders, and four of these still enforce gender segregation (Penn State, 2013). Only the King Abdullah University of Science and Technology has fully relaxed the rules and allowed integration of male and female students (Meijer, 2010).

It is important to acknowledge that enforced gender segregation does not inhibit women from pursuing higher education, and women constitute 60% of the student population in Saudi Arabia (Penn State, 2013). Princess Nora bint Abdul Rahman University in Riyadh is one of the biggest all-women universities in the world, with a sophisticated, high-tech campus and an enrolment of approximately 50,000 students (Penn State, 2013). However, it undoubtedly creates an aura of social taboo with respect to the mixing of genders. Wagemakers, Kanie and Geel (2012) confirm this by pointing out that gender segregation is not only accepted but also welcomed, often by the women themselves, in Saudi Arabia. Students who are unused to the co-educational systems are likely to find it difficult to interact freely in such environments, as their ideas of participation, information sharing, and liberty would be different from those of Western students.

Another key difference between the UK and Saudi Arabian systems of education is the medium of direction. In Saudi Arabia, Arabic is the language of instruction within classrooms, as well as the language of scholarly communication, even at advanced academic levels (Heyn, 2013). Arabic is not only phonetically, semantically and syntactically different from English but is also read in the opposite direction (i.e. from right to left). Although English is taught to Saudi Arabian students, the English language proficiency of most students is rated as poor, even by Saudi Arabian researchers (Ahmed et al., 2014). This, in turn, may affect their academic performance in the UK and in English-language universities, as well as their capacity to search, select and determine the significance of information online, when it is presented in English. Poor language skills may also

affect their ability to interact freely with other students and instructors, when seeking and sharing information in Western universities.

Many scholars have also criticized the ‘rote learning’ approach followed in Saudi Arabian universities, which is based on the idea of compelling students to memorize large parts of the holy Qu’ran. Allamnakhrah (2013) points out that the teaching methods in Saudi Arabia seem to inhibit the development of critical thinking among students due to the rote-learning and memorization approaches followed. To address this issue, the government of Saudi Arabia has initiated a reform programme called ‘Tatweer’, with an approximate budget of 2 billion USD. The aim of the programme is to modernize the Saudi education system by encouraging a more secular, dynamic and problem-solving approach to teaching (Alyami, 2014). However, it is a long-term initiative and the success of the programme remains to be seen, particularly considering that teachers in Saudi Arabia are sometimes said to struggle with modernized approaches to teaching due to conflicts with their cultural values (Elyas and Picard, 2012).

2.2.10 Cultural Differences

Plato (427–347 BC) once said “Those who are able to see beyond the shadows and lies of their culture will never be understood, let alone believed by the masses” (pp 26). This quotation perfectly summarizes the role and importance of adhering to cultural norms. For many people, going beyond cultural norms may not only be undesirable but unthinkable. Hence, in considering the differences between the educational systems of the UK and Saudi Arabia, it is critical to explore the importance of underlying cultural differences. These cultural differences may manifest themselves in terms of the classroom behaviour of students, their approach to information seeking and their ways of communication.

Saudi Arabia is considered to be a high power-distance country, based on Hofstede's (1980) classification of cultural dimensions. The Kingdom's score on the power distance index is 95, which is one of the highest among all the surveyed countries. This essentially means that people in Saudi Arabia are highly acceptive of unequal distributions of power among members of society and believe in hierarchical positions. Authority is acknowledged, accepted, respected and even welcomed by Saudi society, as seen in the absolute deference towards the monarchy. High power-distance cultures typically follow a hierarchical, authoritarian pattern of organisation. Several studies have confirmed the findings of Hofstede (1980) with respect to power distribution in Saudi Arabia, and also pointed out that power distance affects various aspects of the personal and professional lives of Saudi Arabians.

The high-power distance in Saudi Arabia also manifests itself in classroom behaviour; students are encouraged to listen, obey and not question the lecturer. Tweed and Lehman (2002, p. 91) summarize education in such cultures as attempts towards "effortful learning, behavioural reform, pragmatic learning, acquisition of essential knowledge and respectful learning". Consequently, students in Saudi Arabia are likely to see the teacher as an influential figure whose job is to transfer knowledge, while their responsibility is to absorb the knowledge with respect and without questioning. Even if they are unsure about a certain concept and need further information, students are likely to refrain from challenging authorities for fear of appearing disrespectful. This is in direct contrast to acceptable behaviour in low power-distance cultures like the UK, where discussion and critical debate within the classroom are not only welcomed but encouraged. Saudi Arabian students may view this as disrespectful, aggressive and disruptive behaviour. Indeed, Huang and Cowden (2009) point out that students who are unfamiliar with the Western academic model may have

several misconceptions, which may cause them to view the environment as “informal and disrespectful” and thus remain disassociated from it.

Saudi Arabia is also a highly collectivistic society, as defined by the cultural dimensions of Hofstede (1980). With a score of 25 on the individualism index, it can be posited that people in Saudi Arabia value collective welfare over individual welfare and are highly concerned about maintaining face value and social appearances. Combining this with Chatman’s (1996) concept of information poverty leads to the idea that students from collectivistic societies are less likely to seek information freely for fear of appearing ignorant, vulnerable or disruptive in classrooms. This is corroborated by studies that show that Saudi Arabian students are apprehensive about using social media for information exchange and are reluctant to ask questions in classrooms (Huang and Cowden, 2009). On the other hand, given the collectivistic nature of their society, students from Saudi Arabia may be more likely to approach their friends or family members for information.

Apart from being a high power-distance culture, Saudi Arabia also follows a high-context communication style, in which non-verbal cues and implications are as important as verbal or written communication (LeBaron, 2003). This is in contrast to cultures like the UK that follow a low-context communication style, where the focus is mainly on verbal and written communication, and messages are direct and explicit (LeBaron, 2003). According to Inoue (2007), in cultures that follow high-context communication styles, silence is considered a virtue and a sign of respect, which might manifest itself in classroom behaviour. Lowell and Devlin (1998) examined the classroom behaviour of Australian students and found that those who were used to a communication style different from the dominant style of the classroom were at a disadvantage. Hence, it can be posited that students from high-context communication cultures like Saudi Arabia

are at a disadvantage in UK classrooms, as they may feel that they are being respectful by remaining silent and passive. This may prevent them from seeking the clarification and information they need. In addition to this in some of the universities in the UK consider the seminar performance of the students as grading criteria. In the case, if they are silent in the class, their grades will get affected if they will be silent in the classroom. Apart from direct manifestations, cultural differences are known to manifest themselves in indirect forms, such as different understandings regarding the role of teachers and instructors, differing expectations regarding classroom behaviour, and different interpretations of information.

While acknowledging the possible role of cultural dimensions in information-seeking behaviour, it is also essential to note criticisms that claim that cultural attributes cannot be absolute or accurate predictors of behaviour (Blodgett, Bakir and Rose, 2008). Indeed, Saudi Arabia scores low on the Long-Term Orientation Index, indicating that people in Saudi Arabia value past traditions, values and customs over future plans. Mapping this to the information-seeking context, it would be reasonable to posit that students from Saudi Arabia may try to use old, tried and tested methods for their information requirements. Yet research has indicated that Saudi Arabian students are as likely to accept technology and change as their Western counterparts (Alenezi et al., 2010). This proves that cultural dimensions can only be used as broad frameworks to understand behaviour, and it is highly important to consider individual factors and context in order to arrive at a true apprehension.

2.2.11 Information-Seeking Behaviour of Saudi Students in the UK

With the increasing mobility of students and their travel to international destinations for higher education, there has been ample focus in recent times on the differing information-seeking behaviours of international and domestic students. Catalano (2013) synthesized the literature on

the information-seeking behaviour of graduate students and found that international students face several problems in information seeking due to their lack of English proficiency, cultural differences, unfamiliarity with Western systems and other factors. Based on this premise, it is not difficult to see that students from Saudi Arabia may face a variety of problems while studying abroad in countries like the UK, given the cultural and pedagogic differences between the UK and Saudi Arabia discussed so far. For instance, Palmer, Tefteau and Pirmann (2009) classify the various tasks involved in educational information activities into several core activities: searching, collecting, reading, writing and collaborating. They also allocate several core aspects of each of these core activities as shown:

- | | |
|--|---|
| <ul style="list-style-type: none"> 1. Searching <ul style="list-style-type: none"> 1.1 Direct searching 1.2 Chaining 1.3 Browsing 1.4 Probing 1.5 Accessing 2. Collecting <ul style="list-style-type: none"> 2.1 Gathering 2.2 Organizing 3. Reading <ul style="list-style-type: none"> 3.1 Scanning 3.2 Assessing 3.3 Rereading | <ul style="list-style-type: none"> 4. Writing <ul style="list-style-type: none"> 4.1 Assembling 4.2 Co-authoring 4.3 Disseminating 5. Collaborating <ul style="list-style-type: none"> 5.1 Coordinating 5.2 Networking 5.3 Consulting 6. Cross-cutting Primitives <ul style="list-style-type: none"> 6.1 Monitoring 6.2 Notetaking 6.3 Translating 6.4 Data Practices |
|--|---|

Figure 2. 1: Scholarly activities and their different aspects
(Palmer, Tefteau and Pirmann, 2009)

Given the cultural and pedagogic differences between the UK and Saudi Arabia, students from Saudi Arabia may face problems in one or more of the above activities. For instance, searching and collecting information, which is the essence of the information-seeking process, can often be quite

complex (Palmer, Teffeau and Pirmann, 2009). Students from Saudi Arabia, who are used to Arabic as the medium of instruction, might struggle in completing these tasks effectively. Additionally, they might also struggle with reading and writing activities, not only due to linguistic problems but also due to the different approaches that they are used to. Students who are used to gender-segregated classrooms and authoritarian classroom cultures might struggle to collaborate with students, teachers and librarians, particularly those from the opposite gender, for their academic projects and information needs.

The information needs and problems of students from Saudi Arabia are also likely to be different from those of students from other international countries like China and India, where the rules for gender integration are far more relaxed, using English for the instruction medium is common and funding for students is limited. Based on this premise, it can be posited that Saudi Arabian students are in a unique position with respect to their attitudes, information needs, strategies and barriers.

Although several studies have emphasized the information needs and strategies of international students, there are hardly any studies that specifically explore the information needs and strategies of Saudi Arabian students in Western universities. Hanson (2012) carried out a study on the experiences of Saudi Arabian students at a US university, but the study focuses on acculturation aspects instead of the information-seeking behaviour of the students. Hanson found that students from Saudi Arabia often have problems integrating into the host culture due to their religious upbringing, differing cultural values and language barriers; these in turn might hamper their ability to successfully seek information.

A study by Heyn (2013) focused on the experience of male Saudi Arabian students studying in US universities. Heyn explored their expectations, actual experiences, study strategies, support strategies and the impact of US culture on their values. According to the study's findings, students from Saudi Arabia face a range of problems in the US, such as adjustment problems, gaps between expectations and reality, culture shock, and conflict of values (Heyn, 2013). The study also highlights the role of personal and professional factors such as duration of stay, age, marital status, prior experience, language skills and other factors in facilitating or hindering the experience. These findings, although not specific to information-seeking behaviour, highlight the influence of context and both internal and external factors on behaviour.

One of relatively few studies to explore the needs of Saudi Arabian students in the UK is that by Alqahtani (2011). Alqahtani's study explored the language needs of students from Saudi Arabia and found that Saudi students studying in the UK had very specific and unique language needs. This is corroborated to an extent by Heyn (2013), who points out that Saudi Arabian students studying abroad typically receive financial support from the government, owing to the relative affluence of the country, due to which their information needs are likely to be different from other international students (Heyn, 2013).

In terms of barriers to information seeking, researchers have pointed out that students from countries like Saudi Arabia may face barriers due to their lack of proficiency in English, cultural differences and conceptual awareness (Alqahtani, 2011; Hanson, 2012; Heyn, 2013). Jiao and Onwuegbuzie (2001) found in their work on anxiety in the library among students that speakers of English who are not native are likely to face more anxiety compared to native speakers. They divided the source of anxiety into mechanical factors such as inability to use technology, and

affective factors such as feelings of inadequacy during interactions with library staff. Based on the review so far, it is not unreasonable to posit that students from Saudi Arabia are less likely to face mechanical anxiety and more likely to face effective anxiety.

In studying the unique and specific language needs of Saudi Arabian students in the UK, Alqahtani (2011) found that many of their needs and barriers were related to underlying cultural differences. Others like Heyn (2013) have also highlighted the role of cultural differences and the consequent problems for students. However, a key drawback of the study by Heyn (2013) is that it focuses only on the experiences of male students, which is problematic given that female students from Saudi Arabia are likely to face similar or even greater problems in countries like the UK. The study fails to consider the unique position of women from countries like Saudi Arabia, who risk facing isolation and discrimination in Western countries due to their cultural beliefs and their attire, in particular the head covering known as hijab. Such women are likely to face more barriers than men in trying to acculturate into a new culture, as they cannot blend in.

It is thus important to explore the information-seeking behaviour of Saudi Arabian students in a holistic manner, in order to gain a true apprehension of the requirements and barriers faced by them. This is corroborated by Hughes (2013, p. 142) who contends that to understand the behaviour of a diverse international student body without compromising on individual factors requires research that is “inclusive and holistic”. Without this, understanding can only be speculative at best.

2.2.12 Conclusion

It is identified based on the literature that information services in Saudi Arabia are growing at an impressive pace, but in comparison to the developed nations such as the UK, the students are lagging behind in terms of fulfilling their need of seeking information through the internet. From the case of the UK, it is observed that young adults extensively use the internet through mobile phones and laptops for conveniently obtaining information for academic learning purpose. However, due to cross-cultural differences, less access to digital devices and considering English a second language, Saudi students face difficulties in seeking information through the internet. While Saudi students tend to pursue education from the UK, then they get effective access to information for improving learning outcomes because UK based universities provide virtual learning environment through the facilitation of digital devices to students for seeking or attaining wider information through the internet. However, in the UK, Saudi students also face barriers as a means of cultural differences, language difficulties and inadequacy of interaction with faculty. Thus, although previous studies provided effective knowledge on the context of information-seeking behaviour and related barriers for Saudi students in UK education institutions, the detailed insight and practical data have not been obtained to validate the findings. Moreover, the research literature does not provide insights into ways to resolve the barriers to access information. With regard to this, the current study conducts primary research for obtaining realistic and updated information on the impact of UK education on Saudi students' information-seeking attitudes and overcoming the barriers for these students in accessing information resources while pursuing an educational course in the UK.

Chapter 3: Literature Review

3.1 Introduction

This chapter reviews the existing research related to information-seeking behaviour and its various facets. The idea behind the chapter is to set the context for the current research and establish the theory on which it will be based. It begins with an overview of information seeking, and the role of information needs in defining the behaviour. It then provides an overview of information-searching characteristics and a discussion of the changing focus of information research due to the changing needs of users. Specifically, particular attention will be paid to the teaching of information skills in universities.

The review will establish the context of the research by exploring previous research regarding the information-seeking behaviour of Saudi Arabian students overall and Saudi Arabian students in the UK in particular. Given the huge transformations occurring in the area of information searching in the last few decades and owing to the emergence of the Internet and digital media, the literature review will mainly focus on studies carried out since 2000. Nevertheless, earlier studies will be used if they are required to establish the theoretical underpinnings or if they have been particularly influential in the field.

The literature review is divided into three parts. Overall, it is a critical appraisal of research carried out over the last decade on the information-seeking attitude of postgraduate students, particularly emphasising the most recent studies. The first section presents an overview of general studies in the field of information and knowledge searching behaviour, particularly in the field of higher education. This sets the scene for the second section, a survey of the theories underpinning research

into information-seeking behaviour. The final section analyses the information searching models found in the literature, with a special focus on models applied in an academic context.

3.2 Information and knowledge searching behaviour, particularly in the field of higher education

3.2.1 Studies of Internet Usage in Research

The Internet has increasingly become an essential component for researchers because it plays an effective as well as a pivotal role in the collection of relevant information from a variety of scholarly and other sources (Bulman and Fairlie, 2016). As discussed by Hewson and Stewart (2016), there are various advantages to using the Internet for researchers. A major advantage is that there is a huge amount of scholarly and authentic information available on the Internet, which can help the researcher make their research valid and reliable. In addition to this, when searching on the Internet, suggestions are provided by search engines regarding related journals or articles on the topic that is being searched for. These suggested or recommended sources can be helpful for the researcher in gaining more in-depth information regarding the research topic. Another benefit of using Internet-based research approaches is gaining access to populations of potential researchers with whom various opportunities for conducting research have never been attempted before (Hewson and Stewart, 2016).

Markham and Stavrova (2016) regard the use of the Internet for conducting any research as highly beneficial for the researcher. Internet-based research is less time-consuming, less expensive, more accurate in terms of data collection as well as analysis, and more controlled by the researcher. In addition to this, if the research needs a huge sample from various parts of the world then the researcher can fulfil this requirement by doing Internet-based surveys. The cost involved in this

type of survey is less compared to the traditional survey because Internet-based surveys do not need to be printed (Markham and Stavrova, 2016).

On the other hand, as discussed by Hoerger and Currell (2012), there are also some disadvantages associated with the use of the Internet in the context of conducting research. It is essential for researchers to be aware of the fact that the Web is largely an unregulated resource (Hoerger and Currell, 2012). Due to the existence of various unreliable sources on the Internet, there is the probability that the researcher will get the wrong search results. Many sources available on the Internet have been proven to be biased, unreliable and inaccurate. Thus, complete dependency on the Web can lead to misinformed and erroneous research (Hoerger and Currell, 2012).

Denissen, Neumann and Van Zalk (2010) stress that while conducting Internet-based research, the researcher must keep track of several factors in order to make the research authentic and efficient. The research needs to identify whether the material available on the Internet is accurate and reliable or not. Moreover, it must be ensured by the researcher that the information in the sources is stated clearly and includes original material (Denissen, Neumann and Van Zalk, 2010). In addition, it must also be verified by the researcher that the information included in the sources is free from bias, and contains arguments based on effective logic and strong evidence.

Apart from these issues, the Internet allows researchers to access such a huge amount of information that it can be overwhelming (Denissen, Neumann and Van Zalk, 2010). In order to make a search manageable and yield information or data related to the field of research, the researcher is required to use representative and specific keywords related to the research topic. Bassett and O’Riordan (2002) recommend that researchers check that an author, whose source they

use, is affiliated with a reputable organisation or institution, and that websites are up-to-date (Bassett and O’Riordan, 2002).

In summary, the Internet represents a powerful medium for researchers in terms of conducting research. As a means of data collection, the Internet promises access to a variety of scholarly resources, a maximised sample size, a greater diversity of sampling, lower time as well as cost investments, and various other appealing features. However, without due care and attention, researchers may face issues concerning the authenticity and validity of the retrieved information, and hence, ultimately, of the research work itself (Bassett and O’Riordan, 2002).

3.2.3 Subject-Specific Searching

According to Morville and Wickhorst (1996), the Internet is an effective medium for conducting a subject-specific search in the context of any research or academic assignment. Subject-specific searching targets a particular subject area, ensuring the results are relevant and refined (Morville and Wickhorst, 1996). In order to conduct a subject-specific search, subject-specific databases may be utilised. A subject-specific database refers to resources that provide information within a specific discipline, i.e. they are tools that provide comprehensive coverage of scholarly literature in a specifically defined field (Morville and Wickhorst, 1996).

As described by Mondria, Wu and Zhang (2010), one way to conduct a subject-specific search is for the researcher or student to use subject-specific keywords regarding the particular subject so that they can achieve more tailored results. Subject-specific keywords can help the researcher or student in finding subject-specific databases (Mondria, Wu and Zhang, 2010), which are helpful in providing various advantages, including results confined to the area under study. Such databases

also provide customised search options that are specific or particular to the discipline. Thus, in order to make a subject-specific search, the use of a subject-specific database is highly beneficial (Mondria, Wu and Zhang, 2010).

Battles (2010) describes various approaches that researchers or students can take in regards to subject-specific search. One of the approaches is to limit the results to a specific collection in the library. Another approach is to limit the search results to a type of source specifically related to the subject. On the other hand, one can refine the search results by the names of authors who write on the specific topic (Battles, 2010). An efficient way of finding Internet resources on any specific subject is to make use of specialised Internet directories such as Google Directory, environmental directories, radio directories or Yahoo! Directory.

According to Denissen, Neumann and Van Zalk (2010), there are various advantages as well as disadvantages associated with subject-specific searching. Subject-specific searching is precise and helpful in saving considerable searching time for the researcher. It is an effective place to start if the researcher or student already knows the heading of their subject. Moreover, limiting the search to a particular subject, the student or researcher can be assured that the results will actually be about the topic (Denissen, Neumann and Van Zalk, 2010).

Furthermore, it has been argued that subject-specific search tools can avoid homonyms and include synonyms, and the terms entered into the search query are not required to match with the terms in the relevant article for that article to be retrieved (Denissen, Neumann and Van Zalk, 2010). This type of search is highly precise and leads to relevant search results. Both outdated and more modern terminologies for any specific concept are included in the same subject heading, or the researcher

is prompted to use specific subject headings. Additionally, a hierarchy of vocabulary is highly useful in discovering related concepts and narrower topics, as well as additional keywords for specific keyword searches (Battles, 2010).

Nosek, Banaji and Greenwald (2013) describe some disadvantages associated with subject-specific search that relies on fixed subject headings. The headings of the subjects are sometimes not able to address the content or data of individual sections of a work. Furthermore, the over-dependency of databases or catalogue searches on the subject headings discourages individuals from using library resources or catalogues. Besides this, the flexibility of the search is limited or restricted through the manner in which the subject headings are structured.

3.2.4 Key Online Search Skills

According to several studies found in contemporary literature, openness to science and technology has transformed the research landscape and transformed the way that researchers carry out their task. Online searching has been shown to enhance the convenience of learners as well as reducing the costs and information overload placed upon them (Welsh *et al.*, 2003); with heightened experience and positive correlation with the attitude of information seekers (Mathwick and Rigdon, 2004); improved collegiality and socialisation among scholarly networks (Herring *et al.*, 2004). Although online searching might be accompanied by inaccuracies, insufficiencies and questionable credibility (Grant, Clarke and Kyriazis, 2007), the use of automated clustering can improve the coherence of results in more concise and accurate ways – particularly with respect to Arabic language users; which is regarded as one of the more complex languages when searching and even for the clustering algorithms to work reliably (Sahmoudi and Lachkar, 2013). Other challenges encountered during internet based searching include multiple or repeated document submissions,

incompatibility between laboratory and web-based sample data, as well as the international nature of the internet (Reips *et al.*, 2016), as well as, issues relating to plagiarism, citations and ethics (Dolowitz, Buckler and Sweeney, 2008). In order to carry out research in an inappropriate manner, the researcher needs discipline-dependent skills in terms of professional development and skills training at every stage. As elucidated by Mathwick and Rigdon (2004), in the digital era, however, the development of web search skills is crucial for professional success. The ability to sift through and explore vast data and information in the form of reports and journals available online can make a researcher more knowledgeable and efficient.

According to a study by Grant, Clarke and Kyriazis (2007), researchers may use different mediums or mechanisms in order to explore information. Search engines can be used in different ways, and the results from those search engines can be prioritized according to various dimensions (Dolowitz, Buckler and Sweeney, 2008). Google is one of the main search engines, and provides multiple tools that can be used by the researcher. However, these tools can only be used by the researcher if they are well equipped with the know-how about the technology (Mertens, 2014). For this purpose, the teaching of advanced techniques can allow students to identify the most relevant and appropriate tools for exploring online information (Dunn and Rakes, 2015). Below are five advanced methods that can be implemented by academic researchers in order to improve their online searching skills:

- Use of accurate search terms
- Understanding the search results and output
- Narrowing down the search to the main focus
- Searching for evidence regarding researched data
- Evaluating the credibility of sources.

Studies by Willison and O'Regan (2007), Nye (2015) and Gutmann (2014), showed that in less developed countries students are provided with traditional or localised web browsing systems, which result in less effective information searching process. In KSA, for instance, students use European and English browsing systems rather than systems in Arabic, which could lead to some difficulties. Therefore, it is essential to use a modern browsing system where the students can find the right information and can have access to multiple languages.

In summary, many studies such as those highlighted above, demonstrate that the Internet is a reliable and efficient way to conduct search. In academic studies, students typically engage in both qualitative and quantitative research, as well as secondary data collection – both of which can benefit from resources and tools available on online research platforms. From the methodological perspective in particular, secondary data collection is a process which involves students exploring the data regarding their research phenomena by exploring secondary (existing) sources. Sources include books, journals, research papers and articles. It is plausible, therefore, to argue that in searching for and through these sources for gathering accurate information, students must possess not just computer literacy but online search literacy as well.

According to studies such as those by Herring et al. (2004) and Johnston (2010), researchers at every stage seek to continuously improve themselves through updating and expanding their competencies and skills. Such Skills and competency can be expanded via multiple methods (Şendağ and Ferhan Odabaşı, 2009) and they include workshops, formal training opportunities, e-learning and conferences. From the deductions above, online search skills would also be essential for researchers to acquire. The key online search skills, required can be categorized into various types, as listed below and further explained:

- Expertise and skills necessary for publishing
- Skills and expertise required to manage and research data, to use, reuse and analyse data, and in data protection and production management
- Expertise to act beyond one's own skills, i.e., to engage with the community.

Expertise and skills necessary for publishing: This skill is backed by several studies such as those by Welsh *et al.* (2003), Mathwick and Rigdon (2004), Herring *et al.* (2004), Grant, Clarke and Kyriazis (2015), Sahmoudi and Lachkar (2013), and Reips *et al.* (2016). The essential skill sets cover areas such as research information and library search skills. The typical investigator involved in academic research would use database or library-based search for information. Therefore, they must be capable of sifting through e-journals and filtering open-access publications (Dolowitz, Buckler and Sweeney, 2008). They must also be aware of copyright, licensing and bibliometric factors. These overall skills influence the quality of reporting, critical analysis and documentation when sharing information from online searches

Skills and expertise required to manage and research data, to use, reuse and analyse data, and in data protection and production management: Research management skills can include soft skills, leadership skills and the ability to show positively, which impact the overall environment and work outcome (Mathwick and Rigdon, 2004; Ritter *et al.*, 2018). It would be helpful for researchers to work within a collaborative framework and have appropriate knowledge of intellectual property (IP) as researchers need to be aware of all the legal aspects related to copyright and other IP issues related to their work (Morrison and Secker, 2015). The researcher must know how to use data and be aware of data sensitivity. Data protection requirements must be considered in order to maintain research quality (Tikkinen-Piri, Rohunen and Markkula, 2018).

Expertise to act beyond one's own skills, i.e. to engage with the community: As noted by Surmiak (2018), the researcher must know how to engage other scholars and students in the study, and may use citizen platforms for conducting research. The research results must be shared with the public in order to further foster research collaboration and provide information to others.

Researchers such as Dolowitz, Buckler and Sweeney (2008), Rangaswamy, Giles and Seres (2009), McCutcheon, Lohan and Traynor (2016), and Jääskelä, Nykänen and Tynjälä (2018) have discussed the multiple characteristics of the Internet from as a tool for information search. These characteristics include its convenience and dealing with larger volumes of data, but on the other hand, such large volumes of data can often be frustrating and generalised. An online search engine would typically feed off multiple databases but the advantage of having online search skills is the ability to handle huge data/samples, which increases the statistical reach and scope of the research. It reduces the cost of conducting research, and data can be automatically coded (Dwivedi *et al.*, 2020).

In Saudi Arabia, students are provided with various search skills that help them to learn sophisticated techniques. Students are advised to improve their search behaviour by getting familiar with various tools and techniques. They are provided with guidance in using online search engines such as Emerald, JSTOR, Science Direct, etc., but due to lack of access it is often difficult for students to avail themselves of these services (Dolowitz, Buckler and Sweeney, 2008). Students are instructed about the relevant search engines where they can find information about research in specific journals. This promotes better search skills and enhances the overall performance of their research.

As mentioned by Rangaswamy and Seres (2009), in order to code the data, the researcher needs to learn about search syntax. Search syntax refers to the rules that describe how the researcher can query the database to be searched. Sophisticated syntax skills make the research more reliable as the items reviewed by the researcher are more relevant. Online search skills also include the ability to use a combination of words together when looking at the topic. In regard to syntax, the researcher needs to have online search skills such as the following:

Boolean logic: According to Blanche and Merino (1989), the researcher needs to know about Boolean logic, knowing when to use OR, NOT, etc. in a search. Trainers need to provide students with online search skills that include using Boolean logic for research (Hewson and Stewart, 2016). Boolean logic allows students to use various helping words in order to find relevant sources. For example, students could search for “Customer satisfaction AND consumer behaviour”, “English learning AND student performance”, and “Educational training OR job performance”. Boolean logic can help students search for accurate words which are relevant to their research (Rangaswamy, Giles and Seres, 2009; McCutcheon, Lohan and Traynor, 2016; Jääskelä, Nykänen and Tynjälä, 2018).

Phrase searching: As mentioned by authors such as McCutcheon, Lohan, and Traynor (2016) and Jääskelä, Nykänen and Tynjälä (2018), research concepts can be represented by using complete phrases or by using single words. For instance, the researcher could use complete phrases such as “Decision-making model”, “Library School” “Researching techniques”, “Data collections methods”, etc. The use of quotation marks to encapsulate the search phrases increases the chances of getting the complete phrases in the results returned by the search engine.

Truncation and wildcards: According to George, Ferguson and Pearce (2014), wildcard involves substituting symbols like asterisk (*) for a letter within keywords which can help in retrieving items with any word containing variations in the substituted letter. The syntax allows the use of the

symbol in the middle of a word like “wom*n” – which would return all results that have variations of the required key word, in this case ‘woman’ or ‘women’.

Field searching: According to Mathwick and Rigdon (2004), electronic databases are divided into various types. Online libraries and search engines (as opposed to hard copies of journals and books that are kept in libraries) are the best and most sophisticated ways of searching for terms in a particular field. The knowledge provided to students regarding using field searching helps students to accurately search for key terms and phrases online. Both title and research field can be used for searching for papers online, for example (Dolowitz, Buckler and Sweeney, 2008). However, students must have the right knowledge about online library products and titles in order to find the right information.

Capitalization: As highlighted by Bates *et al.* (2017), capitalizing refers to a search using names and search syntax by distinguishing between lower- and upper-case letters. A search engine looks for particular patterns of capitalization and this search approach allows users to choose the right options for search. However, in less developed countries students are often unaware of the capitalization technique, which hinders their searches for information (Donovan and Rapp, 2020).

Proximity: According to studies by Welsh *et al.* (2003), Mathwick and Rigdon (2004), Herring *et al.* (2004), Grant, Clarke and Kyriazis (2007), Sahmoudi and Lachkar (2013), Reips *et al.* (2016), and Clark and Sousa (2017), proximity searching allows users to explore the right documents, as the information on different papers is more closely linked to due to similarity. Phrase researching skills can be used to search for a collection of words that occur in a particular phrase/sequence based on the ability to synthesise online information. According to Rangaswamy, Giles and Seres (2009), the researcher must be able to customize searches and know ways that can help limit the number of outcomes searched. This helps a researcher to save time and reduce extra effort in

research (Lowndes *et al.*, 2017). Below are customization methods that are less often taught to students in less developed countries:

The plus operator (+)	According to Dolowitz, Buckler and Sweeney (2008), these are stop words that are ignored by the search engine. The researchers can use the plus operator and tell the search engine to use only those words that are in line with the research. For instance, large (+) and small.	Sources
The tilde operator (~)	The tilde operator would enable a search for an exact word as well as its synonyms	(Rangaswamy, Giles and Seres, 2009; Hill <i>et al.</i> , 2013; Joyner, 2016; McCutcheon, Lohan and Traynor, 2016; Roy <i>et al.</i> , 2017; Jääskelä, Nykänen and Tynjälä, 2018)
The wildcard operator (*)	The wildcard operator will expand or maximise the search by including variations of the word in which the wildcard symbol has been inserted.	(Day, 2014; Mart <i>et al.</i> , 2019)
The OR operator (I)	The OR operators allows the researcher to use two terms, e.g., ‘happiness’ and ‘joyful’. It will return results with either words.	(Rangaswamy, Giles and Seres, 2009; Joyner, 2016; McCutcheon, Lohan and Traynor, 2016; Roy <i>et al.</i> , 2017; Jääskelä, Nykänen and Tynjälä, 2018)
Site search	Site search allows the researcher to search sites directly and be redirected to relevant sources.	(Herring <i>et al.</i> , 2004; Grant, Clarke and Kyriazis, 2007; Sahmoudi and Lachkar, 2013)
Numeric ranges	Numeric terms can be used by the researcher in order to explore specific ranges which are quantifiable.	(Willison and O’Regan, 2007; Hair <i>et al.</i> , 2008; Gutmann, 2014; Hewson and Stewart, 2016)
Wonder wheel	The wonder wheel concept is used by search engines to enable a user to return results that have some similarity to the keywords/phrases being searched.	(Herring <i>et al.</i> , 2004; Mathwick and Rigdon, 2004; Lyons <i>et al.</i> , 2005; Grant,

		Clarke and Kyriazis, 2007; Sahmoudi and Lachkar, 2013)
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Table 3. 1: Search customization methods that are less often taught to students in less developed countries

As mentioned by Hair *et al.* (2008), research is not a one-way process, and requires inquiry into a huge amount of information, based on wide-ranging data exploration. Researchers are involved in discovering problems and in this regard, they could use Web search for rich cross-linking and making the information search more open-ended, which helps in acquiring large amounts of related or relevant information. Hence, the exploration of a topic is solely based upon right searching techniques (Willison and O’Regan, 2007). Students need to have critical thinking skills and they must be able to read and write the concept in their own words.

When the researcher moves towards writing a literature review, they aim to explore the key points of the topic. According to studies by Grant, Clarke and Kyriazis (2007), Herring *et al.* (2004), Mathwick and Rigdon (2004), Reips *et al.*, (2016), Sahmoudi and Lachkar (2013), and Welsh *et al.* (2003), the researcher pursues a wide range of theory and information as per their research perspective. Many studies have highlighted (as summarised below) some basic skills that could help a researcher find online information, and that must be taught to every research student (Willison and O’Regan, 2007; Dolowitz, Buckler and Sweeney, 2008; Rangaswamy, Giles and Seres, 2009; McCutcheon, Lohan and Traynor, 2016; Jääskelä, Nykänen and Tynjälä, 2018):

Skills for online searching	Description	Sources
Checking sources	Students must be capable of evaluating information sources based on validity, accuracy and appropriateness of need.	(Jääskelä, Nykänen and Tynjälä, 2018; McGrew <i>et al.</i> , 2018);
Search queries	The researcher must be capable of developing and refining search queries in order to explore better results.	(Willison and O'Regan, 2007)
Going beyond the surface	The researcher needs to explore a broad perspective by pursuing more information, beyond the surface.	(Willison and O'Regan, 2007; Bell and Waters, 2014)
Emotional resilience	The researcher needs to ensure persistence and show emotional resilience, despite difficulties or challenges.	(Dolowitz, Buckler and Sweeney, 2008)
Respecting ownership rights	The researcher needs to respect IP and the rights of the creator.	(Rangaswamy, Giles and Seres, 2009)
Using networks	The researcher needs to use social networks and other tools in order to gather and share information.	(McCutcheon, Lohan and Traynor, 2016)

Table 3. 2: Some basic skills that could help a researcher find online information

3.2.5 Existing Studies on Improving Individual Users' Search Behaviour

There is clear evidence that the search skills of Internet users need improving. A study by Rawlins (2009) found that students enrolled in the field of business and marketing lacked the necessary skills required for accessing relevant and adequate information that could benefit them in making important decisions concerning business activities. This is understandable, since rapid access to correct information is essential in the contemporary business environment, which today is driven by technological advancements in various fields. However, a considerable gap was found to be present in the required standard and level of information search skills in students at business schools.

In the view of Egan *et al.* (2017) these days it is important to improve the search skills of students, especially students in higher education. One of the best methods of improving individual users' search behaviour is improving the library in the university or the school, and providing Internet facilities to the students. In the library, librarians can help students improve their search skills by helping them understand the topic so that their search keywords can improve (Egan *et al.*, 2017).

Easterby-Smith and Thorpe (2018) argues that online search skills are essential for students and researchers who wish to obtain various types of knowledge. Online search skills help an individual user to improve their knowledge, over and above the teaching provided to them in classes. The author argues in his study that students in higher education prefer virtual libraries over their university libraries, as these make the information-seeking process easier and faster (Easterby-Smith and Thorpe, 2018). The study overall identifies the importance of individual users' search behaviour, as it helps them in getting knowledge regarding their educational tasks.

Rieger (2009) distinguishes three categories of academic search: informational, navigational and transactional. Under the informational category are students' searches about books, journals or other information sources needed for completing their tasks. They also look for citations and information regarding journals to complete their assignments in an appropriate manner (Rieger, 2009). Under the navigational category, students try to search for suitable journals and articles in a journal, or try to find websites that are suitable for completing the assignment. Lastly, under the third category, transactional searches, students try to search for necessary software or databases relevant to the type of information required (Rieger, 2009).

According to Suleman (2018), in order to improve the search skills of an individual in higher education, students should be encouraged not to limit their searches to publicly accessible websites and other online sources. Students should search databases such as Elsevier, ProQuest or EBSCO, which contain authentic sources of information (Suleman, 2018). In order to improve research skills and behaviour online, it is essential for a student to understand the rationale behind the academic task or the purpose of the search being conducted. This helps the student in searching for appropriate sources for the study being conducted (Suleman, 2018).

From the first decade of the new millennium, the use of search engines has not only been on the rise among students (Hartley, Woods and Pill, 2005b) but nowadays it is becoming integral for completing academic tasks and other requirements for future career development (Soria, Fransen and Nackerud, 2014). Although users from various age groups would use search engines nowadays, among the millennials, there seemed to be a tendency for misspellings and poor logic (Holman, 2011). Hence, in order to improve the online search behaviour of students, teachers can play a major role. Certain steps must be followed by faculty that will help in improving students' search behaviour. In the first step, it is essential for students to understand the information need that is given them by their supervisor, and then to discover ways through which the issue can be addressed, such as via books, journals and websites (Hartley, Woods and Pill, 2005). In the next step, the supervisor must help students in locating the information, such as in a library or through search engines. The navigation skills of the student must also be developed in order to accomplish the necessary academic tasks. Information must be selected on the basis of quality, such as authentic sources and information which is relevant to the research topic. In the next step, it is important for the faculty to teach students to properly communicate the information gathered, for it must be presented in a logical manner and should help the reader to understand the issues and

the ways through which they have been addressed. In the last step, students should be able to synthesise the information and should be able to present it to their supervisor. These steps are important for improving an individual's search behaviour (Hartley, Woods and Pill, 2005).

A study by Schutt and Hightower (2009) found that the American Association of Colleges of Nursing focused on increasing the skills and knowledge of nursing students by engaging students in creative learning practices. In this respect, the teachers at the colleges foreground the use of evidence-based models that help in quick learning, and also make widespread use of tools that are based on instructional technology such as virtual classrooms, course management systems and online tutorials. The faculty also encouraged the use of online databases in order to improve search skills in students. In this context, the faculty planned the development of an online database in collaboration with the library instructors who facilitated the searching skills of nursing students (Schutt and Hightower, 2009).

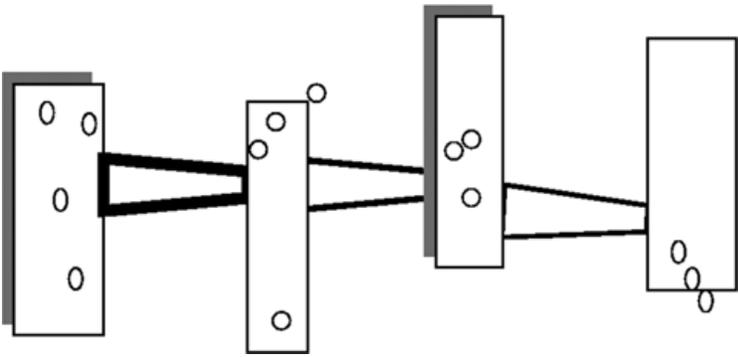
The authors further state that in order to address the search issues faced by students, providing detailed training about the ways in which data available on an online database such as CINAHL Plus can be accessed can prove to be beneficial, as it improves their efficiency and searching skills. Effective use of CINAHL Plus enables students to considerably reduce search times and presents them with specific and more productive information related to their topic (Schutt and Hightower, 2009).

3.2.6 Framework for Improving Online Search Skills

According to studies by Bråten and Braasch (2017), O'Sullivan and Dallas (2017), and Jääskelä, Nykänen and Tynjälä (2018), online searching skills often depend upon the ability of the student

to learn and critically analyse information. Likewise, studies by Willison and O’Regan (2007), Hair *et al.* (2008), and Dabbagh, Fake and Zhang (2019) have found that the students are somewhat self-directed when using online search engines and hence require support (training) even though to accomplish their academic goals students would eventually need to be able to find information independently. Similar to past studies, recent studies by McCutcheon *et al.* (2015) and Jääskelä, Nykänen and Tynjälä (2018) present a framework that shows strategies for and ways of exploring online information. Below is a strategic framework that can be used by educational institutions to develop online search skills in students. The framework addresses the criteria of research techniques, including discourse analysis, case studies, descriptive analysis, observation, phenomenology, focus groups, grounded theory, etc.

<p>Browsing and berry picking</p>	<p>According to the studies by Dabbagh, Fake and Zhang (2019), Jääskelä, Nykänen and Tynjälä (2018) and Suleman (2018) the online searching environment is complex and students need to employ certain research techniques when browsing and searching for relevant information. Authors such as Welsh <i>et al.</i> (2003), Mathwick and Rigdon (2004), Herring <i>et al.</i> (2004), Grant, Clarke and Kyriazis (2007), Sahmoudi and Lachkar (2013), and Reips <i>et al.</i> (2016) mention that browsing can be differentiated from berry picking. Browsing is less directed and helps in determining the searcher’s thinking. Berrypicking was first put forward by Bates (1989) as a cognitive model of information retrieval that captures how a user would seek information, i.e., the search process evolves, and users would modify their search terms based on what has been previously been returned by the</p>
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	<p>search engine. It has since been studied by others (Lillard and Ha, 2015; Low <i>et al.</i>, 2017).</p>  <p>Figure 3. 1: An illustration of the berry picking concept (Bates, 1989).</p>
<p>Footnote chasing</p>	<p>According to George, Ferguson and Pearce (2014), they allow users to explore information from references lists.</p>
<p>Citation searching</p>	<p>According to McCutcheon <i>et al.</i> (2015) and Jääskelä, Nykänen and Tynjälä (2018), citation searching is defined as searching on the basis of studies that have been cited by a given article as well searching for those studies that have referenced the same publication. This is a form of bi-directional searching based on a citation (Hinde and Spackman, 2014). Students must be capable of identifying research by using techniques such as looking at recent work and past work. There must be differentiation, and students must be capable of selecting articles based upon year, data and citation style (such as Harvard, APA, etc.). In this way, the students can use more recent citations in their work in order to increase its quality. They can also look back at cited works in order to find opportunities to find new branches (citations) of a given study.</p>

Area scanning	The technique known as area scanning (Lillard and Ha, 2015) akin to browsing through a given section of shelves in a library for books on related subject matter – and in digital databases or online search, certain classification codes can be used to narrow the area, or scanning through a special issue of a journal (Brajnik <i>et al.</i> , 2002).
Author searching	Bramer <i>et al.</i> (2017), Lockwood, dos Santos and Pap (2019), McCutcheon <i>et al.</i> (2015), and Jääskelä, Nykänen and Tynjälä (2018) highlight that author searching is defined as searching based on relevant publications. It includes the searching of information by using the author’s name. Once the students are able to use the published works of multiple authors, it enhances the quality of their research due to transparency in the study.
Journal runs	This is similar to area scanning, but is more associated with searching within a journal known to publish in a given subject matter (Brajnik <i>et al.</i> , 2002; George, Ferguson and Pearce, 2014). The use of relevant journals helps in ensuring research quality

Table 3. 3: Available techniques for effective online searching

Given the skill sets and techniques required for online research as highlighted in the previous tables above, several studies have explored how students could benefit from applying these in their research. For instance, Herring *et al.* (2004) discussed how students could enhance their online research skills, using available e-learning tools, while Reips *et al.* (2016) argued that students must be provided with such e-learning resources. Other studies such as those by Welsh *et al.* (2003) Mathwick and Rigdon (2004), Grant, Clarke and Kyriazis (2007), as well as Sahmoudi and Lachkar (2013) also add to the growing recognition for research students to learn about the tools and

techniques that are used within e-learning. In summary, the search techniques mentioned previously would aid students e.g., to break up keywords into various categories, use the best combination of phrases and deploy wildcards to ensure that they get the best outputs/results from online journals, books, research papers, etc. State-of-the-art tools can also help students to ensure the validity of the information they find and will make their work more credible.

3.3 Theories of Information Behaviour

3.3.1 Research into Information Behaviour

Much has been said about the technological, cultural and behavioural changes effectuated by globalization in the last few decades. One of the key manifestations of these changes is the way people search for, seek out and utilize information. Wilson (2008, p. 463) reiterates the importance of studying the behaviour of information seekers, when he stated: : “it seems likely that the need to understand how people search for and use information is likely to continue and, as technologies change and information services continue to develop, the understanding gained may become more and more important for the effective design of systems and services”. The constant and dynamic developments in today’s era of digital transformation mean that the information-seeking behaviour of people is changing constantly. Hence, research on information seeking is an ongoing endeavour.

At a very basic level, information seeking can be viewed as the job of obtaining resources to satisfy certain information needs. At a formal level, Case and Given (2016, p. 6) define information seeking as “a conscious effort to acquire information in response to a need or gap in one’s knowledge”. It is evident from this definition that data or information searching is triggered by the necessity of information. This need, formally known as an “information need”, is defined by Belkin

(Belkin (1980, p. 133) as an unusual condition of cognition that acts as the motivating factor behind the process of information seeking. The view is supported by other researchers like Case and Given (2016, p. 6), who define the necessity of information as the “recognition that your knowledge is inadequate to satisfy a goal that you have”. Similarly, Cole (2011, p. 1216) contends that information need is the initial state of someone seeking information to find the answer to a question.

Based on the computer science perspective, Cole (2011) describes information seeking as an active and conscious process in which the user must identify a need, conceptualize the need and take the necessary actions to fulfil the need. It is important to note that both Cole (2011) and Case and Given (2016) consider only conscious or active efforts as part of information seeking, while based on the psychodynamic approach, Bates (2002) stated that information awareness, which is the goal of information seeking, is often a result of experience and inadvertent exposure to information. Accordingly, Bates (2002) classifies information seeking into different categories: the directed mode, in which individuals target specific and absolute information; the undirected mode, in which the exposure to information is random; the active mode, in which the process of fulfilling information needs is active and deliberate; and the passive mode, in which information is absorbed but not actively sought. Based on these categories, Bates (2002) argues that information needs are often satisfied through passive, undirected information seeking.

While the above view highlights the role of unconscious needs and processes on information seeking, it is important to acknowledge that there is also much debate in psychology regarding the relevance and impact of the unconscious mind on human behaviour. Some researchers like Loftus and Klinger (1992) contend that the unconscious mind is ‘dumb’ based on the premise that unconscious mental processes are typically low-level and unsophisticated. On the other hand,

Bargh and Morsella (2008) argue that the unconscious mind has more than one type of impact on human behaviour and hence is quite powerful. On similar lines, Albright (2011) argues that a majority of human thought processes take place outside the realms of conscious behaviour and hence the role of the unconscious mind on information seeking cannot be doubted.

While there is still uncertainty regarding the role of unconscious needs and processes in information seeking, the debates nevertheless highlight that information seeking does not have a particular interpretation among researchers. Indeed, all aspects of information seeking like information needs, information-seeking behaviour and utilising acquired information, can be interpreted differently (El-Maamiry, 2020; Stokes, Priharjo and Urquhart, 2021). To this end, Krikelas (1993) proposed a two-fold model to simplify dealing with the conscious and unconscious aspects of information seeking. Within this model, Krikelas divides information needs into the categories of immediate needs and deferred needs (Krikelas, 1983). According to Krikelas, information seeking is a reaction to urgent and conscious requirements, while information collection is the process of unconsciously gathering stimuli for possible future use. By adopting this view, information seeking can be described as the behavioural response to conscious information needs, while still acknowledging the role of unconscious needs at a broader level.

The focus of the current study, which is information-seeking behaviour, is commonly defined as the concept of seeking information, as visualized by Krikelas (1983). Krikelas describes the term “information-seeking behaviour” as the characteristics exhibited by people in seeking information consciously with the specific purpose of filling certain gaps in knowledge. This is also in line with Wilson’s (1999) model of information behaviour, defined by Savolainen (2017, p. 18) as the “purposive seeking of information” with an objective to fulfil certain information needs.

While the above definitions provide useful frameworks for researching the characteristics of information seeking and have received considerable empirical support, they sometimes suffer due to methodological and terminological inconsistencies. For instance, Moss and Ozmen (2015, p. 779) refer to the process and behavioural patterns of seeking information on the web as 'information retrieval behaviour'. Pejtersen and Fidel (1999, p. 1) refer to the same as "human information behaviour". Bates (2002) uses 'information behaviour' to refer to the myriad ways in which people interact with information, including seeking and using it. Palmer, Tefteau and Pirmann (2009) describe the term 'information behaviour' as a common phenomenon used in research regarding information needs and uses, but believe that "information practices" and 'information work' provide better representations of the activities related to the behaviour. Others have used terms like 'human information behaviour' (Wu and Sonnenwald, 1999) and 'information searching behaviour' (Desta, du Preez and Ngulube, 2019) to refer to similar concepts.

Considering the myriad ideas and terms, it is essential to recognise and clarify the definitions and ideas that will be used in any given study before commencing it. To this end, it is useful to compare and contrast the differences between various definitions, subtle as they might be. Typically, concepts like 'information retrieval', 'information retrieval behaviour' and 'information searching behaviour' are associated with research frameworks involving quantitative methodologies dealing with the performance of users with respect to the system they are using (Chu and Rosenthal, 1996; Lawrence and Giles, 1998; Cothey, 2002). In other words, experiments related to such concepts are focused more on the characteristics of the information system than that of the information seekers or users. The concept of information-seeking behaviour, however, is more focused on the characteristics of information seekers as well as factors related to them that influence or enable

them to indulge in information seeking. Al-Moumen, Morris and Maynard (2012) classify the research focusing on information systems as ‘system-centred’ and that focusing on users as ‘user-centred’. Any research related to the behaviour of users, such as the current study, can be considered user-centred and hence the use of the term ‘information-seeking behaviour’ is more appropriate in this context.

Before focusing further on the various aspects of user-centred information-seeking behaviours, such as user characteristics and factors that influence behaviour, it will be useful to explore the background to, reasons for and need for the focus on users as opposed to systems. This, in turn, will help in identifying and understanding the relevant frameworks for the study.

3.3.2 From System-Centred to User-Centred

While information seeking is an ongoing and constant process, approaches to information seeking are continually changing. In earlier days, information was rare and limited in terms of availability. Today, with increasing rates of Internet penetration, accessing information is often only a matter of a few clicks. With the advent of digital databases, mobile technology and social media sites, there are multiple sources of information vying for the attention of users. Consequently, many users today are no longer bothered about having access to information or the variety of features that a system boasts of. Rather their focus is (arguably) on finding the easiest way to access information.

In fact, two decades ago, Alqudsi-Ghabra (1999) pointed out the need for information providers to shift focus from ownership of information to ensuring access. This is corroborated by researchers who found in their research that students use information obtained through search engines like Google, even when they know that the information may not be accurate or reliable (Rieh and

Hilligoss, 2007; Bhatt and MacKenzie, 2019). Fast and Campbell (2004) also support this by saying that academic libraries are falling out of favour because students want access to information without much critical thought going into it. Research by Jamali and Asadi (2010) found that even scientists are getting more dependent on Google for their scholarly information needs, as they get more aware of the amount of useful information that can be retrieved easily through search engines. Indeed, considering that ‘googling’ and ‘to google’ easily pass off as English words today, the veracity of such claims can hardly be debated. As a result, there has been increasing focus on the behaviour of users in recent times, as understanding such behaviour is crucial in designing better systems.

To an extent, the changing behaviour of users corresponds to the underpinnings of the path of least effort described by Zipf (Chao and Zipf, 1950, p. 18). As per Zipf’s law of minimum effort, in trying to accomplish any task, “each individual will adopt a course of action that will involve the expenditure of the probably least average of his work (by definition, least effort)”. In other words, the principle states that human beings have a tendency to choose the path that is easiest and offers the least resistance. In this regard, it can be posited that in seeking information users will choose the path that will yield the required information with minimal effort. Based on this premise, the popularity of information systems like search engines is hardly surprising, considering the single-search mechanisms and natural language querying provided by them. Compared to academic libraries and OPACs (Online Public Access Catalogues), users seeking information on the Internet rarely need any skills beyond basic computer usage. Hence, these may be viewed as ‘shortcuts’ to information seeking.

At the same time, it could also be argued that students today are no longer willing to adapt to the idiosyncrasies of systems that they perceive as unfriendly. Due to the vast amounts of information resources available to them, it is likely that their expectations will increase in terms of what the system can provide. Indeed, both Rieh and Hilligoss (2007) and Fast and Campbell (2004) note that one of the key reasons behind students' preference of the Internet for their information needs is that they choose convenience and speed even at the cost of losing the quality of the information. Fast and Campbell (2004) also point out that students prefer the natural language query support, search capabilities, and other interface and usability features of search engines. This suggests that the standards of usability for information systems, particularly academic information systems, may need to be redefined in the wake of changing information needs and the behaviour of users.

In other words, it is no longer enough for information providers to make information available, it is necessary to make sure that it can be easily and unconditionally accessed and used by the users it is intended for, regardless of the context and their skills. Consequently, it has become necessary for information providers to focus more on what users want the system to do, rather than focusing on the system itself. In other words, it has become important to shift focus from a 'system-centred' approach to a 'user-centred' approach (Al-Muomen, Morris and Maynard, 2012). Within the system-centred approach, the users adapt themselves to the features and characteristics of the system, whereas within the user-centred approach the focus is on discovering the information-seeking behaviour patterns of users and designing systems accordingly. In a nutshell, rather than the user adapting to the system, the system should adapt to the user.

While there has been ample research acknowledging the changing needs of users with respect to information seeking due to technological and consequent behavioural changes, it must be noted

that the emphasis of most of these studies is on the information-seeking behaviour of users, particularly students, in Western universities. Consequently, the results may not be valid for students from other parts of the world where the conditions are different and the penetration of the Internet may be lower. Additionally, studies show that factors like culture and background play a role in information-seeking behaviour (Urquhart and Rowley, 2007; Hamid *et al.*, 2016). The validity of studies that focus on the Western context is thus questionable in other contexts and cultures. Nevertheless, such studies confirm that the focus of information-seeking research is shifting from systems to users and provide useful information regarding pertinent reasons for the shift.

Overall, the research on the switch to a user-centred from a system-centred approach to information seeking highlights two things: the increasing importance of considering the needs and information-seeking behavioural patterns of specific users and groups, and the fact that it may no longer be sufficient to consider a 'one-size-fits-all' approach to information seeking, nor to lump heterogeneous users into homogeneous categories. Considering that various groups of users tend to have dissimilar information requirements and behaviour, it has become highly necessary to consider and cater to their specific information needs and behaviour. This may take the form of designing systems that are based on specific user needs or meeting users on the platforms that they mostly use. But above all, it means truly understanding specific user needs by considering various physical, cognitive and environmental factors that affect their information-seeking behaviour in a holistic manner. Many information-seeking behaviour frameworks can be used as foundations to this effect.

3.3.3 Defining Key Terms

Definitions of information-seeking behaviour, information literacy and information utilisation are different but there are intersections between them (Nesset, 2014). Although the term “information seeking” has been broadly taken to mean the approach to searching for information to satisfy research needs, many efforts have been made to define the term more specifically.

Case and Given (2016, p. 5) briefly defined the interrelated ideas of ‘information need’ ‘information seeking’ and ‘information behaviour’ as follows:

- An information need is the identification of inadequacy of knowledge required to achieve the goals that you have set.
- Information seeking is a systematic approach for obtaining the information in response to the gap in your current knowledge.
- Information behaviour involves information seeking along with other unintentional and passive behaviours (for instance glimpsing or encountering information); it also includes behaviours derived from the purpose that are not considered information seeking, such as purposefully avoiding information.

The definitions provided by Case and Given (2016) are interconnected, with information behaviour being the broadest term, encompassing any information-seeking behaviour that leads to satisfying a specific need. These terms resemble Wilson’s nested model of information behaviour (1999, p. 263). As per this framework, information behaviour is the broader area that encompasses information-seeking behaviour, which is seen as a subset of the area, especially concerned with the several different procedures users implement to find and obtain access to information resources. The most specific area is information search behaviour, which focuses on the way information

users and computer-based information systems interact with each other. The most commonly discussed of these concepts is information-seeking behaviour (Case and Given, 2016, p. 5), which indicates the importance of this subject area in light of evolving information technologies. A synthesis of studies in the fields of information-seeking behaviour, information literacy and information utilisation reveal some common phenomena. Most information-seeking related studies reflect key components of a particular framework, or are affected by specific aspects of several models, or are based entirely on a particular theoretical dimension (cognitive, social, cultural and so on).

In an attempt to set the current research in context, it is important to first look at the broad theories underpinning research in the multidisciplinary field of library and information science (LIS), in order to recognise the broad theoretical context of research in information seeking (Bates, 2005, p. 2). In order to grasp how models are constructed in accordance with theories, it is essential that the researcher understands the distinction between the terms ‘metatheories’, ‘theories’ and ‘models’, which Bates (2005) defines as follows:

- Metatheory: “a theory concerned with the investigation, analysis or description of theory itself”.
- Theory: “the body of generalisations and principles developed in association with practice in the field of activity; a system of assumptions, accepted principles and rules of procedure devised to analyse, predict or explain the nature of the behaviour of a specified set of phenomena”.
- Model: “a tentative ideational structure used as a testing device” (Bates 2005, p. 2).

3.3.4 Models of Information-Seeking Behaviour

To outline the theoretical foundation of the current study, this section of the review presents several chosen information-seeking models. Among the many different frameworks formulated during the 1990s, the following reevaluation focuses on Kuhlthau's (2004) model, Ellis's (1989) information-seeking model, Leckie, Pettigrew and Sylvain's (1996) general model of the information seeking of professionals, and Wilson's (1999) information-seeking model. Along with this, the review considers various frameworks developed since the beginning of the new millennium, including Foster's (2004) non-linear information-seeking behaviour model, the model of learning-related information behaviour (Ford, 2004), and Urquhart and Rowley's (2007) information behaviour model. These frameworks have been chosen for discussion for several reasons. First, instead of using a system-based approach, they adopt a user-centred approach, which aligns with the approach used in the current study. Secondly, these are the studies most often cited in research on information seeking in the sector of higher education, and some were developed based on research conducted with postgraduate students (Ellis, 1989; Foster, 2004). In the end, the components and variables of the process of information-seeking behaviour are explained by these models, which also align with the aims and objectives of the present study. The models are discussed below.

3.3.4.1 Ellis's Model of Information-Seeking Behaviour

In 1989, Ellis developed a behavioural method of retrieving information, proposing the following six patterns of information-seeking behaviour:

- Starting: activities involving initial searching for the information
- Chaining: following footnotes and citations or other types of referencing
- Browsing: semi-directed seeking for information in the field of possible inclinations

- Differentiating: utilising the differences between sources as a filter on the characteristics and quality of the material being evaluated
- Monitoring: keeping aware of current services
- Extracting: working through a particular source to locate material of interest (Ellis 2005, p. 138).

This behavioural model was applied in a number of theory-based studies, investigating, for example, the information-seeking patterns of researchers in physical and social sciences (Ellis, Cox and Hall, 1993), and the information-seeking behaviour of engineers and research scientists (Ellis and Haugan, 1997). In addition, Ellis has investigated the information-seeking behaviour of English literature researchers (Ellis and Oldman, 2005). The model has also been tested and modified in subsequent studies. For example, Bronstein (2007) applied the model to the information-seeking behaviour of Jewish research students and found a strong connection between the activities used for information and the phase of research the scholar had reached. Therefore, Bronstein proposed a revision to Ellis's original framework in order to involve components regarding the phase of study: monitoring activities (awareness of current services); monitoring electronic and printed materials; networking; citation tracking; and a final stage related to preparing papers for publication.

Based on Ellis's model, Meho and Tibbo (2003) used e-mail interviews with 60 social science faculty members from 14 different countries to describe and analyse their information-seeking behaviour. Although the study's findings confirmed elements of Ellis's model, Meho and Tibbo (2003) enhanced the model by adding the following features: accessing, networking, verifying and information managing. Their findings were consistent with a subsequent MA study by Ge (2010),

who applied Ellis's model to the information-seeking behaviour of social science and humanities faculty members and doctoral students. Ge (2010) proposed extending Ellis's model by the addition of three further elements to the information process: preparation, planning and information management. It is worth noting that all of the studies that have applied Ellis's model have been qualitative and have followed a grounded theory approach. This implies the need to integrate more methods in exploring the information-seeking behaviour of scholars. For example, Meho and Tibbo (2003) recommend that to enhance research outcomes, future research in this area should consider adopting triangulation in research methods for data collection, particularly via surveys and face-to-face interviews.

3.3.4.2 Kuhlthau's Information Search Process

Over the last two decades, Kuhlthau has enriched the LIS literature with research and some models of information-seeking. In the author's latest model, the 'information search process', or ISP (Kuhlthau, 2004), which involves access to ideas and information and the way meaning is sought, should be carried out intellectually rather than depending upon the physical location of the source. In Kuhlthau's ISP model, a holistic perspective on the search process is provided and information searching is depicted as a process of construction that takes place in six different stages:

1. Initiation: becoming aware of a lack of knowledge or understanding.
2. Selection: identifying a problem and getting ready to begin the search.
3. Exploration: encountering uncertainty and confusion regarding "incompatible information".
4. Formulation: forming a focused perspective as confidence begins to increase.
5. Collection: gathering information pertinent to the focused perspective.

6. Presentation: completing the search, with a new understanding of the topic. (Kuhlthau, 2005, pp. 230–234)

3.3.4.3 Ford's Model of Learning-Related Information Behaviour

Ford (2004) formulated a framework which details aspects of learning-related information behaviour, including basic information processes, information processing types and information processing approaches, along with factors influencing the behaviour of information related to the educational atmosphere (especially aims and objectives of learning), and mental (involving cognitive and affective) conditions. A wider abstract framework is provided by the model, which can be used to map the outcomes and research questions of empirical studies, and suggest areas that warrant further investigation (Ford, 2004). Components of the model include educational context (educational philosophies, models of learning and pedagogic approaches, learning objectives and associated tasks), and information behavioural responses to learning tasks (cognitive styles, learning strategies, study approaches, critical thinking, states of previously acquired knowledge and experience).

3.3.4.4 Leckie et al.'s General Model of the Information Seeking of Professionals

The interest in researching the information needs of students in the area of the humanities, science and social science has been growing consistently (Leckie and Given, 2005, p. 158). A key study was conducted by Leckie, Pettigrew and Sylvain (1996) and the following five issues were found:

1. Several complex roles are often assumed by professionals as part of their job.
2. The roles assumed by professionals involve other connected tasks.
3. Tasks needed in every role tend to prompt information necessity or searching.

4. There are many factors which involve intervention, and these factors may help in using the information or may hinder the use of it.

5. Usually, appropriate information cannot be found in the first attempt and normally more than one effort is needed to find it.

The general model of the information-seeking behaviour of professionals was derived from research on engineers, healthcare professionals and lawyers. Leckie, Pettigrew and Sylvain (1996, p. 162) define the term 'professions' as "service-oriented occupations having a theoretical knowledge base". In order to keep the model general enough to cover diverse professions and types of work, the components were kept somewhat non-specific (Leckie and Given, 2005, p. 161). The authors found that information-seeking practices were more similar across various professions than had been previously thought. In their model, they suggest that individuals' information needs are shaped by factors such as status in the organisation, years of experience and area of specialisation.

According to the Leckie and Given (2005), in the process of searching for information, these characteristics work as filters. After the process begins, the source of information and other factors have a role in determining the success of the information-seeking process. The individual's prior knowledge of the information and the likely usefulness of the sources are also critical (Leckie and Given, 2005). The end result of the information-seeking is an 'outcome', which either moves the work forward (provision of a service or production of a report), or requires further information seeking for greater clarification (feedback loop).

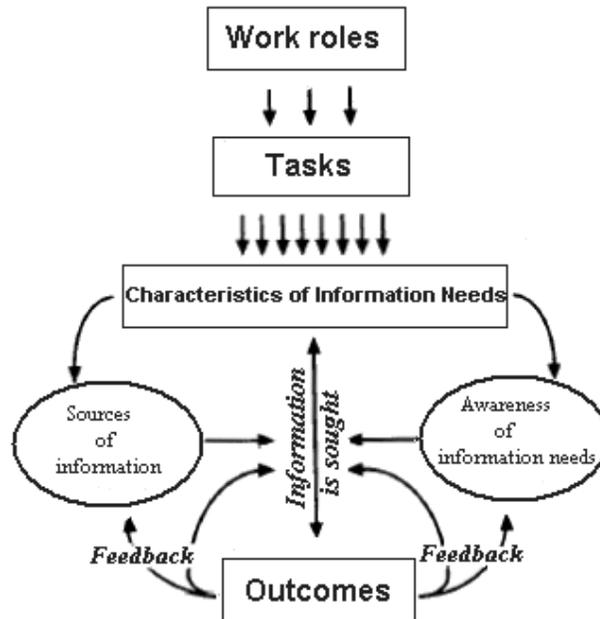


Figure 3. 2: Interacting variables in the information-seeking process (Source: Leckie, Pettigrew and Sylvain, 1996)

The basic assumption of the model, depicted in Figure 3.1, is that the tasks undertaken in the daily practice of professionals evoke the need for particular information, which eventually leads to an information-seeking process. However, a number of interacting variables, which can affect the outcome (Leckie, Pettigrew and Sylvain, 1996, p. 180) could significantly influence this process. These variables represent information source and consciousness of information needs. As revealed in Figure 3.1, knowledge of various information sources, such as online databases, plays an essential role in the overall information-seeking process. Thus, the individual's general awareness about information sources and/or content can determine the path that information seeking will pursue (Leckie, Pettigrew and Sylvain, 1996, p. 185).

3.3.4.5 Foster's Non-Linear Information-Seeking Behaviour Model

Foster's (2004) non-linear model of information-seeking behaviour reflects a new understanding of this area. The model is based on interviews about information-seeking behaviour with a sample of 45 academics and postgraduate researchers representing many disciplines. It consists of three different core processes: opening, orientation and consolidation, in addition to three levels of contextual interaction: cognitive, internal and external (Foster, 2004). The orientation process consists of defining a problem, building a picture and identifying the shape of existing research. Consolidation refers to knowing enough, refining, and incorporation, verifying and finishing (Foster, 2004). See Figure 3.2 for more information.

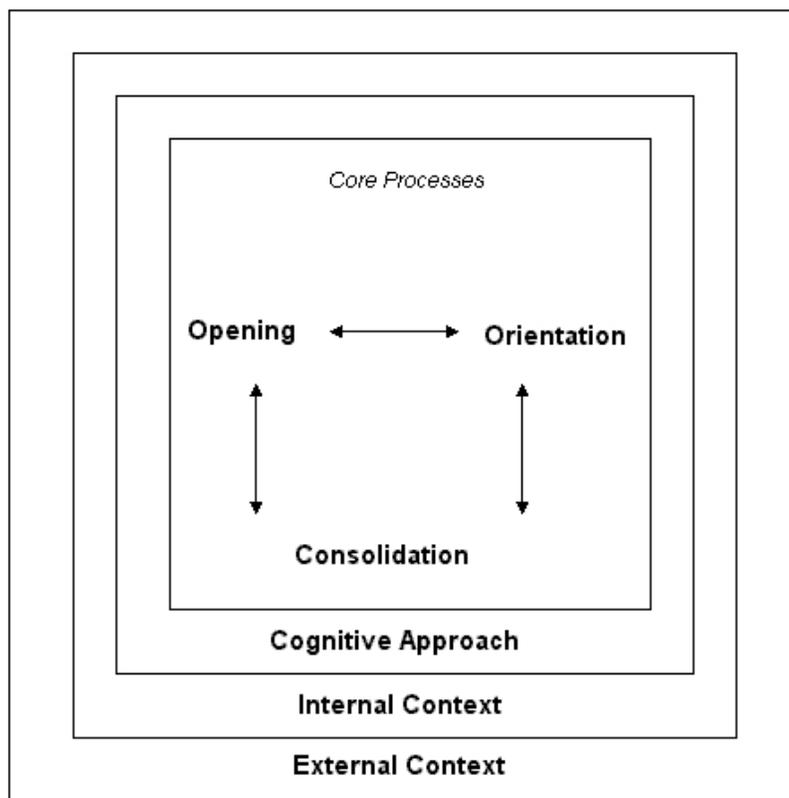


Figure 3. 3: Non-linear model of information-seeking behaviour (Foster, 2004, p. 232)

According to Foster (2004), the outer factors affecting the model are classified as social and institutional, time, the project, and accessibility of resources. Foster also found the component of social networking of interdisciplinary experience to be one of the most important factors influencing access to information resources. By internal influences, Foster refers to previously gathered knowledge on the part of the information seeker, in addition to self-perception and self-efficacy. The cognitive approach, according to Foster, describes the participants' will to recognise and utilise information, which might be related to an interdisciplinary issue. One practical implication of the model is that it suggests a need to revise the instruction of information skills and library ability, with a move towards a holistic skills programme, including curriculum development and training design (Foster, 2004). As Foster (2004, p. 235) writes:

“Ground for a new framework is offered by the new model, in which teachers and library professionals can instruct both non-academic and academic and expert and non-expert users of information in a way that reflects actual behaviours and real-world solutions rather than the artificial conceptualization of stages”.

Despite Foster's presentation of information-seeking behaviour as a 'dynamic holistic process', and the model's insightful implications for teaching information skills, Foster indicates that further research is needed to make the study suitable for generalisation by adopting a mixed methodology, incorporating both quantitative and qualitative approaches. This triangulation was used in the current research, which uses a variety of data collection methods; this, in turn, proved the validity of the approach.

3.3.4.6 Wilson's Information-Seeking Behaviour Model

Wilson's (1997) second model is shown in Figure 3.3 below; it explicitly includes the role of background as well as influencing factors in the information behaviour of users.

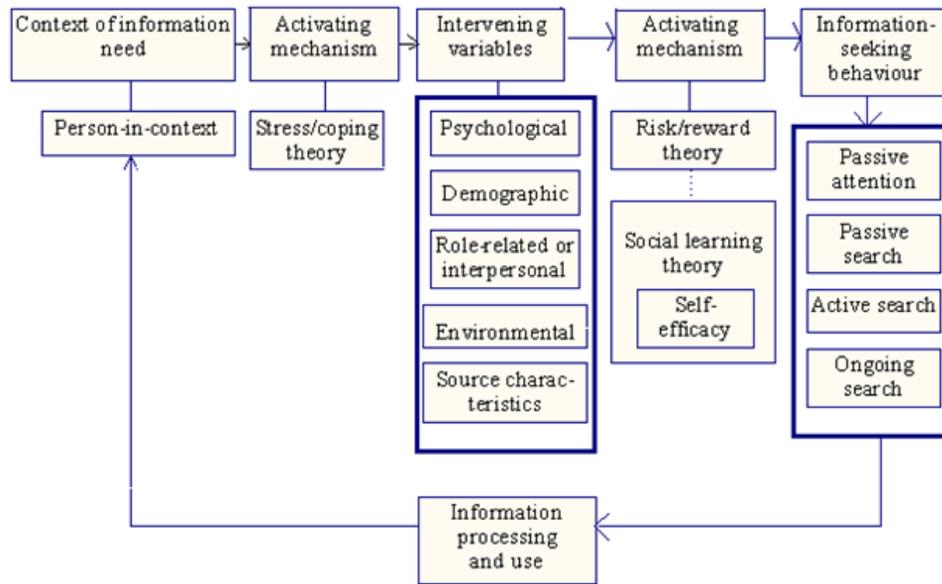


Figure 3. 4: Wilson's enhanced model of information-seeking behaviour (Wilson, 1997)

The enhanced model of information seeking retains several aspects of the initial model. To begin with, the person or the user remains at the point of seeking information, and hurdles in the initial model can be equated to intervening variables in the enhanced model. At the same time, the change of name from 'barriers' to 'intervening variables' suggests that the variables may not necessarily be barriers. In other words, the variables may be factors that help the process of information seeking, or they may act as barriers. Furthermore, the model acknowledges the role of passive searching as well as feedback loops in the process of information seeking. In addition to these, the processes or means through which intervening variables are activated and the way they affect information-seeking behaviour are also considered. While subsequent studies (Palmer and

Neumann, 2002; Meho and Tibbo, 2003; Savolainen, 2019) have suggested adding other activities to the model such as accessing, networking, exploring, translating and verification of information, its validity is nevertheless acknowledged (Palmer, Tefteau and Pirmann, 2009).

In fact, several researchers have used Wilson's enhanced model of information-seeking behaviour to explain the various facets of the information-seeking behaviour of users in specific contexts. For instance, Tury, Robinson and Bawden (2015) used an extended version of the information behaviour model given by Wilson to understand the information-seeking behaviour of students learning through correspondence at the University of London. Similarly, Robson and Robinson (2015) investigated the validity and relevance of a model of information seeking and communication in the field of healthcare. This model, which derived some of its foundations from Wilson's models, was used to derive practical insights into the information-seeking and communication behaviours of users as well as providers of information. Ohtoshi and Gottschalg-Duque (2016) subsequently utilised Wilson's information behaviour models as a foundation for proposing a new framework of information behaviour on the basis of semantic modelling to describe the information behaviour of professionals in their occupational lifework and regular people in their day-to-day activities. Others like Du et al. (2014), Azadeh and Ghasemi (2016), and Orlu (2016) have used Wilson's models of information behaviour to underpin their studies related to the information behaviour of marketing professionals, faculty members and higher education students, respectively. Considering these studies are relatively recent, it is evident that Wilson's model continues to be valid and accepted despite the changes that have occurred in the ways users seek information.

While Wilson's model provides considerable clarity on the role of context and intervening variables in defining information-seeking behaviour, it nevertheless falters in that it considers information seeking as a linear, progressive path that users follow to the end. This is an oversimplistic assumption that has since been pointed out by many researchers. For instance, Huotari and Chatman (2001) suggested that users may perceive the information gap as too big if it involves emotional risks (bad news, failure, and uncertainty), physical risks (situations of abuse) or political/social risks (deviation from accepted norms). Consequently, they may not move linearly from one stage to the next as proposed by the model. Rather, they might move back and forth trying to reduce the gaps, or may even give up in some cases. Moreover, Wilson (1997) himself admits that sometimes users may not even realise or acknowledge that there is an information gap, due to social, political or other factors. When the users do understand and acknowledge the gap and set out to fill it through information seeking, they may experience dead-ends, iterations, feedback loops, abandonment, reversal of direction and other deviations. Other studies by Huotari and Chatman (2001) and Aliannejadi *et al.* (2019) indicate that information seeking often leads to more questions that may either lead to further information seeking and/or frustration.

These claims, while open to debate, nevertheless strongly imply that information-seeking behaviour is not a straightforward or linear process in which users follow a predefined path to arrive at a goal. Rather, they suggest that information-seeking behaviour is a complex activity riddled with confusion, discovery, analysis and further confusion until the user reaches a point where the acquired information makes sense. Hence, while Wilson's (1997) model provides useful tenets to understand the various aspects of information-seeking behaviour, it may not be sufficient on its own to fully understand the complexities associated with the process. To enhance the understanding of information-seeking behaviour further, it is essential to consider aspects that may

cause users to deviate from linear behaviour. Towards this end, one of the key aspects that can be considered an indicator of the beginning and ending of information-seeking behaviour is the sense that it makes to the user. Users are likely to abandon their linear path when information does not make sense. Without sense-making, the process of information seeking can be futile and users might end up in loops. Information seeking is meaningful only when users are able to analyse and understand the retrieved information. Indeed, Shenton (2004) argues that messages without meaning cannot even be classified as information. Losee (1997) excludes even repeated or pre-known messages from the category of information as they do not add any additional value to the users' understanding.

Based on the above premise, it can be argued that the way users make sense of information is a key aspect of research on information-seeking behaviour. It can also be said that the understanding of information-seeking behaviour is complete only when various aspects of the behaviour as outlined by Wilson (1997) are considered along with the sense that they make to the user. Without understanding sense-making, it is very difficult to predict the path that users are likely to take, as they may take alternate paths leading to further search, confusion or abandonment of the process. Moreover, different users may make different sense of information depending on various internal and external factors. Yet, despite this understanding, sense-making is often ignored by researchers while studying the process of information seeking. Considering to sense-making as a part of information-seeking behaviour can help to truly understand user needs and the direction that their information seeking may take. Indeed, Alarayedh (2017) considers sense-making as an information-seeking model in its own right, and warns that without it, users might be stuck in an endless loop of information seeking. Hence, exploring the process of sense-making will help in

establishing the context of the current research by providing a foundation to understand the ways in which different users may make sense of information.

3.3.4.7 Urquhart and Rowley's Information Behaviour Model

An information-seeking study carried out in the UK by Urquhart and Rowley (2007) to analyse information behaviour of students in connection with resources that provide information electronically resulted in the development of a non-sequential model (see Figure 3.4). This model can be used to identify and define the scope of subsequent studies in terms of factors that can be used as a set of variables for such future research to consider (Urquhart and Rowley, 2007, p. 1196). One of the advantages of this model is that it is a common model that helps in bringing together both the micro and macro factors that affect information-seeking behaviour in the context of academia. However, the model is still in its early stages and so far, no study has tested it empirically.

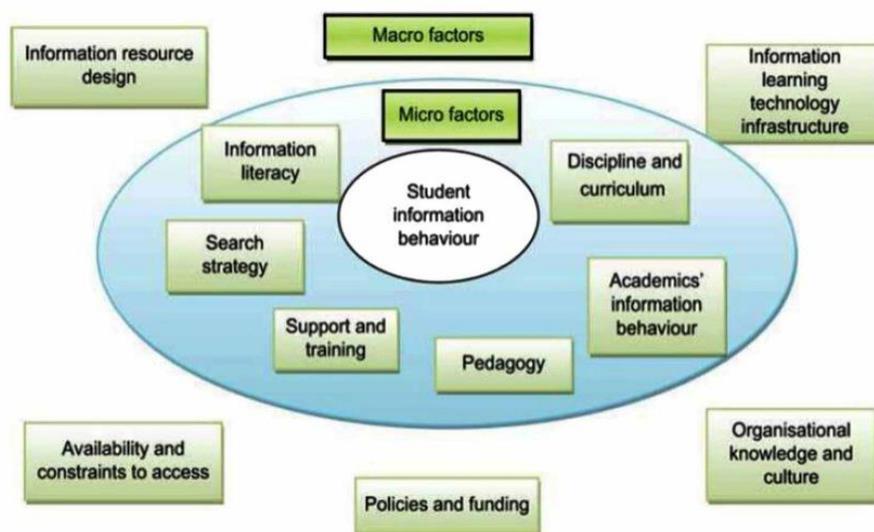


Figure 3. 5: Micro and Macro factors influencing student information behaviour (Reproduced from Urquhart and Rowley, 2007, p. 1190).

Urquhart and Rowley (2007) observe that future research might examine the connection between the level of the student (undergraduate or postgraduate), their discipline, their information behaviour, and the effect of various levels of comfort in relation to accessing information resources in digital form. In this research, the information-seeking model of Urquhart and Rowley provides the theoretical framework and helps identify the components affecting the information-seeking behaviour of postgraduate students.

This research utilises Urquhart and Rowley's model (2007) as it provides a rich model of information-seeking activities. The framework that is provided by the model is general, and has several aspects included in the earlier models. The second reason is that the model is diagrammatically presented, which helps to interpret the relationships between the variables easily. The third reason is that the model is mainly used to analyse and investigate the information-seeking behaviour of students. Fourthly, this model can be combined with a well-tested model like Wilson's (1997). Finally, Urquhart and Rowley's model are a newer model, albeit a less tested one, which has proven to be more driven to the electronic environment.

3.4 Postgraduate Students' Information-Seeking Behaviour

This part of the literature review critically appraises studies on the information-seeking behaviour of postgraduate students, with the objective of setting these into the wider context of information behaviour research. For the purposes of this research, postgraduate students' information-seeking behaviour is described as their approach to seeking information to fulfil their academic tasks. This review focuses on research carried out over the last decade, especially those discussing digital information resources. The review also looks at studies that have investigated the factors associated

with students' information-seeking behaviour: for example, information literacy, disciplinary area, the role of academics and the impact of accessibility of various types of information resources, mainly electronic ones.

The literature on the behaviour of postgraduate students in the context of information seeking has been growing because of the increasing number of students taking an interest in the subject (GT and Vinayagamoorthy, 2013; Tury, Robinson and Bawden, 2015; Case and Given, 2016; Orlu, 2016; El-Maamiry, 2017; Stokes, Priharjo and Urquhart, 2021). This indicates the growing significance of this field, from which it can be implied that librarians and professionals in the field of information have understood the importance of understanding the information-seeking behaviour of postgraduate students, as these students are likely to be future researchers and academics.

Postgraduate students are required to carry out exhaustive research within their field, yet they are often inadequately supported by faculty or library instructional programmes in learning about the research process (Rempel and Davidson, 2008). A report by the Research Information Network (RIN) focused on information skills for young scholars at post-doctoral and postgraduate level (Research Information Network, 2011). The report noted the importance of realising that the training requirements of academics “have tended to be neglected and that in research-active universities, new lecturers are often assumed to have all the skills and knowledge they need” (Research Information Network, 2011, p. 5). One of the purposes of a postgraduate degree is to “bring neophyte researchers into significant communities of practice in their field and to enable them to experience research and information use in the research process as their more experienced counterparts might do” (Aguinis *et al.*, 2020, p. 138). These statements reinforce the value and

timeliness of the current research, especially in today's ever-changing electronic information environment. This part of the review provides a survey of the studies in this area, discussing their scope, the data collection techniques they have employed and their major findings, in addition to identifying gaps in the literature and making suggestions for further research.

In the 2000s, studies on information literacy at the postgraduate level were predominantly focused on theoretical aspects related to standards of information literacy in line with Association of College and Research Libraries (ACRL) standards (Grant and Berg, 2004). In a later section of this review, there will be a detailed account of the studies that have reported on information literacy standards. Since the turn of the century, the literature on information seeking has been enriched with more empirical studies related to the information literacy skills or library research ability of graduate students in particular (GT and Vinayagamoorthy, 2013; Tury, Robinson and Bawden, 2015; Case and Given, 2016; Orlu, 2016; El-Maamiry, 2017; Stokes, Priharjo and Urquhart, 2021). These studies, as well as, other related ones are discussed below.

Hoffmann et al. (2008) conducted needs assessment research through focus groups and an online survey to investigate graduate students' perceptions of the necessity of library research, and the adequacy of utilising a common teaching curriculum for students in the subjects of science, engineering, health and medicine. The study found that postgraduate students had the desire to learn about the methods and procedures of information seeking, bibliographic management tools such as RefWorks, and tools for keeping up-to-date with scholarly literature. It emerged from the study that it is commonly assumed by the teachers that students entering postgraduate study already know how to conduct library research; however, Hoffman *et al.*'s (2008) findings indicate that this is not necessarily true. Students from all the subject backgrounds studied found it difficult to

develop keywords and formulate search strategies. They also had an issue in finding out where exactly to look for the information they required.

The major tool for understanding the perceived knowledge of graduate students about literacy needs was a list of proposed topics for workshops covering issues related to scholarly communication processes, search strategies, conducting a literature review, keeping up-to-date with scholarly literature, writing research papers and using the RefWorks citation tool. Overall, the study found a generally positive attitude among graduate students towards the usefulness of the workshops, each of which was rated 'very' or 'somewhat' useful by between 67% and 83% of respondents. Generally, the outcomes of the study revealed that students prefer to learn about library research by receiving information via email; both students and faculty members recommended workshops at both basic and advanced levels, and there was a demand for a common instruction programme that should include relevant discipline-specific instructions from subject librarians.

Rempel and Davidson (2008) took a more practical look at the information literacy needs of postgraduate students in North America. The authors conducted a pre-assessment survey to explore students' perceptions about proposed literature review workshops and then conducted these workshops with master's and PhD students from various disciplines. The aim of the workshops was to provide students with instructions on how to conduct reviews. It was found that the students were not always as up to date with library tools and latest technologies as normally assumed. The findings of Rempel and Davidson's study largely confirm the findings of Hoffmann *et al.* (2008): many students were not familiar with tools such as databases containing citations, and the authors

suggested enhancing literature review workshops by offering classes for different skill levels from beginner to advance. The study also found that few knew the tools of Web 2.0.

The significant difference from Hoffmann *et al.* (2008) was in the practical aspect: Rempel and Davidson proposed the provision of workshops twice in the week, one in the morning and one in the afternoon, to accommodate both full-time and part-time students. They used a conference-style approach in which students were encouraged to participate. The strength of this study is evident in the insights the authors gained, both practically and theoretically, from the results of both the pre-assessment survey and the assessment of the two workshops. Another important aspect was that the authors went so far as to suggest that such workshops might be improved by including teachers belonging to different disciplines to bring their opinions and expectations to bear on carrying out effective literature reviews. The findings from this study might have been reinforced if another survey had been conducted at the end of the workshop so that a comparison could be made with the pre-assessment survey.

Kai-Wah Chu and Law (2008) adopted a wider longitudinal approach in investigating the progress in expertise in searching for information among 12 students beginning PhD research. The study focused on students from two specific disciplines, education and engineering, and examined the factors contributing to their development from one phase of skill to another. It explored how students improved their understanding of databases/sources, and their skills in searching for information. In common with the studies discussed above, it was observed that research students were facing issues in seeking information sources and that they needed to be use their skill more effectively to achieve in order to efficiently locate information. The strength of this study is in the multi-method approach adopted to collect data: surveys, direct observations, verbalisation of the

students' own opinions and interviews. Systematic training aimed at helping students become competent users of information was provided during five meetings over a period of about one year, and it was found that as students received more training on search strategies, their information needs changed from generic to particular and specific needs. The main conclusions of the study were that training on information searching is still important at the postgraduate level, and that students should be provided with training in special search skills, including proximity search and truncation

Andretta, Pope and Walton (2008) proposed a strategy to ensure the integration of information literacy in the curriculum of UK academic institutions. The authors reflected on perspectives on information literacy among library staff, faculty members and students. The authors point out the need to promote teaching and learning strategies that emphasize independent learning through the integration of information literacy. In a qualitative study exploring the information literacy of medical students, Eskola (2005) found that the development of information literacy is prompted by real information requirements, including seeking data for writing a thesis.

Studies on the information-seeking of graduate students are not restricted to the community of conventional students who progress to their higher degrees immediately or soon after gaining their Bachelor degrees. Bellard (2007) examined the perceptions of different groups of graduate students towards a required information literacy workshop developed for a Master's degree in social science. The author was particularly interested in non-traditional graduate students, those who had been away from academia for a long period. The findings of the study, derived from the results of a pre/post-questionnaire and classroom observation, suggested that there was a significant need for

additional training and that graduate students recognise the need for information literacy instruction throughout their master's programmes.

Kerins, Madden and Fulton (2004) examined the information seeking of 12 postgraduate students from engineering and law who planned to become professionals. They used semi-structured interviews, adopting the Critical Incident Technique. Like the later studies, the authors found that postgraduates have specific information requirements and need information skills training. Through conducting brief problem-solving exercises, the study also found that students often did not consult librarians and academic staff when adopting information-seeking strategies.

It is observable that a major part of the reviewed research on the information-seeking behaviour of graduate students was carried out in the developed world. Adequate number of similar studies has not been conducted in developing countries, particularly of a confirmable nature (El-Maamiry, 2017; Aliannejadi *et al.*, 2019). In an overview of information literacy and programme development at King Fahd University of Petroleum and Minerals (KFUPM), Ashoor (2005) describes the KFUPM experience in developing information literacy initiatives. The author points out those developing countries considering information literacy initiatives face problems posed by the conventional system of education, low rates of literacy and a lack of publishing.

In their empirical study, Hepworth and Wema (2006) designed and implemented a one-week training course for education Master's students in Tanzania. The purpose of the course was to integrate elements of information literacy, educational theory and research on information behaviour. The strength of the study is that trainees' knowledge was evaluated both before and after the course in order to trace changes. The authors indicate that the programme proved

successful in terms of knowledge transfer. Hepworth and Wema (2006) also suggested that “this training programme provides an opportunity for other developing countries to adopt it by implementing it in a wider context”.

Al-Saleh (2004) investigated the information requirements of graduate students in digital information resources in Saudi Arabia. The author utilised a quantitative survey on a sample of 500 graduate students in three Saudi universities. Overall, the study indicated that the majority of digital information resources in Saudi university libraries were not utilised to their full capacity as they did not meet the information requirements of graduate students. The majority of graduate students were reluctant to use electronic resources due to certain barriers. The main obstructions to a student seeking information were related to inadequate training and not enough librarians to help in using the library’s electronic resources.

3.4.1 Factors that Influence Students’ Information Seeking in Higher Education

According to Urquhart and Rowley (2007), the components which affect the information-seeking behaviour of students can be separated into two major classes: micro factors and macro factors.

3.4.1.1 Micro Factors

Research on the internal components that influence information-seeking behaviour has been conducted from a variety of perspectives, with recent research mostly focusing on the human components that impact information seeking (Shah and González-Ibáñez, 2010). This further affirms the increasing shift in information research from the system to the users. Shah and González-Ibáñez (2010) contends that the shift is mainly due to the recognition that understanding

human factors that influence information-seeking behaviour is the key towards the development of an enhanced system of information, rather than study of the system itself.

Human factors, as they relate to information-seeking behaviour, can be classified as internal factors and external factors. According to Koesten *et al.* (2017), both internal and external factors govern behaviour and can be useful indicators to determine the likelihood of a user engaging in certain behaviour. They consider some of the key internal factors that influence behaviour to be existing knowledge, attitudes, skills and self-efficacy. While these findings are derived in the context of users engaging in healthy behaviour, they are nevertheless relevant to the domain of information seeking, as a major part of healthy behaviour is to seek, understand and interpret information regarding what constitutes a healthy lifestyle. Moreover, the findings remain relevant as seen in more recent studies related to health information seeking (Thindwa, Chawinga and Dube, 2019; Agyemang-Duah *et al.*, 2020), which confirm the influence of internal and external factors on information-seeking behaviour.

Further, sense-making, which is a key part of information-seeking behaviour, is based on the premise that internal factors, i.e., factors that are inherent or refer to the user themselves, have an impact on information-seeking behaviour. This position leads to the argument that internal factors include cognitive factors as well as the emotions of the users, given that these are aspects that are inherent to the user and his/her personality. Several researchers have confirmed the relationship between cognitive factors and information seeking (Halder, Roy and Chakraborty, 2010; Desender, Boldt and Yeung, 2018; Sbaffi and Zhao, 2020). Similarly, Fourie and Julien (2014) contend that the emotions of users also have an impact on the way they share and seek information online. Savolainen (2017) argues that emotions and feelings act as motivators for information seeking by

triggering action tendencies to approach or avoid specific sources of information. In other words, emotions lead to action tendencies, which in turn lead to behaviour.

Based on the above aspects, it can be argued that the attitude of users is the main internal factor that affects their information-seeking behaviour. This is because attitude is considered to be a combination of three key components: the ‘cognitive component’, which includes the thoughts and beliefs of people towards the object or idea; the ‘affective component’, which includes the emotional feelings stimulated by the object or idea and the ‘behavioural component’, which includes their tendencies to act in a certain way towards the object or idea (Cherry, 2018). Hence, attitude can be described as the summation of users’ perceptions and evaluations regarding various aspects of information seeking (the cognitive component), their emotions related to it (the affective component), and their action tendencies/behavioural intentions towards it (the behavioural component). Based on this premise, it can be posited that attitude is the main internal factor that affects the information-seeking behaviour of users and that it is comprised of three sub-factors: cognitions or cognitive factors, emotions, and behavioural intentions.

3.4.1.1.1 Discipline and Subject Area

Studies on information use show that discipline has an influence on information-seeking behaviour; thus, any analysis of information seeking should be conducted within the field of the information needs of the particular user group (Zach, 2005, p. 24). It is important to recognise the major aspects of the atmosphere in which any user group functions, including characteristics of the group members, the settings in which they operate and the types of issues they face (Zach, 2005, p. 24). A number of studies have found that disciplinary differences influence the patterns through which

end users search for the information they need (Ajiboye and Tella, 2007; Vakkari, 2008; Catalano, 2013; Dejonckheere *et al.*, 2019).

3.4.1.1.2 Pedagogic Factors

Apart from demographic factors and culture, a focus of many studies related to information-seeking behaviour has been on the role of pedagogic factors in influencing the behaviour of students. Given that information seeking is one of the most significant activities in the context of education, it is essential to acknowledge pedagogic components that may affect academic information seeking in particular. Dorner and Gorman (2006) have pointed out that one of the key differences between Western and non-Western educational systems are the perceived purpose of education. Many Western countries like the US and the UK are individualistic in nature, and in such countries the focus of education is seen as equipping students to deal with new and unknown situations. On the other hand, collectivistic societies like Eastern and Middle Eastern countries see the purpose of education as the gaining of skills necessary to belong and be accepted in a group (Dorner and Gorman, 2006). This has a significant influence on the information behaviour of learners.

This is corroborated by Amsberry and Snavely (2011), who argues that pedagogical factors such as education system and familiarity with academic requirements may be as important as cultural factors in shaping students' behaviour when searching for information, particularly when it comes to issues like plagiarism. Amsberry and Snavely (2011) argue that students who are unfamiliar with information-seeking strategies and academic writing in the Western educational system may resort to plagiarism in order to deal with the requirements of academic rigour.

Others like Alqahtani (2011) and Heyn (2014) have similarly emphasized the problems faced by students who lack sufficient English language skills in efficiently searching for and retrieving information in Western universities. This gives rise to the idea that those who do not study English as their first language in their home countries are likely to struggle in Western universities. Furthermore, students who are used to different alphabetical and numerical systems might find Western library catalogues and indexing systems difficult to use. This highlights the challenges that are likely to be faced by students from countries like Saudi Arabia, who predominantly use Arabic as the primary language of instruction back home, given that Arabic is not only linguistically very different from English but also reads in the opposite direction.

Based on research into the information-seeking behaviour of Swedish students, Thórsteinsdóttir (2005) found that pedagogical aspects such as the tasks assigned to students influence their choice of information channels, resources and strategies. On similar lines, Rowley, Johnson and Sbaffi (2017) found that the pedagogic approach adopted by instructors influences students' behaviour. Rowley contends that the use of a problem-based learning approach by instructors encourages active information seeking and participation among students, with the instructor acting as the facilitator, while the resource-based learning approach focuses more on providing the right resources to students. Given this premise, it is not surprising that a significant amount of confusion exists regarding international students' information-seeking behaviour in Western countries, with some researchers calling them "persistent plagiarizers" (Park *et al.*, 2014), and others countering this by arguing that it is not deliberate plagiarism but a manifestation of their pedagogical backgrounds (Snowden, 2005).

While there is little debate regarding the influence of students' pedagogic background and practices on their information-seeking behaviour, it is important not to use pedagogic factors as uniform predictors of behaviour, given that pedagogic factors are very different even among outwardly similar education systems. Non-Western countries like China, India and Saudi Arabia have varying education systems, practices and different levels of emphasis on English language learning. Even culturally similar countries like Saudi Arabia and Kuwait differ in several aspects, such as the level of gender segregation in classrooms (Meijer, 2010). Moreover, pedagogic factors may be influenced or supported by other factors. For instance, Thórsteinsdóttir (2005) found that along with pedagogical aspects, the personal circumstances, existing knowledge, information literacy, prior experiences and ambitions of students also played a key role in their information-seeking behaviour. Similarly, Skagen et al. (2009) found that along with pedagogic factors, student skills, awareness and circumstances influence their information-seeking behaviour.

Overall, based on these observations, it is evident that while cultural, demographic and pedagogic factors can provide useful indications of behavioural tendencies, they cannot be considered in isolation, nor can they be taken at face value. Moreover, the debates surrounding the theoretical frameworks indicate that relying too much on any specific factor alone to study information-seeking behaviour may be inefficient. Rather, a more practical approach is to consider internal and external factors along with information needs as well as barriers and context in order to arrive at an understanding of the situation as a whole.

3.4.1.1.3 Information Literacy

The skills that are inherent in students can help in facilitating their learning situation. Students' skills may develop with the help of training, their experience of previous work, previous education

or even with the help of life experience. These capabilities relate to the recovery, utilization, appearance and assessment of knowledge. These skill sets make up ACRL skills that are connected with deciding the nature and the degree of information that is needed, accessing that information, understanding the ways to use the information effectively, evaluating the information, and realising the social, legal and wider economic issues (Magnuson, 2013).

3.4.1.1.4 The Role of Academics

a - Influence of faculty members on graduate students

Previous research suggests that faculty members and librarians have an impact on students' information seeking. Luck and Thompson (2006) conducted research at Queensland University of Technology examining the effectiveness of providing graduate students with information literacy instruction on the scope of information resources available in their fields. The findings revealed the necessity for alliance between teachers and librarians to develop tools to improve the information literacy capability of students and therefore make progress in their use of resources (Luck and Thompson, 2006, p. 2). George et al.'s (2006) study of graduate students from various disciplines shows that academic staff has a great impact on the information-seeking behaviour of graduate students; consistently across the disciplines, 96% of respondents reported that faculty members influenced their research and information seeking.

The influence of faculty has also been referred to by Posada (2006) who assumes that the attributes of instructing and learning in higher education rely not only on the execution of new information technologies and acquiring information resources, but also on teachers having the necessary skills for teaching and research (Posada, 2006, p. 174). A study by Serotkin, Fitzgerald and Balough (2005) gives further evidence for the impact of teachers on the graduate students taught and

supervised by them. In a focus group study with 71 health sciences graduates in a small private Master's institution, students accepted that without the recommendation of their teachers, they were not likely to seek the information that they needed to carry out the research. In a similar vein, Tenopir (2003) indicated that recommendations of specific electronic resources by faculty members or academic librarians had an influence on students' choice of resources (p. 34). Therefore, the most efficient method for students to know about essential resources in academic libraries seems to be for librarians to coordinate directly with faculty to bring relevant resources into the teaching process (Tenopir, 2003, p. 34).

Consistent with the above studies, Kerins, Madden and Fulton's (2004) qualitative study exploring the information-seeking behaviour of undergraduates and postgraduates from engineering and law observed that students learned their information-seeking skills from educators. Similarly, in a study by Barrett (2005), detailed interviews with ten humanities graduate students at the University of Western Ontario revealed that most participants reported learning about resources from supervisors and colleagues (Barrett, 2005).

Tomaiuolo *et al.* (2006) conducted a survey of 120 community college and university English faculty members, representing 66 public and private, large and small, institutions, situated across the USA. The aim of the study was to understand the professors' observations concerning the tendency of students to use open Web resources more than the conventional resources available in the library database. The findings revealed that despite the efforts of librarians and faculty to inculcate techniques for evaluating the materials available on the Web, and despite allocated funding for databases, students often preferred to rely on Web resources, most of which are regarded by faculty as unreliable (Tomaiuolo *et al.*, 2006)

Despite the fact that some of the above studies have shown the influence of faculty members on the information-seeking behaviour of students, few studies have investigated faculty members' perceptions of how graduate students in particular use electronic information resources. Furthermore, the available studies on faculty members' perceptions have focused on investigating specific disciplines such as journalism, communication and English. Singh's (2005) survey investigated faculty members' perceptions of the information literacy of students in journalism and mass communication programmes, for instance. Faculty members reported that most of their graduate students possessed the ability to think critically, organise information, carry out research, use print reference sources, electronic databases and World Wide Web searches, and evaluate information.

Hewitson (2002) carried out a general study looking at UK electronic information services (EISs). This took the form of an investigation into the utilisation and awareness of digital information services by staff at Leeds Metropolitan University. Despite the faculty members' enthusiasm for students to use EISs, they had some reservations. Some academics felt that EISs undermine students' ability to think critically regarding their subjects, as they tend to use search terms on the Internet to retrieve information. In addition, some staff expressed concern regarding plagiarism and the abilities of students to evaluate and critically analyse the information they found. On the other hand, other faculty members felt that electronic information services could enable students to become more exposed to a wide range of resources (Hewitson, 2002, pp. 49-52). The study revealed a consensus of opinion among staff members with regard to how they would like to receive training for their own skills in using EISs. The majority gave priority to courses led by subject, which were more related to their information needs.

In the first study of its kind in a developing country, Adikata and Anwar (2006) found that the faculty members they investigated were not fully satisfied with their students' library skills. Using a modified version of Baker's (1997) instrument to examine academics' perceptions of undergraduate students' library use in Malaysia, the authors concluded that the library-use skills of the students needed to be improved. Adikata and Anwar (2006, p. 117) envisage further research investigating the perceptions of user groups, faculty members and students.

b - Training needs of faculty members

Studies of faculty members' awareness of electronic information resources have revealed a consistent need for professional training programmes to enhance academics' adoption of these resources. According to Hewitson (2002, p. 51), skills in using electronic information services are related to individual factors such as IT skills, subject area, and the extent to which users adhere to a professional development scheme. Hewitson (2002, p. 48) also indicates that although some staff members have realised the inadequacy of their ability to efficiently use e-resources, there is still a hesitancy to gain the required skills due to time pressures and factors such as the constant changes in information technology. Earlier studies of Internet use by faculty members also recognised the need for additional training courses for this academic community (e.g. (Lazinger, Bar-Ilan and Peritz, 1997)).

3.4.1.1.5 Existing Skills and Knowledge

The concept of existing knowledge is closely related to several aspects of information-seeking behaviour. Not only do users realise gaps in knowledge based on the state of their existing knowledge, their information needs are also dictated by existing knowledge. Moreover, the

strategies they utilize for searching for information and the sense they make of the information retrieved depend on their existing knowledge and skills. To this end, it can be argued that the existing knowledge and skills of users are essential in shaping their information-seeking behaviour.

To explain the role of users' existing ability and knowledge in their information-seeking behaviour, Kelly (1955) proposed a framework in which individuals create certain patterns known as 'personal constructs', based on their existing knowledge, to anticipate future needs for information. According to Kelly (1955), users create new personal constructs through the process of information seeking, which they assimilate into their existing systems of constructs. In fact, according to Tan (2021), the ability to identify information needs begins with the ability to make connections regarding new problems in new situations through existing knowledge. This idea of existing knowledge leading to information needs is quite similar to the idea of sense-making, in which the gaps in existing knowledge led to the search for information, which is then synthesized into existing knowledge structures to arrive at meanings. In addition, Talja (1997) argues that the reception of information by a person also depends on his/her state of existing knowledge and knowledge structures.

While acknowledging the role of existing knowledge in defining information needs and behaviour, it is also important to acknowledge that knowledge, knowledge gaps and personal constructs are not standalone entities but rather are influenced by other factors. For instance, researchers point out that factors like availability of information resources and culture affect a person's knowledge structures (Talja, 1997; Ochsner *et al.*, 2005; National Academies of Sciences Engineering and Medicine, 2018). A review by Ochsner *et al.* (2005) also posits that the cognitive abilities of the user play a key role in their knowledge structures. This has found support in a study by Sharit *et*

al. (2009), who carried out research into the online information-seeking behaviour of young adults and found that knowledge about the Internet alone was not sufficient for information seeking. Rather, knowledge combined with cognitive abilities led to effective information seeking. This leads to the idea of existing knowledge being influenced by other factors.

Dervin (2003) also point out that existing knowledge and skills are continuously updated as more information becomes available. This is corroborated by Palmer, Tefteau and Pirmann (2009), who argue that the value and use of any information can change at micro as well as macro levels over the course of time. This essentially means that existing knowledge is not a constant state of mind but something that varies among individuals and changes dynamically during and after the information-seeking process, depending on various factors. To this end, it is essential to acknowledge the importance of other factors that may shape, dictate and/or change the existing knowledge and skills of users as they seek information.

Having reviewed the perceptions of faculty members regarding students' information skills, the next section discusses another factor which influences information seeking: support and training. For the purpose of this research, there is a special focus on library anxiety, due to its important influence on students' information-seeking behaviour in higher education.

3.4.1.1.6 Library anxiety and available support

The theory of library anxiety was developed by Constance Mellon (Mellon, 1986). Students with library anxiety express a sense of “powerlessness” when beginning an information search that requires them to use the library. Although the theory has mainly focused on undergraduate students (Jerabek, Meyer and Kordinak, 2001; Anwar, Al-Kandari and Al-Qallaf, 2004), behaviours indicating anxiety have also been noted in postgraduate students (Jiao and Onwuegbuzie, 1998;

Jan, Anwar and Warraich, 2020). As Katopol (2010) indicates, library anxiety remains a strong theory for explaining information behaviour not just in undergraduates, but also in postgraduate students who “find themselves lost in an unfamiliar information world”.

In an attempt to quantify attitudes and feelings about library use, Bostick (1993) developed a Library Anxiety Scale, which included five different dimensions of anxiety: barriers with staff, affective barriers, comfort with the library, knowledge of the library and technical problems (Katopol, 2010, p. 236). In order to overcome a perceived limitation in this scale, the omission of anxiety about online source preferences, van Kampen (2004) developed the Multidimensional Library Anxiety Scale, which improved on the original by adding factors of gender and online resources in relation to library awareness and anxiety.

In assessing components associated with the library anxiety of off-campus graduate students, Collins and Veal (2004, p. 13) found that the opinions of learners of their capabilities to access information constituted an integral element of their level of anxiety while using both digital resources and resources available at the library. Based on their findings they advocate instruction based on knowledge along with computer instruction to develop skills in accessing resources. The authors note the need to extend this method of study by examining other uncertainties in order to obtain an adequate analysis of what kinds of relationship exist between the performance levels of adult learners and their perceptions of their skills in accessing technology and library resources.

Tenopir (2003) found that both faculty members and students most readily adopt electronic resources if they are seen as handy, relevant and time efficient. Another qualitative study, by Fast and Campbell (2004), showed that students preferred Web searching to OPACs. This was found to be because of psychological factors related to the ease of using search engines and factors related

to interface and system which have made the process of information seeking from digital resources much easier.

Liu and Yang (2004) used a questionnaire to determine the principal factors which influence students' decision processes for choosing and utilising their sources of information. Based on a framework of the information-seeking process for distance education students, the survey indicated the effect of the law of least resistance in the respondents' choice and use of sources information. Results showed that participants preferred timely and easy information retrieval from digital sources over information seeking associated with a physical information source. The study also found that the different motivation levels of students when choosing information sources were strongly associated with their own subjects of study. The outcomes of the survey have implications for the academic library, which ought to plan to increase access to electronic information resources, and promote more effective information literacy programmes in order to meet the information needs of graduate students (Liu and Yang, 2004, p. 34).

3.4.1.1.7 Search Strategies

Students adopt an information-seeking routine habitually. Understanding the difference between search strategies and information literacy is essential, because the confirmation that is received from the students indicates that they already knew their capabilities, but they refrain from using more complicated techniques for searching. As noted by Järvelin and Ingwersen (2004), information seeking and retrieval is viewed by users mostly in an instrumental way, and users intend to complete it quickly. This research shows that information problems can be solved by an information seeker with the help of a routine strategy (Savolainen, 2007).

3.4.1.1.8 Context

The review of studies in the previous sections indicates that information seeking is a complicated process that cannot be generalized. The findings also indicate that information-seeking behaviour as a whole, as well as its components (like sense-making), are heavily influenced by the context in which the information is being sought or shared. To this end, the importance of context in information-seeking behaviour cannot be overstated. There has been ample study of the importance of context to information seeking, to the extent that Case and Given (2016) argue that information seeking can never occur in isolation, regardless of how many abstractions are applied to it. This is supported by Savolainen (2017), who argue that there is no such thing as “information seeking in general”, particularly when it comes to real life. In other words, information seeking is said to be inextricably joined to context. This is also in line with the concept of extended cognition, in which the user’s thought processes, which eventually influence his/her behaviour, are invariably linked to the environmental context (Shapiro, 2019). Hence considering the context in which the information-seeking behaviour occurs is of utmost importance in understanding the various aspects related to the behaviour both as a whole and in parts.

Savolainen (2017) define context as a sum total of anything and everything that is not an actual part of information seeking, but that nevertheless impacts the process and behaviour related to it. They also contend that context can always be restructured and refined into an almost infinite number of sub-contexts, depending on need. Chang *et al.* (2015) systematically explored the relationship between information seeking and context/subcontext, and found that the relationship can be of association, of interaction or one-directional. Within this classification, association refers to the concurrence of information behaviour within a given situation, interaction refers to the influence of context on behaviour and vice-versa, and one-directional refers to the influence of

context on information behaviour without any reciprocal changes in context (Chang *et al.*, 2015). Savolainen (2017) extends this further to study information-seeking behaviour on the Web and identify eleven types of relationship between information-seeking behaviour and context: “affecting, associating, causing, concerning, and connecting, enabling, exploiting, hindering, illustrating, isolating, and misleading”. It is evident from their classification that the influence of context on information-seeking behaviour can be positive or negative and may encourage, affect, determine or prohibit the behaviour. Several other researchers have conducted research on the relationship between context and information-seeking behaviour, particularly on the Web, and have determined that the Internet enables new types of information-seeking behaviour in relation to authority, trust and communication (Muwanguzi and Lin, 2010; Fourie and Julien, 2014).

While these studies highlight and confirm the role of context in information seeking, they do not provide much clarity regarding the actual facets of context that are involved in the relationship. In fact, Dervin (2003, pp. 13–38) argues that defining context in absolute terms is as challenging a task as trying to “tame an unruly beast”. Other researchers like Leckie and Given (2005) and Savolainen (2017) agree with this, pointing out that there are innumerable models and typologies proposed by researchers to characterize context, which indicates the complexities involved in the task. Nevertheless, there have been some attempts to identify the different contextual factors that impact information seeking. Clemens and Cushing (2010) studied information-seeking behaviour in substantive and enriched personal contexts (i.e. from lived experiences), and found that factors like familiarity with subject, available sources of information, available sources of support, emotions, missing information, coping strategies and external recommendations influenced the behaviour. On similar lines, Kjos, Worley and Schommer (2011) studied the importance of social

context in influencing information-seeking behaviour, and found that contextual factors like social interactions, social ties, social networks and trust played a key role.

These studies provide valuable information regarding the contextual factors that influence information-seeking behaviour. However, a key drawback is that while they acknowledge the differences in information behaviour caused by context, these studies assume a uniform influence of context. This is a myopic view, considering that different users may be affected differently by context, context may be influenced by other factors and the contextual factors themselves may vary across user groups. Indeed, Kim, Joanna Sin and Yoo-Lee (2014) confirm that demographic factors like gender and cognitive factors like problem-solving abilities influence the information-seeking behaviour of users within specific contexts on social media. Others like Bates (2002) and Choo (2007) have confirmed that external factors like culture and environment affect context as well as its influence on behaviour. To this end, it is necessary to consider the influence of context holistically along with needs, barriers, and various internal and external factors, rather than in isolation.

The next section of the review shifts focus from the micro factors influencing the information-seeking processes of students, to environmental factors. For the purposes of this research, which was conducted in a unique cultural context, the crucial environmental factors are culture and information resources.

3.4.1.2 Macro Factors

While several researchers have indicated that both internal and external factors have a bearing on information-seeking behaviour, the factors themselves could have an impact on each other. For

instance, external factors like socioeconomic aspects and culture could influence the attitudes and values of a person. One of the most powerful ideas in this area emerged from the work of Huotari and Chatman (2001), who found that even advanced and economically strong people may suffer from 'information poverty' if social norms inhibit information seeking. Indeed, Huotari and Chatman (2001) found that information poverty may or may not be affected by economic poverty, but is heavily influenced by a set of social attitudes and norms. This directly manifests itself in the form of the attitudes of users towards information-seeking behaviour, in that they are often unwilling to share or seek information based on their perceptions of loneliness, risks and loss of face. In other words, often those who lack information may refrain from seeking it rather than risking any perceived negative effect on their life, despite the availability of information resources. This indicates the high influence of external factors on internal factors such as thoughts and emotions, as well as on a person's information-seeking behaviour, particularly in societies where a lot of importance is placed on conforming to collective norms.

Apart from culture, researchers have also studied the relationships between other external factors and users' information-seeking behaviour. Howard, Rainie and Jones (2001) studied the information-seeking behaviour of users on the Internet and found that users with different elements such as race, gender, ethnicity, age and socioeconomic factors searched for different content. This indicates that the information needs of users may be influenced by demographic factors.

Baumann, Czerwinski and Reifegerste (2017) found that gender had an impact on the way users used the information resources available to them. According to their findings, the Internet was used by women more for social information sharing and less as a resource of information. However, their findings are debatable, as they attribute the limited usage of the Internet as an information

resource by women to their lack of confidence in managing technologies, which may no longer be valid considering the technological advances that women have made in the decade and a half since then. Given the time frame in which it was conducted, the study treats the use of the Internet as a novelty, which is, again, no longer the case. Indeed, more recent studies have indicated that while perceptions of women being less competent with technologies continue to persist, they are more likely to be stereotypical notions than reflections of reality (Corneliussen, 2020). Recent studies also indicate that today women from various backgrounds use the Internet as an extensive information resource (Hughson *et al.*, 2018). Urquhart and Yeoman (2010) argue that gender-ascribed constructs are more likely to be responsible for variations in information-seeking behaviour, rather than the gender itself. Based on their meta-synthesis of literature related to the information behaviour of women, they found that factors like concern for others and risk avoidance, which may vary between genders, influence information-seeking behaviour, and not gender by itself. They also present the argument that the condition or the context in which women tend to be found influences their information-seeking behaviour.

While these studies indicate that assumptions regarding the role of gender in information-seeking behaviour cannot be taken at face value, they nevertheless confirm that external factors like gender may indeed influence information-seeking behaviour at times. Hence, it can be argued that considering the role of external factors on information-seeking behaviour is a worthwhile endeavour, although this needs to be done in the context of other factors and changing trends in order to arrive at accurate and up-to-date results. Others like Al-Muomen, Morris, and Maynard (2012) and Disalvo, Roshan and Morrison (2016) have also confirmed the influence of factors like gender, education, academic practices, skills, labour force participation and age on various aspects

of information-seeking behaviour, such as the willingness to utilize technology and the purpose of utilization.

3.4.1.2.1 Culture

Based on Huotari and Chatman (2001)'s work on information poverty, it is evident that information seeking may be hindered or hampered by cultural norms. Huotari and Chatman (2001) found that certain aspects of behaviour such as secrecy regarding information needs, deception, and self-protective behaviour in terms of shielding or misrepresenting information are all responses to external culture and social norms. To this end, culture is one of the most essential external factors that impact the information-seeking behaviour of users. Innumerable studies have explored the role and influence of culture on information-seeking behaviour. Many of them derive their foundations from the cross-cultural dimensions of Hofstede (2010), in the context of a study of IBM employees across 72 countries world-wide.

According to the findings of Hofstede's study, employees develop the perception for choices and situations through the filters of cultural differences, which in turn can be summarized by five key dimensions: power distance index, uncertainty avoidance index, masculinity vs femininity, individualism vs collectivism index and long-term orientation (Hofstede, 2010).

The power distance index shows the degree to which members of a given society accept authority and differences in power distribution (Hofstede, 2010). In cultures where the power distance index is high, people at high levels have significantly more power than their subordinates. While this is related to the idea of equality or lack thereof to an extent, the index considers inequalities to begin at the lower levels in the sense that it attributes a society's unequal power distribution to the

subordinates more than the leaders. Based on the findings of his study, Hofstede (2010) classified countries like Austria and Germany as low power distance, and Middle Eastern countries as high-power distance. Other researchers who have followed up on Hofstede's cultural dimensions have confirmed this. For instance, Cassell and Blake (2012) compared the business and legal environment of the USA to that of Saudi Arabia in the context of Hofstede's dimensions, and found that Saudi acceptance of unequal power is evident in their preference for managerial positions, based on the view that low-level jobs can cause embarrassment. Similarly, Khanum, Fatima and Chaurasia (2012) followed up on Hofstede's work by studying Arabic users' preference for interface designs and posited that interfaces designed for low power distance countries may not be suitable for users in Arabic countries. These studies confirm that there is high deference and acceptance of authority in Middle Eastern countries like Saudi Arabia.

The uncertainty avoidance index indicates the degree to which people living in a society are willing to accept risks and situations with uncertainty (Hofstede, 2010). Societies that exhibit low uncertainty avoidance tend to have higher allowance for uncertainty, are willing to take risks, and have lower need for rigid rules and constraints. Societies with high uncertainty avoidance have little tolerance for risks and tend to have rigid rules and formalities in place to mitigate them (Hofstede, 2010). Middle Eastern countries like Saudi Arabia are classified as having high uncertainty avoidance.

The masculinity vs femininity index indicates the degree to which a society emphasizes traditional masculine values (Hofstede, 2010). In cultures that focus on masculinity, the attention is on heroism, assertiveness, material possessions and personal goals, while in cultures that focuses on femininity, the focus is on quality of life, social relevance and collective welfare. The premise for

this dimension is the distribution of emotional roles between members of different genders. In masculine societies, gender roles are highly segregated, distinct and dramatically different, whereas in feminine cultures, roles are distributed equally (Hofstede, 2010). According to Hofstede (2011) countries like Japan and Germany score high on the index, others like the Netherlands score low, while Middle Eastern countries are somewhere in the middle.

The individualism vs collectivism index indicates the degree to which a society prefers collectivism over individualism (Hofstede, 2010). In cultures which have high collectivism, the emphasis is on collective welfare rather than the self. According to Hofstede (2010), the index is a measure of the extent to which individualism is seen either as beneficial or as isolating within a society. Hofstede (2011) classifies most Western countries as individualistic, Eastern countries as collectivistic and Middle Eastern countries as somewhere in the middle on the scale.

Finally, the long-term orientation index indicates the outlook of the members of a society with respect to their goals and needs (Hofstede, 2010). In cultures of long-term orientation, people are more concerned about the future and are ready to wait for outcomes. This may manifest itself in the form of savings, persistence and willingness to accept change (Hofstede, 2010). Cultures with short-term orientation value rewards and goodness connected to the past and present, such as in regard to culture, social obligations and preserving face (Hofstede, 2010). Eastern and Western Europe are classified as long-term oriented, while Asian and Middle Eastern countries are classified as short-term oriented (Hofstede, 2011).

Hofstede's cultural dimensions have found ample support and application in the field of information seeking. Based on a study of knowledge sharing and seeking in online communities,

Li *et al.* (2018) found that cultural factors had a significant impact on the behaviour of users, with some factors facilitating information seeking and others hindering it. On similar lines, Komlodi and Carlin (2004) researched the impact of Hofstede's (2010) dimensions on information-seeking strategies and found that the individualism vs collectivism, power distance and uncertainty avoidance indexes had an impact on the way users define their information needs, execute their searches and select resources. Dorner and Gorman (2006) also refer to the work of Hofstede (2010) to discuss the differences between Western and Asian cultures in the context of information literacy. While these studies provide empirical support for Hofstede's (2010) dimensions, there have also been several studies that criticize the framework for its allegedly shallow and generalized views on culture.

Smith, Peterson and Schwartz (2002) and Williamson (2002) have argued that the methodologies used by Hofstede to come up with the dimensions were too simple and therefore fail to account for individual variations or deeper issues. Similarly, Blodgett, Bakir and Rose (2008) carried out exploratory research to evaluate the validity of Hofstede's framework and found that although it provides valuable theoretical and practical contributions, it underplays the potential influence of individual traits and contextual factors. Moreover, recent studies indicate that Hofstede's assumptions about national culture may not always be true, with researchers like Cooper-Chen and Tanaka (2007) pointing out the celebrations that occurred throughout Japan, which is purportedly a highly masculine society, after the birth of Princess Aiko. Even in the domain of information seeking, researchers have pointed out that behaviours typically attributed to certain cultures may or may not hold true (Li *et al.*, 2018). Hofstede (2011) has reacted to these criticisms by pointing out that the dimensions are neither predictors of individual behaviour, nor methods of stereotyping

people or societies, but simply designs to anticipate the penchant for certain types of common behaviours.

Researchers like Hodgetts and Luthans (1993) also argue that what was valid and relevant at the time of Hofstede's study may not be relevant at other times, owing to economic, social, political and technological changes. They remind us that culture is not a stagnant concept but something that keeps evolving over time, and hence needs to be viewed holistically along with context, as well as internal and external factors. This is particularly important considering the amount of time that has lapsed since Hofstede's studies, and the globalization, technological revolution and consequent changes that have occurred since then. Nevertheless, it is normally admitted that Hofstede's cultural dimensions give essential inputs to help understand basic attitudes and characteristics of users, as long as the role of other factors is considered.

3.4.1.2.2 Policies and Funding

The sector level is related to issues such as the knowledge economy, learning, student-centred learning and information literacy. Such types of policy are applicable at the institutional level, or even at the regional or national levels. The sustainability of the local and national economies is could be linked to the role of universities, particularly because they are centres of research and development. Therefore, universities ought to be aligned with business needs as can manifest in government policies. In order to compete internationally, businesses should produce or generate new enterprises, and graduates should have appropriate skills and talents that are necessary for organizations to compete globally.

3.4.1.2.3 Information Resource Design

The resources and design, and the structure, which is provided by publishers is concerned with information resource design. The important objectives here are concerned with the learning needs of the student. The IMS Learning Resource metadata model consists of some of the models that are required for learning objects, and they cover the types of software required for multimedia resources, and which offer interactivity for the proposed audience (Barker, 2005). Apart from these, other factors can be defined, such as the use of graphics, visual impact and distinction in packaging, and also navigation and structuring options.

3.4.1.2.4 Information Resources and Accessibility Issues

Contrary to the notion that information seeking in the electronic environment has become easier, the excess of information sources means that effective retrieval of the best available information has actually become even more complex (Feather and Sturges, 2003, p. 173). The plethora of available information resources does not necessarily indicate an availability of good quality information. Therefore, searchers in this electronic information age must become increasingly competent in judging the quality of electronic information resources (EIRs). As Feather and Sturges (2003, p. 174) point out, “due to the vast increase in complexity of EIRs, the challenge is to make them accessible in useful ways for a hugely enlarged community, many of whom are inevitably unskilled in the use of the resources”.

In the context of tertiary education, information resources encompass a variety of print resources, including monographs, serials and original source manuscripts, in addition to digital resources such as Internet databases, the World Wide Web and electronic journals. The way these information

sources are organised and the tools for locating information from them are considered to be important factors affecting access to such resources (Kiili *et al.*, 2018).

3.4.1.2.5 Demographic Factors

Apart from culture, several studies have indicated that user demographic factors also play a key role in their information-seeking behaviour. Demographic elements can be defined as elements such as gender, age, socioeconomic status and other variables that define the overall persona of an individual within a society. According to Estacio, Whittle and Protheroe (2019), demographic factors not only influence the behaviour of an individual but also aspects like education and access to information resources, which in turn may influence other factors related to information-seeking behaviour such as existing knowledge constructs. To this end, it can be posited that the influence of demographic factors can be direct or indirect.

There is ample empirical evidence to support the link between information seeking and demographic factors. Indeed, based on research into the online information-seeking behaviour of users, Howard, Rainie, and Jones (2002, p. 45) found “significant differences in use between men and women, young and old, those with different race and ethnicity, and those of different socio-economic status”. This indicates that information seeking is influenced by not one or two but a combination of several demographic factors. Other researchers have focused their studies on specific factors and confirmed their influence on information-seeking behaviour. It is pertinent to note that prior to the advent of contemporary social media, studies like Slomian *et al.* (2017) looked into the use of the Internet by women and found that they utilise the Web in order to collect information. On similar lines, other studies have studied the impact of gender, and found that

women use it more as an information resource than for social activities (Sayakhot and Carolan-Olah, 2016; Satir and Kavlak, 2017).

Other studies have linked gender to the existing knowledge and abilities of users, arguing that men and women follow different approaches to information seeking due to the gaps in their knowledge and skills (Voelck, 2003; Li *et al.*, 2018). The findings of these studies indicate that women are less confident in their online information-seeking behaviour due to limited technological competence and technology acceptance. However, Niu and Hemminger (2012, p.11) argue that differences in behaviour are just a representation of differences in the “psychological makeup” of genders and not a reflection of their abilities. This seems valid, particularly considering that women have started making their mark in almost all technological fields today, and the ability to use the Internet is now more of a norm than a skill. Nevertheless, they confirm that gender has an impact on information-seeking behaviour.

Several recent studies (Voelck, 2003; Li *et al.*, 2018) have indicated that women use the Internet and social media extensively as information resources, further strengthening the idea that although women might use different strategies, they use the Internet for information seeking at the same level as men. In fact, a study by Pew Internet found that women are actually ahead of men in using the Internet to seek certain types of information (Fox and Duggan, 2013). This not only highlights the increasing competencies of women, but also reaffirms the idea that information-seeking behaviour is a constantly changing process. It also indicates that gender may not always be a factor in information-seeking behaviour. Indeed, some researchers, such as Vilar (2015), report no link between gender and information-seeking behaviour, barring very specific circumstances. Nevertheless, the continued focus on gender as a variable influencing information-seeking

behaviour is noteworthy and indicates that its influence cannot be ruled out. Kim, Joanna Sin and Yoo-Lee (2014) contend that gender also plays a role in the problem-solving style of users, indicating that sense-making may also be affected by gender.

Prensky (2001) refers to people born after the new millennium (2000) as 'Generation Y' or 'Millennials', as 'Digital Natives'. Several studies argue that people from this and subsequent generation are those more likely to utilise Google and other search engines for their information seeking, to the extent that "to google" has become a de facto verb in English today (Anderwald, 2016). This not only indicates the increasing influence and proliferation of the Internet in people's lives, but also confirms the influence of age on the information-seeking behaviour of users.

Prensky's (2001) classification of millennials as digital natives has come under criticism, with researchers like DaCosta, Kinsell and Nasah (2011) arguing that the over-abundance of 'opinions' on the generation has made it extremely difficult to separate fact from speculation. Indeed, based on their research on the information-seeking and learning traits of millennials compared to their older counterparts -labelled 'Digital Immigrants' by DaCosta, Kinsell and Nasah (2011), the researchers found no significant differences in the traits that would justify the assumptions of extreme digital competency among millennials. However, while this casts doubts on the exact nature of the influence of age on information-seeking behaviour, it does not negate the influence on its own. In fact, considered in the context of other studies that support the link between information-seeking behaviour and age (Howard, Rainie and Jones, 2001; Vilar, 2015), it can be said with reasonable certainty that while age may or may not have an impact on the technological competencies that impact information-seeking behaviour, it may have an impact on the behaviour itself.

Apart from age and gender, studies also indicate links between socioeconomic status and information-seeking behaviour (Vilar, 2015; Teo *et al.*, 2018). In fact, according to a study by Ahmed *et al.* (2005) on the health information-seeking behaviour of participants in Bangladesh, socioeconomic factors are the single most significant predictor of information-seeking behaviour, surpassing other factors like age and gender. Indeed, considering that education and access to information resources and technology are likely to be dictated by economic status, this seems like a valid conclusion. However, some studies indicate that while certain aspects of information-seeking behaviour are influenced by socioeconomic status, others are not. For instance, a study by Jung (2014) found a positive relationship between information-seeking behaviour and socioeconomic status in post-treatment cancer patients, but also found that people who were economically less affluent did not exhibit active information-avoiding behaviour. Similarly, Kumar, Hoovayya and Ahmed (2014) found that socioeconomic status does not impact the information-seeking behaviour of users but might create barriers to seeking information. Most studies that have found a link between socioeconomic status and information-seeking behaviour are in regards to health information (Uzochukwu and Onwujekwe, 2004; Ahmed *et al.*, 2005; Jung, 2014; Kumar, Hoovayya and Ahmed, 2014), indicating that the same relationships may not hold true in other, more general contexts.

3.4.1.2.5 Infrastructure of Information and Learning Technology

The infrastructure of information and learning management comprises workstation locations, networking arrangements, and managed or virtual learning environments. There are some important issues here, like the links between student record systems and learning management systems. There are also some resources that are based on on-campus and off-campus access,

networked access, including wireless networking, and accessibility of computers amongst teaching rooms, in addition to student residences.

3.5 Challenges for Researchers in Less Developed Countries in Regard to Improving their Online Search Skills

Several studies note that search skills represent the fundamental level of searching activities in the information-seeking process (Willison and O'Regan, 2007; Gutmann, 2014; Hewson and Stewart, 2016). According to Mondria, Wu and Zhang (2010), Morville and Wickhorst (1996), and Sanchiz *et al.* (2017), searching skills are a basic search tactic that helps in analysing the process of information searching. They include multiple searching choices and the initiatives that are determined by tactical behaviour which helps in accomplishing the desired goals. Searching behaviour is based on individual psychological behaviour and needs. According to studies by Welzer, Jaakkola and Thalheim (2016), Dutt, Ismail and Herawan (2017), and Jääskelä, Nykänen and Tynjälä (2018), there are three major challenges faced by researchers in the research industry or in academic work. These challenges are as follows:

Technology – Technology has introduced multiple ways for students to search for information. In developed countries, students are well aware of modern technology and search tactics, whereas in developing countries students are not provided with a wide range of strategies, which hinders them in using technology in the right manner. Herring *et al.* (2004) and Lyons *et al.* (2005) write that technology has introduced many reliable ways to explore online information. This helps students to conduct secondary research and to answer their research questions in a more effective and efficient manner.

For instance, as described by Grant, Clarke and Kyriazis (2007), Sahmoudi and Lachkar (2013), and Reips *et al.* (2016), if any students are conducting research on giant multinational companies then they can find all the relevant information from their websites through exploring published annual reports. In developed countries, companies are making their operations transparent, which allows for reliable information to be gathered. On the other hand, studies by Mondria, Wu and Zhang (2010), Morville and Wickhorst (1996), and Massaro *et al.* (2018) show that in developing countries companies are unable to share their published reports, which creates difficulty for academics who want to present data from secondary sources. Therefore, in less developed countries students often find it difficult to gather the right secondary data due to lack of information available through technology tools.

Impactful reporting – According to Mondria, Wu and Zhang (2010), Morville and Wickhorst (1996), and Massaro *et al.* (2018) impactful reporting is the ability to provide or to receive the right consultative reports, those that are comprehensive and present cohesive details. It includes the entire information about the research topic based on the availability of a wide range of information. A large number of studies (Welsh *et al.*, 2003; Herring *et al.*, 2004; Mathwick and Rigdon, 2004; Lyons *et al.*, 2005; Grant, Clarke and Kyriazis, 2007; Sahmoudi and Lachkar, 2013; McCutcheon, Lohan and Traynor, 2016; Reips *et al.*, 2016) note that in online searching, students often find it difficult to get comprehensive details because of a lack of information availability. A majority of students prefer not to search online journals, due to which they are unable to provide accurate or theoretical insights. This behaviour in students is because of less accountability in presenting their research, which prevents them from information searching. However, in developed countries students are provided with separate courses in which they are taught about impactful reporting which is comprehensive and quantifiable, in which they are encouraged to use multiple tools for making their papers more reliable and impactful.

Data management – As mentioned by many studies, data management is another tool that helps students in identifying how to manage data (Welsh *et al.*, 2003; Herring *et al.*, 2004; Mathwick and Rigdon, 2004; Lyons *et al.*, 2005; Grant, Clarke and Kyriazis, 2007; Sahmoudi and Lachkar, 2013; McCutcheon, Lohan and Traynor, 2016; Reips *et al.*, 2016). Research often involves vast amounts of information and multiple books, journals and articles, which can be managed through implementing data management strategies. Data management strategies are applied in both primary and secondary data, where students need to handle information and integrate it in order to enhance their research's reliability. In an online search, data management can be done by using the bookmarking tool. Students can make separate folders where they can save all the searched information by categorizing it. In developed countries, students are separately taught about data management through use of business management software and software packages for the social sciences, such as NVivo, which helps students manage their primary and secondary data (Willison and O'Regan, 2007; Gutmann, 2014).

According to authors such as Welzer, Jaakkola and Thalheim (2016), Dutt, Ismail and Herawan (2017), and Jääskelä, Nykänen and Tynjälä (2018), there are multiple reasons which hinder students from online searching and which negatively affect their online search behaviour. Self-efficacy plays a major role in the searching behaviour of students (Grotan, Sund and Bjerkeset, 2019). When students search for something online and do not find it, this results in lower self-efficacy, which hinders future performance and research quality. According to the self-efficacy scale used by authors such as Bassett and O'Riordian (2002), Selzler *et al.* (2020), Nosek, Banaji and Greenwald (2013), Mondria, Wu and Zhang (2010), Welzer, Jaakkola and Thalheim (2016), Dutt, Ismail and Herawan (2017), and Jääskelä, Nykänen and Tynjälä (2018), there are two instruments which define self-efficacy. The first is Internet self-efficacy and concerns the

information about students' software skills, which determines their interest in information gathering through using online tools. The second is computer self- efficacy skills, which determines the use of programming, hardware, the software of terminologies. Self-efficacy plays a significant role in online search skills, as it is a basic factor which helps students in finding information by various means.

A range of studies outline the factors that create challenges for students in online searches, and the treatment needed to address these challenges (Willison and O'Regan, 2007; Gutmann, 2014; Hewson and Stewart, 2016). Studies by Welzer, Jaakkola and Thalheim (2016), Herawan et al. (2017), O'Sullivan and Dallas (2017), and Jääskelä, Nykänen and Tynjälä (2018) mention that search methodology is one of the huge challenges in online searches for information. The data available online is chaotic and disorganized, which pushes researchers back from the exploration of information. Besides this, there are huge security and data privacy issues which hinder students from searching online. The reason methodologies are the biggest problem in online data searching is because the majority of students are not provided with the right tools, and students that are provided with the right techniques are unable to use them. Hence, in order to improve online searching, researchers need to use various methodologies and explore online data using various approaches.

According Welsh *et al.* (2003), Mathwick and Rigdon (2004), Herring *et al.* (2004), and Lyons *et al.* (2005), in searching for information online, students face trouble while dealing with the clients data. For instance, if students are using the case study approach for their research then they need to engage with clients, which is often difficult. A lack of information available regarding client data can hinder the process of searching for information, and students are often unable to find

information due to confidentiality. Besides this, a majority of reports and published documents are not freely accessible and can only be accessed by purchasing them.

A lack of primary data from clients creates challenges in data gathering. To address this issue, studies have shown that students need to be taught about multiple methods through which they can get information online (O'Sullivan, 2008; Welzer, Jaakkola and Thalheim, 2016; Gurley, 2018; Jääskelä, Nykänen and Tynjälä, 2018). For instance, they can use other published research by previous authors in order to gather client related information, or secondary data from websites can be used directly. Besides this, students can also email and request published data from the company by assuring data privacy.

The following are major challenges that are faced by students in regard to online search skills:

Insufficient funds for acquiring ICT facilities – in lesser developed countries educational institutions are unable to acquire modern ICT tools due to lack of funds. In KSA in particular, students prefer to take their higher education studies abroad, due to which there is less concern for HE in the country. Hartley, Woods and Pill (2005a) noted that insufficient money results in fewer learning resources for students. Online learning resources are costly and cannot be bought by students, which hinders access to online information. Besides this, the data available on the Internet is often inadequate due to poor information communication infrastructure. Hence, libraries in HE need appropriate finances in order to provide useful tools with which students can find relevant information; traditional facilities such as computers, scanners, photocopiers and servers need to be replaced by tools such as e-journals, digital libraries, e-books, etc. ICT tools will improve students' online searching skills.

Lack of relevant ICT knowledge – According to earlier studies, the utilization of ICT tools facilitates the storing, distributing and retrieval information, but without appropriate training, it can be challenging for students in accessing the information (O’Sullivan, 2008; Welzer, Jaakkola and Thalheim, 2016; Gurley, 2018; Jääskelä, Nykänen and Tynjälä, 2018). Therefore, it is essential to identify effective use of ICT tools, so that students can easily retrieve information. Students must be trained in the use of the library and how to manipulate the information they retrieve, which will help them in pursuing the information they wanted. Students in less developed countries are not provided with computer literacy skills, which results in poor academic library skills. As mentioned by Qian and Lehman (2017) , the lack of relevant computer skills and retrieval methods creates challenges for students. Hence, it is essential to make library searching skills a compulsory course in educational institutions, so that students can develop the computer literacy and e-library searching skills necessary for their future academic work.

Lack of information literacy skills – According to Bassett and O’Riordian (2002), Nosek, Banaji and Greenwald (2006), Mondria, Wu and Zhang (2010), Yu, Lin and Liao (2017), Morville and Wickhorst (2013), Power, Karthik and Subramanian (2014), McCutcheon et al. (2015), and Jääskelä, Nykänen, and Tynjälä (2018), the lack of information literacy skills refers to finding information that satisfies the needs and end-user requirement. It includes understanding regarding online libraries, which is based on becoming familiar with the available resources. It also includes the awareness of students in regards to automated tools for searching, online formats and research techniques. It also includes the skills of students in terms of critical information evaluation and the employment of information by considering the facts and logical approaches. According to Ullah and Ameen (2019), information literacy skills are commonly taught to students, and they can use blended approaches in order to access online libraries and search facilities. This includes the authorized information and the instructions that are provided by the institution to the students.

Postgraduate students are provided with online lectures, manuals and electronic tutorials so that they can develop their skills. However, one of the most challenging tasks is that the students must be capable of analysing the information required, so that they can access and find the information easily.

Library education – According to Willison and O’Regan (2007), Gutmann (2014), and Hewson and Stewart (2016), library education is a major skill and plays a significant part in online information searching. Students in less developed countries are often unable to access library education, which leads to insufficiency in using digital technology. Therefore, another challenge which hinders students from online searching is lack of knowledge of libraries. Willison and O’Regan (2007), Gutmann (2014), and Hewson and Stewart (2016) all note that these issues can be improved by providing sufficient knowledge about digital content, so that learners can become aware of new tools for achieving high academic standards by ensuring accurate searching for online information.

Awareness of ICT – According to Bassett and O’Riordan (2002), Nosek, Banaji and Greenwald (2006), and Mondria, Wu and Zhang (2010), despite multiple benefits, the new technology of online information searching came with new challenges for students which are relevant to information preservation, acquisition, maintenance and the safety of clients. Morville and Wickhorst (2013), Power, Karthik and Subramanian (2014), McCutcheon et al. (2015), and Jääskelä, Nykänen, and Tynjälä (2018) all state that students often face trouble in accessing online information and it affects their knowledge and use of the library. The real issue is of technological awareness and exposure, which hinders students in using an online library to search for information. Therefore, as suggested by Sohail and Ahmad (2017), it is essential for educational institutions to market their online libraries so that the students can become aware of the resources which are provided for online information search.

Lack of information retrieval skills – Bates *et al.* (2017) noted that information retrieval skills include awareness of Boolean operators, keywords and phrases which are used as online searching strategies. In less developed countries students are unaware of information retrieval skills, which hinder them from online information search. Welzer, Jaakkola and Thalheim (2016), Herawan *et al.* (2017), and Jääskelä, Nykänen and Tynjälä (2018) all mention that there is a need to improve the information retrieval skills of students, so that they can acquire information correctly. McCutcheon *et al.* (2015) note that time and resource limitations hinder students from learning information retrieval skills. Studies by Willison and O'Regan (2007), Gutmann (2014), and Hewson and Stewart (2016) highlight that Internet access is the disrupted technology which creates challenges for the students. A shortage of library staff, lack of awareness and poor knowledge also create difficulty for students in learning the accurate retrieval skills in online searching.

There are further factors that impact international students in particular. Several researchers have highlighted factors like lack of English language proficiency, culture shock, unfamiliarity with academic requirements, lack of technological skills and other factors that hamper the information-seeking abilities of international students (Liao, Finn and Lu, 2007; Mu, 2007; Abdoh, 2021). Baron and Strout-Dapaz (2001) found through their research on international students in the US that information literacy is a major problem for them. Jiao and Onwuegbuzie (2001) also point out that international students are often reluctant to approach reference librarians or other staff members to seek help due to communication problems, which in turn hampers their ability to seek information.

While these studies and findings provide pertinent information regarding some of the problems faced by international students at a generic level, they also reinforce the idea of a singular, rigid mental model in which all international students are considered equal in terms of their ability, needs

and strategies, as well as the context, barriers and factors that influence them. Yet research has shown that this is hardly true. In fact, a report by World Education Services stresses that not all international students are the same and maps international students into different profiles according to their information-seeking behaviour (Choudaha, Orosz and Chang, 2012). The report also indicates that students seek and value different information in different ways and through different resources, based on their profiles. Studies comparing the information-seeking behaviour of local and international students have highlighted that the barriers faced by international students have been diminishing (Liao, Finn and Lu, 2007). According to the findings of Varga-Atkins and Ashcroft (2004), a comparison of information seeking skills of students from the United Kingdom and international students showed that international students were not at a disadvantage in terms of their skills compared to domestic students. On the other hand, Martin et al. (2009) examined the information-seeking skills of US students in comparison with those of international students, and found that both struggled with inadequate skills.

On the grounds of the above findings, it is clear that the idea that it is only international students who suffer from barriers to information seeking, or that all international students suffer from similar barriers, is inherently flawed. The studies that led to these ideas are by no means absolute, as they come with several caveats. Firstly, the results are often self-reported, which casts doubt regarding the truthfulness of the responses, as it is likely that some students may not want to admit to their lack of skills. Secondly, many of the international students in these studies are in fact students from EU countries and hence less likely to experience cultural and integration barriers compared to students from countries that are culturally very different to the West. Regardless, the findings further highlight the importance of not treating international students as a homogenous group but rather paying more attention to specific factors and circumstances that may affect their

information-seeking behaviour. Ikoja-Odongo and Ocholla (2003) point out that barrier to information seeking may be created or influenced by personal, organisational and situational factors. These may be very specific to students or groups.

Another important aspect to note while considering the barriers to information seeking, in foreign students or otherwise, is that external perceptions regarding barriers are rarely accurate. A study by Savolainen (2017) on the information-seeking barriers faced by students in school libraries found that there were inconsistencies between the perceptions of teachers/librarians and students regarding roles and expectations. On similar lines, Dickson and Holley (2010) point out that often, over-aggressive approaches by teachers or librarians to reach out to students can make students uncomfortable and create more barriers for them, particularly if the latter view the former as authority figures and wish to maintain a distance. This may be particularly true for students from high power-distance cultures.

3.5 Summary

The previous and current chapters have reviewed recent research on the information behaviour of Saudi student in their home country, UK students in the UK and international students in general. They have also addressed more general research into information behaviour, including a range of theoretical models developed to account for the variety of factors involved in the multiple aspects of information behaviour, particularly in an academic setting. We have seen that user-based issues such as national culture, gender and exposure to pedagogical approaches have an impact of uses of information by students. These are the drivers and barriers to success in information seeking that we seek to enhance via our research: these drivers and barriers are created, perceived and influenced by the context within which individuals operate and the factors influence their

behaviour. They are not the same for all international students; and, moreover, outside perceptions of the weight of these factors may not always be correct. It is essential to consider context and the actual point of view of students and avoid assumptions regarding the barriers faced by them. This has been a major driver in the selection of research methods for the current project, where we have tried to highlight a user-driven approach via student-oriented surveys, rather than, say, interviews with librarians or quantitative surveys of database usage, which would have been possible alternatives.

The review of the literature also highlighted the fact that a very wide range of factor of different types might be at work in determining students' information behaviour, with their digital technological context playing an ever more important role. It was necessary to identify a structure that would allow these myriad factors to be organised. Rather than taking the approach of allowing categories to develop in a free-form manner, we took the decision to adopt the most promising of the theoretical models, the Rowley and Urquhart model, as a source for the design of our survey instruments and thence for the analysis of our data. Not only did the Rowley and Urquhart model appear to cover all the aspects uncovered as significant by other researchers, it also offers a clear and intuitive framework for reporting results, with its division of factors into macro- and micro-elements. This will be useful in explaining results to stakeholder and to future researchers in interrogating and extending the current study.

The findings from the literature review, in alignment with the research aim and objectives, were useful in developing the premise of this research, which involves addressing the context of changing patterns of information-seeking behaviour in students from KSA studying in the UK and within the country.

Chapter 4: Research Methodology

4.1 Introduction

In the last chapter, the review of the literature showed that the key internal factors influencing information-seeking behaviour are the existing skills and knowledge, cognitive factors, and emotions. Further, the key external factors responsible for influencing the information-seeking behaviour were found to be culture, demographic factors and pedagogic factors. It was also found that these factors and behaviour do not exist in a void which necessitates that they should be considered contextually. The findings from the literature review, in alignment with the research aim and objectives, were useful in developing the premise of this research, which involves addressing the context of changing patterns of information-seeking behaviour in students from KSA studying in the UK and within the country.

This chapter presents an outline and description of the methodology adopted in addressing the research questions. The first section presents a description and justification of the philosophies adopted in the research methodology. This section also presents a rationale for the incorporation of the chosen research methods which include both qualitative and quantitative approaches. Following this, a detailed description of the research design describes the chosen methodology with its reasons. The theoretical framework, which is based on the information behaviour model proposed by Urquhart & Rowley (2007), is also discussed. The chapter concludes by considering ethical issues in the use of data collection, sampling, and data analysis techniques.

4.2 Methodological Approach

It is necessary to declare the reasons which have driven the researcher to make crucial choices that have affected how this study has perceived the nature of reality and approached the gathering of

knowledge. These choices govern the epistemology and ontology for the research methodology which are further clarified in the sections below.

4.2.1 Research Philosophy

There are several theoretical perspectives pertaining to the subject area of information systems (IS) which allow researchers the opportunity to select the most suitable method among the available research approaches and strategies. The assumptions and beliefs of the researchers influence their selection of research methods for guiding their study in an efficient and effective manner (Creswell and Poth, 2017). In any research methodology, the research philosophy or paradigm can be considered a particularly important aspect as it defines the nature of the analysis made in the work. Positivism and interpretivism are the commonly preferred research philosophies. Positivism generally aligns with quantitative research while interpretivism is useful for qualitative studies (Saunders, Lewis and Thornhill, 2009). Positivists adopt a scientific method in the knowledge generation process with the belief that research problems have solutions which can be generalised if due process is followed. This is generally done by gathering data in a numerical format to identify the relationships between the variables that have been selected for testing. As a result, positivist researchers emphasise the use of quantitative observations collected through surveys that can be analysed through statistical methods (Saunders *et al.*, 2011).

The Interpretivist philosophy, on the other hand, assumes that a research phenomenon is subjective and socially constructed. Interpretivist researchers hold that many aspects of reality can be better explored from the subjective experiences of people about the external world than by mere numerical data gathering and interpretation. Interpretivist researchers generally gather and interpret

qualitative data to generate knowledge. The interpretivists believe that they can make sense of research questions based on individual experiences, perceptions, memories, and expectations which is why they prefer multiple perspectives to understand reality (Supino and Borer, 2012). In this way, interpretivism helps in exploring the meanings that are allocated to a research phenomenon by an individual in order to gain a deeper understanding of the research problem (Saunders, Lewis and Thornhill, 2009). This philosophy is based on the assumption that reality is not independent of social events and people, as in the case of positivism which keeps an independent approach to maintain objectivity (Hassan and Mingers, 2018). Therefore, interpretivism can be used for gaining knowledge about the manner in which participants conceptualise the research phenomenon (Padgett, 2016).

The positivist philosophy was not entirely sufficient to meet our current research. However, the analytical understanding of the research phenomenon and the measurement of variables to study if the theoretical framework and existing literature is supported by the findings was best approached through the positivist approach (Bell, Bryman and Harley, 2018). Moreover, the generated findings would benefit from the scientific and factual data, which is falsifiable, logically consistent and self-explanatory and can be recommended for making generalisations which address the research subject. As a result, the positivist research philosophy was retained to identify the predictive laws of reality along with their reliability with regard to the research subject (Robson and McCartan, 2016).

However, positivism is accompanied by certain limitations in relation to its integration in the social world as it lacks the focus on the experiences and viewpoints of the study actors (Bryman, 2016). The present research needs the understanding built from the experiences and viewpoints of

graduate students from KSA and the UK to understand their information-seeking behaviour. It is possible to quantify only a part of the information required such as information on the number of graduate students having access to the Internet or their satisfaction with it. However, questions about what exactly causes this dissatisfaction are not possible as there is limited information available about this subject. Hence, this study has taken the epistemological approach of realism where reality guides both facts and feelings as not only is it important in this study to find out the strategies and sources of information used by the Saudi students, it is also important that the reasons why they choose them and what barriers they perceive in information-seeking that are needed to be explored to find pragmatic answers to the research problems. Therefore, it is necessary to combine both philosophies in order to obtain the answers for this study's questions.

In this study, we take an ontological perspective using the pragmatic approach which combines elements of interpretive and positivist philosophies to look for effective solutions to the research problem. The pragmatic approach is the best suited for this research as it is based on the use of mixed methods which will allow the collection of data in numerical and qualitative terms and help in developing a meaningful conceptual framework (Padgett, 2016). A pragmatic paradigm aims to analyse real-life phenomena via quantified means. Accordingly, both numerical and thematic analysis were performed on the data in order to verify relationships between the study variables and assess the suitability of Urquhart and Rowley's model (2007) to the research problem in this context.

In this research, both qualitative and quantitative research methods were selected with interviews chosen for qualitative data and a questionnaire survey to collect the quantitative data. Mixed-methods research which involves a combination of philosophies can help to obtain useful insights through both quantitative and qualitative research methods (Creswell and Plano Clark, 2011). The

following section outlines the research stages revealing the process of gathering data through the quantitative and qualitative methodologies.

4.2.2 Researcher Reflexivity

One more important consideration in a research design is to clarify the researcher's own beliefs and position for guiding the study. This declaration is possible only after due consideration of one's beliefs, biases, and expectations about the results of the study which can make the researcher more aware of where he or she stands and take necessary steps to prevent any obfuscation of data. Such reflection is called researcher reflexivity (Darawsheh and Stanley, 2014).

In qualitative studies, and by association, mixed research designs like the present study, the level of involvement of the researcher remains contested. Some researchers assert that any involvement by a researcher can introduce the risk of biased data analysis and interpretation which reduces the quality of the findings and affects the validity and reliability of the study results and of the tool (MacCoun, 1998). This is why Dowling (2006) recommends the use of a bracketing approach where researchers should introspect their own attitudes and biases at different stages. Using this recommendation, the researcher has also reflected on her own attitudes and feelings at different stages of the research process. We report on this at the end of Chapter Eight.

On the other hand, others emphasize that the human angle brought by the researcher and the opportunity to clarify any doubts (Bickman and Rog, 2008). According to Corti *et al.* (2015), the researcher's involvement in the research can help three important aspects to the research. First, social qualia which is the researcher's prior experiences can help improve the accuracy and validity of the research. Second, the researcher will be in a better position to visualize and create mental

models of the research subject and throw more insights into the findings. Lastly, researchers with experience are in a better position to reflect on their own role and topic and make informed decisions about the data collection, analysis, and interpretation.

Researcher reflexivity is quite important in this study as the topic has been chosen by the researcher herself and holds a lot of interest for her. Moreover, the researcher herself has been a student from Saudi Arabia abroad which puts her in a position where her own beliefs, experiences, and biases could colour her judgment while collecting, transcribing, and interpreting the data. This is why reflexivity is important in this study as it has allowed the researcher to introspect and decide her own feelings about the study, its questions, and the boundaries she will adopt during the research process (Jootun, McGhee and Marland, 2009; Palaganas *et al.*, 2017).

Reid *et al.* (2018) report that researchers should examine their own predispositions and biases before initiating the research process and also examine them after completing the process so that they can examine what changes have been brought about in their own values and assumptions. In this way, researchers can continue to grow and learn through this continuous and ongoing process. As mentioned earlier, the researcher is herself a Saudi national who has studied in a Saudi Arabian University which would allow her to empathise and understand the perspectives of her respondents better. It would also help in understanding the responses of the respondents better as many of them used several Arabic phrases to explain what they meant during the interviews.

Lastly, methodological reflexivity also works on similar lines as personal reflexivity. Dowling (2006) has recommended that researchers should make notes of all the reasons behind each research decision, records of issues faced and how they were resolved, and how ethical procedures were

upheld. This chapter has explained the reasons behind each choice for the research methodology which come from the methodological reflexivity performed by the researcher. In fact, this form of reflexivity has helped the researcher to introspect and perform personal reflexivity as well.

4.3 Overview

The practical part of this research project consisted of three phases, a preliminary planning phase, the data-gathering phase which consisted of an online survey and interviews, and a third phase of data analysis. In the preliminary phase, the research problem was identified and evidence from previous studies was gathered to understand the study context. A pilot survey was conducted to test the reliability and validity of the survey questionnaire on a small sample. The next phase was concerned with the collection of data. In this phase, primary quantitative data was collected through a survey questionnaire. During this phase, another pilot study was conducted for testing the interview questions and later the qualitative data was collected through the interviews. The third phase consisted of data analyses for the survey and the interviews.

4.4 Research Design

Research designs may be exploratory, diagnostic and descriptive depending on their purpose (Thomas, Nelson and Silverman, 2011). The present study describes the information-seeking behaviour of KSA students in the UK and the KSA and the associated factors, therefore, it is descriptive in nature. Though no similar studies were found on the research subject in KSA, research on information-seeking has been conducted in other countries and study contexts. As a result, the exploratory design was not suitable.

The descriptive research design was aimed at the in-depth investigation of existing phenomena in order to identify relationships between the study variables while applying the researcher's personal

insights (Thomas, Nelson and Silverman, 2011). It also offers a high degree of flexibility in terms of availability of a variety of data collection methods. In contrast, a diagnostic research design is better suited to scientific studies where carefully matched control variables can allow a close examination of the study variable’s behaviour under study conditions.

This research utilised an exploratory sequential design for the investigation of the information-seeking behaviour of Saudi students in Saudi Arabia and in the UK (Cresswell, 2015). According to Subedi (2016), in an explanatory sequential design, the researcher first gathers quantitative data to investigate the research phenomenon, and then collects qualitative data to explain the relationships observed from the quantitative data.

As shown in Figure 4.1 the results of the first stage are used to determine the study participants and the interview questions for the second stage. Under this approach, the outcomes of Stage Two provide an in-depth explanation of the data collected in Stage One (Creswell, 2014).

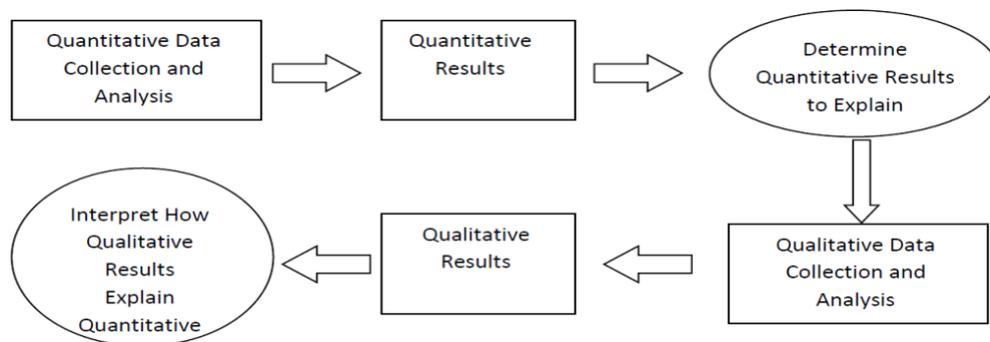


Figure 4. 1 Exploratory Sequential Design (Creswell, 2014)

In the present study, the researcher first collected quantitative information regarding the opinions and perspectives of students from Saudi Arabia about their information-seeking behaviour and

associated factors. At this stage, numerical data was collected to explore whether the factors appeared to have any significant impact on the information-seeking behaviour of the students. Later, the semi-structured interviews were used to identify the reasons behind the significance of these factors. The quantitative data, thus, gave a brief explanation of the research problem whilst the qualitative data was collected in Phase Two to expand this explanation (Subedi, 2016). As is the case with mixed research studies, the data was generated in two stages wherein participants for the interviews were selected from the participant pool of the survey.

Before the survey, the participants' consent was obtained about their willingness to participate in the interviews so that the subsequent availability of the desired sample size could be ensured. Phase One of the research included the survey questionnaire involving mainly closed-ended questions. Phase Two of the research involved interviews with open-ended questions which provided an opportunity for the participants to expand their opinions about the topic. The open-ended nature of questions allowed the interviewees to discuss their opinions about the kind of information they considered crucial for their research.

Rocco, Bliss, Gallagher and Pérez-Prado (2003) note that a mixed design allows a researcher to combine paradigms to better approach important research problems. They point out that mixed research is strengthened by being able to incorporate data such as images, narratives or verbalisations of the participants which lends more meaning to the numerical data. They also affirm that a mixed design offers a better understanding of phenomena and, therefore, strengthens the theoretical and practical learning. However, they point out that researchers must have appropriate knowledge about the paradigms that are going to be integrated into mixed designs so as to guarantee the validity of the strategy.

According to Morse (2016), a mixed-method design helps a researcher in the complete exploration of a research phenomenon. Moreover, it is also best suited to study several variables at a single point of time. In a mixed-methods study, the collection of quantitative and qualitative data occurs simultaneously during a period of research. In a perfect world, data collection must be the same for both methods though it usually follows a sequence in real study designs. The mixed design generally integrates the effects of both methods in the interpretation phase which facilitates the convergence of results and strengthens the research findings.

The key advantage of a mixed-methods approach is the inclusion of several research data sources and methods of analysing the research problem called triangulation (Zohrabi, 2013). In the present study, Phase One allowed the researcher to analyse the key factors and trends in light of the research aim and objectives. The data collected in the survey during Stage One allowed the researcher to obtain statistically significant and reliable results. The inferential analysis technique helps in the generalisation of research outcomes provided the sample size is sufficiently large compared to the number of study variables (Morse, 2016). Moreover, the survey should be valid and reliable for the variables associated with research.

Phase Two helped the researcher to understand and to analyse the values, outlook, attitude, and motivation of these participants further. After the completion of phases One and Two, data gathered from these two stages was critically analysed with a view to answering the research questions. The data and information collected from the survey and interview needed to be aligned appropriately to provide the best answer to the research question on the information-seeking behaviour of

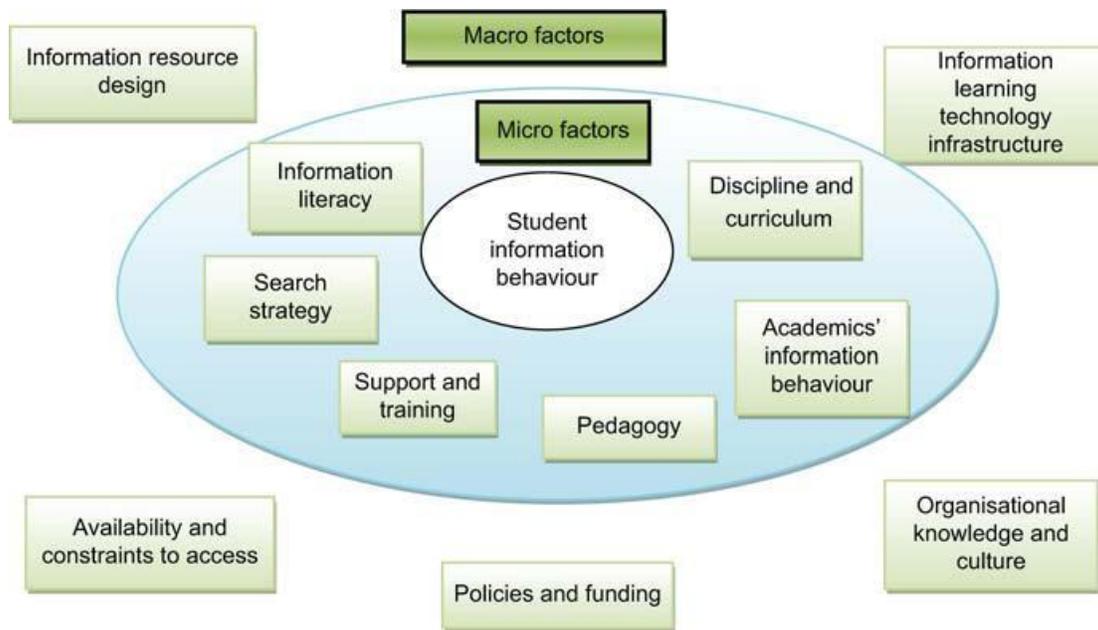
postgraduate students from Saudi Arabia. Therefore, the descriptive research design combined with a mixed-method approach yielded both quantitative and qualitative data for this study.

4.5 Research Phases

4.5.1 Preliminary Phase

The preliminary phase involved a literature review wherein the theoretical evidence was gathered for elaboration of the research problem. Studies which have explored the information-seeking behaviour of students were explored and later focussed on the differences in students from developing and developed countries.

This research utilised Urquhart and Rowley's model (2007) which was chosen as it provides a rich exploration of the information-seeking activities. The framework that is provided by the model is general and has several aspects adapted from the earlier models. The second reason for its choice was that the model is diagrammatically presented which helps to interpret the relationships between the variables easily. The third reason is that the model is imminently suited for analysing and investigating the information-seeking behaviour of students. Finally, it is possible to adapt this model for use in the context of digital resources of information.



Source: Urquhart and Rowley (2007)

Figure 4. 2: Micro and Macro factors influencing student information behaviour (Reproduced from Urquhart and Rowley, 2007, p. 1190).

In the preliminary phase, this model was found to be suited to the research context, and hence, retained for the final data collection.

4.5.2 Phase Two – data collection

4.5.2.1 Online questionnaire

In this phase, an online questionnaire was designed and administered to gather quantifiable information about the influence of UK education on Saudi Arabian graduate students in terms of their information-seeking behaviour.

The online medium is a convenient way to collect a significant amount of primary data through the questionnaires, especially if the target population is geographically diverse (Brace, 2018). Due to the unpredictable nature of postal services, an online questionnaire can be more reliable than a

postal questionnaire. Moreover, administering the questionnaires personally may not be possible in all circumstances and is very costly otherwise. Additionally, the cost of sending an online questionnaire is almost nil compared to the cost incurred by traditional survey methods (Hooley, Wellens, and Marriott, 2012). Further, as the data collected through an online questionnaire is handled in an electronic database, the chances of manual data-entry errors are reduced. An online questionnaire reduces the chances of error and increases the response rate as the participants can answer it as per their convenience. The use of an online questionnaire also saves a lot of time for researchers as manual data entry is not required (Stieger and Reips, 2010).

In spite of the advantages of the online questionnaire listed above, there are some disadvantages as well. The first disadvantage is that an online questionnaire is not appropriate for targeting a population that has no access to an Internet connection or an email account (Brace, 2018). However, in the current study, the survey was conducted with students who are a part of the millennial generation considered to be highly technology savvy (Nielsen, 2014), so it was considered that the majority of participants would have access to a proper Internet connection at home or in the workplace. The second disadvantage of online questionnaires is the chance of data loss due to a system crash (Stieger and Reips, 2010). This limitation can be controlled by ensuring proper data storage.

A cover letter was sent to the research respondents before starting the survey questionnaire. A cover letter is used to inform respondents about the aims, objectives, and the significance of the study (Patten, 2016). Such a letter also helps to determine the willingness of the respondents to participate in the study. The prior permission reassured the study participants about the maintenance of their anonymity and the confidentiality of their participation in the survey or

interview (Taylor, Bogdan and DeVault, 2015). The survey respondents were also informed about the number of sections to be included in the survey questionnaire and the purpose of the research.

The survey participants were not influenced to complete the survey questionnaire by any offer of a monetary reward or any other incentive. Moreover, the consent secured through the cover letters ensured that the survey participants were not forced to participate in the research (Grinyer, 2009). Since this research is an investigation of the information-seeking behaviour of postgraduate students from Saudi Arabia, the interest in the research topic increased the students' motivation to participate in the research, as indicated by field observations.

A total of 270 postgraduate students studying in the UK and Saudi Arabia answered the questionnaire survey. This section describes its design and implementation.

4.5.2.1.1 Questionnaire Design

The primary purpose of the questionnaire was to investigate the influence of UK education on the information-seeking behaviour of the Saudi Arabian graduate students. The questionnaire included multiple-choice, yes/no alternative and open-ended questions. For multiple-choice and yes/no questions, the respondents had to tick the checkboxes with their choice of response. For open-ended questions, the participants were required to fill in the responses in the text box. The survey questionnaire incorporated eight sections which are depicted in detail in Table 4.1:

Questionnaire Items in detail

Sections	Information	No. of Items
A	Personal information of the respondents	7
B	University-related information	4
C	Respondent's approach to language learning	4
D	Respondent's approach to search information	21
E	Information literacy	21
F	Teaching and learning style	17
G	Library awareness	35
H	Challenges faced in information seeking	16

Table 4. 1:Questionnaire Items in detail

A copy of the questionnaire is attached in the Appendix. The questionnaire was created by the researcher with careful consideration of instruments used in the studies with similar research aims (Safahieh, 2007; Ganaie and Rather, 2014; Sin, 2015; Zhao and Mawhinney, 2015; El-Maamiry, 2017; Labib *et al.*, 2019). The sections of the questionnaire covered the micro factors in Urquhart and Rowley's model including information literacy, search strategy (respondents' approach to search strategy), pedagogy (teaching and learning style), with support and training, academics' information behaviour, and discipline and curriculum covered in the challenges faced in information search section. The macro factors in the model were explored through library awareness and university-related information (organizational knowledge and culture, information learning technology infrastructure). The availability and constraints to access were also covered in the challenges faced in information section. The information resource design and policies and funding were not a part of this study as they required a separate source of enquiry which would have been beyond the researcher's current resources.

In this manner, the information-seeking behaviour of graduate student studying in the universities of Saudi Arabia was examined in a structured method. The respondents of the questionnaires belonged to various levels of education and possessed varied research work experience. They also belonged to diverse universities. This diversity in demographic details ensured that a cross-section of graduate students could be approached for the study.

The reliability and validity of the survey questionnaire was tested using Cronbach's alpha. The results of the pilot study were assessed using the reliability analysis before embarking on the main survey. The survey respondents were sent a consent form before starting the online questionnaire. Along with the consent form, the survey respondents were also informed about the purpose of the study and research aim.

4.5.2.1.2 Translation

The survey questionnaire was translated from the English language to Arabic for the KSA students as it is their native language. According to Francis et al. (2004), a research instrument should be formulated in the native language of the respondents so that they can fully understand the terminology of the instrument. The questionnaire used for this research was translated into Arabic by the researcher who is a native Arabic speaker. In order to further check the clarity of the translated questionnaire, the instrument was sent to two translators who specialise in English-Arabic translation. This step was performed to ensure that each question included in the survey retained its original meaning. The final copy of the survey questionnaire was then sent to the selected survey participants.

4.5.2.1.3 Pilot Study

A pilot study with six participants established the reliability of the questionnaire and ensured that there were no issues in the language, delivery, sequence, or meaning of the items. It offered an opportunity to observe the benefits and drawbacks of the quantitative method first-hand, judge its suitability for the present research, and refine the specific items accordingly.

The pilot study also checked the clarity of the translated questionnaire for the participants. A few corrections were made in the survey questionnaire according to the suggestions given by the participants of this pilot study. These changes ensured that the language used in the survey was appropriate and unambiguous for the target participants. In addition, the pilot study showed that the language used is appropriate for addressing both male and female participants.

The pilot study was conducted after discussing the questionnaire with the project supervisors. The researcher also obtained the help of colleagues who were pursuing their higher education (Master's or PhD) at Brighton University. The participants of the pilot study belonged to disciplines like machine learning, design, and information studies. The pilots were conducted in a room or a research lab inside the university, after securing consent through cover letters which explained the aims and objectives of the study. After they finished the pilot, further discussions were held with them regarding any issues in the items of the questionnaire. The observations of the participants indicated that they found some of the questions uninteresting and frustrating. Also, the participants indicated difficulty in understanding and performing some of the questions containing long tables. They reported that they struggled due to their lack of knowledge about certain topics in which case it was realised that the language had to be simplified. For instance, the question, "Did you have

any trouble searching online databases for information” had to be reworded to, “Did you experience any computer or network problems when doing the search?”. This issue also highlighted the need for the researcher to be available for feedback for the participants to explain things to them if they had any difficulties.

Two respondents had trouble because the questionnaire was in Arabic. Though all the participants were Saudi nationals and hence, Arabic native speakers; they mentioned that they always complete surveys in English. As a result, both versions of questionnaires were sent to the final list of respondents. On the other hand, all the six participants expressed comfort with the idea of answering the questionnaires within a research lab as they felt that it was free from distractions and helped them focus.

Several advantages of the quantitative method were noticed during the first pilot study. For instance, the researcher was able to observe the behaviour of participants at first hand while filling the personal information section. It was noticed that all respondents had started learning the English language in their intermediate schools in the Saudi education system. Though some of them came from uneducated families, they were proud that their parents had encouraged them to study higher education. Also, most of them were using non-academic websites like Wikipedia and Google for their information seeking. Most of the participants had studied for their Master’s in Saudi and completed their PhD in the UK and this was really helpful in comparing their information seeking behaviour.

4.5.2.1.4 Data Analysis for Questionnaire Survey

The research data was first entered into the statistical software SPSS by IBM which was used for data entry, analysis and interpretation of the quantitative data. The first step was to scrutinise the data through descriptive statistics so that any missing values or wrong entries could be identified and corrected. Microsoft Excel for the missing observations with the help of searching and filtering tools. The aim of statistical analysis performed in this research study was to explore statistically significant relationships or their lack among the study variables to ensure that they successfully address the research objectives and questions. The survey results were first analysed using the descriptive statistics method with the use of measures of central tendency like Mean, Standard Deviation, and frequency tables to describe the demographic data. A graphical method was also used for data analysis to reveal results via informative and presentable graphs such as pie charts and bar graphs. The graphical analysis has the advantage of presenting data in an understandable way that aids identification of majority views of respondents in the context of the research problem at the first glance (Gray, 2014).

The main statistical measures used for exploring relationships between the variables were:

- **T-test:** The t-test is most commonly used in academic research to compare the Means of two groups. An independent sample t-test is used in this study to analyse the differences in the information-seeking behaviour of the students studying in the universities of the UK and Saudi Arabia. This test is best suited to analyse the difference in the perception of two independent groups. In the current study, the behaviour of the students studying in the universities of the UK and Saudi Arabia are independent of each other, thus, an independent samples t-test is appropriate to test the research hypothesis.

- **Cronbach's alpha coefficient:** Cronbach's alpha is a statistical measure of reliability that is used to examine the internal consistency of the items included in the survey questionnaire. The Cronbach's coefficient depicts the proportion of variation that is not obtained due to a chance occurrence (Creswell and Creswell, 2017). In this study, this value was first used to ensure that all questionnaire items measured the same variable depending on their inter-correlation values. This justified each item's inclusion in the final questionnaire after the pilot study.

4.5.2.1.5 Reliability and Validity of the Survey questionnaire

- Validity

Validity measures the extent to which a tool estimates the construct which it is used for. For this study, several measures were taken to ensure high validity of the questionnaire. The questionnaire was first validated by experts' review. The experts were the supervisors and statisticians who were approached by email and personal meetings. They were asked to perform content validity to estimate how much every item in each domain is able to measure what it is intended to measure. Moreover, the relevance of each item was also estimated. All comments and recommendations were considered for instrument modification. Additionally, the pilot study which was performed before the data collection process also detected the appropriateness of the instrument and ensured that the questions are clear and unambiguous for the respondents to answer.

- Reliability

Reliability measure the degree to which similar results can be expected on multiple applications of the same tools. In social sciences, the context plays a significant role in determining reliability. This is one of the reasons why a questionnaire was designed by the researcher who wanted to ensure

that all factors necessary to the context based on her preliminary research were included in the tool.

The researcher undertook the following steps to ensure reliability:

1. The questionnaire was accompanied with a cover message informing all respondents about the purpose of the study, securing their consent, and describing their role in it.
2. The data entry was done only by the researcher and was performed on a daily basis to allow the review of data and to uphold its quality. Any incomplete questionnaires were rejected in case they had been answered less than 95% of the total instrument.
3. Cronbach's alpha was calculated to measure inter-reliability among the items.

- Criteria for Inclusion and Exclusion of Research Participants

The criteria for inclusion and exclusion were established to help select the appropriate respondents who formed a subset of the study population to participate in this research. All the participants in the research were required to be above the age of 18. They must have been living or have lived in the territory of Saudi Arabia and completed some portion of their higher education in the country. Therefore, the participant must have been enrolled in one of the universities of Saudi Arabia while the UK-based participants needed to be enrolled in the UK. To initiate the project, the first contact was made with the informants to explain the research process. They were sent an informative document explaining the content and objectives of the study. Later, informed consent was secured from the students participating in this investigation before completing the data collection.

4.5.2.2 Phase Three-Interview Study

4.5.2.2.1 Design of the Interview

This research study focuses on exploring the influence of UK education on Saudi postgraduate students' information-seeking behaviour. The interview method has been included to gain in-depth

knowledge about the topic of the research study and specifically on the findings of the quantitative survey. This method has been chosen as it provides a unique approach for observing and recording the perspectives of the interviewees regarding the issues which are a part of the research study. It allows the researcher to gain valuable insights into the research topic by gaining first-hand and factual data to support the findings. Moreover, it facilitates the recording of complex data about the perceptions and viewpoints of the students regarding their information search activities which are generally adopted by them.

There are several types of interviews but for this study, the semi-structured interviews were chosen with questions that were aligned with the research objectives. The interview schedule was aimed to analyse the information-seeking behaviour of the Saudi students studying in universities of Saudi Arabia and the UK. More specifically, the interview schedule helped analyse the information-seeking strategies used by these groups of students for fulfilling their academic motives. It explored the issues and challenges faced by the students in Saudi and UK universities to access relevant information. Further, it also focused on the training strategies adopted by UK and Saudi universities to enhance the success of the information-seeking behaviour of the graduate students.

4.5.2.2.2 Participants

The semi-structured interview was also validated through a pilot interview with 4 Saudi graduate students. Two of these students were studying in the Saudi Universities while the other two were students at the UK universities. After validation of clarity, unambiguity, and comprehensiveness of the items, a full-scale interview were conducted with 10 graduate students from Saudi Arabia and the UK. Open-ended questions that helped to gather a wide array of information on the research

topic without constraining the researcher to a specific format were utilised (Brinkmann, 2014). The universities from which the students were selected included King Abdul-Aziz and King Saud Universities from Saudi Arabia and Brighton and Sussex Universities from the UK. The Saudi region-based graduate students were from the age-group between 30- 41 years. This is the average age of postgraduate students in Saudi Arabia according to the researcher’s field observations. The involved students included both genders.

The interview participants were recruited from among the questionnaire survey participants at the time of securing their consent when they were asked if they would like to participate in the interviews afterwards. As this research focused on analysing the information-seeking behaviour of the students, these postgraduate students were found appropriate to give further elaborate about their information-seeking behaviour. The students in the current study are being recruited from two groups. The first group include Saudi graduate students who are enrolled in the postgraduate courses of Saudi universities. The other group consists of Saudi students who are currently doing their post-graduation from the UK universities. The demographic information and coding of the participants has been presented in the table below.

Study type	Participants	Code	Gender	Age
Pilot Study	Saudi Students Studying in the Saudi Universities	KSA1	Male	32
		KSA2	Female	35
	Saudi Students Studying in the UK Universities	UK1	Female	31
		UK2	Male	35
Full-Scale Study	Saudi Students Studying in the Saudi Universities	KSA3	Male	34
		KSA4	Female	36

		KSA5	Male	34
		KSA6	Female	36
		KSA7	Male	31
	Saudi Students Studying in the UK Universities	UK3	Female	32
		UK4	Male	39
		UK5	Female	34
		UK6	Male	40
		UK7	Male	39

Table 4. 2: Demographics of Interview Participants

The purpose of this study is to examine key factors influencing the strategies for improving the participants' information search skills. The aim of using an interview schedule in this research study was to ensure that the same set of questions should be presented to each student that will help to reliably aggregate the answers and draw meaningful findings (Gill *et al.*, 2008).

A separate set of questions from the survey were designed for the semi-structured interview on the basis of examining different aspects. Some more aims were gaining new real-world information on the research topic, filling the literature gap, reconfirmation of the questionnaire results, in-depth explanations to support the survey results, and also, to find suggestions for future strategies/policies. Once the questionnaire was prepared, a pilot interview was conducted with 4 students was conducted to examine whether the participants are able to comprehend the intent of questions (Doody and Noonan, 2013). In addition, the pilot study helped to evaluate the structure, sensitivity, and the ethical and balanced nature of the interview schedule. Based on the findings of the pilot interview, a few changes were made in the schedule to enhance its comprehensiveness and to

improve the participation of the respondents. The aim was to design the interview questions on the basis of a thorough study of theoretical information and viewpoint of participants.

The estimated duration of the interview was 40-50 minutes. The responses collected from the participants were recorded on a smartphone and later transcribed.

4.5.2.2.3 Transcription and Translation

Effective planning of transcription phase is quite crucial as it is a time-consuming task that demands the researcher's attention. The researcher is advised to count on approximately ten hours for every hour of recorded tape for transcriptions that are rendered in an easy to analyse form (Gillham, 2000; Seidman, 2006). The process of transcription turns the dynamic form of interviews to a static form determined by how the researcher intends to use the transcriptions (Cohen *et al*, 2007). For this study, the interviews had to be carefully translated from Arabic to make sure their exact meaning was retained in English. Considering the limited time available, translations into English were only made when quotations were needed for the study. The accuracy of these translations was ascertained by having the quotation in English re-translated to Arabic to establish that there had been no change in meaning (Healey & Rawlinson, 1994; Ghauri&Grønhaug, 2005; Easterby-Smith *et al.*, 2008).

4.5.2.2.4 Interview process

The interviews were scheduled to be carried out in Brighton university with approximately 10 females and males. The interview schedule focused on the working practices of postgraduate Saudi students with respect to their information-seeking behaviour for their research or coursework. It also included their advice to new students and their opinions on how their universities could

improve the information seeking, as well as investigate the students' opinions in more detail and revisit any concerns that were highlighted during the survey.

Consent was again obtained for the interviews and the participants were assured of confidentiality before beginning the interview process. Moreover, the researcher ensured that the interviewees were comfortable with the interviews being recorded or they could ask to turn off the recording at any time. An iPhone device was used to record the interviews as it is also able to record a lot of data which can then be easily transferred onto a PC, stored safely and transcribed with relative ease. As several elements of communication such as gestures, facial expressions, and body language cannot be recorded in audio tapes and would require the interviews to be videotaped. However, the feedback from the pilot study for the interviews suggested that the respondents were not comfortable with the videotaping and felt it to be more intrusive. Hence, audiotaping was selected for the purposes of this study. Moreover, this method of recording the interviews is simpler to use and records the participant's tone of voice. To address the limitation of no observation of the body language of the respondents, the interviewer took notes wherever considered relevant. Interview notes can be used if the recording is faulty or if the interviewee changes his or her mind about being recorded.

The location, time, and date of the interview was logged, as well as any problems such as interruptions that occurred. Some impressions about how the interview went, for example, if any question was not answered in sufficient depth was also noted (Robson, 2002; Saunders et al., 2009). Audiotaping also allows the researcher to focus on communicating with participants and the data yielded is more accurate and less biased than just observation and notes. After recording the interviews, the tape can be played back and listened to as often as required and can also be used to log any supplementary questions asked which proved to be relevant and could be used in

subsequent interviews. Moreover, actual quotations from the participants can be used to illustrate the arguments made in the analysis.

For interview planning, the researcher also took into account the participants' comfort and how her own behaviour could be monitored so as not to influence the interviewees other than putting them at ease. There is a need to have a high degree of sensitivity and skill as ideally the participants' body language, as well as their words would be observed as indicators of any problems or misunderstandings. It was essential to make sure that respondents can speak as freely as possible and that the interviewer was not 'leading' them either by the questions asked or by her body language. During the planning and piloting stages of the interviews, these issues were, therefore, paid a lot of attention (Creswell, 2008; Saunders et al., 2009).

4.5.2.2.5 Pilot Study

Firstly, a pilot study was performed with four graduate students as a trial to verify the interview schedule's questions. After this testing, the feasibility, duration, as well as the value of the questions were determined. After finalisation of the interview schedule, the full-scale interviews were conducted with ten graduate students. The following section analyses the responses of the four graduate students in the pilot which helped to check whether the questions are clear and unambiguous. Further, it is identified from the findings of the pilot study that all the interview questions were clear to the respondents and elicited good responses. Thus, no changes were made to the interview schedule.

The respondents are indicated as KSA1, KSA2, and UK1, UK2 in order to maintain the confidentiality of the research participants and abiding by the ethical code of research. The key findings under each theme can be represented as follows:

The students studying in the UK universities UK1 and UK2 shared their experiences of using the online databases and searching for the information required for their academic use. A student studying in the universities of the KSA (KSA1) reported that, *"I think that the libraries do offer guidance regarding the use of the Boolean operators and search filters while researching the online databases. However, such assistance is not offered formally because of which several of my friends and me have faced difficulties in using these tools. Moreover, there is no formal way of clarifying the doubts."*

KSA1 has further mentioned regarding the challenges observed in the information-seeking process that, *"Most students believe that the library website is very difficult to understand, and many do not even try to navigate through it in the initial phases."* Respondent KSA2 provided information that *"The number of terminals available in the library is limited and if we try to access the library website and other online databases using the external computers, we often get an error message and are not able to access the necessary information."*

KSA1 highlighted their inclination towards the offline mode of the information search process and mentioned that, *"I prefer to be flexible with the information resources that I use for my academic tasks. I use textbooks or similar physical material to prepare for my exams as they have detailed information regarding each topic."* Respondent KSA2 added to this stating *"Peer-reviewed journals are a better information resource for studies as they reflect the latest advancements in my field."*

However, some of the graduate students had recently started using the online and electronic information resources while the relatively younger students seemed comfortable and at-ease with these internet search tools. KSA 2 noted *"One of my faculty members have introduced me to the electronic information resources and I was impressed with their relative ease of use. Initially, I was not able to effectively identify the keywords and frame the search phrases. However, with practice, I have been able to use online resources effectively."*

The respondents studying in the Saudi universities claimed that they followed the reputed international peer-reviewed journals while the students studying in the UK universities preferred online databases in the information-seeking process. Therefore, the pilot study was able to successfully provide good evidence of the interview schedule's validity and reliability. Further, it established the suitability of the instrument for meeting the research objectives. The pilot study used in the current study also helped to analyse the appropriateness of the interview schedule for the target audience. Moreover, it also helped to analyse whether all the study participants were able to follow the directions well.

4.5.2.2.6 Design of Data Analysis for Interviews

Thematic analysis was used for analysis of the qualitative data. Thematic analysis is a method for the identification, analysis, and reporting of themes and common patterns found in the qualitative data (Boyatzis, 1998). This method has the advantage of being very flexible, but it requires careful planning and execution. Moreover, the themes should not be seen as just emerging from the data

as the role of the researcher is pivotal in how these themes are selected (Braun and Clarke, 2006). Care was, hence, paid to ensure that the themes reflected the findings well.

4.6 Ethical Considerations

4.6.1 University Ethics Procedures

Ethical approval has been taken through an application from BREAM (Brighton Research Ethics Application Manager). All the required documents, including the questionnaire and interview schedule, were uploaded to the ethical approval board to get their approval. In this study, an appropriate cover letter was formulated to be sent with the questionnaire. The research aims were explained in the cover letter and all the necessary information to acquire informed consent from the participants was added. The participants were briefed that they could withdraw from the study at any time without being asked to give a reason as required by the Ethics Committee. The participants were informed about how many sections were included in the questionnaire, encouraged to indicate if they would like to participate in the subsequent interviews about their experiences, and attitudes for using e-learning technologies. They were also thanked in anticipation of their co-operation. As interviewees were selected from those survey participants who volunteered to be interviewed, it implied that they had already answered the questionnaire and were, thus, fully informed about the nature of the study.

The interviews were conducted in an environment where the participant would not be pressured by other people. To ensure this, the participants were asked to indicate a place and time convenient for them. Interviewees were informed from the start that the interviews will be tape-recorded, and the researcher will be making notes during the process. In addition, the consent form also included

a proclamation that the interviews would be taped with the tape and noted data securely stored by the researcher and that when it was no longer required for the research, it would be destroyed. The questions asked in both the survey and the interviews were piloted so that the researcher could check if the questions were potentially problematic for the respondent in any way in terms of being too personal or intrusive and whether the language used was appropriate. This ensured that the participants were not harmed in any manner during the research process.

The personal information of all interview participants has been kept confidential. The interview participants have been provided with a consent form to secure their informed consent. The qualitative data and information accumulated from the participants have been kept secured in the password-protected audio files. The data collected from the participants would be used only for the academic purpose and would be destroyed thereafter. No data would be shared with any third-party for any purposes apart from the academic aim of this research's objectives.

Chapter 5: Results of the quantitative study

5.1 Results

This chapter presents an analysis of the quantitative data generated through the use of the study questionnaire. This data was collected from the Saudi students, in the UK and KSA. The questionnaire aimed to answer the main research question, i.e., what is the value of the UK higher education experience for KSA students and how is this evidenced the specific area of information behaviour?

The following sub-questions were developed to help in addressing the main research question:

1. What are the differences in information-seeking behaviour strategies between the graduate students of Saudi Arabia and Saudi students in the United Kingdom?
2. What are the key factors that influence information-seeking behaviour in graduate students (cognitive, research environment, role-related, faculty members, instructors, demographics)?
3. What are the key barriers experienced by Saudi Arabian graduate students in the UK during online information seeking? How do these barriers affect their information seeking?
4. What are the procedures that can be implemented by research institutes or universities in order to improve the information-seeking behaviour of students from Saudi Arabia?

Before exploring the answers to the questions, the first section of this chapter will provide demographic information about the sample; this is followed by description of the questionnaire structure, as shown in Table 5.1.

Section	Theme	Number of items
1	Personal Information	7
2	University-related information	4
3	Language	4
4	Searching for Information	14
5	Information literacy	21
6	Teaching and learning styles	17
7	Library Awareness	40

Table 5. 1: Questionnaire Structure

5.2. Questionnaire Data

5.2.1. Personal Information and Educational Background

In this section, the general information given by respondents about themselves and their educational background is presented, in order to understand the participants' demographic and educational characteristics.

The questionnaire used in this study began with questions that would allow the researcher to build up a profile of the participants with salient features such as age and gender. This gave an indication about whether the sample was representative of the population of the study, as well as, in giving a general overview of the participants' educational background, for instance, their English language skill and major subject of their study. The sample for this study consisted of two groups of participants: one group who were studying or had studied in the UK for their post-graduation (n=199) and the other who had studied or were studying in KSA (n=71). Apart from this distinction, the other demographic variables like gender, age, father's education, level of education completed

in the UK or KSA, region of KSA, major field of study, and current degree are shown in detail in Table 5.2.

Age	UK		KSA	
	n	%	n	%
18-25	20	10.1	1	1.4
26-30	28	14.1	17	23.9
31-40	131	65.8	51	71.8
=>40	20	10.1	2	2.8
Education				
Uneducated	7	3.5	17	23.9
Primary School	12	6.0	12	16.9
Intermediate School	33	16.6	10	14.1
High School	34	17.1	18	25.4
University	113	56.8	14	19.7
Location				
Urban	144	72.4	46	64.8
Rural	55	27.6	25	35.2

Table 5. 2 Demographic Information of the sample

In terms of their *gender*, it has been observed from the survey findings that there are more male participants (60.3%) in the survey as compared to female participants (39.7%) in the UK. Similarly, postgraduate students in KSA are predominantly male: 59.2% as opposed to females 40.8%. This is shown in Figure 5.1.

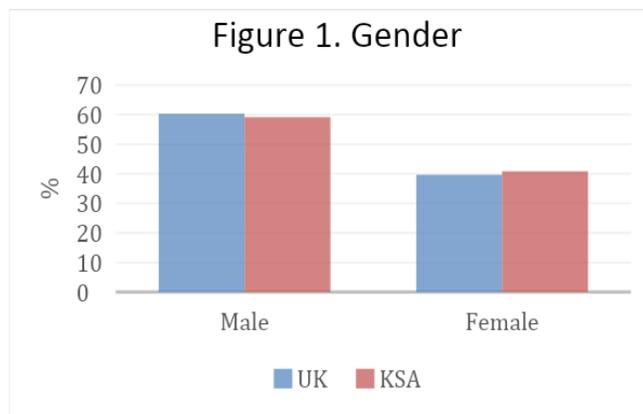


Figure 5. 1 Gender distribution

Most of the respondents studying in the universities of the UK fall within the age-group of 31-40 years (65.8%) as compared to 71.8% respondents studying in the universities in Saudi Arabia. Also, the 26-30 years age group shows a similar distribution with 14.1% participants having studied in the UK compared to 23.9% in KSA. However, there is a clear difference between the two groups in the age group of 18-25 as the students in Britain are 10.1% compared to Saudi Arabia's 1.4%.

Figure 5.1 shows the distribution through a graph.

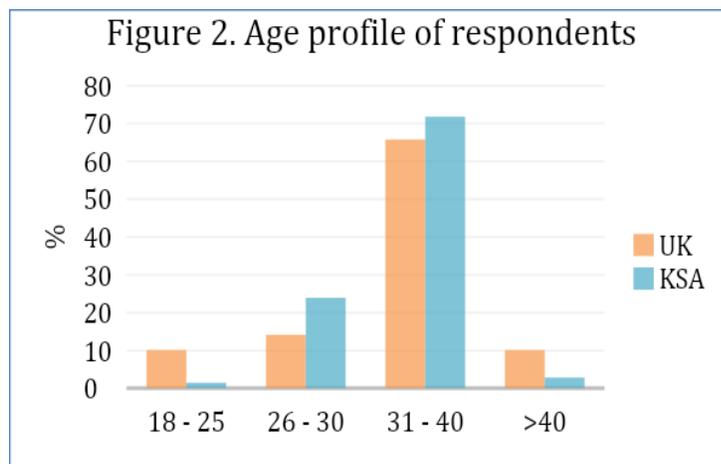


Figure 5. 2 Age Distribution

Participants were asked to report their father's education level. Already the preliminary results from the pilot study had showed that the participants talked more about their father's education than for their mothers. This could be explained by many reasons including culture, religion or traditional mindset. Therefore, only the statistics for the father's education was considered enough to determine the level of education for the respondents. This decision was also influenced by the reluctance of the pilot study's respondents to divulge their mother's education levels.

Further, the survey established that the father's education level of the UK study participants predominantly (56.8%) possessed a University education as compared to participants studying in

the Saudi universities (19.7%). The education level was highest next for High School (17.1%), intermediate (16.6%), and the fewest number for father's education level of participants had primary school only (6.0%). This shows that the parental background was largely educated. Also, the survey shows that more fathers were uneducated among the participants from the Saudi universities (23.9% compared to 3.5%). This is as expected, as it is generally students of more privileged backgrounds who are able to study abroad.

The data collected through the questionnaires also showed, in terms of location, that most Saudi graduate students, whether in the UK or Saudi Arabia, live in urban areas. 72.4% UK respondents and 64.8% Saudi respondents stayed in urban areas.

In terms of their own education history, the majority of participants had completed their bachelor's degree in Saudi Arabian universities (94.5%) and only a few participants had completed it in the UK (5.5%).

5.2.2. Field of Study

The final sample included 199 Saudi graduate students were completing their postgraduate studies in the UK (58.8%) and 71 who were studying in Saudi Arabia (41.2%). These results are shown in Table 5.2. 29.1% of the participants' studying in the UK had their field of study in engineering, followed by 24.1% in computing. As for the participants from Saudi Arabia, the highest percentage was found in the field of mathematics (52.1%) followed by computing (23.9%). This gives a relatively good basis for comparison as these are quite homogenous fields.

Study Major	n	%	n	%
Medicine	25	12.6	1	1.4
Engineering	58	29.1	10	14.1
Science	9	4.5	1	1.4
Business Administration	15	7.5		
Arts	9	4.5		
Law	7	3.5		
Social Sciences	8	4.0	5	7.0
Education	9	4.5		
Islamic Studies	1	.5		
Mathematics	10	5.0	37	52.1
Computing	48	24.1	17	23.9

Table 5. 3Field of Study

5.2.3 Location of study

Table 5.3 shows the location of study for participants BSC, MSC and PhD education: this can help to understand the years spent by each respondent in the UK while studying. It shows that most of the UK respondents went to the UK to complete either their post-graduation or their doctoral studies. Only 5.5% Saudi students had completed their bachelor's degrees from the UK. In fact, 11.6% respondents had chosen elsewhere for their graduation. Still, Saudi Arabia remained the place of choice for completing graduation with 82.9% respondents completing this degree within their own country.

For master's students, 55.8% respondents had moved to the UK to complete this degree while a further 56.8% moved there for doctoral study. 23.1% of the UK-based students had completed their Masters in Saudi Arabia.

Degree	Location of study	UK		KSA	
		N	%	N	%
Bachelors	UK	11	5.5		
	Saudi Arabia	165	82.9	70	98.6
	Elsewhere	23	11.6	1	1.4
MSC	UK	111	55.8		
	Saudi Arabia	46	23.1	70	98.6
	Elsewhere	31	15.6	1	1.4
	Not applicable	11	5.5		
PhD	UK	113	56.8		
	Saudi Arabia	15	7.5	31	43.7
	Not Applicable	71	35.7	40	56.3

Table 5. 4 Location of study

5.2.4. Language

The learning of English language by the sample has been explored through several questions in the questionnaire. A summary of the responses is presented in Table 5.4. As is evident from Table 5.4, most of the participants started to learn English in the Saudi education system in middle schools (primary and intermediate).

	UK		KSA	
	N	%	N	%
Kindergarten	29	14.6	10	14.1
Primary school	22	11.1	55	77.5
Intermediate school	125	62.8	3	4.2
High school	17	8.5	2	2.8
University	6	3.0	1	1.4
Total	199		71	

Table 5. 5 English language learning

Almost half of the participants had to attend an English language course before beginning their studies in the UK (52.3%). Though most of these English courses were conducted within Saudi Arabia (44.7%), a sizable number (32.7%) were held in the UK.

5.3 Identification of information needs

We asked the participants about the purpose of the research they were conducting, by asking them to refer to recent incidents when they needed some information via the internet. The majority of the postgraduate students were using Google and Google Scholar to find information, most of the answers were searching for literature review, definitions, thesis, previous studies, journal papers, general inquiries associated to their field of study.

5.4 Differences in information-seeking behaviour strategies

The first research question seeks to investigate the difference in information seeking behaviour strategies between the Saudi students who have studied within KSA and those who have studied in the UK. Table 5.5 throws light on the answers to questionnaire items that have explored the information seeking behaviour of the respondents.

Table 5.5 first describes the answers to the location chosen by the respondents to look for research information. The Saudi students studying in the UK prefer the library (38.7%), followed by their homes (25.1%), and then the college and office equally (18.1%). The Saudi students studying within KSA show an equal first preference for home and college workstations (40.8%) with very few choosing to go to the library (9.9%), or their office (8.5%).

The second item relevant to this objective explores the channel used for seeking information. The alternatives include search engines, electronic journals, library databases, personal contacts, and the library website. The Saudi students studying in the UK preferred search engines the most (32.7%), followed by library's online database (28.1%), electronic journals (17.6%), and personal contacts (16.1%). The Saudi students studying within the country showed a much more pronounced

preference for search engines (49.3%), and chose personal contacts (33.8%), over other modes. Library's online database was used by only 7% of the respondents while 9.9% used electronic journals.

When in need of help, the UK studying students went to their friends or colleagues (45.7%), or to the library staff (31.7%). Lecturers were approached by 22.6% of the UK respondents. On the other hand, the Saudi studying students also preferred friends and colleagues first (42.3%) but also approached their tutors and lecturers more frequently (38%) with only 19% approaching the library staff. When asked about the preferred mode of journals for information-seeking, Saudi students studying in the UK preferred electronic journals (68.8%) over printed versions (31.2%). An almost opposite trend was shown by the Saudi students within KSA who preferred the printed journals (62%) over the electronic versions (38%).

A query about who made the respondents aware about the use of electronic resources, the UK study students cited previous search experience and results (44.2%) and friends or colleague's suggestion (42.2%) as the most common sources. The Saudi students studying in KSA were more likely to state friend or colleague's suggestion (40.8%), previous search experience (28.2%), and course or session (19.7%).

Location of Search	UK		KSA	
	N	%	N	%
Library	77	38.7	7	9.9
College workstation/computer lab	36	18.1	29	40.8
Office	36	18.1	6	8.5
Home	50	25.1	29	40.8
Total	199	100.0	71	100.0
Method of information seeking	N	%	N	%
Search engines (e. g. Google)	65	32.7	35	49.3
Electronic journals	35	17.6	7	9.9
Library's online databases	56	28.1	5	7.0
Personal contacts	32	16.1	24	33.8
University library website	11	5.5	0	0
Total	199	100.0	71	100.0
Asking for help	N	%	N	%
Library staff	63	31.7	14	19.7
friend/colleague	91	45.7	30	42.3
Tutor/lecturer	45	22.6	27	38.0
Total	199	100.0	71	100.0
Searching for academic information	N	%	N	%
Print versions of databases/journals	62	31.2	44	62.0
Electronic versions of databases/journals	137	68.8	27	38.0
Total	199	100.0	71	100.0
Awareness of the electronic resources	N	%	N	%
Previous search experience and results	88	44.2	20	28.2
Friend/colleague suggestion	84	42.2	29	40.8
Course/session	13	6.5	14	19.7
Departmental website	14	7.0	8	11.3
Total	199	100.0	71	100.0

Table 5. 6 Information seeking strategies

5.5 Different Modes of Information-Seeking

When the different modes of information-seeking were explored for the Saudi and UK students, various differences became apparent. The modes explored for information-seeking were the World Wide Web, search engines, electronic journals, online databases, university library websites, books, and dissertations. (The seven items enquiring about these modes were first analysed for their reliability. This scale showed a Cronbach's alpha value of .776. Any value above 0.7 is

believed to show a good reliability (Cronbach, 1951), therefore, this scale is considered to be reliable for measuring the chosen modes of information seeking behaviour).

The items measuring information-seeking were rated through a Likert type scale ranging from 1 to 7 with 7 denoting always and 1 reflecting Never. The highest Mean value were observed for search engines (M = 4.8), Standard deviation (SD = 2.00), books (Mean 4.78, SD = 1.98) and dissertations and these (Mean 4.77, SD = 2) for the Saudi students studying in the UK. For the Saudi students, the most popular medium for information-seeking were search engines (Mean = 3.27, SD= 1.81), books (Mean = 2.99, SD = 1.98) and dissertations and theses too (Mean = 2.85, SD=1.86). Though both kinds of respondents had the same choices for information-seeking, the Mean values were much lower for the Saudi students studying in KSA.

Location	UK			KSA			Total		
	Mean	Std.	Median	Mean	Std.	Median	Mean	Std.	Median
World Wide Web	4.69	1.99	5.00	2.66	1.86	2.00	4.16	2.15	4.50
Search engines	4.80	2.00	5.00	3.27	1.81	3.00	4.40	2.06	5.00
Electronic journals	4.76	2.00	5.00	2.35	1.82	2.00	4.13	2.22	5.00
Online databases	4.67	2.00	5.00	2.27	1.91	2.00	4.04	2.24	5.00
University library website	4.74	1.98	5.00	2.39	2.00	2.00	4.12	2.23	5.00
Printed books	4.78	1.98	5.00	2.99	1.98	2.00	4.31	2.13	5.00
Dissertations, theses	4.77	2.00	5.00	2.85	1.86	2.00	4.26	2.14	5.00

Table 5. 7 Different Modes of Information-Seeking

Part of this study's aims is to find if groups (UK, KSA) influence outcomes. The differences between the two groups was noted above. It was clear that those who were educated in the UK showed more usage of different modes of information seeking. Hence an *independent samples t-test* was conducted to confirm if the overall difference between both groups was significant. This was conducted based on overall Mean scores for each of the groups. By observing Levene's test

for equality of variance it was evident that equal variances were not assumed ($F = 60.00, p < 0.05$). The results of the t-test showed that the groups were significantly different from each other in the usage of modes of information sources $t(78.29) = 9.59, p < 0.001$. The KSA group showed significantly less overall usage ($M = 2.68, SD = 1.76$) compared to the UK group ($M = 4.74, SD = 0.71$).

The effect size of this relationship was calculated using the formula

$$\text{Eta squared} = t^2 / t^2 + (N_1 + N_2 - 2)$$

The value arrived through this formula is then assessed using Cohen's guidelines which state that effect sizes are small for values between .01 and .05, moderate if between .06 and .1 and large if above .1 (Cohen, 1988). The effect size (Table 5.10) was calculated to be 0.26, which is large.

5.6 Factors that influence information-seeking behaviour

The factors explored in this study that may influence the information-seeking behaviour of the students are information literacy, pedagogy or teaching and learning style, search strategy (explored in the first research objective), and library awareness. These factors are a part of the micro-factors of the information behaviour model discussed in detail in the first chapter.

5.6.1. Information Literacy

There were seventeen items in the questionnaire that enquired about the information literacy of the respondents. The Cronbach's alpha value for this scale was calculated to be .897, which is quite a high value and shows that the scale is reliable. Table 5.7 presents the Mean, standard deviation (SD), and Median values for information literacy.

Location	Educated in the UK			No UK education			Total		
	M	SD	Med	M	SD	Med	M	SD	Med
I feel confident in defining the information I need	4.75	2.01	5.00	2.68	1.77	2.00	4.21	2.15	5.00
I am confident about being able to identify a variety of potential source of information	4.68	2.02	5.00	2.68	1.97	2.00	4.15	2.19	4.00
I am confident in limiting search strategies by subject language and date	4.74	2.00	5.00	2.87	1.95	2.00	4.25	2.15	5.00
I feel confident with initiating search strategies by using the keyboard and/or Boolean logic	4.54	2.05	5.00	2.55	1.73	2.00	4.02	2.16	4.00
I feel confident with deciding where and how to find the information I need	4.68	2.01	5.00	2.75	1.56	2.00	4.17	2.08	4.00
I am confident with using a different kind of print sources (i.e books, periodicals)	4.60	2.04	5.00	2.76	1.63	2.00	4.11	2.10	4.00
When I think about using electronic information resources, I feel confident	4.78	1.99	5.00	2.89	2.00	2.00	4.29	2.16	5.00
h. I am confident about being able to locate resources in the library using the library catalogue.	4.76	1.94	5.00	2.61	1.89	2.00	4.19	2.15	5.00
I feel confident using internet search tools (such as search engines, directories, etc)	4.86	1.86	5.00	2.87	2.06	2.00	4.34	2.10	5.00
I am confident with using many sources at the same time to carry out research.	4.85	1.86	5.00	2.58	1.58	2.00	4.25	2.05	5.00
I am confident about how to determine the reliability of information sources	4.10	1.88	4.00	2.54	1.98	2.00	3.69	2.02	3.00
I am confident with selecting information most appropriate to my information need	3.98	1.72	4.00	2.85	2.16	2.00	3.68	1.91	4.00
I am confident with my ability to evaluate sources from the World Wide Web	4.66	2.01	5.00	2.21	1.35	2.00	4.02	2.15	4.00
I am confident about how to combine newly gathered information with the previously obtained information	4.49	1.97	5.00	2.59	1.96	2.00	3.99	2.13	4.00

I am confident with writing a research paper	4.48	1.96	5.00	2.37	1.81	2.00	3.93	2.14	4.00
I know how to create bibliographic records for different kinds of materials (i. e. Book, articles, web pages)	4.50	1.97	5.00	2.54	1.95	2.00	3.99	2.15	4.00
I am confident about criticizing the quality of my information seeking process and its outcomes	4.54	1.97	5.00	2.44	2.06	2.00	3.99	2.20	4.00

Table 5. 8 Information literacy

Looking at the table, it is evident that the highest Mean values overall are associated with confidence in the use of internet search tools ($M=4.34$, $SD=2.1$), the use of electronic information resources ($M=4.29$, $SD=2.16$), and confidence with limiting search strategies by subject language and date ($M=4.25$, $SD=2.15$), and the use of many resources at the same time ($M=4.25$, $SD=2.05$). On the other hand, the lowest scoring items in this scale are confidence with the selection of appropriate information suiting the need ($M=3.68$, $SD=1.91$), reliability of information resources ($M=3.69$, $SD=2.02$), and the writing of a research paper ($M=3.93$, $SD=2.14$).

When the results are compared for the UK study students and the KSA students, it is observed that the overall Mean values are very different, with most items rated 4 and above by the UK students and none of the items rated even above 3 by the KSA students. However, the highest rated items remained the same in both cases. When the lowest items are examined, however, it becomes apparent that the KSA students are under-confident about evaluating the sources on the World Wide Web ($M=2.21$, $SD=1.35$), but the UK students are reasonably confident about it ($M=4.66$, $SD=2.01$). Similarly, criticising the quality of one's own information-seeking process and outcomes was also an area of concern for the KSA students ($M=2.44$, $SD=2.06$), but not so much for the UK students ($M=4.54$, $SD=1.97$). Therefore, the lowest rated items differed for the group.

The differences between the UK and KSA students with respect to their information literacy was explored using independent samples t-test (refer Table 5.10) on the overall Mean score of information literacy. The results showed that in Levene's test for equality of variance equal variances were not assumed ($F=138.14, p<0.05$). Further, both groups differed significantly in their information literacy $t(73.48) = 9.32, p<0.001$. On calculating the effect size of this relationship (see table 5.10), it was observed that the value was high at 0.24. Thus, Information Literacy is a significant factor influencing the information behaviour of the two sets of respondents.

5.6.2. Teaching and Learning Style

The next factor explored in this study was the teaching and learning styles or pedagogy followed by the tutors encountered in the subjects' educational histories. Eleven items showed a Cronbach's alpha value of .699, which is the same as the acceptable value of .70. Cronbach's alpha values for scales with fewer items are believed to have lower values when compared to scales that have more items (Tavakol & Dennick, 2011).

Teaching style	Educated in the UK			No UK education			Total		
	M	SD	Med	M	SD	Med	M	SD	Med
Based largely on traditional lecturing	5.88	1.73	7.00	6.89	0.73	7.00	6.15	1.59	7.00
Based largely on lab work and experiments	2.75	2.20	2.00	1.90	0.70	2.00	2.53	1.96	2.00
Based largely on a combination of lectures and tutorials	2.95	2.18	2.00	1.80	0.67	2.00	2.65	1.97	2.00
Based largely on problem-solving and critical thinking	2.48	2.08	1.00	1.65	0.90	1.00	2.26	1.88	1.00
Based largely on individual work	3.83	2.17	3.00	1.94	0.84	2.00	3.33	2.09	3.00
Based largely on group work	3.32	1.80	3.00	2.27	1.00	2.00	3.04	1.69	3.00

Supervisor/teacher provides assistance									
Guiding in how to use information sources	4.32	2.52	5.00	2.89	2.00	2.00	3.94	2.47	3.50
Laying down the foundation for my research work	4.56	1.97	5.00	2.92	1.66	3.00	4.13	2.02	5.00
Passing on journals, research papers, on their own or of noted authors.	4.10	2.00	5.00	2.52	1.77	2.00	3.69	2.06	3.00
Assessing projects that require using information resources available in the library.	4.26	2.11	5.00	2.66	2.12	2.00	3.84	2.22	4.00
Offering guidance on how to conduct literature searching	4.29	1.99	5.00	2.73	1.71	2.00	3.88	2.03	4.00

Table 5. 9 Teaching and Learning Style

As shown in Table 5.8, this factor is measured by two prominent questions. The first is about the teaching style adopted in class, while the second enquires about supervisory assistance. For the first, the most highly rated item is traditional lecturing with an M value of 6.15 and SD of 1.59. There is a wide difference for the rest of the items, which are all rated between 2 to 3. Individual work is rated the highest next with an M value of 3.33 and SD of 2.09. When the two groups of UK and KSA students are compared for teaching and learning styles, it is visible that the Mean values for the highest rated item of traditional lecturing is quoted to be much higher by the KSA students (M=6.89, SD=.073), and (M=5.88, SD=1.73). Individual work is rated much higher by the UK students (M=3.83, SD=2.17) than the KSA students (M=1.94, SD=0.84). For the KSA students, the second highest rated item was based on group work (M=2.27, SD=1.00) while it was individual work for the UK students. For both groups, the lowest rated item was problem solving and critical thinking with UK students rating it higher (M=2.48, SD=2.08) compared to the KSA students (M=1.65, SD=0.90).

For the second part of this factor, supervisory assistance was investigated. The highest rated statement in this question was the supervisory support in laying the foundation for research work (M=4.13, SD=2.02) followed by guidance in how to use information sources (M=3.94, SD=2.47) and guidance for conduct of literature search (M=3.88, SD=2.03). When the two groups of respondents were compared, both the UK and KSA students had rated research work foundation as the highest rated item. Again, the differences for both groups existed in the ratings given to the items with the UK students giving above 4 rating to all items and KSA students rating all items below 3.

The differences between the UK and KSA students in their teaching and learning styles (using overall Mean scores) was explored using Independent Samples t-tests (refer Table 5.10). Levene’s test for equality of variance was significant and hence equal variances were not assumed (F=68.41, P<0.05). Both groups differed significantly in their teaching and learning styles $t(267.99)=8.00$, $p<0.001$. The effect size of this relationship with an Eta squared value of 0.19 was large.

5.6.3. Library Awareness

This scale consisted of nineteen items, which achieved a Cronbach’s alpha value of .897 showing a high degree of reliability. The results are shown in Table 5.9.

	Educated in the UK			No UK education			Total		
	M	SD	Med	M	SD	Med	M	SD	Med
I can usually find the information and resources I need in the library	4.68	2.02	5.00	2.61	2.02	2.00	4.13	2.21	4.00
I am aware that the library offers online search services for graduate students	4.74	2.00	5.00	2.23	1.83	1.00	4.08	2.25	5.00

When I think about my dissertation/thesis as it relates to the library, I feel stressed	4.54	2.05	5.00	5.56	1.96	6.00	4.81	2.07	6.00
I know what resources are available in the library	4.69	1.99	5.00	2.28	2.07	1.00	4.06	2.27	4.50
I understand how to begin my research in the library	6.24	0.80	6.00	2.39	2.09	2.00	5.23	2.12	6.00
When I use the library for information, I feel overwhelmed	4.54	2.05	5.00	2.20	1.94	1.00	3.93	2.27	4.00
I am uncomfortable using the library's online catalogue	4.68	2.01	5.00	5.59	1.98	6.00	4.92	2.04	6.00
I am uncomfortable using the library's website	1.90	0.90	2.00	5.55	2.20	6.00	2.86	2.11	2.00
I am comfortable using the computers inside the library	4.10	1.88	4.00	2.55	2.06	2.00	3.69	2.04	3.50
The library should provide more services for masters and doctoral students	4.72	2.47	6.00	6.21	1.12	7.00	5.11	2.29	6.00
The library's resources for my area of interest are satisfactory	5.21	2.43	7.00	2.41	2.00	2.00	4.47	2.63	5.50
It is difficult to locate materials in the library	4.76	1.94	5.00	5.55	1.96	6.00	4.97	1.97	6.00
The library offers enough information skills training sessions for graduate students	4.85	1.86	5.00	2.13	2.07	1.00	4.13	2.26	5.00
My knowledge of the library is limited to my area of interest	4.85	1.86	5.00	5.68	2.01	7.00	5.07	1.93	6.00
I would rather use the library online	3.32	1.80	3.00	2.65	2.09	2.00	3.14	1.90	3.00
The library is easy to use	3.83	2.17	3.00	2.24	1.85	1.00	3.41	2.20	3.00
There are too many possible sources of information	2.48	2.08	1.00	2.59	1.98	2.00	2.51	2.05	1.50
I can use Interlibrary Loan for access to materials not in my library	4.77	2.56	6.00	2.08	1.82	1.00	4.06	2.66	5.00
In general, I think my ability to use the library has had a negative effect on my research	4.10	1.88	4.00	5.55	2.08	6.00	4.48	2.03	5.00

Table 5. 10 Library Awareness

Looking at the Table 5.9, it is evident that the highest rated items are different for two types of respondents. For instance, the highest rated item, which is the acceptance that the respondents are aware of how to begin their research in the library (M=5.23, SD=2.12), is rated highest by the UK studying students (M=6.24, SD=0.80) but rated low by the KSA students (M=2.39, SD=2.09). The second highest rated item for the UK students is that the library's resources are satisfactory for their area of interest (M=5.21, SD=2.43) and even this item is rated low by the Saudi students (M=2.13, SD=2.07). In fact, the highest rated items for the Saudi students studying in KSA are that the library should provide more services for masters and doctoral students (M=6.21, SD=1.12) which is a negative statement. This item is rated much lower by the UK students (M=4.72, SD=2.47). The second highest rated item for the Saudi students was regarding their knowledge of the library being limited to their area of interest (M=5.68, SD=2.01).

The lowest rated items overall are questions enquiring about too many possible sources of information (M=2.51 SD=2.05) and discomfort using the library's website (M=2.86 SD=2.11). These are both negative statements and are rated low by both types of respondents. Some items that show a lot of difference in the ratings by the two groups included a statement enquiring if Interlibrary loans could be used for accessing library materials (M=4.77 SD=2.56) for the UK students and (M=2.08 SD=1.82) for the KSA students, another asking about availability of sufficient information skills training sessions (M=4.85 SD=1.86) for UK and (M=2.13 SD=2.07) for the KSA students. The ease of using the library (M=3.83 SD=2.17) for the UK and (M=2.24 SD=1.85) for the KSA students, comfort in using the computers in the library (M=4.10 SD=1.88) for the UK and (M=2.55 SD=2.06) for the KSA students, discomfort while using the library website (M=1.90 SD=2.00) for the UK and (M=5.55 SD=2.20) for the KSA students, and a feeling of

overwhelm while using the library for information (M=4.54 SD=2.05) and (M=2.20 SD=1.94) respectively were also asked.

Overall Mean of Library awareness items was also found to be different between UK and KSA based students as was shown through the t-tests (refer Table 5.10). Levene’s test for equality of variance made it evident that equal variances could not be assumed (F=161.32, p<0.05). Both groups differed significantly with respect to their library awareness $t(71.89)=8.32$, $p<0.001$ and the effect size of the relationship was found to be large with an effect size of 0.21(see Table 5.10).

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Use of Information Resources	Equal variances assumed	60.001	.000	13.712	268	.000	2.06306	.15046	1.76683	2.35929
	Equal variances not assumed			9.593	78.297	.000	2.06306	.21505	1.63496	2.49116
Information Literacy	Equal variances assumed	138.139	.000	14.495	268	.000	1.95639	.13497	1.69065	2.22212
	Equal variances not assumed			9.320	73.476	.000	1.95639	.20991	1.53808	2.37469

Teaching style	Equal variances assumed	68.414	.000	5.429	268	.000	.79423	.14629	.50620	1.08226
	Equal variances not assumed			7.998	26799	.000	.79423	.09931	.59871	.98975
Supervisor assistance	Equal variances assumed	10.242	.002	8.078	268	.000	1.55986	.19311	1.17966	1.94005
	Equal variances not assumed			6.838	95311	.000	1.55986	.22813	1.10699	2.01272
Library Awareness	Equal variances assumed	161.315	.000	13.387	268	.000	1.85408	.13850	1.58140	2.12676
	Equal variances not assumed			8.324	71869	.000	1.85408	.22275	1.41003	2.29813
Overall problems	Equal variances assumed	3.683	.056	-3.005	268	.003	-.61928	.20606	-1.02499	-.21358
	Equal variances not assumed			-2.622	9980	.010	-.61928	.23619	-1.08792	-.15065

Table 5. 11 Independent T-Tests between Information-seeking behaviour factors and location of study

The results from the Independent t-tests that were conducted to see if any of the differences in the Mean values between the UK and KSA students were significantly different to each other are shown in Table 5.10.

Considering each of these factors for the difference among the two groups, it is evident that use of information resources, information literacy, teaching style, supervisory assistance, library awareness, and overall problems, are all significantly different for both groups.

The next step is to calculate the effect sizes of the relationships. The formula for calculating this effect size is

$$\text{Eta squared} = t^2 / t^2 + (N_1+N_2-2)$$

The value arrived through this formula is then assessed using Cohen’s guidelines which state that effect sizes are small for values between .01 and .05, moderate if between .06 and .1 and large if above .1. (Cohen, 1988). The effect sizes calculated for each of the factors are shown in Table 5.11.

Factor	Effect Size	Impact
Use of Information Resources	0.26	High
Information literacy	0.24	High
Teaching Style	0.19	High
Supervisory Assistance	0.15	High
Library Awareness	0.21	High
Overall problems	0.02	Low

Table 5. 12 Strength of the relationship between information-seeking factors and behaviour

Looking at Table 5.11, it becomes clear that use of information resources, information literacy, teaching style, supervisory assistance, and library awareness all have High effect sizes. The relationships between these factors are, thus, strong and significant.

5.7 Barriers/issues in information-seeking behaviour

The barriers in information-seeking behaviour were explored through several items that enquired about problem areas. Table 5.12 shows the summary of responses received for all items enquiring about barriers in information-seeking. Table 5.12 summarises the results pertaining to the fourth research objective. It is evident that there is a huge difference between UK studying Saudi students and KSA students when it comes to computer and network problems. Where only 35.7% UK students faced such problems, 83.1% KSA students admitted to disruptions caused by internet performance or lack of infrastructure.

When asked if the students had to modify their search questions or strategy to get more relevant results, both UK and KSA students replied yes more than no. However, there was still a difference with 65.8% UK students having to change their search strategy or phrasing of the questions compared to 83.1% KSA students.

61.3% UK students agreed that they had managed to find the information they were seeking while another 22.6% reported that they had found some part of it. Only 16.1% had failed to find the needed information. On the other hand, 42.3% KSA students only found all of the information they were looking for while 39.4% found some part of it. Like the UK students, 18.3% could not find any information relevant to their search.

	Location	UK		KSA	
		N	%	N	%
Experience any computer or network problems.	No	128	64.3	12	16.9
	Yes	71	35.7	59	83.1
Modify search question or strategy at all	No	68	34.2	12	16.9
	Yes	131	65.8	59	83.1
Find the information wanted	No	32	16.1	13	18.3
	Yes	122	61.3	30	42.3
	Some of it	45	22.6	28	39.4
Feeling about the results of search	Completely dissatisfied	181	91.0	6	8.5
	Mostly dissatisfied	8	4.0	30	42.3
	Somewhat dissatisfied	10	5.0	20	28.2
	Neither			3	4.2
	Somewhat satisfied			3	4.2
	Mostly satisfied			6	8.5
	Completely satisfied			3	4.2
Identifying any useful resources that couldn't access due to university subscriptions	Yes	106	53.3	59	83.1
	No	93	46.7	12	16.9

Table 5. 13 Issues in Information Seeking

5.7.1 Accessibility issues

When asked if the respondents had managed to identify any useful resources that were not available through their university subscription alone, almost half of the UK students admitted it to be true (53.3%). However, 83.1% of the KSA students, in comparison, said that they were able to access better resources through an information search.

The items enquiring about barriers to information-seeking were measured by eight items and this subscale showed a Cronbach's reliability coefficient of .805. As a result, the subscale was deemed to be reliable. According to the results shown in Table 5.13, the most problems were faced during the access to printers (M=5.48, SD=2.21), followed by journals (M=5.43, SD=2.33) and the need for passwords to access information (M=5.32, SD=2.25). The least problematic areas were access to computing skills (M=4.31, SD=2.35), computers (M=4.92, SD=2.4) and internet (M=5.04, SD=2.52).

Location	Educated in the UK			No UK education			Total		
	Mean	Std.	Median	Mean	Std.	Median	Mean	Std.	Median
Access to the Internet	4.77	2.56	6.00	5.82	2.23	7.00	5.04	2.52	7.00
Access to computers	4.72	2.47	6.00	5.48	2.12	6.00	4.92	2.40	6.00
Access to printers	5.43	2.35	7.00	5.61	1.81	6.00	5.48	2.21	7.00
The need for passwords to access information	5.28	2.29	7.00	5.44	2.15	6.00	5.32	2.25	7.00
Interlibrary loan	4.80	2.36	5.00	5.86	1.79	7.00	5.08	2.27	6.00
Computing skills	4.15	2.49	4.00	4.76	1.86	5.00	4.31	2.35	5.00
English language skills	5.20	2.43	7.00	5.49	1.65	6.00	5.27	2.25	7.00
Access to journals	5.21	2.43	7.00	6.06	1.87	7.00	5.43	2.33	7.00

Table 5. 14 Barriers in Information -Seeking

Based on the overall mean scores, the differences between the UK and KSA students with respect to the barriers in information seeking was explored using independent samples t-tests (refer Table 5.10). The results showed that Levene's test for equality of variance established that equal variances were assumed ($F=3.68$, $p>0.05$). Both groups differed significantly $t(268)=3.00$, $p<0.001$. On calculating the effect size of this relationship (see table 5.12), it was observed that the value was small at 0.02.

5.8 Impact of location: Urban vs Rural

This section examines whether or not students' location in Saudi Arabia influences their experiences. The Mean values for KSA and UK students who have different locations of origin show that there is again a difference with the UK students rating all statements higher than the KSA students.

For the UK students, the difference in urban and rural origins for use *of information resources* has almost no difference in the Mean values with urban UK students ($M=4.75$, $SD=0.75$) showing similar values to the rural ones ($M=4.73$, $SD=0.62$). The KSA students, on the other hand, have a difference of an entire point between urban ($M=2.34$, $SD=1.32$) and rural origin students ($M=3.31$, $SD=2.27$).

In *information literacy*, UK students (Urban $M=4.56$, $SD= 0.45$, Rural $M=4.66$, $SD=0.48$) show little difference but KSA students again show the difference of a point in the Mean values (Urban $M=2.26$, $SD=1.37$, Rural $M=3.32$, $SD=2.14$). Teaching style is almost the same for UK students in Urban ($M=3.54$, $SD= 1.14$) and Rural areas ($M=3.52$, $SD=1.36$) and also for KSA students in Urban ($M=2.68$, $SD=0.44$) and Rural areas ($M=2.85$, $SD=0.40$).

Supervisory assistance follows the same trend of being similar for UK students (Urban M= 4.26, SD=1.24; Rural M=4.41, SD=1.24) but varying by a Mean point for KSA students (Urban M=2.32, SD=1.44; Rural M=3.52, SD=2.10). Library awareness is the same for UK students whether Urban or Rural with an M value of 4.20 but it differs a lot of KSA students with Urban students showing an M value of 1.92, SD=1.40 and the Rural students showing a higher value of M at 3.15 SD=2.33.

Finally, *overall problems* for UK students have values of M=4.97, SD=1.34 in Urban areas and M=4.88, SD=1.41 in rural areas. But for KSA students the values differ again with Urban areas showing a higher M value at 6.04, SD=1.35, and a lower value for Rural areas (M=4.68, SD=2.23).

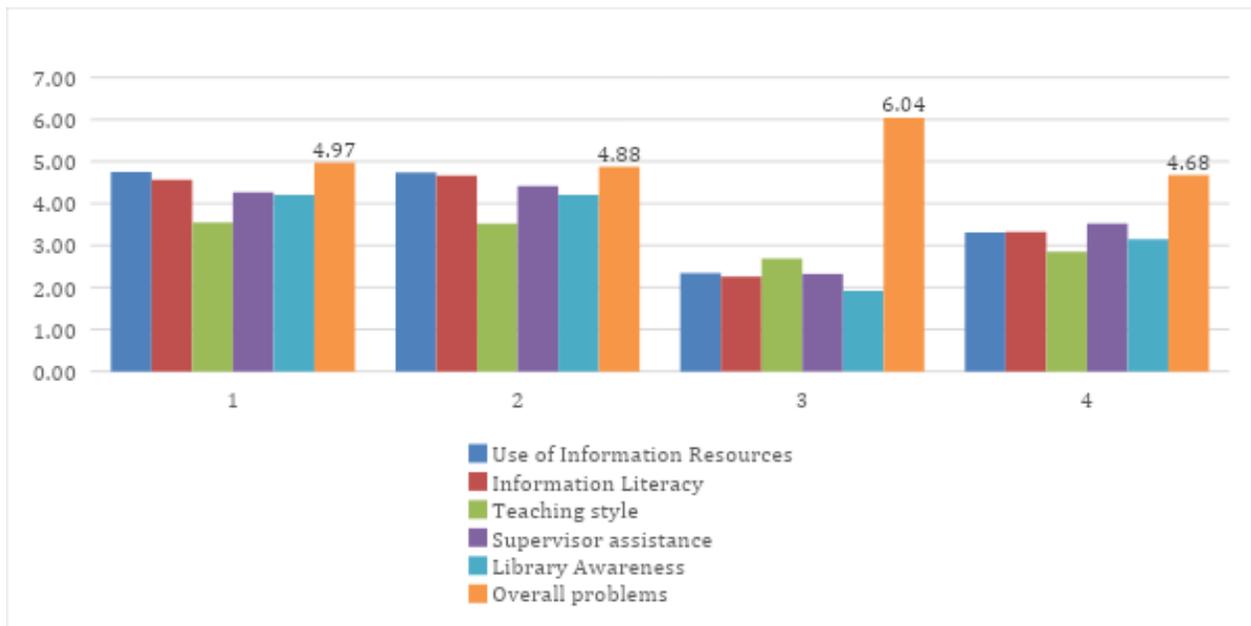


Figure 5. 3 shows Mean values for the study variables for both UK and KSA students.

5.9 Regression testing

Regression: Teaching styles practiced in the class

Multiple linear regression analysis was conducted to measure if variables such as Group, Location, gender, age, father's education, area of origin, and time of beginning English learning significantly predict or explain variances in Teaching styles used in the last attended class i.e., predict teaching style. The model was significant ($F=5.14$, $p<0.001$), and $R\text{-Square}=0.105$. Therefore, despite being significant it could only explain 10.5% variation in the dependent variable (teaching styles). By checking each predictor (table 5.14) it can be seen that those in the UK were more likely to be happier with the teaching styles ($B=-0.80$, $p<0.001$). Other variables were not significant predictors of teaching styles ($p>0.05$).

Regression: Supervisor assistance

Location, Gender, Age, father's education, area of origin, and time of beginning English learning were put into a regression model to understand if they all had any predictive value over supervisory assistance. The model was found to be significant ($F=12.43$, $p<0.001$), and $R\text{-Square}=0.222$. Therefore, it could explain 22.2% variation in the scores. By checking each predictor (table 5.14) it can be seen that location had the biggest impact on supervisory assistance ($B=-0.438$, $p<0.001$). Area of origin was also found to be a significant predictor ($B=.128$, $p<0.05$), those from rural backgrounds are more likely to seek assistance. Other variables were not significant predictors of teaching styles ($p>0.05$).

Regression: Library awareness

Regression analysis of Location, Gender, Age, father's education, area of origin, and time of beginning English learning were all found to be significant predictors of Library Awareness ($F=32.3, p<0.001$) with a R Squared value of 0.425. Therefore, the predictive value was quite high at 42.5%. Among the variables, location of the students showed the biggest contribution, favouring UK group ($B=-.62, p<0.001$), followed by region ($B=.125, p<0.001$) and gender ($B=-.10, p<0.001$). This showed that male and rural students were less likely to be library aware. Other variables were found to not be significantly related.

Regression: Access problems

Regression analysis of location, gender, age, region, father's education, and the time of beginning English learning was found to be a significant predictor of overall problems ($F=2.87, p<0.001$). R Squared value was, however, .06, showing only an influence of 6% on the scores. The biggest contribution in the model was made by Location of the student ($B=.173, p<0.01$) followed by region ($B=-.146, p<0.01$). Therefore, students from KSA and urban areas were more likely to have access problems. Other factors, as before, were not significantly related.

	Teaching style		Supervisor assistance		Library awareness		Overall access problems	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.
Location (UK=1, KSA=2)	-.802	.000	-1.552	.000	-1.828	.000	.597	.009
Sex (M=1, F=2)	.197	.139	-.170	.327	-.263	.034	.207	.263
Age	-.056	.543	.173	.152	-.038	.655	.151	.239
What is your Father's education level	-.005	.933	.028	.693	.031	.540	-.027	.721
Which of the Saudi regions do you come from? (U=1, R=2)	.047	.740	.436	.020	.352	.009	-.483	.016

When did you start learning the English language in the Saudi education system?	.032	.689	-.019	.856	-.028	.704	.012	.914
R2		0.105		0.222		0.425		0.062
Adj. R2		0.085		0.204		0.412		0.040

Table 5. 15 Regression Analysis Multiple linear regression analysis predicting key variables

5.10 Summary

This chapter has presented the results of the questionnaire study. First, the demographic details of the respondents are discussed including their age, education level, location, and the study major. English language learning details were also presented that clarified which level of education the respondents had begun learning the language at. Next, the research questions were explored with popular information-seeking strategies including their location, method, sources of help, mode of academic information, and the awareness of resources were presented. The following table summarises the results of this chapter.

Research Question	Key Findings
What are the differences in information-seeking behaviour strategies between the graduate students of Saudi Arabia and Saudi students in the United Kingdom?	<p>The Saudi students studying in the UK prefer the library, followed by their homes, and then the college and office equally. The Saudi students studying within KSA show an equal first preference for home and college workstations with very few choosing to go to the library or their office.</p> <p>Those who were educated in the UK showed more usage of different modes of information seeking.</p> <p>The Saudi students studying in the UK preferred search engines the most, followed by library's online database, electronic journals, and personal contacts. The Saudi students studying within the country showed a much more</p>

	<p>pronounced preference for search engines and chose personal contacts over other modes.</p> <p>When in need of help, the UK studying students first went to their friends or colleagues, and then to the library staff and Lecturers. The Saudi studying students also preferred friends and colleagues first but also approached their tutors and lecturers more frequently, with fewer numbers approaching the library staff.</p> <p>Saudi students studying in the UK preferred electronic journals over printed versions while the Saudi students within KSA preferred the printed journals over the electronic versions.</p> <p>UK students were more likely to search information based on their previous experience and friends' suggestions while Saudi students preferred friends' suggestions over past experience.</p> <p>Use of information resources, information literacy, teaching style, supervisory assistance, library awareness, and overall problems, are all significantly different for both groups.</p> <p>Use of information resources, information literacy, teaching style, supervisory assistance, and library awareness all have High effect sizes.</p>
<p>What are the key factors that influence information-seeking behaviour in</p>	<p>The highest rated factors are associated with confidence in the use of internet search tools, the use of electronic information resources, and confidence with limiting</p>

<p>graduate students (cognitive, research environment, role-related, faculty members, instructors, demographics)?</p>	<p>search strategies by subject language and date and the use of many resources at the same time.</p> <p>The lowest scoring factors are the confidence with the selection of appropriate information suiting the need, reliability of information resources, and the writing of a research paper.</p> <p>For both KSA and UK students, the highest rated factors remain the same. However, they are rated lower by the Saudi students.</p> <p>When the lowest items are examined, however, it becomes apparent that the KSA students are under-confident about evaluating the sources on the World Wide Web, but the UK students are reasonably confident about it.</p> <p>Criticising the quality of one’s own information-seeking process and outcomes was also an area of concern for the KSA students but not for the UK students.</p> <p>Students in the UK were more likely to be happier with the teaching styles.</p> <p>Students from rural backgrounds are more likely to seek assistance.</p> <p>Male and rural students were less likely to be aware about their libraries.</p>
<p>What are the key barriers experienced by Saudi Arabian graduate students</p>	<p>61.3% UK students agreed that they had managed to find the information they were seeking while another 22.6% reported that they had found some part of it.</p>

<p>in the UK during online information seeking? How do these barriers affect their information seeking?</p>	<p>Students from KSA and urban areas were more likely to have access problems.</p> <p>The most problems were faced during the access to printers followed by journals and the need for passwords to access information.</p> <p>The least problematic areas were access to computing skills, computers, and internet.</p> <p>Barriers were significantly different for KSA and UK students but with small effect size.</p>
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Table 5. 16 Key findings

It was found that UK and KSA students differed significantly in all areas of information seeking from the mode of information-seeking to its factors like information literacy, teaching and learning styles, and library awareness. The possible reasons for and implications of the results are explored in Chapter Seven. The findings of this study resonate with the earlier scholarly research. Researchers mention that universities are in need of developing learning strategies that can support their students' information seeking (Eisenberg, Murray and Bartow, 2016). Students need to develop skills that allow them to recognise a specific problem, articulate it, select information sources, the form queries, examine obtained outcomes, as well as, conduct critical reflection of the obtained results (GT and Vinayagamoorthy, 2013). Studies also confirm that investing in the information seeking of the students can contribute to an improvement in their learning capabilities (El-Maamiry and Ghauri, 2016). Further, studies have shown that both students and teachers benefit from the improved learning capabilities (Richardson and McBryde-Wilding, 2009). Studies like the present one can help by providing the feedback of the students about the barriers in their

information seeking which can help in creating a positive learning environment in the university (Johnston, 2010).

Apart from the support for information seeking of students, there is also literary support for the cultural influence on this phenomenon (Peeters and Oerlemans, 2009). Students may exhibit differences in their information seeking in aspects like secrecy and deception (Maybee, 2006). For the Saudi students, though the research phenomenon of their specific needs and challenges with respect to information seeking is less researched, Alqahtani (2011) has asserted that their language needs are different and linked to their culture. Consequently, the usage of the language while seeking information is expected to be affected.

Chapter 6: Results of the Qualitative Study

6.1 Introduction and Overview

It has been identified from Chapter Five that the information-seeking behaviour of the Saudi students studying in UK universities differs from the information-seeking behaviour of the Saudi students studying in Saudi universities in various ways. The Saudi students studying in KSA universities are facing several challenges in the use of electronic information resources. It was also found that the UK and KSA students differed significantly in all areas of information seeking from the mode of information-seeking to its factors like information literacy, teaching and learning styles, and library awareness. In order to explore the relationships identified from the questionnaire results, a series of interviews with KSA and UK students were carried out. These interviews explored the students' experience of the micro- and macro-factors identified by Urquart and Rowley (2007) as impacting students' information behaviour. The results are described in this chapter and may help to clarify how the information behaviour of the Saudi students with respect to information search, planning, evaluation, and confidence changed after their experience with the UK-based institutions.

6.2 Interviews with KSA and UK students

6.2.1 Interview Design

The following themes were selected to be a part of the semi-structured interviews undertaken with Saudi graduate students:

- Theme 1: Training and assistance offered in Saudi and UK universities to students for information search.

- Theme 2: Role of Supervisors and academic librarians in guiding and encouraging students for developing search strategies
- Theme 3: Information search strategies used by Saudi students studying in the UK and Saudi Universities
- Theme 4: Challenges associated with the information-seeking behaviour of the graduate students of Saudi Arabia
- Theme 5: Information-seeking Principles learned by the students from Arabic lessons
- Theme 6: Perceptions of students regarding the familiarity with the recent electronic resources
- Theme 7: Advice given to new students to search a relevant information

The students in the current study were recruited from two groups. The first group include Saudi graduate students who enrolled in the postgraduate courses of Saudi universities. The other group consist of Saudi students who are currently doing their post-graduation from UK universities. A total of 14 interviews were carried out, with four interviews forming a pilot study phase. The demographic information and coding of the participants have been presented in the table below.

Study type	Participants	Code	Gender	Age
Pilot Study	Saudi Students Studying in the Saudi Universities	KSA1	Male	32
		KSA2	Female	35
	Saudi Students Studying in the UK Universities	UK1	Female	31
		UK2	Male	35
Full-Scale Study	Saudi Students Studying in the Saudi Universities	KSA3	Male	34
		KSA4	Female	36
		KSA5	Male	34
		KSA6	Female	36
		KSA7	Male	31
	Saudi Students Studying in the UK Universities	UK3	Female	32
		UK4	Male	39

		UK5	Female	34
		UK6	Male	40
		UK7	Male	39

Table 6. 1: Demographics of Interview Participants

The interview schedule is attached to the appendix of this thesis.

6.2.2 Results and Analysis of the Interview

The interview questions were developed in relation to the questionnaire results, which, together with the Urquart and Rowley model, suggested the themes that were most in need of further exploration. Thus, the themes were pre-decided and did not simply emerge from freeform discussion. The interviews were recorded and transcribed, and comparisons made within the answers to each question. All interviews were conducted in Arabic and if any English words were used by the interviewees were kept retained until they were translated to English during the transcription process itself.

6.2.3. Thematic Analysis: Semi-Structured Interviews with postgraduate students

The following section evaluates the opinions of the ten graduate students regarding their perceptions about the information resources, search strategies, selection criteria for the relevant information, and the recent developments in the information search strategies and electronic information resources. We do not include the pilot study results as the interview was amended quite substantially for the main study and comparisons would not hold. The participating Saudi postgraduate students are indicated as Respondent UKS3, UKS4, UKS5, UKS6, UKS7 for the students currently studying in the UK universities and KSAS3, KSAS4, KSAS5, KSAS6, KSAS7 for the students currently studying in the Saudi universities. These numbers have been assigned in

order to ensure privacy. Direct quotations are translated from Arabic by the author. Following are the key findings under each theme.

Theme 1: Training and assistance offered in Saudi and UK universities to Saudi graduate students for information search

This theme addresses the various services and/or assistance that are offered in the University libraries in order to improve the information search strategies adopted by the students. Responses to questions 1 and 6 in the interview schedule address this theme, inquiring about any special services or training programmes received by the university students. The majority of the students studying in the UK universities stated that although training and other information sources regarding the search strategies are available for them from their respective libraries, they felt they were not supposed to rely on this alone in order to access the necessary information.

The responses provided by the students studying in the Saudi universities indicate that though there are a lot of books and journals available in the University library, a manual searching process still takes a lot of time. Moreover, they are not well-informed about the e-searching methods. Further, the students studying in Saudi universities have also reported that they are not trained to use online books and manuals to collect relevant data and information needed by them. Lastly, the teachers and librarians working in their universities are also not well informed about internet searching tools.

In relation to this, KSAS5 reported that, “We face difficulty in accessing the relevant information due to the unavailability of information in the university library. We are using the CD-ROM

databases and e-journals for information retrieval. The librarian provides adequate help to search a book, but they are not well updated about the web searching method.”

Further, the responses of KSAS3 KSAS4, and KSAS7 indicated that they usually rely on the physical library sources such as printed books, research papers, old reports, and articles. The search for academic information was quite challenging at the initial stage for them. They had doubts about the information to be collected which led to frustration and confusion. In order to resolve issues, they contact their supervisor, but they are not available all the time for help. It was reported that the majority of respondents faced a common problem while seeking information, which was simply the unavailability of information.

On the other hand, the UK students reported that they do receive access to library resources. UKS2 stated that: "I believe that the university attempts to provide us with access to the international databases and latest research. However, sometimes, we are not able to locate the most relevant information in the vast databases and often feel lost in the information overload."

The UK universities students claimed that they usually consult with their supervisors for resolving any queries related to information search. The supervisor is the first person they consult as they have significant experience in the area. Moreover, they also take the help of a librarian sometimes for searching relevant books and journals in the central library.

In regard to this, an interviewee from UK UKS6 reported that, “The academic staff including all advisors, librarian, professors, and committee members all play a crucial role in the information search process like building confidence in the search process. Their guidance and suggestions have helped me to find the right direction for my research." Supporting this argument, respondents

KSAS4 stated that, “The library officials are ready to help us with the various tools that are available for us in the libraries. But sometimes their understanding is also limited, and they tend to answer only the presented query. Because of this, we need to approach them again if we face any difficulty of a slightly different nature.” The comment about the limited nature of the librarians’ response is interesting as it possibly indicates a mismatch of expectations: the librarian is responding to a specific enquiry, while the student is perhaps expecting a broader and more pedagogic approach.

The overall findings under this theme indicate that the UK universities are offering several sources to seek meaningful information, which provides the students with adequate support to solve their research problems. However, they still experience information overload. On the other hand, the students studying in Saudi universities are not provided with adequate support especially for the e-searching methods. They are still using the manual searching process for collecting information for their research, which takes a lot of time. Thus, students studying in Saudi universities require more support and assistance regarding the search strategy, which would be beneficial for the academic enrichment of the students.

The UK students suggested that the introduction of a formal course, addressing only the internet and online database search strategies would be extremely beneficial to their academic development. Respondents UKS4 and UKS5 contributed that “We get many services in the library like access to international research databases and the latest search tools. I believe that we will be able to utilise these resources more effectively if we had a better and more formal understanding of the search tools and strategies.”

Theme 2: Role of Supervisors and academic librarian in guiding and encouraging students in developing search strategies

This theme addresses the role played by the faculty members in guiding the postgraduate students in improving the information seeking process and search strategies adopted by them. Responses to question 2 reveal the guidance, cooperation, and encouragement received by the students from their supervisors, librarian, and teachers while searching the information they need. A large proportion of the student studying in the Saudi universities have talked about the unsupportive environment in accessing the online database and their opinion can be summarised to say that despite the availability of the latest search tools and access to international databases, the academic environment is not highly supportive of the development of the internet and online search strategies in Saudi Arabian universities.

Respondents studying in the UK universities presented their opinions in a similar regard, wherein UKS3 stated that, "We are often encouraged by faculty members to read more about the search strategies to find the required information efficiently." The students from KSA, KSAS5, KSAS6, and KSAS7 said that, "The teachers are more concerned about the topic giving a low priority to the development of search strategies. We understand the topic in the class, but we find difficulty in searching relevant journals and articles for the in-depth study of the subject. After wasting a lot of time in the library, I do not find any relevant book or journal articles related to my subject".

KSAS4 further added that, "My professor says that I should be more focused on understanding the topic being investigated and not on the numerous tools that are offered by the online databases."

On the other hand, students studying in the UK universities hold a different opinion regarding the support they receive from the teachers, supervisors, and academic librarians. It has been identified

from the viewpoint of the students studying in the UK universities (UKS3 and UKS5) that both the faculty members and the academic librarians highlight the importance of accessing multiple information resources in order to gain an all-around comprehensive understanding of the topic under investigation. The faculty members are highly cooperative in suggesting various peer-reviewed journals that offer authentic and reliable information reflecting the latest research that is being undertaken in the study fields. UKS4 subscribed to the view that “My professors and mentors always direct me towards the reputed information sources regarding the topic that we are currently studying.” UKS6 also added, “One of our professors also allows us to use his access credentials to search the latest information and stay up-to-date on the research. Moreover, the academic librarians also encourage the students to utilise various information sources by making a number of peer-reviewed journals available in the university libraries.”

The overall response of the participants reveals that there is a positive impact of both the faculty members and the academic librarians in encouraging the students to improve their online search strategies and utilise multiple information sources in case of the Saudi students studying in the UK universities. However, their contribution is very limited for the students studying in the Saudi universities as the teachers and supervisors in the Saudi universities give a high priority to the topic and are less focused on developing search strategies among the students. This could be a reflection of different attitudes to knowledge and its transmission in the two countries, with the UK staff more willing to expose students to multiple sources of knowledge.

The support and assistance provided by the teachers, supervisors, and librarians to the students studying in the UK universities encourage a majority of the students to explore various sources and gather as much information as possible. UKS4 and UKS7 supported this argument: “Our librarian

encourages us to access multiple journals which has allowed me to have a multidisciplinary understanding of the topics of my interest and to seek information regarding the topic further.”

Theme 3: Search strategies and Resource Selection Criteria used by the students studying in the UK and Saudi Universities

This theme is developed by understanding differences in the search strategies and resource selection criteria used by the Saudi students of Saudi Arabia and the UK. The third sub-question of the second question in the interview schedule helped find answers to this theme. The interviewees were asked about the search strategies they used in order to retrieve meaningful and relevant information regarding their research paper or coursework. In response to this, interviewees studying in the Saudi universities reported that they are using journals articles available in the library as prime sources of information and textbooks to understand definition and details of study concepts. Further, they are using the central library for collecting sufficient information along with the resources from conferences, seminars, and workshops that are all considered as informal information sources.

On the other hand, students from the UK universities responded that they usually opt for the easiest and most convenient method to find relevant information. The time-efficiency of electronic databases was appreciated the most. They report themselves to be highly dependent on the Google search engine to find the answers to their queries. The wide popularity of electronic databases and the different search options available on Google play a lead role in the enhancement of their electronic search behaviour.

Further, the interview respondents were also asked regarding the resource selection criterion used for accessing the required information. On this topic, KSAS6 and KSAS7 claimed that, “While searching for information through online sources, I put the keyword on the search engine based on my research topic and research questions. Both these aspects are crucial for me as they have a direct influence on my quality of work.”

In continuation with the above discussion, UKS3 focused on the accessibility aspect and said that, “Convenience, time involved, prior knowledge about the sources, and physical proximity determines my selection of resources, and it is a measure highlighting the cost associated with it and frequency of use, which highlights the relevance of a particular source.” These responses highlight that availability of information is a crucial aspect affecting the criteria for resource selection. Easy accessibility of resources encourages the graduate students and faculty members for gathering adequate and relevant information about different topics.

In reference to the search strategies, a majority of the Saudi students KSAS3, KSAS4, and KSAS5 reported that they are using the Arabic style of searching strategy, wherein different combinations of a root form are put as a keyword. The students generally attach prefixes and suffixes to stem generated by a keyword, which helps them to get the required information. The students also emphasised that their teachers taught them the use of spelling normalisation, spelling mapping and Arabic mapping strategy to search the relevant data and information related to their research.

The findings of the interviews consisted of the opinions of different postgraduate students highlighting that selecting the pertinent information found through a variety of sources depends upon different criteria, which have a significant impact on the quality and characteristics of the data. The findings of the interview also highlighted that the majority of the students studying in

Saudi universities use spelling normalisation and spelling mapping to search the required information. However, the use of such a strategy does not help them in providing specific information related to their research. Moreover, students studying in Saudi universities are facing difficulties in assessing internet and online journals to access pertinent information related to their research.

The interviewees were asked regarding their opinion about the effective strategies for enhancing their information searching capability. In this respect, UKS5 stated that, “There are different tools available for searching information such as online and offline tools, but in the contemporary era, Google has gained a renowned position for providing information from a wide variety of sources.” In support of the above discussion, the KSAS3, KSAS4, and KSAS5 also discussed some criteria for selecting pertinent information about a topic. In this respect, KSAS3 said that, “Purpose, currency, language, and relevancy determine the selection of pertinent resources. KSAS4 added that, “The purpose of the information and the timeliness of the search results help to gather up to date and revised the information on the topic.”

Theme 4: Challenges associated with the information-seeking behaviour of the postgraduate students of Saudi Arabia

This theme is developed in answer to the first objective, which aims to identify the need of offering correct information to postgraduate students for achieving their academic purpose. The theme helps to identify the factors that influenced the information-seeking behaviour of graduate students over the years. The responses of the postgraduate students to the various sub-question of question 2 highlights the various aspects that are associated with searching the online database, challenges and issues in searching online databases, and help provided by the supervisors.

In this context, KSAS3 stated that “My searching strategy for information is aimed to gain pertinent information out of it. The efficiency of the education system like the ease of finding sources of data, their usefulness, and reliability all contribute to it. KSAS4 also confirmed that, “information search depends on my preferred mode of searching information, and how reliable I find the source”. In support of this, UKS3 said that, “Accessibility to internet and knowledge supports are some of the key factors affecting the search strategy through internet sources.”

Furthermore, the theme also delivered responses for the sixth objective, which is to identify the challenges prevailing for Saudi Arabian scholars in seeking accurate information. In this context, KSAS4 and KSAS6 have similar opinions: KSAS4 stated that, “If students had another chance, they would change the search process by incorporating infrastructure issues and contextual factors, which are associated with the status of the teachers”. The response highlights that issues or factors such as accessibility of power, user education, training, and lack of upgraded server have a significant impact on the use of internet search by graduate students. In this respect, the opinion of graduate students highlights that there are different factors that are affecting the internet accessibility of students that have an influential impact on their information search strategy. This is apparent from their responses where they highlight the lack of infrastructural, teacher, and training support which could support them to refine their information search.

The interviewees depicted the challenges faced by them in their information-seeking behaviour. In this regard, KSAS3 and KSAS5 reported that they are facing issues in using online databases. Moreover, they are not skilled in using computer technology due to the lack of technical knowledge and experience. In a similar vein, KSAS4 and KSAS6 also highlighted the importance of electronic

search behaviour and indicated that the information-searching behaviour of researchers and academicians is significantly influenced by digital platforms in the developed countries like the UK. According to KSAS4, “We still lack behind in terms of electronic information searching, which, in turn, affect the quality of research written by Saudi scholars”.

The Saudi students studying in the UK universities highlighted the role of online search engines in influencing their search behaviour. UKS3, UKS4, and UKS5 all agreed that fast internet speeds and search engine capabilities help them to access information fast. UKS4 quoted that, "With the developing search engine capabilities and increased speed of the internet connections, my colleagues and I are able to quickly access all the necessary information and utilise the search tools in order to enhance the efficiency and relevance of the search tools."

On the basis of the interview findings, it was found that there are different factors affecting the search strategy and information seeking process for the Saudi students. The findings reflect that searching information through the internet is affected by the ease of use, reliability, contextual issues, web-based learning, and ICT knowledge of the faculty members. The overall findings reveal that the students studying in the UK universities use the databases that have the most relevant information addressing their respective fields, and these databases have been highly useful for their enrichment. The key issues noted by the Saudi graduate students studying in the UK universities are the complexities that are associated with understanding the user interface of the library websites, the slow speed of some servers, and the availability of the computer terminals in the libraries.

UKS6 and UKS7 highlighted the cost-effectiveness and time-effectiveness features of information search behaviour. UKS6 highlighted that, “The online facilities, which are available free of cost, have helped all students in gaining the necessary information in a short period and enhancing their knowledge. However, one of the key issues is that the online facilities and websites that are offered by the university libraries are not coherent with the tools offered by private search engines and online databases.”

Moreover, regarding the sixth objective, a similar opinion has been presented by KSAS6 and KSAS7 who focus on the role of Arab countries and economic aspects that affect their level of Information and Communication Technology (ICT) knowledge. The KSAS7 stated that, “Problem of skills and knowledge regarding the ICT knowledge affects the information-seeking behaviour through the internet that hinders the gaining of pertinent information through reliable sources”. In addition to this, the viewpoint of interviewees highlights the lack of web-based learning as the major factor affecting the information search strategies of the students in the school and universities.

Theme 5: Information-seeking in Arabic and English language

The respondents were asked regarding the information-seeking principles learned from the Arabic lessons. This theme has been formulated in the alignment of question 3 of the interview schedule. In response to this question, participants studying in the Saudi universities (KSAS3 and KSAS6) explained that there is a higher redundancy in Arabic as compared to the English language as Arabic words are derived from some root words according to specific patterns, which also depend on some fixed rules of prefix and suffix. Further, KSAS4 and KSAS7 also supported that the average length of a word is greater in Arabic than the English language. For this purpose, a root

indexing is used in the researches to index the documents as it increases the circumvent and recall problems raised by the Arabic morphology. The respondent KSAS4 further highlighted the importance of the technique and depicted that a root index term helps to retrieve all possible variations of the root word and eliminate the requirement to put the complex phrases while searching.

Further, KSAS5 also presented the viewpoint regarding the lesson learned from the Arabic lessons and said that, "I usually use the same behaviour as complying with the Arabic databases, I usually do only general search, wherein I use a list of keywords to retrieve results because I know that content is very limited in Arabic databases."

On the other hand, the Saudi students studying in the UK universities are more inclined to use the English language for a searching process as they believe root indexing is quite a complicated technique to search for international databases as the majority of the articles published in international journals are usually published in the English language. In this context, UKS7 responded that, "I do not use Arabic databases, however, if I need to retrieve some crucial information from the foreign literature in any coursework or research then I usually go to databases such as ScienceDirect or use Google Scholar for searching the required information."

Further, UKS3 and UKS6 also highlighted the significance of the English language in information-seeking behaviour, UKS6 said that, "We do search in the English language as it is easier as we know that the renowned authors write their research in English". Further UKS5 also believes that searching in English is easier as compared to searching in Arabic and stated that, "I do search for the topic in English by typing specific author name and reading their viewpoints. I think that searching for a topic in Arabic, it is a little bit different. Moreover, I also prefer to use a Boolean

search strategy as I am much concerned to retrieve the results very soon that are not possible in the case of the Arabic language”.

It is identified from the interview results that search principles in the Arab countries are more focused towards the use of keywords and some specific rules of prefix and suffix, which do not provide the answers of the query raised. On the other hand, students studying in the UK universities are utilising Boolean search strategy, which helps them to have search results specifically related to their query. The UK-based students, often more fluent in English than those based in KSA, recognised the prestige issues of publishing in English and Arabic, choosing to search English language texts via English searches.

Theme 6: Perceptions regarding the students' familiarity with recent electronic resources.

All the students were asked to express their feelings regarding the advanced electronic resources used in college. In this context, KSAS3 and KSAS4 have presented their views that they are not very familiar regarding new electronic resources that are used in the college as there is a lack of an awareness campaign regarding the development of knowledge in context to electronic resources. KSAS5 and KSAS6 shared the same views and stated that the university does not conduct any training or orientation sessions on the campus that focuses on retrieving information skills among the postgraduate students, as well as, faculty members. Moreover, KSAS7 in this regard noted that “The library officials are ready to help with the various electronic resources that are made available in the libraries. But my understanding regarding the usage of these resources is limited, and by asking the library officials they tend to answer only the presented query, and as a result I need to approach them again if I face any difficulty of a slightly different nature.”

For UK-based students it is easy to search books and journals online as proper training and orientation took place in the university with regard to the usage of electronic resources. In a similar context, UKS5 and UKS6 have stated that they are very much aware of the electronic resources used in a college such as electronic databases. However, tutors did not help in gathering knowledge regarding the electronic resources as they are not supportive. Moreover, these tutors themselves are not much aware about the electronic resources. UKS7 in regard to the question has shared his views that practical knowledge is necessary for utilising the growing range of electronic resources in the university. In this regard, the students studying in the UK universities believe that the university has provided all means to gather knowledge regarding the usage of electronic resources by appointing a specific teacher to enhance the practical knowledge of electronic resources used in gathering information. Moreover, the skills required for maximising the potential of electronic resources are much higher in comparison to the skills required for searching printed resources. Overall it has been interpreted from the findings of the interviews that students are not familiar with the usage of electronic resources in the day-to-day information searching. The main reason behind this scenario is that the university faces the issue of the lack of cooperation between the faculty members and graduate students. As per field observations, the faculty members, in many cases, are not familiar with the online database search themselves or feel that explaining this usage is not part of their jobs but should be done by the library staff. This is a belief shared by the UK-based Saudi students as well. However, unlike the UK students, the Saudi-based students are not even supported by the library staff to learn and use the online or physical catalogues.

Theme 7: Advice given to new students to search for relevant information

This theme helps to understand the perception of the Saudi students studying in the UK and Saudi universities regarding the relevant search strategy for new students. This theme has been formulated in reference to the interview schedule question number 5. In this regard, students studying in the UK universities; UKS4, UKS5, and UKS6 highlighted that the new students should be focused on enhancing their E-searching skills and for this, they can adopt some crucial strategies such as take more training in information seeking, improve their academic English, and ask supervisors for help or advice.

Further, KSAS3 and KSAS6 also acknowledged the significance of electronic information resource environment for the future students and stated that the electronic information sources are growing rapidly in our country so the future students should be well informed about the role of information and communication technologies in searching for relevant information for their research. KSAS5 affirmed this opinion and stated, “It will be beneficial for all the students, including me, to be able to use every latest search tool in the university libraries as this will allow us to clarify any doubts with the help of faculty members, academic librarians and peers that are present on the University campus.”

It can be analysed from the study findings that both of the groups namely students studying in the UK universities and students studying in the Saudi universities should incorporate Boolean operators in their search to enhance their search results. Further, the perception and opinions presented by the students also depict that new students should be well-informed about the electronic information search methods, which can help them to obtain valid and reliable search results. The

overall responses indicate that Saudi students in the UK universities are more skilled and trained compared to the Saudi student in Saudi universities.

In this regard, the students studying in the UK and Saudi universities realised the importance of Boolean operators and online search tools for searching for relevant information and suggest that new students should utilise various search strategies and databases to search for relevant information about their research. UKS3 mentioned that, “The search tools and filters that simplify the internet information-seeking process allow the students to have easy access to international resources”. Further, the students studying in Saudi universities also think that new students should modify their search skills as the majority of the researches that are published in the international articles are written in the English language. In this regard, KSAS4 stated that, "The new students should widen their search by using different resources. Moreover, they should use electronic journals more often.

6.3. Discussion of Findings

In relevance to the first objective, it is analysed that there is a need for learning efficient searching strategies because they help in achieving an optimised information retrieval from the internet sources. It was identified from the survey results that the majority of students studying in Saudi or UK universities want to access an electronic version of the information. Moreover, it is further gleaned from the interview results that with the development of Google search engine and the increasing popularity of the internet platforms, there is a growing need for the students to learn more efficient search strategies. The internet-based search strategies help students to access the desired information quickly. Moreover, electronic search strategies incorporate a number of filters and sort option, which provide an opportunity for the students to find the updated sources. It is identified from the findings that prior to the accomplishment of the search strategy, there is a need

for recognising the correct terms for particular data sets, as well as the methods by which the expanse of a search can be made wider or more focussed. The literature sources have helped to understand more clearly that as per the changing educational environment, the seekers of the particular type of information seekers are in need of learning feasible strategies that help to utilise the electronic sources of information (Eisenberg, Murray and Bartow, 2016). The findings have shown that such strategies are needed more by the KSA students than the UK ones.

Tighe (2012) identified a need to improve the education of the undergraduates of American universities. His research showed that universities in America can also integrate search skill activities in their curriculum and their classrooms so that the students can learn to enhance their research skills and help generate an environment of research-based learning. This will improve the environment of the universities by the adoption of new techniques, and also help them in enhancing their teaching practices (Tighe, 2012). Therefore, based on the findings of this study, it has been recommended that KSA universities should provide the students with unique resources that can provide them with an advantage regarding their research in the classroom. The students must also be guided properly throughout their research work by the faculty regarding the use of resources and improving their search skills. It is important for the universities to engage the students into research work from the beginning of their sessions and also provide them with training so that the students can improve their search skills (Tighe, 2012).

Furthermore, the findings for the second objective which aimed to assess the impact of the UK education upon the information-seeking behaviour of the Saudi Arabian students showed that internet search skills have an impact upon the modern education system and information-seeking behaviour of the Saudi students studying in the UK. It is observed from the responses collected

from the Saudi participants that postgraduate students relied more on the academic books published by reputed authors and publishing houses while preparing for coursework or a similar seminar. The books are accessed with the help of university libraries and online libraries. On the other hand, the students studying in the UK universities are more inclined towards using peer-reviewed resources in order to gain access to the latest research trends. Taking the rising importance of information search into consideration, it can be stated that the graduate students of the colleges in the UK are being provided with some special services by the faculty members of the colleges. On the other hand, the students studying in the Saudi universities are still utilising the physical library resources such as research papers, books, and old reports for searching information as they are not updated with the use of online searching tools. In addition to this, their supervisor does not provide them with effective support to search for online information resources as they are not informed about the use of the latest technology themselves.

It is further analysed with the support offered through the existent research work of GT and Vinayagamoorthy (2013), that executing searches for the required information source is not straightforward. It is not just a technique to obtain the required data sets, but it is a key process for problem-solving that is identified as being crucial for the recognition of a specific problem, its articulation, selection of information sources, the formation of queries, examining obtained outcomes, as well as, conducting critical reflection of the obtained results. By offering the correct information-seeking techniques, the information-seeking behaviour is enhanced as it allows the graduate students to study and integrate the prevalent information for solving a specific problem (GT and Vinayagamoorthy, 2013).

The research literature shows that the students in the UK universities use e-books more often for their academic research in higher education. It has been found that the universities are focusing more on improving the learning of the students by adopting new methods. In the UK, the libraries conduct sessions where the students can practice their search skills, in order to improve their learning with the help of available online resources and the accessible electronic databases (Lacović, 2014). It has been reported that the students showed a positive response regarding their improvement in search skills. With the improvement in the search skills strategy of the students, it was observed by the students that the search skills are useful for them in improving their learning and also helped them in completing their academic tasks (Lacović, 2014). The study found that it is essential for the universities to improve the search skills of the students and also of the teachers, so that both teaching and learning of the university can be improved.

For teachers, search skills can help in teaching in an effective manner, as can access to a large amount of information for gaining knowledge regarding a topic (Lacović, 2014). Furthermore, in relation to the fourth objective of this study that intended to explore the efficient and effective approaches for improving the behaviour of the UK-based students for seeking information, the gathered primary data showed that resource selection criteria and prevalence of relevant information had an impact on the graduate students' internet search skills strategy. It is suggested by the study's findings that Saudi universities should focus on providing training or orientation sessions for the students in order to enhance their information-seeking behaviour. Moreover, the teachers and supervisors should also be provided with effective assistance regarding the use of electronic databases so that they could help students.

The UK universities are more focused on the training and development of the students, which helps the students to access electronic resources more easily. The interview findings also show that online facilities and web-based searching strategies are free of cost, which helps the UK interviewees in gathering the required information in a short period. However, the students studying in the Saudi universities stressed that they are not well informed about the online facilities and websites use to search pertinent information.

With regard to the fifth objective, which aims to identify information about vital factors that influence the ISB oriented aspects of the Saudi originating students, it was analysed from the research outcomes that there are certain factors like special educational provisions and internet searching training that lay a significant emphasis on the search strategies and information searching behaviour of the students. The interviews show that students studying in the Saudi universities are focused on using Arabic streaming strategy, where they put a different form of a root word of a keyword. They use prefixes and suffixes to a root word in order to search for relevant information. Apart from this, students studying in the Saudi universities were also reported to use spelling mapping, spelling normalisation, and Arabic mapping strategy to search for the relevant information. On the other hand, the information-seeking behaviour of students studying in UK universities is more influenced by various online search engines such as Google, which help them to access a wider range of academic sources.

The interviews show that students studying in Saudi universities face challenges with regard to accessing the computers, printers, and the internet. Thus, these students should be provided with effective training and development opportunities to access the required information. Further, it is also evaluated that the English language skills of Saudi students is not good so they find it difficult

to decide the right keywords for their search. Moreover, it is examined from the interview results that Saudi graduate students should be provided English language training, which can help to find more relevant information for their study. El Maamiry (2016) showed that enhancing the information searching skills can have an affirmative impact on the learning capabilities of students. This technique plays a useful role in mastering a given set of methods. It also allows defining a specific set of rules, as well as principles in order to reach the aspired results.

The nature and efficiency of the searching skills are also highly varied according to the emotional status of the searcher (El Maamiry, 2016). This suggests that support from the teachers and other staff of the University can help students to feel more emotionally supported which will, in turn, imperative the efficiency of their research.

The sixth objective aimed to explore the possible barriers in the information-seeking behaviour of the students. With regard to the students studying in Saudi Arabia, it was analysed from the interview that the process of information search encompasses varied challenges. From securing access to the internet to connectivity issues in the college libraries or other places, the infrastructure issues were found to be prevalent. Besides this, in some colleges, information search has not been given a clear focus, which might be one of the reasons that students are not able to find relevant information for their dissertations.

On the other hand, students studying in the UK universities face fewer challenges as they are familiar with the relevant information sources, and their supervisors provide them with all the required support to search for a book or suitable journal articles.

The seventh objective of this research project was directed to offer recommendations to improve the behavioural aspects of graduate students in seeking the right information and enhancing the educational information environment. It is analysed from the interview that the enhanced availability and use of resources while searching websites is also one strategy that can be applied by the universities of the UK in order to improve the search skills. However, it is found that there are certain gaps in the current provision which are likely to be best addressed by a joining of forces between the universities and Ministry of Education department of Saudi to help the graduate students studying in the UK based universities. Also, it is found from the interview results that the future students should indulge in the English language training courses before enrolling into postgraduate courses. Moreover, future students should also regularly meet with their supervisors in order to learn new strategies regarding information searching.

It has been found from the interview results that in the current scenario, universities try to provide access to the international databases and also to latest researches and assistance regarding information search. Further, the officials or the staff members that are present in the library help the students in searching for useful information, so that the students can conduct their research. However, the students face difficulty in locating information themselves and with the limited information that the staff members of the library have. It has also been explored some of the universities provide the students with latest search tools and also motivate the faculty members in order to encourage the students to read about the search strategies to improve their search skills. Lastly, the universities try to provide the students with adequate internet facilities so that their search skills can be improved.

The literature review has suggested that the UK universities have always focused on the improvement of learning and teaching practices in the universities. Therefore, the universities have adopted a practice of collecting feedback from the students which can help in improving the practices of learning and teaching in the universities (Johnston, 2010). Universities realise that in order to improve the learning of the students, their search skills should be improved by refining their search strategies. In order to refine their strategies, UK universities have provided the students with a large number of electronic databases and various web resources that can be helpful in conducting their research successfully (Johnston, 2010).

The research literature findings have further shown that it is important for the universities to adopt certain skills that can help the teachers and students in higher education to improve the learning and teaching practices. In the literature, two major skills have been highlighted in this regard. These are the adoption of communication technology and the use of information technology in the form of the internet to improve the teaching practices (Richardson and McBryde-Wilding, 2009). It has been explored that in the United States, the education sector is being improved with the help of an improvement in the search skills of the students. Search skills can help both the teachers and the students in improving their knowledge regarding a topic (Richardson and McBryde-Wilding, 2009). It has been reported that in the current scenario, universities strongly focus on the search skills of the students, as they help in improving their overall knowledge regarding a topic or a subject area. It is evident that the students try to gain information regarding a topic from the lectures provided in the classrooms or by narrowing their search scope to books or journals.

There are various universities in the UAE, such as the University of Dubai, which have taken the initiative in spending resources on the electronic resources, so that these resources become

accessible to the various communities (El-Maamiry, 2017). The University of Dubai also provides databases of various journals and other web-resources, so that the students and the faculty are benefited with the material, and the learning and teaching process can be improved. The literature has mainly explored the information-seeking behaviour with the help of electronic resources at the University of Dubai. It has been analysed that the students of the university use electronic resources as per the direction given by the faculty (El-Maamiry, 2017). The major barrier faced by the students is information literacy. The University of Dubai has chosen a strategy whereby the students are recommended to access the web-based resources in their spare time, but the barrier is that students prefer to use their spare time on other things rather than accessing the databases in the library (El-Maamiry, 2017).

6.4. Conclusion

This study has shown that the Saudi students in the UK and Saudi face different challenges while seeking information for their research and education needs. While the Saudi students face challenges associated with infrastructure that is still lacking and trained support of their faculty and library staff, the UK-based students are well-supported in this regard. The UK-based Saudi students looked beyond their libraries for informational resources, many of which like access to international research databases were provided by their Universities themselves. Not only were the UK-based students helped in accessing their library resources by the library staff, they were also assisted by their tutors in looking for other valuable sources which improved their research perceptibly. Where the Saudi students were still largely limited to the manual search of resources in their libraries, the UK-based students preferred the e-resources, which saved them a lot of time and efforts.

Even the search terms differed with Saudi students using an Arabic style of searching strategy, wherein different combinations of a root form are put as a keyword , while the UK-based students used the keywords based on their research topic and research questions on the search engine. For the Saudi students, access to infrastructure, recent electronic resources, and support remained major challenges while these were the factors that allowed UK-based Saudi students to conduct their searches efficiently. The level of knowledge of English language was also a limiting factor. The findings of this chapter are summarised in Table 6.2 below:

Theme	Key Findings
<p>Training and assistance offered in Saudi and UK universities to Saudi graduate students for information search</p>	<p>Manual searches are time consuming in libraries for Saudi students. They are also not trained and informed in e-search methods.</p> <p>Even the teachers and librarians working in Saudi universities are also not well informed about internet searching tools.</p> <p>UK students reported that they do receive access to library resources and have well trained and aware supervisors and library staff.</p>

	<p>The UK universities are offering several sources to seek meaningful information, which provides the students with adequate support to solve their research problems. However, they still experience information overload.</p>
<p>Role of Supervisors and academic librarian in guiding and encouraging students in developing search strategies</p>	<p>Saudi students describe an unsupportive environment in accessing the online database so that despite the availability of the latest search tools and access to international databases, the academic environment is not highly supportive of the development of the internet and online search strategies in Saudi Arabian universities.</p> <p>For UK students, both the faculty members and the academic librarians highlight the importance of accessing multiple information resources in order to gain an all-around comprehensive understanding of the topic under investigation.</p> <p>The faculty members are highly cooperative in suggesting various peer-reviewed journals that offer authentic and reliable information reflecting the latest research that is being undertaken in the study fields.</p>

	<p>For Saudi students, faculty and supervisors' contribution is very limited for the students studying in the Saudi universities as they give a high priority to the topic and are less focused on developing search strategies among the students.</p>
<p>Search strategies and Resource Selection Criteria used by the students studying in the UK and Saudi Universities</p>	<p>Saudi students report that they are using journals articles available in the library as prime sources of information and textbooks to understand definition and details of study concepts. Further, they are using the central library for collecting sufficient information along with the resources from conferences, seminars, and workshops that are all considered as informal information sources.</p> <p>UK students are using electronic databases for their ease and time saving. Google search engine is preferred by most.</p> <p>Saudi students use spelling normalisation and spelling mapping to search the required information. However, the use of such a strategy does not help them in providing specific information related to their research.</p>

	<p>Saudi students are facing difficulties in assessing internet and online journals to access pertinent information related to their research.</p>
<p>Challenges associated with the information-seeking behaviour of the postgraduate students of Saudi Arabia</p>	<p>Searching information through the internet is affected by the ease of use, reliability, contextual issues, web-based learning, and ICT knowledge of the faculty members.</p> <p>UK students use the databases that have the most relevant information addressing their respective fields. They face complexities that are associated with understanding the user interface of the library websites, the slow speed of some servers, and the availability of the computer terminals in the libraries.</p>
<p>Information-seeking in Arabic and English language</p>	<p>Search principles in the Arab countries are more focused towards the use of keywords and some specific rules of prefix and suffix, which do not provide the answers of the query raised.</p> <p>UK students are utilising Boolean search strategy, which helps them to have search results specifically related to their query.</p> <p>The UK-based students, due to higher fluency in English recognise the prestige issues of publishing in English and</p>

	<p>Arabic, choosing to search English language texts via English searches.</p>
<p>Perceptions regarding the students' familiarity with recent electronic resources.</p>	<p>UK students receive sufficient training and orientation in using electronic databases. The UK Universities provide all means to gather knowledge regarding the usage of electronic resources by appointing a specific teacher to enhance the practical knowledge of electronic resources used in gathering information.</p> <p>Saudi students do not receive much help from their tutors who lack knowledge and motivation to support them. The Universities face the issue of the lack of cooperation between the faculty members and graduate students.</p> <p>Saudi students are not familiar with the usage of electronic resources in the day-to-day information searching.</p>
<p>Advice given to new students to search for relevant information</p>	<p>Students should incorporate Boolean operators in their search to enhance their search results.</p> <p>New students should be well-informed about the electronic information search methods, which can help them to obtain valid and reliable search results.</p>

Table 6. 2 Key findings from interviews

Chapter 7: Discussion

7.1 Introduction

In Chapter Six we provided a broad discussion of the results of the questionnaire and interview studies. In this chapter, we turn to a comparison of our results with those of other researchers, in the form of a detailed discussion of the similarities and differences between our findings and those to be predicted by the Urquhart and Rowley Model. These lead to recommendations for areas on which KSA and UK educational institutions could focus in order to improve student performance and satisfaction.

7.2 The Urquhart and Rowley Model

The Information Behaviour Model highlighted by Urquhart and Rowley emphasizes two categories of factors that impact the students' information-seeking behaviour, the micro and the macro factors (El-Maamiry, 2017). The macro factors are composed of information source design, technological set-up, availability of information, and the organisational ethos. On the other hand, the micro factors' category emphasises the information knowledge, search criteria, the role played by academics in transforming the information behaviour of students, conduct and syllabus training, and training provision. El-Maamiry (2017) indicates that students have undeniably been influenced by macro factors that impact their information set as suggested by Urquhart & Rowley. The students at a Dubai university were influenced by their cultural factors to choose different information-seeking strategies, processes, phrases, and even take more time than those mentioned by Urquhart and Rowley showing that culture is an important macro factor.

Students are forced to look for information resources only guided by the teacher or cited in the course curricula. Urquhart and Rowley (2007) conducted an analysis of information behaviour of UK students in connection to resources in order to provide information electronically. This led to the development of a non-sequential model as demonstrated in Figure 2.6 of the literature review. In line with the authors' perspectives, this model can be used to identify and define the scope of subsequent studies in terms of factors that can be used as a set of variables which are used by studies like the present one (Urquhart and Rowley, 2007, p. 1196). The model is useful in bringing together both the micro and macro factors that affect the behaviour of information seeking in the context of academics. However, the model is still in its early stages of development and so far, no study has tested it empirically.

7.2.1 Micro Factors

Information-seeking behaviour is a term with wide-ranging meanings. It defines those practices that a person takes to articulate, acquire, assess, pick, and eventually apply the required information for accomplishing existing information requirements. Students from all parts of the world need information to complete the requirements of their education and prosper in their studies. For international students, this information search may become a challenge due to lack of information about the right sources, support staff and lower levels of language proficiency. The micro factors in the Urquhart and Rowley model (2007) are information search strategy, information literacy, discipline and curriculum, training and support, academics' information behaviour and pedagogy.

7.2.1.1 Information Search Strategy

In most cases, problematic situations during studies give rise to an information gap that needs to be satisfied. The requirements for information result in information seeking behaviour to satisfy

the need. Some of the information sources for international students are the Internet, the college libraries and their own fellow students. Major information needs for students tend to be for their studies, projects, and research work associated with their course curricula (Ge, 2010). Therefore, information sought by students is primarily for their academic purposes, which is why most students seek information from materials read in and out of class, especially from the college library.

The quantitative survey's findings in this research has shown that most students (39%) go to the library while some (25%) prefer to do this search from home. The most common sources of information used are friend/colleague (46%), search engines (e. g. Google) (33%), and electronic versions of databases/journals (69%) to search for academic information. It is to be noted here that students often use multiple strategies for searching information.

Research also shows that fellow students are an information source for their peers (Allen, McManus and Russell, 1999; Yuen and Majid, 2007). Apart from fulfilling the role of mentors who help in identifying the right sources of information, fellow students also help in finding moral support and alleviating stress among international students. Information Resources Management Association (2018) has revealed that students experience a richer learning experience by “researching for class papers, defending their thesis and communicating with fellow students” (p. 1172). In addition, the internet plays a vital role in the quest for most information. Studies exploring the limitations of virtual tutoring have revealed that students do utilize references given to them by their tutors in class as most of them yield valuable sources of information (Graesser and Person, 1994). However, several limitations in information seeking persist like lack of credible

sources, irrelevancy of results, and outdated information (Sin, 2015). These challenges need to be identified and addressed so that the international students can engage with their educational goals.

While in their home country, students of Saudi Arabia demonstrate a different information seeking behaviour which is influenced by their cultural orientation (Peeters and Oerlemans, 2009). If students have access to databases outside campus, they can also use their free time to access educational resources for their information-seeking. This is especially important in the context of Saudi Arabia as the conservative culture of the Arab world limits many students, particularly women, from having staying back at the university libraries so as to evade male and female interactions during the process (Xanthidis, Alali and Koutzampasopoulou, 2016).

Unfortunately, there are no studies which have explored information seeking strategies of Saudi students in the UK. However, other studies in different contexts have suggested ideas about the needs and strategies which may apply for Saudi students in the UK in their information-seeking (Spezi, 2016; Erfanmanesh, Abrizah and Karim, 2017; Thomas, Tewell and Willson, 2017).

In this way, the information seeking strategies of Saudi Arabian students in the UK are more efficient, reliable, informed, and of higher quality as compared to their counterparts in the Saudi Arabian universities. Overall, though students in the UK and t in Saudi Arabia have similar systems of education, the former have fine-tuned their information seeking strategies and adapted to the electronic media better.

7.2.1.2 Academics' information search behaviour

Supervisory assistance was another factor that affected the information seeking strategies of the students. It has already been discussed that lack of learning and development sessions for the students and the faculty members for information seeking affects their information seeking behaviour especially by limiting their knowledge of the library resources and of using digital medium for searching electronic databases. According to Lacovic (2014), teachers' support in retrieving information will help the students to receive some form of informal training and thus, improve their education quality. Supervisory assistance can also aid the students through guidance and support during the information seeking process (Spezi, 2016).

The UK interviewees have reported that their supervisors are well-conversant with using library and digital resources. However, the KSA students have reported that they do not receive sufficient guidance in this regard. At the same time, some UK interviewees have commented that though they have received training sessions on information seeking, their professor neither helped nor was very conversant with the use of electronic resources. Another interviewee from the UK however, negated this comment by stating that not only were they allocated a specific teacher to help with the information seeking, this help and support was also instrumental in maximising the potential of the electronic resources.

7.2.1.3 Information Literacy

Another important factor in information seeking is Information Literacy. The survey showed that the UK students (45.5%) receive more formalised training sessions about information-seeking than the KSA students (9%). The UK students also received support from IT service specialists (36.5%) while the KSA students rarely receive it (9%). The KSA students, however, were more likely to

seek help from the library staff (36%) than the UK students (9%). This difference may be a function of the earlier received training by the UK students, which made the need for help redundant.

Library awareness is another key factor that differentiates the KSA and the UK students. The KSA students were found to be significantly less aware about the available resources provided in the library compared to the UK students. This is a significant finding as it has already been discussed that the KSA students are more likely to go to the library and search among physical resources for their information needs. If the KSA students lack information about these physical resources themselves, it is a disturbing difference as the KSA students are anyways lagging behind in the digital resources search. The KSA students believed that they did not receive sufficient information skills training, they needed more services from the library, and they were less adept than their UK counterparts in using Interlibrary loans. The findings of this study are similar to those conducted by Liu (2016) who conducted a survey regarding Chinese academic library services in comparison to Canadian universities. The study found that Chinese students experienced challenges when using services in the library including interlibrary loans. The study suggested that this may be due to interlibrary loan services not being as well established in China as they are in Canada.

The KSA interviewees have also suggested that there is a lack of awareness about knowledge resources for information seeking especially the electronic resources. In fact, this view was shared by all interviewees with KSAS7 throwing light on the exact nature of the issue, *“The library officials are ready to help with the various electronic resources that are made available in the libraries. But my understanding regarding the usage of these resources is limited, and by asking the library officials they tend to answer only the presented query and as the reason for that I need to approach them again if I face any difficulty of a slightly different nature.”* It is understandable

that students will feel discouraged to ask too many questions about resources and how to find them. In fact, field observations showed that the library staff would lose patience very quickly if the same student asked too many questions. On the other hand, the UK students reported an easy search for books and journals by making use of e-catalogues for which they had already received training. All UK interviewees were of the same opinion that they had received ample training for library resources.

Al-Muomen, Morris, and Maynard (2012) have suggested that library awareness is a significant factor that can influence students' information-seeking behaviour. Additionally, Catalano (2013) posits that a lack of awareness of library services tends to be a common theme found in the literature on international student information behaviour. She also suggests that this lack of awareness could be because of cultural differences and a failure of the institution to provide outreach initiatives. The research conducted by D'Couto and Rosenhan (2015) also aligns with this study's findings. Their research discovered that students' awareness of resources provided by the library was increased through library instruction. Therefore, universities in KSA should consider improving their students' awareness of library services by ensuring that both lecturers and librarians are giving them more instruction about it.

Based on these findings, the researcher has suggested that the Ministry of Education, Saudi Arabia should launch an awareness campaign and formal programs for improving library resources. This is supported by research which suggests that the TV, digital media and social media will reach more people and educate a significant number of people explaining ways to use the internet and extract relevant information (Lorenzo and Dziuban, 2006).

Lack of information literacy skills is another barrier that hinders the culture of information seeking. Information literacy skills could be stated as the art of finding knowledge as per one's requirements or needs. It entails an extensive understanding of the modern online libraries which can only be achieved through familiarity (Fruster, 2016). Additionally, it can extend to awareness of automated tools for research, research techniques, as well as online formats. As such, it goes without mention that the importance of information literacy skills for the students is a disadvantage that students in Saudi Arabia face which greatly limits their potential to make strides in information seeking.

Another barrier to information finding experienced by students is language proficiency. Most students, especially those studying internationally, find themselves placed in situations where they are not as proficient in the relevant language as they should be. Ultimately, this translates to a lack of necessary skills for information retrieval since they lack a fluent understanding of operators, keywords, and phrases that are used when searching for information online. Differently put, these students lack information retrieval skills, thus, putting a gap between them and online information. Accelerant factors of this are a lack of awareness, shortage of staff, and poor or insufficient knowledge which cause students to experience difficulty in accurately retrieving information, online or otherwise.

7.2.1.4 Support and Training

The majority of the students in Saudi Arabia seek international schools for their post graduate studies (Taylor and Albasri, 2014; Rabia and Hazza, 2017). The migration to international Universities offers a unique research opportunity as the domestic and international students have varied experiences including information seeking behaviours. According to Catalano (2013), international students face a number of difficulties in attempts to reach their academic goals

including while seeking information. Some of these challenges revolve around challenges with adapting to the foreign language. Several international students with Saudi Arabian ones not being an exception, lack proficiency in the articulation of English words, speech, and grammar in general. This lack of language proficiency hinders their communication with their tutors and colleagues in school and notably alters their ability to comprehend their studies in a satisfactory manner. Several studies have demonstrated that students from Saudi Arabia have a unique language and, hence, specific language needs (Al-Hazmi, 2017; Alshabeb, Alsubaie and Albasheer, 2017). In Saudi Arabia, English has been introduced in the elementary classes only in 2004-05 which has prevented the students from familiarity with the language. At the same time, Arabic students face their own issues in learning English. Rass (2015) noted that Arabic students struggle to use the right transition words and coordinators while writing English. Al-Khatib (2001) had also reported that Arabs have a tendency to write longer sentences with many coordinators and conjunctions which can make it difficult for students to use the right phrases for online search of information. Almeahmadi (2012) has pointed out that Arab students repeat themselves several times in writing using many words to argue and elaborate on the same points. It takes them a lot of words to explain their main point which is evidently an issue when information search is required.

This lack of proficiency in the English Language makes students from Saudi Arabia anxious during their library work (Hanson, 2013). It is relevant to mention that the anxiety is caused by a lack of a sense of belonging in the native land, usually caused by the inability to express oneself in a way that other people can easily understand. In general, language issues faced by Saudi Arabian students limit their interaction with the library staff, other students, and tutors. The students face difficulties while writing and reading all of which hinder smooth learning. In such circumstances, the Saudi students need support and training to work and study in the English language.

The instructors from Saudi Arabian Universities lack enough skills and competencies especially when it comes to working with ICT (Ghavifekr *et al.*, 2016). As a result, it is difficult for them to extend any support and even encouragement for the Saudi Arabian students to use the electronic sources of information for information-seeking.

The training and development sessions for students would go a long way in improving the efficiency for all students' methods of seeking information. The findings of this study have suggested a present focus on their needs by an integration of the students' programs and course related requirements into the library instructional program. With such training students would be equipped with the necessary skills to search for content online with ease and take up minimal time while doing so. Moreover, if the education boards of the institutions would implement this as a regular program, the international students would learn information-seeking right at the time of joining the University about how to gather relevant information on various research topics (Rieger, 2009). A viable option to this end would be to have students engage in classes where they would learn the art of completing their assignments with the use of learnt online searching techniques. They would learn the progressive steps taken in the process of information seeking behaviour.

As is with the current dynamic technological society, learning and research too have made great strides in terms of technological improvements. As opposed to prior learning techniques where information was majorly retrieved from books, the modern world provides an opportunity where a vast range of information can be found online if properly researched. With these opportunities, teachers should incorporate a system where they teach their students online searching methods. Via good demonstrations, teachers should encourage the students to adopt online information searching in the quest for the completion of their given academic tasks.

Such training would also improve education quality if the students with the go-ahead from their teachers learnt to retrieve the desired information from the internet (Lacovic, 2014). This would motivate the students to further better their information gathering skills while the teachers, via effectively teaching them of effective online search methods, motivate and support them through the process. The role of teachers in improving the electronic information seeking skills of the students has been highlighted by the UK interviewees who say that they are assigned a specific tutor who is well-conversant with the library and electronic sources of information and teaches the students about them. This enables them to maximise the potential of all resources and hone their information-seeking strategies.

In fact, Richardson and McBryde-Wilding (2009) have said that the learning and development sessions for information-seeking can help both students and teachers in improving their knowledge. The teachers in the UK are supported by the Higher Education Funding Council for England which has provided the required infrastructure and equipment for electronic search. Moreover, they are themselves self-motivated to use the digital resources for communicating with students about their assignments and assigning them electronic resources for completing them (Hartley, Woods and Pill, 2005). Therefore, the UK students have an edge over KSA students as they receive more support and guidance from their teachers.

The results of this study suggest that students studying in KSA receive insufficient training on how to use printers to retrieve hard copies of e-resource information. In cases where these resources are available, they are of poor standards allowing only a disruptive access to information due to low frequencies and bandwidth connections (Maki, 2012). Also, libraries still use traditional learning

tools such as scanners and photocopiers instead of the current digital libraries which makes it difficult for the students to access and store information.

On the other hand, not only are the numbers of UK respondents in single digit percentiles when asked about the relevant barriers faced by the KSA students, the interviewees are also very positive about the information-seeking experience. Fast speed internet and good information literacy about information seeking are cited as the relevant factors for a good experience for the UK students. One important point to be noted here is that the UK students have had a student experience within KSA and are able to compare their infrastructure, supervisory assistance, and resource availability with what they had available when studying in their home country. This factor may be the reason behind an overwhelmingly positive experience for the UK-based Saudi students.

7.2.2 Macro Factors of Urquhart and Rowley Model

7.2.2.1 IT and Learning Infrastructure

Empowerment of the students with self-direction skills could also improve their search for information greatly. This could be achieved by the implementation of dependable internet sources both at the institutions of learning, as well as, in their homes. It would help the students learn about data independence, sharing, and exploration which could offer them the relevant exposure with information. The students' supervisors have a huge role in this which would be to mentor the students to channel online searching skills in the development of their education and academic targets along with their career advancement. Consequently, students have better chances of retrieving information online rather than doing so manually at the school library (Rawlins, 2009).

Overall, making open internet easily accessible to the students would ultimately translate to the improvement of their behaviour in the context of digital information searching.

According to the results from the survey, the teaching and learning style in KSA is traditional with more use of lectures and tutorials while the UK teaching relies more heavily on problem solving and critical thinking. As the UK students have also completed their schooling and even college education in several instances in KSA, they are more familiar and at ease with the traditional ways of teaching. This creates a learning preference within them for these techniques making an adjustment to modern techniques a challenge (Labib *et al.*, 2019). The interviewees have also commented on the lack of web-based learning opportunities during teaching to be a hindrance in their information-seeking online. This is supported by El-Maamiry (2017) who has reported that enhancing the information searching skills can have an affirmative impact upon the learning capabilities of students.

7.2.2.3 Availability and constraints to access

Within the academic context of Saudi Arabia, research shows that the information seeking process is retarded due to lack of facilities, access to information, lack of awareness about sources, and cultural inhibitors (Al-Saleh, 2004). Moreover, when compared to the UK, the strategies for information seeking behaviour in Saudi Arabia are way behind. This study's findings have clearly shown that when it comes to using the library to access information from electronic resources, students that have studied in KSA experience more problems than KSA students that have studied in UK. It is evident that the universities in the UK better equip their students with the skills needed to know how to search for information using e-resources in the library compared to universities in KSA. Libraries in the UK appear to have programs available for instructing international students

about how to use library facilities to search for information on the internet. On the other hand, it appears that KSA universities either have limited resources (e.g. computers and internet) or they do not provide their students with sufficient training at the library. However, the recent trend in Saudi Arabian universities for incorporating e-learning and the use of electronic sources as a strategy in information seeking is a step towards improvement (Hussain and Ahmad, 2014).

Al-Saleh (2004), reports that insufficient instructions, little skills and little proficiency in English language among students in Saudi Arabia is the core reason why their strategies are different from those in the UK. This study's findings are similar Zhao and Mawhinney (2015) who compared the challenges that native Chinese speaking students and native English speaking students experienced at a Canadian university. Their study found that because of the limited English language proficiency Chinese students faced more challenges when searching for information.

Where almost half the KSA students were vocal about facing issues in accessing the internet, only 7% UK-based Saudi students felt so. Moreover, 42% KSA students had difficulty in getting access to computers while only 8% UK-based students reported it. A key hindrance in gathering information for students is insufficient funds to acquire well-equipped ICT facilities. It is not uncommon to find in Saudi Arabia that educational institutions fail to get enough funding to set up modern ICT tools. For this reason, the costly online learning resources are not available for student use which hinders or limits their ability to access academic information online.

The findings of this study align with that of Ahmed (2014)'s who investigated the current status of public university libraries in Bangladesh. The researcher found that the students had a limited access to computers which was preventing them from gaining adequate knowledge about

information search and the use of e-resources. These sentiments are supported by Ganaie and Rather (2014) who studied the information seeking behaviour of postgraduate students of the University of Kashmir. They found that it is important to provide students with access to quality information resources and prevent obstacles in accessing information resources in order to positively influence their behaviour while seeking e-resource information. While it is important to know how to get access electronic information like articles through computers, some users may also prefer to print those articles so they can have hard copies for reading. Also, access to resources like printers, the frequency of cartridge replacement, paper etc. can also play a role.

66.5% KSA students said they faced issues with access to printers but only 3% UK students reported it. The latter's lower numbers are also indicative of the rare need for these students to need a printer as most of their course and research resources are available electronically. In fact, 58.5% KSA students reported issues in accessing e-journals while only 13% UK students had troubles doing so.

Even the interviewees have reported that the library website interfaces are very difficult to navigate through. This insight coupled with the knowledge that there is no training or awareness program and limited supervisory assistance for the KSA students shows their predicament. Further, interviewees have revealed that the number of computer terminals in the library are also limited and face several issues that interrupt the internet several times during a single login session. Thus, the KSA students lack a good experience which dampens their information gathering skills.

7.2.2.4 Organizational knowledge and Culture

Culture plays a significant role in the direction of information seeking behaviour for students in the UK, as well as those in Saudi Arabia. Each culture presents a differentiated approach to various aspects of life with information seeking strategies notwithstanding. Based on the respective norms of the society, various behavioural aspects such as secrecy and deception with regard to information can be attributed to the external culture (Maybee 2006). Numerous studies have explored and revealed that the student's behaviour with regard to information seeking can be directly attributed to his/her culture. Therefore, the students' cultural origin may have the effect of either promoting or hindering their behaviour of information seeking. In respect of this study, the cultural and religious limitations on the social interactions between men and women in Saudi Arabia may affect the latter's choice to ask for help and to spend greater time in the library seeking information. However, it should be noted that the interviews did not reveal any such information.

This study has shown that most Saudi students in the UK find the library materials irrelevant and instead utilize information gained from internet sources, media, technology and research. In contrast, students in Saudi Arabia rely more on acquired information from their library materials and books rather than reverting to digitally gained information. Even though students in the UK from Saudi Arabia find it difficult to keep up with the pace of international students coming from the developed countries of the West, the fact remains that they have a competitive advantage over their fellows in Saudi Arabian Universities.

Research has also shown that the language needs of students from Saudi Arabia is linked to their culture (Alqahtani et al., 2011). The cultural differences among students from Saudi Arabia and the Western nations alter information seeking behaviour in the UK. During the process of seeking

information, it is more likely for students from Saudi Arabia to face expressive challenges when compared to Saudi students in the UK given that they are not used to most learning approaches in the UK (Palmer et al., 2009). This study's findings have shown that the search strategies for the UK KSA students are narrower and more focussed. They are also more likely to use the Boolean search and phrase searching which allows them to save significant amounts of time and resources. while the KSA students use Arabic streaming strategy where different combinations of a keyword are used for searching information with prefixes and suffixes which increases the search time and compromises its efficiency. Therefore, there are differences between the UK and KSA students in their information-seeking behaviour and strategies.

Safahieh (2007) presents a survey of the information-seeking behaviour of multicultural students studying at San Jose State University. The methodology used involved a questionnaire tool that was used in data collection. The outcomes of the study indicated that the length of the stay in the new nation was an aspect that substantially impacted the students' information- seeking behaviour in the orientation desk for cultural blending (Peters and Oerlemans, 2009). The authors further found that those students who had lived in a foreign nation for over 16 years posed reference questions more regularly than those who have been there for 15 years or less. They demonstrated that the duration of the stay regulates the extent to which students from overseas nations feel acclimatized with the society and, hence, are contented with using libraries and posing reference queries. This particular study proposed an effective library service for the international students though reporting that the creation of multicultural communication skills among librarians is required.

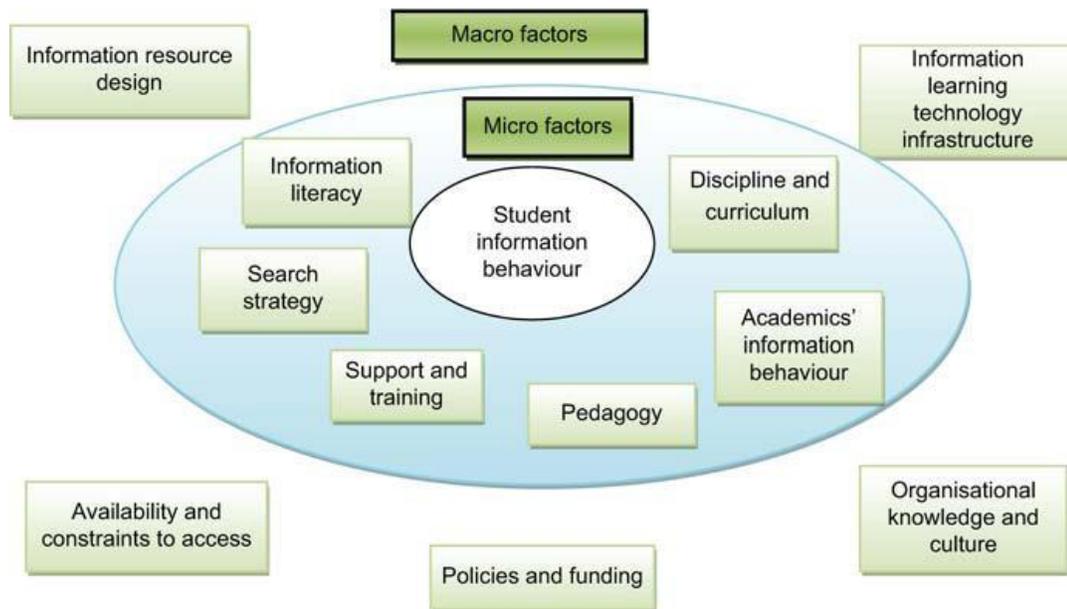
7.2.2.5 Policies and Funding

The policies and funding available to the students also influence their information seeking behaviour. Since funding and policies directly relate to the aspects of information literacy, economy, student-centred learning and learning in general, they control much of what happens education-wise in the institutional, regional, and the national level. Funding received by any given institution if put to correct use could translate to better quality of education for the students, even in terms of necessities needed to engage in information seeking. Similarly, policies influence how educational institutions are run, therefore, policies geared towards the promotion of information seeking behaviour could definitely improve their efficiency (Rainie, 2000). The two coupled together could have institutions aligned to produce globally competent students, who are well manned with skills to compete internationally.

Several suggestions for improving information-seeking at the policy level were received from the interviewees. The first one was to create a formal learning and development program for faculty members who could, in turn, teach the students. One interviewee suggested that a separate course could be created about information-seeking so that they get to learn the different and useful internet search techniques on a daily or weekly basis. The second was to ask the teachers to motivate the students so that they continue to work hard in honing their information seeking skills. Such student-faculty collaboration will encourage the international students to ask questions from the faculty and build a better relationship with them. The third was to ask the Universities to provide access to international electronic databases which would give them access to rich sources of information.

7.3 Applying the Urquhart and Rowley model

There are several reasons substantiating the choice of *Information Behaviour Model* from the perspectives of Rowley and Urquhart (2007). Firstly, the framework that is offered by the model is universal and has several aspects incorporated in the earlier models. The second justification is that the model is diagrammatically presented, assisting in the interpretation of the relationships between the variables easily. The third reason is that the model is mainly used to analyse and investigate the behaviour of the students towards information-seeking. In addition, this model can be integrated with a well-tested model such as Wilson's model of information behaviour. Hence, the Rowley and Urquhart's model is a newer model but at the same time, a less tested structured model which has proven to be more geared towards an Internet-based setting.



Source: Urquhart and Rowley (2007)

Figure 7.1 Urquhart and Rowley (2007) model

With relation to micro factors outlined by Urquhart and Rowley (2007) focusing on information literacy, there is no rooted course on information knowledge and the researchers are content with library induction for the use of information resources by freshly admitted graduates. There is a serious probability that students are not informed about e-tutorials, so there is a need for academic institutions to market this service that will moderately address the challenge of instruction for a maximum exploitation of the library resources. Considering that both the KSA respondents of the survey and the interviewees have indicated that they have not received sufficient training and are not aware about the library and electronic resources, this need is particularly pressing for these students. Giving access to databases outside the confines of the campus is highly preferable with 88% of students in the study learning electronically at their own free time. This limitation may be due to the conventional culture of the Saudi Arabia which has bound several students and particularly women to access information at home so as to avert male and female contact in information-seeking ventures.

Urquhart and Rowley's model stipulates that students use electronic resources with restricting teacher's assistance as educated people along with guidelines from fellow students (Safahieh, 2007). As cited, there is a need of academics to play a pivotal role to enhance information seeking behaviour of students as they are knowledgeable resources and more likely to be consulted by the students. Alazemi (2015) claims that an increasing number of studies have centred on information-seeking behaviour to discover the information-seeking process. Considering tremendous technological advancement in the University education and teaching worldwide, there is some evidence that students' information seeking behaviour and the use of electronic resources is influenced by information literacy barriers. Therefore, information literacy skills are a key focus

so that students should not suffer while navigating to authoritative and high-quality information sources.

Gaining access to databases outside the campus environment is a preference for students, implying that they prefer to access information resources at their own spare time, in a place of their own convenience rather than the library. Urquhart and Rowley (2007) designed a model that acknowledged both micro and macro factors that influence students' information-seeking behaviour in accordance with the electronic and digital information resources to support knowledge acquisition in schools. In other words, the library is no longer the only place to satisfy students' needs which makes resources availability online an important consideration.

Taking the tremendous strides made in technology development in university education and teaching, it is expected that future students' information seeking behaviour will change too as every level of their study will be online. Information literacy skills will be a key focus from pre-university level onwards. While the country is heading towards smart learning, students will no longer struggle with using software applications and will easily navigate electronic resource interfaces and fully utilize digital tools and available information with no struggle with basic electronic resources functionality.

Understanding information-seeking behaviour is essential in identifying user search methods and predilections for information resources. Different micro factors influence users' behaviours when they are looking for information, counting information literacy and search strategies. Urquhart and Rowley (2007) observe that future research might assess the link between the level of student, discipline, (for both undergraduate and postgraduate) and information behaviour, and the effect of

various levels of comfort in relation to accessing resources of information in digital form. In the current study, the information-seeking model of Urquhart and Rowley provides the theoretical framework as this model matches the identification of the components affecting the behaviour of information seeking graduate students.

The capacity to have access to networked resources from home is a key learning opportunity for students. This implies that for KSA students who prefer accessing information at home, a chance to access universities' licensed digital resources from home is highly valuable (Alazemi, 2015). The Urquhart and Rowley (2007) model were specifically designed to correspond to the students' information behaviour when they are using electronic information resources. A commitment of the purpose-based utility will be demonstrated by the application of these models, and it will provide a reference to the impact that the education of UK has had in influencing the behaviour of the graduate students that are seeking information.

This study's findings resonate with the study of Desta, du Preez, and Ngulube (2019) who investigated factors affecting the information-seeking behaviour of postgraduate students at the University of South Africa's Ethiopia Regional Learning Centre. They assessed their participants' computer literacy skills and found that most of them were not competent information searchers and would likely need to be trained in using computers to search for online information resources. The researchers concurred that information search skills via computers can influence the use of electronic information resources such that if a student has a low level of information-searching skill, it will have an adverse effect on his or her use of e-resources.

The Urquhart and Rowley model basically suggests that macro and micro factors affect the student information behaviour. Though this study has not explored all factors in these categories in complete detail, yet it has managed to support this model as a viable, valid, and reliable tool to assess the factors that influence information-seeking among students. Given an opportunity, I would prefer to use the same model to analyse if there are differences between different universities within Saudi Arabia with respect to their students' information seeking behaviour depending on the factors mentioned this model. At the same time, this model will need to be modified if used in a qualitative study as it has many factors which cannot be included in studies conducted at this level while study projects with funding from the government will greatly benefit from its wholesome approach.

This study has, hence, strengthened the Urquhart and Rowley model by providing more evidence to support its findings and showing other researchers' how it can be used. In this respect, it has joined the ranks of Al-Muomen, Morris and Maynard (2012) who also found evidence that library awareness, information literacy, gender, nationality in demographics, and other factors all clubbed in organizational and environmental issues affected the Kuwaiti students' information seeking. Therefore, the only limitation of this model in the context is that it is difficult for researchers to do full justice in exploring all listed factors by the researchers in the model.

7.4 Recommendations for Enhancing Students' Information-Seeking Behaviour

The findings of this study have suggested several areas of concern which are impacting the information seeking for KSA students. Addressing these areas of concern is very important as information seeking is a precursor for achieving academic goals and achieving a good education.

A possible recommendation to enhance the information seeking behaviour of students is to bypass information from websites and other online sources in favour of electronic databases which offer more reliable sources of academic information. Although websites are a good source of information, information sources from journal databases offer similar if not better data which is better suited for academic purposes. Such sources include databases such as EBSCO and Elsevier which are renowned for their authenticity. It would help a student's case if he/she was fully aware of the purpose or rationale behind the assigned academic tasks, so as to fully understand what they are looking for in the search. As such, they would search the appropriate sources and quickly get the information they need especially in such databases. This would create more enthusiasm in the students with regard to information seeking, thereby, enhancing their skills and improving their information seeking behaviour.

Another recommendation would be to encourage the use of online search engines. Given that most students fail to engage in information seeking since they often fail to find the needed results, search engines would greatly help to this effect. This study's findings also suggest this and are consistent with other studies that discovered that general search engines were the preferred strategy, as well as, the main point for access to sources of information while information-seeking (Kostagiolas, 2012).

They could be channelled to help the students to complete their academic assignments or even support the need for knowledge to support their career development. Search engines can significantly improve the rate at which information is navigated online saving time. As such, search engines can help graduate students better synthesize information and, thus, promote their search behaviour.

Promoting the creation of an environment that promotes information seeking is best approached by the development of relevant policies. Such policies could entail the development of programs that foster the growth of search skills for the students. More so, these programs should be integrated in the various institutions of learning, making them easily accessible. Some of the activities conducted in such programs would entail step by step procedures on how to go about extensive searching. Moreover, campaigns could also be developed all over the institutions to better advocate for information searching along with the benefits they bring forth. To assure the success of these programs, incentives could be issued to ensure optimum student participation. This would inarguably foster an environment in which information seeking behaviour is embraced, thus, ensuring the adoption of a culture where students actively engage in online searching techniques.

7.4 Conclusion

This chapter has presented a comprehensive discussion of all the findings associated with this study about the impact of UK education on the graduate students of Saudi Arabia in their information-seeking behaviour. The major objective of this chapter was to present a discussion of the findings using relevant literature review to support the statistical and qualitative results. The strategies for information seeking behaviour in Saudi Arabia are way behind than the ones utilized in the United Kingdom. The discussion shows that insufficient instructions, training and awareness, little skills, and lack of proficiency in English language among students in Saudi Arabia are some of the core reasons as to why their strategies are different from those in the UK. Lack of information literacy has been raised as one of the barriers that hinders the culture of information seeking. Lack of information literacy, in turn, impedes knowledge acquisition among Saudi students in the UK. The conclusions and recommendations can be applied to help Saudi students in the UK to achieve their academic aims.

Chapter 8: Conclusion

8.1 Introduction

This chapter summarises this research project by presenting the conclusions from the discussion, which was in turn based on the analysis of the findings. The objectives of the project addressed the impact of a UK education on the information behaviour of Saudi Arabian graduate students, with data gathered by a questionnaire and interview study, along with the critical review of literature. This chapter covers the contribution of the study, limitations of the study, and the implications for future research and practice.

8.2 Contribution of the Study

This study has explored the information behaviour among Saudi Arabian students studying in the UK and within Saudi Arabia in order to gauge the contribution of a UK education to the development of skills in this area. It has explored the information seeking strategies for both groups of students with the investigation of the key factors that influence their search, based on the structure introduced by model constructed by Rowley and Urquhart (2007). The primary barriers for information seeking have also been identified. Finally, this study has also explored practical recommendations for developing a more effective and supportive learning environment for information seeking by Saudi students.

This study has contributed to the theoretical understanding of the information-seeking behaviour of students in education and, to some extent, filled the gap related to the exploration of the topic in non-Western cultures. It has used an existing and less tested model of information behaviour which has not been applied before in Saudi Arabian universities. In addition, its findings have also led to

practical suggestions that can act as a starting point for institutions in Saudi Arabia looking to advance the information-seeking strategies in their teaching and learning.

Apart from these theoretical and practical contributions, the strength of the study also lies in its mixed-mode methodology involving multiple groups of participants. This has provided a holistic, in-depth view of the behaviours and attitudes of these groups and highlighted the differences between them as far as the information-seeking behaviour in education is concerned. Such a study comparing the behaviour of two student groups using a mixed methodology has not been observed in the Saudi Arabian higher education context. The use of a mixed methodology with multiple data collection methods has increased the suitability of the data and findings for future researchers.

The following research questions and objectives were explored in detail:

Objective 1: To investigate the differences in information-seeking behaviour strategies among postgraduate students in Saudi Arabia and Saudi students in the UK in terms of their ability to search for content online for the purpose of research.

This was the over-arching objective of the study.

Objective 2: To understand the impact of the UK education system on Saudi graduate students' information-seeking behaviour.

1. What are the differences in information-seeking behaviour strategies between the graduate students of Saudi Arabia and Saudi students in the United Kingdom?

Although the use of electronically based information among Saudi Arabia students has been increasing, in contrast to the UK students the usage rate was found to be lower for the Saudi students, due to insufficient instruction and skills. The students in the UK are more inclined towards using both digital databases and technologies and other useful devices for content or information searching. The information-seeking behaviour of the UK-based students shows a successful integration and appropriation of digital resources and content. The easier

accessibility or availability of e-learning for the students in the UK is better than in the developing countries, which has made a difference in their information-seeking behaviour. This is why the preferred location for information-seeking for the UK students is the library but it is home workstations for the Saudi students. UK students used the search engines, library's online databases, and electronic journals for their information search while the Saudi students used the search engines even more and preferred their personal contacts over all other modes of information search. They even chose to approach personal contacts and even their teachers over the library staff if faced with a problem. As expected, the students studying in the UK preferred electronic journals and databases while the Saudi students preferred physical searches in the libraries. Consequently, as expected from the field observations and the qualitative study's results, the Saudi students differed significantly in their information search from the UK-based students.

Objective 3: To identify the factors that influences the information-seeking behaviour of Saudi Arabian postgraduate students in KSA and in the UK.

2. What are the key factors that influence information-seeking behaviour in graduate students (cognitive, research environment, role-related, faculty members, instructors, demographics)?

In the factors found significantly associated with the information-search behaviour information literacy, teaching style and supervisory assistance, library awareness, and the problems faced in information seeking were all significantly related to the information search. Another factor highlighted in this research is linguistic skills, which affect the online search in the information behaviour of Saudi Arabian students.

Objective 4: To understand the barriers experienced by Saudi Arabian graduate students trying to find information related to their academic study within the Saudi and UK education systems.

3. What are the key barriers experienced by Saudi Arabian graduate students in the UK during online information seeking? How do these barriers affect their information seeking?

Accessibility issues with infrastructure, internet, and printers, the lack of facilities, technical know-how, and lack of assistance are some other issues that are faced by the students from Saudi Arabia in the UK while English language proficiency is the main issue in the process of online information exploration. The Saudi students begin to learn the English language only from intermediate school level, which impacts their basic literacy skills in later life. The students who leave for studies abroad are forced to take up additional courses. This research study has also covered information about domain knowledge to address its impact on information search behaviour. Domain knowledge is directly linked to the search strategies and information search skills.

For the Saudi students in KSA, awareness of how to begin research in the library and satisfaction with the available resources itself is low. This is alarming as these students rank physical resources available in the library to be their first preference in information search.

Objective 5: To identify the information needs of postgraduate students in terms of fulfilling their academic purposes (for example, coursework, projects, theses, dissertations).

Objective 6: To provide recommendations for enhancing the information-seeking behaviour of graduate students in KSA, and for improving the information environment.

4. What are the procedures that can be implemented by research institutes or universities in order to improve the information-seeking behaviour of students from Saudi Arabia?

The most important procedures for policy makers are to supply sufficient infrastructure in the form of computer terminals, electronic databases of all library resources, high speed internet, and availability of all electronic resources through the internet at the convenience and place of

choice of the students. This is important as without the resources the students are lagging behind international students while cultural and institutional barriers prevent them from accessing the physical resources.

Secondly, the policy makers have to initiate training of the library staff for using electronic databases and supporting the search for the students. Without this training, the practice of using electronic and physical resources to their potential will be very difficult to develop amongst the students.

Thirdly, language skills need to be improved for the Saudi students which may have implications far beyond the scope of this research. For instance, lack of English-speaking skills may make students underconfident and affect their ability and motivation to participate in the classroom learning. This study has shown that the information search through search engines is affected by the phraseology used by the Saudi students where their knowledge of Arabic is affecting the terms, they use to initiate searches. In such circumstances, it is evident that authorities have to encourage the introduction of English as the second language at the early stages of schooling itself.

Looking at the differences in the information search behaviour, cultural dimensions and differences between Saudi Arabia and the UK also play a role in the relationship. All the identified issues from the survey and interview data such as little technical or online search skills, lack of English proficiency, insufficient instructions, training, and teachers' support in Saudi Arabia have indicated ineffectiveness of education strategies that should support the information-seeking behaviour among the students. The Information Behaviour Model

developed by Urquhart and Rowley has been particularly useful in explaining the major factors both micro and macro which are affecting the education of Saudi students with respect to their information behaviour and skills.

The amended Urquhart and Rowley model are very similar to the original with the exceptions being information resources design, policies and funding, organizational knowledge, and discipline and curriculum, as they required a separate source of enquiry which would have been beyond the researcher's current resources. The sections covered in micro factors in Urquhart and Rowley's model including *Library Awareness*, *information literacy*, *search strategy*, *pedagogy* (teaching and learning style), with *support and training*, *academics' information behaviour*, After the analysis of the finding, new factors emerged which are *Linguistic skills* and *Domain knowledge*.

The macro factors in the model were explored through university-related information, (*information learning technology infrastructure*), the *availability and constraints to access* and *Culture* was also covered in the challenges faced in the information section. Similar to the Micro factors new Macro factors have emerged after careful analysis; they consist of *Internet connections* and *Lack of facilities*.

The KSA government is also a beneficiary of this research as it has provided insights into the barriers in the learning of its students. As infrastructure, teacher and library staff support and lack of English language skills have been found to be lacking in Saudi Universities, the government needs to pay attention to these areas. As part of its Vision 2030 program, the government aims to have at least five of its universities in the top 200 Universities of the world

(Vietor and Sheldahl-Thomason, 2018). It has been recommended that the achievement of this goal is possible only if higher education see several reforms (Saudi Arabia, 2016). Therefore, these findings are important for the Saudi government as it shows that digital infrastructure, teacher and staff training, and exposure to digital skills and English language are important to improve higher education outcomes in the country.

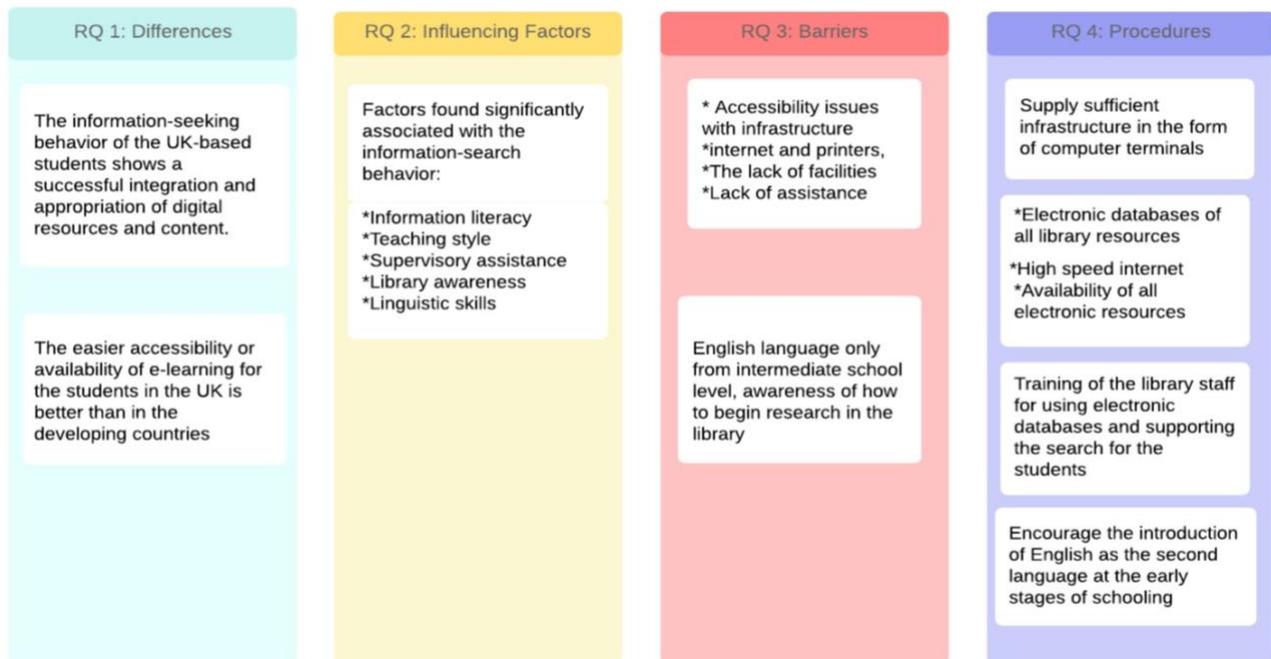


Figure 8. 2 Research questions

8.3 Limitations of the Study

The following limitations should be considered by all future researchers while using this study's findings:

- One of the limitations of the current study is that the findings have revealed a strong influence of the Saudi pedagogical culture on several aspects of the participants' behaviour.

While this is useful and interesting in the context of the current study and helps to fulfil the aim, it nevertheless means that the findings cannot be generalised to other contexts as it is hard to predict the changes in behaviour in the absence of cultural influences.

- The participants belong to the higher education community which can also influence their information behaviour through its own subcultures, and also, the different life stage of the participants making it important to consider before applying them to students from primary or secondary schools. Moreover, the participants of the current study belong to large, technologically advanced Universities in Saudi Arabia. The students in these Universities are likely to have skills and advantages over those studying in, for example, small rural Universities. As a result, the findings cannot be generalised to the broader population without further research and analysis.
- Another limitation of the study is that the results may be skewed due to self-selection bias as the initial survey was voluntary and administered through the online media. While it can be argued that the use of technological devices and social media is extremely common nowadays and there would hardly be any users unfamiliar with them, the possibility of bias must nevertheless be acknowledged. The only way to eliminate the bias would be to conduct further research with larger and completely random sample sets.
- It was challenging to find graduate students in Saudi Arabia to fill the survey online. Moreover, the researcher had to ask them to fill it manually due to lack of computer and internet facilities. Future researchers should, therefore, be prepared to cast a wider net through a bigger sample size than their final size to meet the target. Also, they should

use a wide variety of approaches to ensure their respondents are comfortable and able to share their opinions with as few barriers as possible.

- As discussed in the methodology, the impact of the researcher's own involvement during the qualitative research could have been a source of bias. Acknowledging this impact is important as not only is the research topic of personal interest to the researcher, but the researcher herself is a higher education student who has previously studied in a Saudi higher education institute. While it can be argued that the researcher's experience is necessary in this context to make sense of certain aspects of the participants' attitudes and behaviour, particularly those related to Saudi Arabia's culture and education system, it must nevertheless be acknowledged that the findings are representative of a single viewpoint or perspective.
- While several factors have been considered which impact information behaviour, there are many others that could not be accommodated in this study's design. The research subject of the information behaviour of the students from Saudi Arabia in the UK University covers several subject areas. The influence of study discipline on information search could not be explored. Thus, further research comparing information behaviour across a number of disciplines would be of interest, in order to identify domains where UK experience was particularly valuable or distinctive.
- It is important that future research looks at more universities within the UK and Saudi Arabia, as well as, other nations where a sizeable proportion of KSA students migrate

for studies. A wider scope of such studies will help in assessing the impact of other factors like cultural differences in information seeking.

- In some more of the issues that need further light are the influence of getting a master's degree abroad on the KSA students when they return to the country. The expectations of these students need to be understood better as they will help in building insights how KSA can ensure they do not suffer brain drain and are able to encourage students to return for their PhD courses in the country.
- Finally, the findings of the study represent attitudes and behaviours at a particular point of time and do not consider changes that may occur over time. This is a limitation given the rapid rate at which behaviours and attitudes generally change. This limitation can be addressed by conducting annual or bi-annual reviews to track changes in trends.

8.4 Implications

It is hoped that the coverage of the issues that obstruct information-seeking behaviour and a study culture in Saudi Arabia which are identified in this study will contribute to bringing a substantial change in the current education policy strategies. It has been gathered from this research that the development of programs for behavioural information development could be a useful tool for the growth and development of the students from Saudi Arabia.

This study's findings about information seeking behaviour of Saudi students has practical implications for bringing forth changes in the current educational pattern and strategy. The

knowledge of factors, challenges and constraints in fostering online search skills and information-seeking behaviour will be useful for the current education administrators and policy makers. Using the findings, the policy makers can build an environment for improving search skills so that valuable and latest information is accessed with greater ease by the students while studying in a foreign university with international students.

The knowledge of factors including information literacy, search strategy, pedagogy or teaching and learning style and library awareness with relation to the information-seeking behaviour is advantageous to understand the impact of each factor. From the analysis, it has been inferred that information behaviour is affected by information literacy. This implies that it is essential to provide the supportive facilities for the students to develop their online search skills and information behaviour.

The wider difference in the style of teaching and learning between Saudi Arabia and the developed nations that has been identified in the quantitative analysis would have implications for the real practices in pedagogy. Changing the traditional lecturing style widely followed in the KSA to a system foregrounding student participation and initiative is a priority.

Even library awareness, which has been explored in this research study, has also indicated differences in the students studying in the UK and KSA that can be useful for the educational decision-makers to make significant changes in the services provided for education and awareness of the students. The considerable development of the students would have a direct implication on the country's development while building more professionalism in them. Information-seeking factors have a positive relationship with behavioural development of the

students who need this skill throughout their professional lives. Therefore, by investing in the development of this skill, the education policy makers can build a more robust and responsive labour force for the industry.

Further, the knowledge of significant barriers faced by the students in the KSA in promoting information behaviour when compared to that of students in the UK such as lack of supportive infrastructure and internet accessibility has also assisted in extending the knowledge of what areas need urgent attention of the education authorities whether at the state or the institution level.

The overall findings would be useful to bring many changes in the educational system of Saudi Arabia. Information behaviour of the students is not only supportive of developing search skills but is also directly interlinked with their knowledge development as it provides access to wider and more useful information from different domains. Finally, the findings have implications for future researchers who will find several opportunities for further exploration which are presented in the next section.

8.5 Recommendations

A set of proposals for public policies and strategic interventions that are aimed at improving post-graduate students' success in information-seeking in Saudi Arabia are suggested here. These are intended to operate at two different levels:

1. Institutional level for promoting better information seeking strategies.
2. Governmental level for promoting better information search skills.

Recommendations for Institutions

In order to improve the information behaviour of students, institutions need to adopt certain strategies (Maki, 2012). First, they must invest more in training and development sessions for online content searching. This practice should be adopted by schools before students enter higher education to better prepares students. Institutions could organise classes where students practice completing their assignments with the help of internet search (Maki, 2012).

As per the OECD (2012), institutions today promote quality teaching which involves teachers improving the learning of students and, at the same time, improve their own teaching methods with trends showing that teachers are promoting online search methods to students. Teachers can motivate students to adopt online search techniques for accomplishing their academic tasks and produce better quality work.

Institutions can also develop an environment of information seeking among students by making online searching for information mandatory. It has been observed that organisations require candidates with developed search skills as they help the organisation grow by developing new strategies (Strom and Strom, 2015). Therefore, information seeking strategies developed by educational institutions at the initial stage can help students in their future also.

In the view of Blummer and Kenton (2014), presence of Internet facilities at universities and homes promote independence in data exploring and sharing in students. This provides students with self-direction skills which are important for their career development. Students can gain access to more information online when compared to a manual search in a university library. Firstly, the supervisor must make the students understand the requirements of the task (Blummer and Kenton, 2014).

Further, the supervisor can guide them in exploring suitable sources and developing strategies for gathering relevant information regarding the topic. Lastly, the supervisor should guide students to present the gathered information in the most effective manner (Blummer and Kenton, 2014). The following table summarises the recommendations also suggestion of time-scales.

Recommendations for Institutions	Methods	Time-scales
1. Invest more training and development sessions for online content.	- By organizing classes adopted by domains.	Short term
2. Teachers to improve their own teaching methods.	- Promoting online search methods - Motivate students to adopt online search techniques.	Short term
3. Develop an environment of information seeking among students.	- By making online searching classes for information mandatory.	Long term
4. Supervisors support	- Guide students in exploring suitable sources and developing strategies. - Guide to present the gathered information in the most effective manner.	Short term

Table 8. 1 Recommendations for Institutions

Recommendations for Governments

Governments need to develop certain policies regarding the improvement of the information-seeking behaviour of students. These skills of a student not only help in accomplishing their academic targets but can also help them find better suited jobs and search for suitable options for further studies. In Saudi Arabia, no current government policies could be identified in this regard. El-Khayat (2016) reflected that the government should motivate institutions to improve the

information behaviour of their students. Another way would be appointing some government employees in the universities who could guide the students in their information seeking (El-Khayat, 2016). These employees could be librarians as most students go to the library every time they are provided with an assignment.

Turkington (2014) noted that certain online databases provide a good source of information to students but are not publicly accessible. Therefore, the government could provide access to some of these databases to improve the availability of information.

Training in information seeking should start as early as primary school so that the students become well versed in computer basics and the ways by which they can easily acquire the required information at an early age (ISLS, 2013). This will not only reduce their time and effort but also help in increasing computer literacy in the country. The following table summarises the recommendations also suggestion of time-scales.

Recommendations for Governments	Methods	Time-scales
1. Develop policies.	Appointing some government employees in the universities.	Long term
2. Access of these databases.	Provide a good source of information and databases subscriptions.	Long term
3. Training in information seeking.	To start as early as primary school.	Long term

Table 8. 2 Recommendations for Governments

8.6 Researcher Reflexivity

I have been interested in the Information seeking behaviour of Saudi students in the UK ever since as a Saudi Arabian female student, I and my classmates have struggled to find the information we have been looking for. I realised that a lot of things that work in the UK can work in my home country but there are several barriers that prevent them. In Saudi Arabia, there are a lot of different cultural rules, gender norms, and a conservative society. However, I also feel that though we would like to see Universities in Saudi to be similar to the UK ones, we need more information about why there are differences between the two countries. As I explored the subject more, I realised that earlier studies also support the idea that students in Middle Eastern countries want to improve their information behaviour. My study has particularly explored the information-seeking behaviour of students and the differences in their strategies between Saudi Arabia and Saudi students in the United Kingdom. This is an important topic as government of Saudi Arabis has undertaken significant initiatives to overcome the absence of access to adequate IT infrastructure and facilities which may hamper research. Still, there is a large gap in this field which suggests that for improvement in academic research, we might need to look elsewhere - to the researchers' skills and knowledge. Though IT infrastructure and online databases are present, they are not optimally utilised. My own position as a Saudi student has made it possible for me empathy and awareness regarding the prevalent databases, Internet-based tools, and the students' attitudes towards them. Also, my own status has been useful in reaching out to the student community who have been a part of this study and in interpreting the meaning of several Arabic phrases used by them. At the same time, I had to make sure that my own status as a student did not affect the research process.

I also feel that a UK researcher would likely not have got the same results because the findings of the current study have revealed a strong influence of the Saudi pedagogical culture on several aspects of the participants' behaviour. It is hard to predict the changes in behaviour in the absence of cultural influences and my own position as a Saudi student has been helpful in this regard. Further, the findings of the study represent student attitudes and behaviours at a particular point of time and do not consider changes that may occur over time, which is why a subsequent research may not reveal the same findings. At the same time, the fact that a reliable and valid research methodology was used to arrive at the results does imply that anyone else conducting the study should also receive the similar trends in the findings.

The main advantages of this research have been filling the gap in literature regarding the lack of research in Saudi Arabian context, adding the contextual element of Saudi Arabia to the existing body of literature, and providing practical suggestions that can act as starting point for change in policies and practices within the country. There is also certain limitation associated with the study which include the sample. I have included only two Saudi and 2 UK Universities in the research due to time and other resource constraints. The included institutions are large, public, and technologically advanced Universities which may differ in their infrastructure and other aspects with smaller universities or universities in rural areas which do not have a good technology access. Also, the research findings may become inapplicable and obsolete after a point of time so there will always be a need for further research.

Among the avoidable limitations, earlier I considered using only qualitative methodology because I felt I needed to explore the behaviour of students in detail. However, I later realized that I also need to study the prevalent attitudes among the student population which made me change the

research methodology to a mixed design later. Also, I would have liked to include more Universities in the survey but had to limit to them 3 because of time and access limitations.

If I had to advise someone else to do this research in the future, I would tell them to learn how to manage time efficiently, to learn data gathering efficiently and conduct data analysis using tools within SPSS and NVIVO. I would suggest them to plan their research properly, have some backup plans for delays, ensure they follow ethical guidelines, and attend some conferences in the field for better appreciation of the research context.

8.7 Further Research

A survey and qualitative interviews were both conducted with the respondents who were the students who had studied in the UK or KSA based universities. Despite the value of conducting surveys and interviews with the Saudi students, interviews with the teaching and library staff in the UK are suggested for future research in order to find issues and gaps in the information behaviour of students from Saudi Arabia. The teachers' perspective about information behaviour in the future research would lead to portray actual issues, as well as, initiatives or strategies followed by the teachers, to support the students. In this study we have tended to discuss mainly the various training programmes provided by libraries and information services departments. While valuable, these are not tightly integrated into the students' study programmes and tend to be one-off events or else simple information provision. In future work, more attention could be concentrated on the Teaching and Pedagogy aspects of the Urquhart and Rowley model. In particular, it would be possible to strengthen the learning theory element via recourse to Bandura's notion of self-efficacy, which is a more powerful notion than the various aspects of "confidence" measured in the current study. Bandura defines self-efficacy as

“[p]eople’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986). Thus, self-efficacy is a *belief* about one’s capability, with individuals making use of their efficacy judgments in reference to some *goal*. This aspect of self-efficacy stands in contrast to other, more general measures of expectancy, such as self-concept and self-perceptions of competence, which tend to be less specific. Some of our questionnaire items come close to testing this concept, but one could imagine a more tightly focussed study.

In future research, research focus should narrow down to the socio-cultural factors that can be compared with the personal skills for exploring the information-seeking behaviour of the Saudi Arabian students. This suggestion will be useful to find the extent of the impact of the socio-cultural factors than personal developmental factors or skills to examine the information-seeking behaviour. In addition, as mentioned above, a discipline-based approach could be of value. The influence of study discipline on information search was not explored in the current study, but is highly likely to be significant. From the Rowley and Urquhart model, which has proved very effective in focussing on specific factor, micro factors such as curriculum and pedagogy and the macro factors such as information resources design could be further explored in future research. More broadly, the results of this research will benefit future KSA students by informing policy and best practices in training them in research information-seeking skills.

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Appendix One: Raw Data

Group Statistics					
	Location	N	Mean	Std. Deviation	Std. Error Mean
Use of Information Resources	Educated in the UK	199	4.7452	.71166	.05045
	No UK education	71	2.6821	1.76146	.20905
Information Literacy	Educated in the UK	199	4.5885	.45918	.03255
	No UK education	71	2.6321	1.74736	.20737
Teaching style	Educated in the UK	199	3.5360	1.20475	.08540
	No UK education	71	2.7418	.42705	.05068
Supervisor assistance	Educated in the UK	199	4.3035	1.23597	.08762
	No UK education	71	2.7437	1.77480	.21063
Library Awareness	Educated in the UK	199	4.2047	.35992	.02551
	No UK education	71	2.3506	1.86455	.22128
Overall problems	Educated in the UK	199	4.9441	1.35620	.09614
	No UK education	71	5.5634	1.81780	.21573

Table 5.13 Urban and Rural regions of origin

Group Statistics						
Location		Which of the Saudi regions do you come from?	N	Mean	Std. Deviation	Std. Error Mean
Educated in the UK	Use of Information Resources	Urban	1	4.7	.74480	.06207
			4	50		
		Rural	4	0		
			5	4.7	.62273	.08397
			5	32		
				5		

	Information Literacy	Urban	1 4 4	4.5 59 6	.44820	.03735	
		Rural	5 5	4.6 64 2	.48278	.06510	
	Teaching style	Urban	1 4 4	3.5 42 8	1.1446 9	.09539	
		Rural	5 5	3.5 18 2	1.3607 0	.18348	
	Supervisor assistance	Urban	1 4 4	4.2 62 5	1.2366 1	.10305	
		Rural	5 5	4.4 10 9	1.2391 3	.16708	
	Library Awareness	Urban	1 4 4	4.2 05 8	.35418	.02952	
		Rural	5 5	4.2 01 9	.37787	.05095	
	Overall problems	Urban	1 4 4	4.9 69 6	1.3380 1	.11150	
		Rural	5 5	4.8 77 3	1.4130 9	.19054	
	No UK education	Use of Information Resources	Urban	4 6	2.3 41 6	1.3181 0	.19434
			Rural	2 5	3.3 08 6	2.2717 9	.45436
Information Literacy		Urban	4 6	2.2 57 0	1.3759 8	.20288	
		Rural	2 5	3.3 22 4	2.1422 9	.42846	

	Teaching style	Urban	4 6	2.6 84 8	.43635	.06434
		Rural	2 5	2.8 46 7	.39651	.07930
	Supervisor assistance	Urban	4 6	2.3 21 7	1.4344 8	.21150
		Rural	2 5	3.5 20 0	2.0880 6	.41761
	Library Awareness	Urban	4 6	1.9 18 8	1.4049 9	.20715
		Rural	2 5	3.1 45 3	2.3288 2	.46576
	Overall problems	Urban	4 6	6.0 43 5	1.3494 4	.19896
		Rural	2 5	4.6 80 0	2.2290 9	.44582

Independent Samples Test									
Location	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper

Educa ted in the UK	Use of Inform ation Resour ces	Equal variances assumed	2.2 61	. 1 3 4	.1 55	197	.8 77	.0175 3	.1130 9	- .205 48	.240 55
		Equal variances not assumed			.1 68	116. 045	.8 67	.0175 3	.1044 2	- .189 28	.224 34
	Inform ation Literac y	Equal variances assumed	.68 2	. 4 1 0	- 1. 44 0	197	.1 51	- .1045 3	.0725 9	- .247 68	.038 62
		Equal variances not assumed			- 1. 39 3	91.6 54	.1 67	- .1045 3	.0750 5	- .253 60	.044 54
	Teachi ng style	Equal variances assumed	4.5 09	. 0 3 5	.1 29	197	.8 98	.0246 4	.1914 4	- .352 90	.402 18
		Equal variances not assumed			.1 19	84.7 98	.9 05	.0246 4	.2067 9	- .386 53	.435 82
	Superv isor assista nce	Equal variances assumed	.00 9	. 9 2 3	- .7 57	197	.4 50	- .1484 1	.1961 3	- .535 19	.238 37
		Equal variances not assumed			- .7 56	97.5 66	.4 51	- .1484 1	.1963 1	- .538 00	.241 18
	Librar y Aware ness	Equal variances assumed	.10 8	. 7 4 2	.0 68	197	.9 46	.0038 6	.0572 0	- .108 93	.116 66
		Equal variances not assumed			.0 66	92.3 91	.9 48	.0038 6	.0588 8	- .113 08	.120 80
	Overall	Equal variances assumed	.56 5	. 4	.4 29	197	.6 69	.0923 5	.2154 2	- .332 48	.517 17

	problems			53							
		Equal variances not assumed			.418	93.189	.677	.09235	.22077	-.34604	.53073
No UK education	Use of Information Resources	Equal variances assumed	29.662	.000	-.274	69	.026	-.96696	.42519	-.181519	-.11873
		Equal variances not assumed			-.1957	32.996	.059	-.96696	.49418	-.197237	-.03846
	Information Literacy	Equal variances assumed	16.522	.000	-.548	69	.013	-1.06532	.41808	-.189936	-.23128
		Equal variances not assumed			-.2247	35.029	.031	-1.06532	.47406	-2.02769	-.10295
	Teaching style	Equal variances assumed	.618	.434	-1.541	69	.128	-.16188	.10509	-.37152	.04775
		Equal variances not assumed			-.1585	53.605	.119	-.16188	.10212	-.36665	.04289
	Supervisor assistance	Equal variances assumed	11.866	.001	-.852	69	.006	-1.19826	.42010	-2.03633	-.36019
		Equal variances not assumed			-.2560	36.606	.015	-1.19826	.46812	-2.14710	-.24942
	Library Awareness	Equal variances assumed	26.187	.000	-.771	69	.007	-1.22650	.44266	-2.10958	-.34342

		Equal variances not assumed			-2.406	33.730	.022	-1.22650	.50975	-2.26275	-.19025
Overall problems		Equal variances assumed	26.037	.000	3.214	69	.002	1.36348	.42429	.51704	2.20992
		Equal variances not assumed			2.793	33.797	.009	1.36348	.48820	.37111	2.35584

Regression: Predicting Teaching styles practiced

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.325 ^a	.105	.085	1.06370
a. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.948	6	5.825	5.148	.000 ^b
	Residual	296.440	262	1.131		
	Total	331.388	268			
a. Dependent Variable: Teaching style						
b. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location						

Coefficients ^a				
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	4.090	.513		7.976	.000
	Location	-.802	.163	-.317	-4.920	.000
	Sex	.197	.133	.087	1.483	.139
	age	-.056	.092	-.036	-.609	.543
	What is your Father's education level	-.005	.053	-.005	-.085	.933
	Which of the Saudi regions do you come from?	.047	.143	.019	.332	.740
	When did you start learning the English language in the Saudi education system?	.032	.079	.024	.400	.689
a. Dependent Variable: Teaching style						

Regression: Supervisor assistance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.471 ^a	.222	.204	1.38910
a. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	143.934	6	23.989	12.432	.000 ^b
	Residual	505.553	262	1.930		
	Total	649.487	268			
a. Dependent Variable: Supervisor assistance						
b. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location						

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.997	.670		7.462	.000
	Location	-1.552	.213	-.438	-7.286	.000
	Sex	-.170	.173	-.054	-.981	.327
	age	.173	.120	.079	1.436	.152
	What is your Father's education level	.028	.070	.024	.395	.693
	Which of the Saudi regions do you come from?	.436	.187	.128	2.333	.020
	When did you start learning the English language in the Saudi education system?	-.019	.103	-.010	-.182	.856
a. Dependent Variable: Supervisor assistance						

Regression: Library awareness

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.652 ^a	.425	.412	.98978
a. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	189.943	6	31.657	32.314	.000 ^b
	Residual	256.674	262	.980		
	Total	446.617	268			
a. Dependent Variable: Library Awareness						
b. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.004	.477		12.583	.000
	Location	-1.828	.152	-.623	-12.046	.000
	Sex	-.263	.123	-.100	-2.128	.034
	age	-.038	.086	-.021	-.448	.655
	What is your Father's education level	.031	.050	.032	.614	.540
	Which of the Saudi regions do you come from?	.352	.133	.125	2.650	.009
	When did you start learning the English language in the Saudi education system?	-.028	.073	-.018	-.380	.704
a. Dependent Variable: Library Awareness						

Regression: Overall problems

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.249 ^a	.062	.040	1.48143
a. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.849	6	6.308	2.874	.010 ^b
	Residual	574.994	262	2.195		
	Total	612.843	268			
a. Dependent Variable: Overall problems						

b. Predictors: (Constant), When did you start learning the English language in the Saudi education system?, Which of the Saudi regions do you come from?, Sex, What is your Father's education level, age, Location

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.336	.714		6.071	.000
	Location	.597	.227	.173	2.626	.009
	Sex	.207	.185	.067	1.121	.263
	age	.151	.128	.071	1.180	.239
	What is your Father's education level	-.027	.074	-.023	-.357	.721
	Which of the Saudi regions do you come from?	-.483	.199	-.146	-2.426	.016
	When did you start learning the English language in the Saudi education system?	.012	.110	.007	.108	.914

a. Dependent Variable: Overall problems

Appendix Tow: Questionnaire for graduate students

Information-seeking behaviour of graduate students of Saudi Arabia

This project aims to explore the working practices of Saudi students, related to information-seeking behaviour pertaining to research and coursework.

The survey is being conducted by Narmeen Bokhari, a PhD student at the University of Brighton, UK. My supervisors are Dr Roger Evans and Dr Lyn Pemberton, School of Computing, Engineering & Mathematics. If you have any questions don't hesitate to email me at N.Bokhari@brighton.ac.uk.

Please note that all the data related to your participation is confidential. No one except the researcher will be allowed to use or read the answers that are given by you. The researcher will keep the data given by you until the completion of the thesis, the response data will be destroyed afterwards. I would also like to draw it to your attention that your participation in this survey is voluntary. If you feel that you do not want to continue to participate in the survey you can withdraw at any point.

If you are willing to participate in an additional interview for this research, please indicate this at the end of the questionnaire. I am sincerely thankful for your positive participation and cooperation in the study.

Part A. General Personal Information

1. Please indicate your gender

- a. Female b. Male

2. What is your age?

- b. 18-25 c. 26-30 d. 31-40 e. 41 and over

3. What is your nationality?

- a. Saudi b. Non-Saudi, please specify.....

4. What is your Father's education level?

- a. Uneducated b. Primary school c. Intermediate school d. High school e. University

5. Which of the Saudi regions do you come from?

- a. Urban b. Rural

6. Have you studied in the UK?

- a. Yes b. No

7. Where did you study for your:	UK	Saudi Arabia	Elsewhere	N/A
Bachelor				
Masters				
PhD				

Part B. University

1. Is your current university in?

- a. UK b. Saudi c. Other please specify..... d. N/A

2. Which of these fields best describes your major? (Please tick one answer only)

- a. Medicine
 - b. Engineering
 - c. Science
 - d. Business Administration
 - e. Arts
 - f. Law
 - g. Social Sciences
 - h. Education
 - i. Islamic Studies
 - j. Computing
 - k. Mathematics
- Other:

3. What degree are you studying for now?

- a. Masters b. PhD c. Otherd. N/A

4. What stage are you at? For instance, first year
please specify

Part C. Language

1.a. When did you start learning the English language in the Saudi education system?

- a. Kindergarten b. Primary school c. Intermediate school d. High school
- e. University f. N/A

1.b. How many years in KSA did you study English? please specify

2.a. If you studied in the UK, did you attend any English language course before the beginning of your studies?

- a. Yes b. No c. N/A

2.b. Was this English language course in a. KSA b. UK c. somewhere else

Part D. Searching for Information

To answer the questions in this section, could you please refer to a recent incident when you needed some information via the internet. The information you needed should have been related to your coursework (for example, assignments, literature review, or research proposal). The task could have been simple or complex. The information need may have required the use of the internet, search engines, library databases, e-journals, or other sources.

1. What was the purpose of the search? Give as much detail as you can.

2. Where did you carry out the search? (Please select all that apply)

- a. Library
 - b. College workstation/computer lab
 - c. Office
 - d. Home
- Other, please specify

3. Did you experience any computer or network problems when doing the search?

- a. Yes b.No If yes, please give details.....

4.a. How did you first search for the information needed?

please give details.....

4.b. Did you need to modify your search question or strategy at all?

- a. Yes b.No If yes, please give details.....

5. Did you find the information you wanted?

- a. Yes b. No c. Some of it

6. If you needed to ask someone for help, who did you ask? (Please select all that apply)

- a. Library staff
- b. friend/colleague
- c. Tutor/lecturer
- Other, please give details.....

7. How did you feel about the results of your search when you'd finished?(Please circle the appropriate number)

Dissatisfied								totally satisfied
1	2	3	4	5	6	7		

8. What did you use to find this information?(Please select all that apply)

- a. Search engines (e. g. Google)
- b. Electronic journals
- c. Library's online databases
- d. Personal contacts
- e. University library website
- Other, please give details.....

9. If given the option, how would you prefer to search for academic information? (Please select only one) a. Print versions of databases/journals b. Electronic versions of databases/journals

10.a. Did you identify any useful resources that you couldn't access due to your university subscriptions? a. Yes b. No

10.b. If you answered Yes to question 10.a. Please explain what you did about it?

11. What/who made you aware of the electronic resources used in your search? (Please select all that apply)

- a. Previous search experience and results
- b. Friend/colleague suggestion
- c. Course/session
- d. Departmental website
- Other, please give details

12. In general, how often do you use the following information resources for your studies? (Please circle the appropriate number)

		Never						Always
a.	World Wide Web	1	2	3	4	5	6	7
b.	Search engines	1	2	3	4	5	6	7

c.	Electronic journals	1	2	3	4	5	6	7
e.	Online databases	1	2	3	4	5	6	7
f.	University library website	1	2	3	4	5	6	7
g.	Printed books	1	2	3	4	5	6	7
h.	Dissertations, theses	1	2	3	4	5	6	7
i.	Other							

Part E. Information literacy

1. To what extent do you agree or disagree with the following?

(Please circle the appropriate number)

		Strongly disagree						
		Strongly agree						
		disagree						
		agree						
a.	I feel confident in defining the information I need	1	2	3	4	5	6	7
b.	I am confident about being able to identify a variety of potential source of information	1	2	3	4	5	6	7
c.	I am confident in limiting search strategies by subject language and date	1	2	3	4	5	6	7
d.	I feel confident with initiating search strategies by using the keyboard and Boolean logic (and, or).	1	2	3	4	5	6	7
e.	I feel confident with deciding where and how to find the information I need	1	2	3	4	5	6	7
f.	I am confident with using a different kind of print sources (i.e books, periodicals, encyclopedias)	1	2	3	4	5	6	7
g.	When I think about using electronic information resources, I feel confident	1	2	3	4	5	6	7
h.	h. I am confident about being able to locate resources in the library using the library catalogue.	1	2	3	4	5	6	7
i.	I feel confident using internet search tools (such as search engines,	1	2	3	4	5	6	7

directories, etc)								
j.	I am confident with using many sources at the same time to carry out research.	1	2	3	4	5	6	7
k.	I am confident about how to determine the reliability of information sources	1	2	3	4	5	6	7
m.	I am confident with selecting information most appropriate to my information need	1	2	3	4	5	6	7
o.	I am confident with my ability to evaluate sources from the World Wide Web	1	2	3	4	5	6	7
p.	I am confident about how to combine newly gathered information with the previously obtained information	1	2	3	4	5	6	7
q.	I am confident with writing a research paper	1	2	3	4	5	6	7
r.	I know how to create bibliographic records for different kinds of materials (i. e. Book, articles, web pages)	1	2	3	4	5	6	7
s.	I am confident about criticizing the quality of my information seeking process and its outcomes	1	2	3	4	5	6	7

2.a. During your studies in Saudi Arabia, did you receive any information skills/information retrieval training or help ? and from which university?

(Please tick all that apply)

- a. IT services specialist session
 - b. Library training session
 - c. Informal help as needed by library staff
 - d. None
- other, please give details.....

2.b. How useful was this?

2.c. If you studied in the UK, did you receive any information skills/information retrieval training or help ?and from which university?

(Please tick all that apply)

- a. IT services specialist session
 - b. Library training session
 - c. Informal help as needed by library staff
 - d. None
- other, please give details.....

2.d. How useful was this?

Part F. Teaching and learning style

1.a. In your last Saudi degree, what was the teaching style like in your programme?

Strongly

Strongly

disagree

agree

a.	Based largely on traditional lecturing	1	2	3	4	5	6	7
b.	Based largely on lab work and experiments	1	2	3	4	5	6	7
c.	Based largely on a combination of lectures and tutorials	1	2	3	4	5	6	7
d.	Based largely on problem-solving and critical thinking	1	2	3	4	5	6	7
e.	Based largely on individual work	1	2	3	4	5	6	7
f.	Based largely on group work	1	2	3	4	5	6	7

1.b. If you studied a taught course in the UK (e.g Masters), what was the teaching style like in your programme?

Strongly

Strongly

disagree

agree

a.	Based largely on traditional lecturing	1	2	3	4	5	6	7
b.	Based largely on lab work and experiments	1	2	3	4	5	6	7
c.	Based largely on a combination of lectures and tutorials	1	2	3	4	5	6	7
d.	Based largely on problem-solving and critical thinking	1	2	3	4	5	6	7
e.	Based largely on individual work	1	2	3	4	5	6	7
f.	Based largely on group work	1	2	3	4	5	6	7

2. Thinking of your Masters or PhD projects, to what extent would you agree or disagree with the following statements?

(Please circle the appropriate number)

My supervisor/teacher provides assistance by doing the following

Strongly

Strongly

disagree

agree

a.	Guiding in how to use information sources	1	2	3	4	5	6	7
b.	Laying down the foundation for my research work	1	2	3	4	5	6	7
c.	Passing on journals, research papers, on their own or of noted authors.	1	2	3	4	5	6	7
d.	Assessing projects that require using information resources available in the library.	1	2	3	4	5	6	7
e.	Offering guidance on how to conduct literature searching	1	2	3	4	5	6	7

Part G. Library Awareness

1.a. Thinking of your university library in KSA, to what extent would you agree or disagree with the following statements?(Please circle the appropriate number)

- N/A

Strongly

Strongly

disagree

agree

a.	I can usually find the information and resources I need in the library	1	2	3	4	5	6	7
b.	I am aware that the library offers online search services for graduate students	1	2	3	4	5	6	7
c.	When I think about my dissertation/thesis as it relates to the library, I feel stressed	1	2	3	4	5	6	7
d.	I know what resources are available in the library	1	2	3	4	5	6	7
e.	I understand how to begin my research in the library	1	2	3	4	5	6	7
f.	When I use the library for information, I feel overwhelmed	1	2	3	4	5	6	7
g.	I am uncomfortable using the library's online catalogue	1	2	3	4	5	6	7
h.	I am uncomfortable using the library's website	1	2	3	4	5	6	7
i.	I am comfortable using the computers inside the library	1	2	3	4	5	6	7
j.	The library should provide more services for masters and doctoral students	1	2	3	4	5	6	7

k.	The library's resources for my area of interest are satisfactory	1	2	3	4	5	6	7
l.	It is difficult to locate materials in the library	1	2	3	4	5	6	7
m.	The library offers enough information skills training sessions for graduate students	1	2	3	4	5	6	7
n.	My knowledge of the library is limited to my area of interest	1	2	3	4	5	6	7
o.	I would rather use the library online	1	2	3	4	5	6	7
p.	The library is easy to use	1	2	3	4	5	6	7
q.	There are too many possible sources of information	1	2	3	4	5	6	7
r.	I can use Interlibrary Loan for access to materials not in my library	1	2	3	4	5	6	7
s.	In general, I think my ability to use the library has had a negative effect on my research	1	2	3	4	5	6	7

1.b. Thinking of your university library in the UK (If you have studied in the UK) , to what extent would you agree or disagree with the following statements?(Please circle the appropriate number)

- N/A

**Strongly
agree**

**Strongly
disagree**

a.	I can usually find the information and resources I need in the library	1	2	3	4	5	6	7
b.	I am aware that the library offers online search services for graduate students	1	2	3	4	5	6	7
c.	When I think about my dissertation/thesis as it relates to the library, I feel stressed	1	2	3	4	5	6	7
d.	I know what resources are available in the library	1	2	3	4	5	6	7
e.	I understand how to begin my research in the library	1	2	3	4	5	6	7
f.	When I use the library for information, I feel overwhelmed	1	2	3	4	5	6	7

g.	I am uncomfortable using the library's online catalogue	1	2	3	4	5	6	7
h.	I am uncomfortable using the library's website	1	2	3	4	5	6	7
i.	I am comfortable using the computers inside the library	1	2	3	4	5	6	7
j.	The library should provide more services for masters and doctoral students	1	2	3	4	5	6	7
k.	The library's resources for my area of interest are satisfactory	1	2	3	4	5	6	7
l.	It is difficult to locate materials in the library	1	2	3	4	5	6	7
m.	The library offers enough information skills training sessions for graduate students	1	2	3	4	5	6	7
n.	My knowledge of the library is limited to my area of interest	1	2	3	4	5	6	7
o.	I would rather use the library online	1	2	3	4	5	6	7
p.	The library is easy to use	1	2	3	4	5	6	7
q.	There are too many possible sources of information	1	2	3	4	5	6	7
r.	I can use Interlibrary Loan for access to materials not in my library	1	2	3	4	5	6	7
s.	In general, I think my ability to use the library has had a negative effect on my research	1	2	3	4	5	6	7

Part H. Overall, If you were in Saudi to what extent have you experienced problems by the following factors related to the use of electronic information resources? (Please circle the appropriate number)

		Not at all influenced			Extremely influenced			
a.	Access to the Internet	1	2	3	4	5	6	7
b.	Access to computers	1	2	3	4	5	6	7
c.	Access to printers	1	2	3	4	5	6	7
d.	The need for passwords to access information	1	2	3	4	5	6	7
e.	Interlibrary loan	1	2	3	4	5	6	7

f.	Computing skills	1	2	3	4	5	6	7
g.	English language skills	1	2	3	4	5	6	7
h.	Access to journals	1	2	3	4	5	6	7

Part H. Overall, If you were in the UK to what extent have you experienced problems by the following factors related to the use of electronic information resources? (Please circle the appropriate number)

		Not at all influenced			Extremely influenced			
a.	Access to the Internet	1	2	3	4	5	6	7
b.	Access to computers	1	2	3	4	5	6	7
c.	Access to printers	1	2	3	4	5	6	7
d.	The need for passwords to access information	1	2	3	4	5	6	7
e.	Interlibrary loan	1	2	3	4	5	6	7
f.	Computing skills	1	2	3	4	5	6	7
g.	English language skills	1	2	3	4	5	6	7
h.	Access to journals	1	2	3	4	5	6	7

Please enter any comments or suggestions you have in the text box below.

Thank you very much for taking the time to complete this questionnaire.

I also plan to carry out short interviews related to this survey. If you are willing to take part in these, please provide contact details below.

Name----- E-mail address -----

Appendix Three: Semi-structured interviews with Graduate Students

Interview guide for graduate students at Saudi Arabia universities and the UK (King Abdul-Aziz University, King Saud University, Brighton University, Sussex University). These interview questions form part of the PhD research conducted by Narmeen Bokhari from the University of Brighton. The interview aims to explore the working practices of Saudi students, related to information-seeking behaviour pertaining to research and coursework. The interview would take

40-50 minutes and data and information collected through the interview would be kept as confidential. The personal identity of all interviewees would be kept anonymous.

Your contribution will highly be appreciated.

1. What training is there in Information Retrieval at your university?

2. Can you tell me about help or advice from your supervisors/librarian/teachers/research methods courses?

- How do you have collected information for your recent research activity or coursework?
- Which factors influenced your information-seeking behaviour?
- What type of search strategies have you used for collecting data and information to fulfil your academic research motives? What is your resource selection criterion?
- Do you face any challenges or issues in searching relevant information? If yes, please elaborate?
- What type of formal and informal or formal help is provided by your supervisors for information searching?
- What principles did you learn regarding information-seeking from lessons?
- How do you find (easy/difficult) to access to journals- Wi-Fi speed- off/on-campus?

3. How would you advise a new student to find relevant, reliable information?

4. What could universities do to improve graduate students' information seeking?

Thank you very much for taking the time to answer the questions.