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# **The Use of Social Tagging in Academic Libraries: An Investigation of Bilingual Students**

**By**

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## **Abstract**

This research investigates the use of social tagging systems in facilitating access to academic libraries. Social tagging allows users to assign free-text keywords, or ‘tags’, to describe information items. Users’ tags are usually employed to provide a flexible way to access, manage, and share information. This research is a user-centred study focusing on bilingual students (Arabic/English speakers) to explore the use of social tagging in academic library catalogues. Several aspects are examined regarding library catalogue usage, language skills and preferences in tagging and searching; students tagging behaviour; and the potential use of social tagging functionalities in academic libraries.

The participants in this research were students and librarians from Kuwait University, the Gulf University for Science and Technology in Kuwait; and the University of Sheffield (UK). A mixed-methods approach was adopted, which included: a comparative analysis of 11 existing social tagging systems; a survey involving 241 students; an interactive tagging experiment involving 46 students; and semi-structured interviews with 10 librarians. Methods were employed in two phases and results were analysed using quantitative methods and qualitative thematic analysis.

The key contributions to this research include developing a descriptive model of bilingual (Arabic-English) students’ tagging behaviour. This captures interactions between users, resources and tag, and highlighting the influencing factors on the creation of tags. This includes cognitive, text/content and tag language choice influences. In addition, the research has established five main categories of social tagging functions: posting, searching, browsing, managing and sharing. The categories were linked to the SCONUL Seven Pillars of Information Literacy (IL) that were explored and evaluated to provide a framework of social tagging and information literacy that situate the prospective use of social tagging and its support to IL practices within academic libraries.

The findings of this research confirm that students and librarians are interested in using social tagging within the library catalogue and perceive tags in multiple languages to be appropriate as a way of supporting information discovery. The

research also recommends that social tagging functions should be considered for the future development of academic library catalogue services to support the engagement and participation of students. Furthermore, to obtain the greatest utility of social tagging systems in academic libraries this research also proposes guidelines regarding best practices of using tags, as well as recommendations for implementing social tagging systems.

*To the heart that always believed and prayed for me; my Mother*  
&  
*To the soul of my dear Father*



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## Publications

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# **Chapter 1: Introduction**

## **1.1 Introduction**

Chapter 1 provides background information about the thesis describing the research context, followed by the research aim, questions and objectives. An explanation of the significance of the study is presented, ending with the rationale of the research and the thesis layout.

## **1.2 Background**

Academic libraries face challenges in providing sufficient library catalogue services and functionalities that fulfil users' needs and practices, especially with continued technological developments of library systems. Over the years, library catalogues have shown weaknesses in terms of retrieving relevant information. For example Eckert et al. (2009: 22) noted that a “comprehensive search solution to students and researchers does not solve the problem of the lack of alternative methods of metadata”.

This subsequently impacts on the use of search services, especially since students nowadays mostly utilise “natural-language searching” (or keyword search) and trust systems, such as Google, to fulfil their information needs (Connaway et al., 2010: 37). Students have also become more connected and familiar with Web2.0 tools that allow users to participate, interact and collaborate with Web content as much as they like, mostly within a public space (O'Reilly, 2005). Such tools include Blogs, Wikis, social tagging system, multimedia sharing, audio blogging and podcasting (Anderson: 2007).

This research focuses on social tagging as one of the many Web2.0 tools commonly used within websites and social media networks. Social tagging systems allow users to freely assign keywords or ‘tags’ to label content to facilitate the organisation and sharing of information and aid future discovery. Such tools have brought new methods of organising and retrieving information and support for information access.

In most library catalogue systems metadata are the only searchable information. So, in order to find the relevant content, the search query must match at least one of the metadata fields or the search will fail to retrieve results. An important aspect of using

tags, however, is being able to index and organise content using terms from the user's own vocabulary. Tags can be organised and employed in the searching and browsing process to help users find information. A mixture of expert and users' vocabulary is one of the benefits of using tags in library catalogues because, in this way, a broader linguistic field and area of knowledge is covered that may increase information access (Peters, 2009).

Tags are "highly able to solve the 'vocabulary problem' in information retrieval" (Peters, 2009: 416), and help fill the gap between the indexing language and the user's vocabulary. Thus, the use of social tagging may help to enhance the search functionalities of the library catalogue, especially given most implementations of library catalogue systems require students to specify their search as keywords to find information (Borgman, 1996). This makes it difficult for students to search and subsequently find information in library catalogues (Villen-Ruede, et al., 2007).

Social tagging, as a research area, is a fast growing topic attracting the attention of many scholars in the field. Various studies have been carried out focusing on different perspectives. For example, studies on users, tag and resource characteristics (e.g. Thomas et al., 2009; Furner, 2007); user tagging behaviour and effects on system usage (e.g. Tsai et al., 2010; Heckr et al., 2007); and studies on the usefulness of tags for indexing and retrieval (e.g. Yi et al., 2009; Arch, 2007).

Many studies presume that tags are used in a language that is understood by most users; whereas in practice this is not always the case (Hammond et al., 2005). With the global growth of internet users, multilingual tags have arisen in popular social tagging systems, such as Delicious and LibraryThing (Vuorikari et al., 2007:7). Multilingual tagging can refer to the use of tags in different languages, combining more than one language in a single tag, or tagging resources or items in different languages. In social tagging systems understanding the users preferred language, the language that users prefer to use and the language they most understand, is as important as the information itself (Vuorikari, 2007).

Enriching library catalogue services with tools, such as social tagging, would have many advantages. The use of tagging could also be useful in supporting students' wider information activities, such as sharing and using information. However, in order to implement social tagging functionalities effectively the information needs of

users is required. This is especially pertinent as the success of a social tagging system is highly dependent on user participation and usage, and a “tagging system that works in one context may not work in another” (Smith, 2008:16). So, exploring ways to get the most benefit from using tags functionalities to support the information practices of users would also be valuable.

### **1.2.1 The context of the research**

This research focuses on bilingual university students who speak both Arabic and English. English is known as a global language; whilst Arabic is widely used in many places around the world (e.g. Middle East, and some countries in Africa). Between 2000-2011, the use of the Arabic language on the Web increased rapidly and is now the seventh of the top ten most-used languages on the Internet (Internet world stats, 2011).

Within the globalisation and internationalization movement in Higher Education, English has become the main language of many universities around the world that have numerous international students, such as in the UK, USA, Canada and Australia. International students normally include many bilinguals, where it is expected to find variations in their language skills according to their educational and cultural backgrounds. Arabic speaking students now form an increasing part of the international student community in the UK. For example, in 2010-2011, UK higher education had 5.3% of undergraduate students from the Middle East (Higher Education Statistics Agency, 2013); these students speak both Arabic and English.

English is also the main language of many universities in non-native English-speaking countries. Kuwait is a good example of this, where the mother language is Arabic, but English is also widely spoken. With the impact of globalisation and the use of new technologies, formal Arabic is now mostly limited to official written and spoken communications. English, on the other hand, is mostly used in the business, education and media sectors, and is widely used in daily social communication alongside the informal Arabic or Kuwaiti local accent, especially among newer generations.

The Arabic and English languages are used in the Kuwaiti Higher Education sector, depending on the subject of study and the type of institution, which employs both

languages in the educational context mostly framed under bilingual education, where it is said that “more than one language is used to teach content (e.g. science, mathematics, social sciences, or humanities) rather than just being taught as a subject by itself” (Baker, 1988: 466).

When non-native English students are taught in English, they might find themselves in a situation whereby they learn the subject and develop their English language proficiency at the same time, especially if they graduated from an Arabic school. The opposite situation might also be found, when a student who graduated from an English school is taught in Arabic. Accordingly, when searching for information in a library catalogue, the variation in language skills can negatively impact bilingual students in expressing their search query (Salmi and Chevalier, 2014; Liu, 1993). This in turn contributes to them failing to find relevant information. Thus, social tagging as a tool, which represents and deals with the users’ preferred language ‘tags’, would be helpful in facilitating their search process and increasing access to information.

The research conducted in this study has been carried out in both Kuwait and the UK. Bilingual students from universities in Kuwait represent students who joined academic environments that involve using both the Arabic and English languages in an Arabic public environment; these include the University of Kuwait (KU), and the Gulf University for Science and Technology (GUST). Bilingual students from the University of Sheffield (UoS) representing students who are studying in a completely English academic environment:

- *KU*: this is the first public university in the state of Kuwait and was established in 1966. The university has 16 colleges where a single college of graduate education covers various subjects. Both the Arabic and English languages are used as a teaching language depending on the domain of learning. KU has a libraries administration service team that supervises the technical and the management aspects of the eight libraries across different campuses. The library website provides searching services to locate and access the library collection that includes both Arabic and non-Arabic resources. Searching services include: an online catalogue that offers basic and advanced search functionalities to search books and journal for all the disciplines; and e-books, e-journals, databases and

federated search (Appendix 4). The library website also offers instruction on how to use the offered services (Kuwait University, 2009).

- *GUST*: this is the first private University in the State of Kuwait approved by the Kuwait Ministry of Higher Education (MHE). English is the main teaching language, although a few topics are taught in Arabic. GUST has two main undergraduate colleges covering 11 courses and a graduate programme. The GUST library is called the Abdullah Mubarak Al-Refai (A. M. Al-Refai) Library. The library website provides a range of search services. The library catalogue is used to locate and access the library collection and offers both basic and advanced services; the functions include some additional features (e.g. an image of the book cover). It also provides other digital resources including e-journals, e-books, and databases. They also offer LibGuides, which aim to share resources based on creating guides on topics supporting the GUST academic learning environment (Appendix 4). Online tutorials are also offered to assist the users with the services available (The Gulf University for Science and Technology, 2013).
- *UoS*: this was established in 1905 and is known as a research university in the city of Sheffield in South Yorkshire, England. The university has six main faculties covering a wide range of courses for undergraduate, postgraduate and research degrees. The university has over 5,000 international students from 120 countries. The University Library is a member of Research Libraries UK that represents the UK's largest research libraries. The website offers various services (Appendix 4). The online catalogue is the main place to locate and access information, which used to be called "Star" but has recently been developed to "StarPlus" with more enhancements added. The new functionalities offer different services beside the basic general and advanced searching options (e.g. e-shelf and tags) (The University of Sheffield, 2015).

## **1.3 Research aims, questions and objectives**

### **1.3.1 Research aims**

The aim of this research is to investigate the use of social tagging in facilitating the discovery and use of information for bilingual (Arabic/English) students in academic libraries, and to develop a descriptive model of the tagging behaviour of bilingual students.

### **1.3.2 Main research question**

Can social tagging functionalities support information discovery and use in academic libraries, particularly for bilingual (Arabic/ English) students?

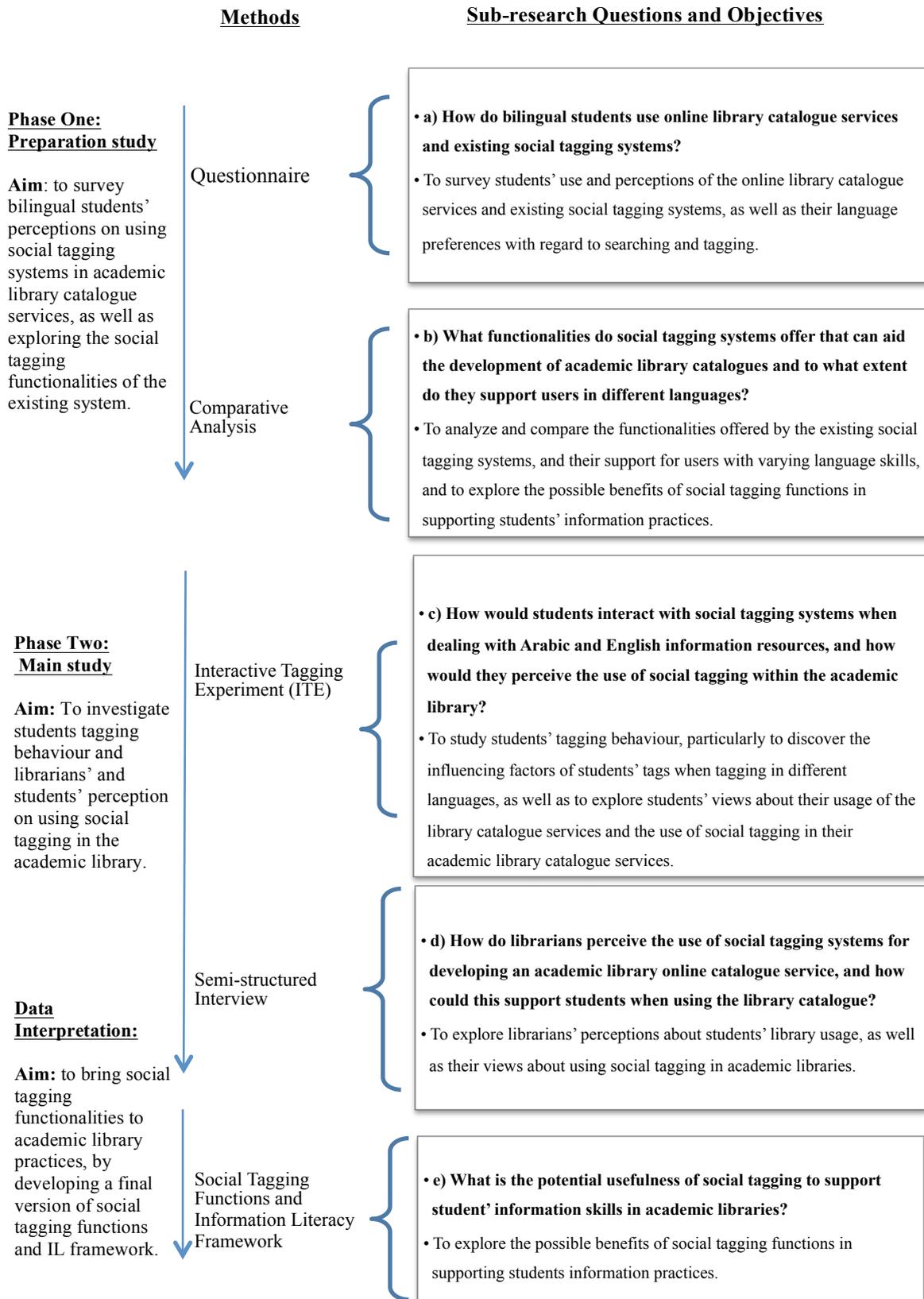
### **1.3.3 Sub-research questions and objectives**

Five sub-research questions and objectives were identified:

- a) How do bilingual students use online library catalogue services and existing social tagging systems?*
- b) What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?*
- c) How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?*
- d) How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?*
- e) What is the potential usefulness of social tagging to support student' information skills in academic libraries?*

Figure (1.1) provides an overview of the method used to address each sub-research question and objective, and shows in which phase of the research it was used.

Figure 1.1 An Overview of Addressing Each Sub-research Question



## 1.4 Significance of the study

As social tagging is a recent area of research that has emerged with the evolution of Web2.0 technologies, further investigation is still needed into the use of social tagging in an academic library context. This research has value in drawing significant findings for the field of Library and Information Science (LIS) about the use of social tagging systems in academic libraries. In particular, this study involves students with varying language skills, principally in the areas of library catalogue development on implementing new technological applications. As the research investigates bilingual students' language preferences on tagging and searching, it may also provide valuable insights into multilingual and Cross-Lingual Information Retrieval (CLIR). Furthermore, the research will contribute in the area of multilingual/bilingual social tagging by capturing the prospective tagging behaviour of bilingual students when tagging in the Arabic and English languages for academic purposes, where there are only a few existing studies that focused on tagging in Arabic. The research is also significant as it engages participants from three universities located in Kuwait and in the UK. To the best of the researcher's knowledge, there have been no previous studies carried out in Kuwaiti universities (KU and GUST), particularly in exploring social tagging systems.

Additionally, the research proposes a descriptive model of bilingual (Arabic/English) tagging behaviour that emerged from the research findings (Chapter 6, Figure 6.3). The model captures interactions between the main elements of the tagging process, including users, resources and tags; influences on tag creation influences, including cognitive, text/content, and tag language choices influences. The model is valuable for scholars, as well as librarians, in enriching the understanding of students tagging behaviour. It also categorizes social tagging functions into five main categories: posting, searching, browsing, managing, and sharing (Chapter 3, Section 3.6.2.2). Based on this, the research proposes a conceptual framework linking social tagging categories with the Society of College, National and University Libraries (SCONUL) seven pillars of Information Literacy (IL) skills (SCONUL, 2011), underlining how features of social tagging can support information work skills (Chapter 6, Figure 6.4). Details of the research contribution and recommendations for further studies are presented later (Chapter 7, Section 7.3).

## 1.5 Rationale of the study

This research was motivated by my work experience as an information specialist in the KU library. There I was involved in a range of duties, together with the other library staff, where I had the chance to be close to the responsibilities and challenges of the library. I became aware of the strengths and weaknesses of library services recognizing that, while the library spends huge amounts of money to offer a wide range of services (e.g. database subscriptions), many students still fail to use the library and lack knowledge of the services available and offered on the library website.

Furthermore, this research was also inspired by my previous educational background as a student studying in an Arabic educational environment, where English was just one of the subjects taught. I completed my school levels and my bachelor degree in Library and Information Sciences (LIS)<sup>1</sup> in Kuwaiti public educational institutions. During my undergraduate studies and beyond I worked on improving my English skills by taking several English language courses. My aim was to join a postgraduate programme as it was mainly taught in English either in KU or in many overseas universities. Later, I joined UoS to study for an MA in librarianship; I found being in an entirely English environment for the first time in my educational life was challenging. For example, finding relevant information for my coursework was one of challenges where it was very time-consuming, particularly in becoming familiar with searching the library catalogue and databases, as well as formulating appropriate search queries.

In completing the course I became interested in the area of Web2.0 technologies and their possible support to searching and retrieving information. So, I transferred my interest to research and completed a dissertation investigating “the role of social tagging in resource discovery: a case study in the academic context” (Abdulhadi, 2010). As a researcher I became more interested in the subject and decided to undertake my PhD exploring more aspects regarding social tagging systems. Especially as I started to identify gaps in the literature particularly in relation to the possible uses of social tagging functions in academic libraries, as well as

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<sup>1</sup> The College of Basic Education is one of colleges under the Public Authority for Applied Education and Training (PAAET); it is one of the government higher education institutions in Kuwait.

investigating tags in different languages. I started to imagine using social tagging in library catalogues and how tagging in Arabic and English would help students, as well as how it would assist them discovering information.

## **1.6 Thesis layout**

This section will present an overview of the thesis layout, listing the chapter names with brief details of their contents.

- **Chapter 2 Literature review:** provides a review of the literature relevant to the research, covering several topics. The first sections provide theoretical background on Information Behaviour (IB), reviewing some of the key models and showing the relations between IB research areas and information (retrieval) systems, as well as Information Literacy (IL) skills. A brief summary of the globalization and internationalization movement in Higher Education is then given, together with the challenge of multilingualism in academic libraries. The sections that follow will focus on reviewing studies of academic library catalogue development, underlining issues that include: resource discovery and multilingual information access; next generation library catalogue development; implementation of technological tools and functions and their support to academic library catalogue services. The chapter ends by focusing in detail on social tagging system definition and related concepts, and on studies specifically related to social tagging and academic library catalogues.

- **Chapter 3 Methodology:** discusses the research design and data collection methods adopted to conduct this research in order to address objectives of this research. The chapter begins with a general description of the philosophical perspective of the research. Then the methodological approaches are presented, explaining the chosen research design and use of a mixed methods approach. This is followed by a description of the participants, research quality and ethical considerations. The focus then turns to providing details about the data collection and analysis procedures of phase one which employed conducting a questionnaire and comparative analysis. This is followed by details of phase two of the research that involved designing an Interactive Tagging Experiment (ITE). This included pre- and post-task questionnaires, a tagging task, and post semi-structured interview; there were also semi-structured interviews with librarians.

- **Chapter 4 Phase One Findings:** this chapter presents the findings of the questionnaire including: descriptive analyses (demographic, online library searching services, searching and language preferences, and the current and the prospective usage of social tagging systems); a relation analysis (university with user satisfaction and with difficulties encountered with library searching services); then relationship analysis that focused on tag language preferences and the search language preferences. The second section also presents the findings of the comparative analysis, including the categories of social tagging functions, description of the examined social tagging system functions (social networking services, library 2.0/museum), as well as overall findings.

- **Chapter 5 Phase Two Findings:** this chapter first presents the findings of the second phase of data collection activities. The first section reports the results of the Interactive Tagging Experiment, giving an overview of the research (e.g. demographic information, language, and students' article choices), the students' tagging behaviour (e.g. familiarity with social tagging, tagging process description, tag examination and the influences factors, tag language examination and influences factors), then the overview findings on social tagging perception and prospective use. Secondly, findings about the library catalogue services are presented, including students' and librarians' perceptions about the library catalogue services, development of library catalogue services, and aspects of social tagging systems in the library catalogue. Finally, the results centre on reporting students' perceptions about aspects related to information literacy (e.g. IL awareness, IL learning sources). The findings of librarians' perceptions about different facets of IL skills instruction are also reported.

- **Chapter 6 Discussion:** this chapter presents an integrated view of the findings presented in Chapters 4 and 5, which will be supported by the related previous studies to support the arguments discovered by this research. The structure will be based on the sub-research questions that were considered useful in providing a consistent structure to the research, and making it clear how each question has been addressed.

- **Chapter 7 Conclusion:** this chapter concludes the thesis by summarising the findings of each sub-research question. The chapter highlights contributions of the

research, including recommendations for implementing social tagging in academic library catalogues, research limitations and finally provides directions for further research.

## **Chapter 2: Literature Review**

### **2.1 Introduction**

Conducting a literature review of the related studies is an essential part of research and increases awareness of the theoretical models used in the area of research which, together with observing the results of the relevant previous studies, can play an important role in understanding the research problem. It also enhances a researcher's skills and abilities to clarify selections made in the research methodology (Bryman, 2012).

In this research, the literature review was primarily conducted in relation to academic library catalogue development, while focusing particularly on the use of social tagging systems as one of the emerging technological tools used in the field. A broad review was initially carried out to improve the researcher's understanding of the general field, and be aware of the related topics. This helped to be more assured in focusing on the related studies that were considered beneficial to this research.

In order to gather the necessary information many databases were consulted, including the University of Sheffield library, Google Scholar, Emerald Insight, Web of Sciences, as well as a number of key journals and the proceedings of relevant conferences in the field. Broad search terms were used to search for information, (e.g. "academic library catalogue", "library development", "information behaviour"); while other more specific terms were used to narrow down the search (e.g. "Web2.0", "social tagging", "collaborative tagging" "folksonomy", "social bookmarking" "multilingual access/retrieval", "resource discovery", "users perspectives").

The following sections will cover a review of several of the areas by providing a theoretical background to Information Behaviour (IB), covering some of the major models and showing the links between IB, research areas and information systems, and retrieval and Information Literacy (IL) skills (Section 2.2). It also presents brief background information in relation to the globalization and internationalization movement in higher education, as well as the challenge of multilingualism in academic libraries (Section 2.3).

The focus then turns to reviewing studies of academic library catalogues (Section 2.4), highlighting issues such as resource discovery and multilingual information access, next-generation library catalogue development, implementation of technological tools and functions and their support to academic library catalogue services, then considering in detail social tagging systems (Section 2.5). This includes definitions and related concepts, such as common functionalities, classification, indexing tags, social tagging and library catalogue, multilingualism and social tagging and tagging behaviour.

## **2.2 Information behaviour**

The concept of Information Behaviour (IB) has been discussed widely in the literature because it covers many research topics within the field of Library and Information Science (LIS). IB in relation to users' needs and use began to be discussed in library service studies in the mid-90s (Case, 2007), which usually presented itself in terms, such as "information-seeking behaviour" and "human information behaviour" (Savolainen, 2007).

IB can be described as "specific actions performed by an individual that are specifically aimed at satisfying information needs" (Feinman et al., 1976: 3) or, as Case suggested (2007), IB is mostly closer to the concept of "need" than to the "information" itself. Other researchers have observed that people usually ask questions motivated by a specific need, usually to resolve a problem and in making the seeking for information a problem-oriented task (Wilson, 1999; Marchionini, 1997).

IB can also comprise wider actions in relation to "how people need, seek, manage, give and use information in different contexts" (Fisher et al., 2009: xix). IB can thus be seen as a circle of activities that a person conducts to fulfil their information need. This section aims to present a concise review of IB concepts and some of its models to better understand the theoretical dimensions of this research, particularly in relation to studying students' prospective tagging behaviour when using social tagging systems for academic purposes. This will in turn assist in placing this research into the wider IB context.

### 2.2.1 Models of information behaviour

The literature presents various models which assist in understanding aspects of IB. Some of the core models are considered valuable to review, such as Wilson's Nested Model of IB Research, Wilson's 1996 model of IB, Jansen and Rieh's framework of human behaviour and information systems, Ingwersen's cognitive model of IR (Information Retrieval) interaction, and Choo et al.'s behavioural modes and moves of information-seeking on the Web. These models are mostly acknowledged as useful frameworks that have assisted researchers in studying and describing users' behaviours and their interaction with information.

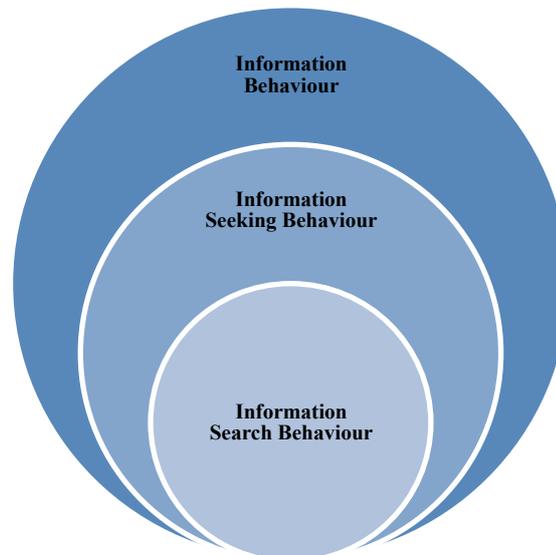
For an inclusive understanding of IB, a review of Wilson's Nested Model of IB Research (1999), shown in Figure 2.1, is considered of value as a basis for current research. The model shows three general areas of investigation, including IB and information-searching behaviour. IB is presented as the centre of the model, which concerns "human behaviour in relation to sources and channels of information" (Wilson, 2000: 49). This includes active information-seeking and use of techniques such as "face-to-face communication with others", and passive information-seeking and use, like "watching TV advertisements, without any intention to act on the information given" (Wilson, 2000: 49).

"Information-seeking behaviour" is shown as a subdivision of the field, which is "particularly concerned with the variety of methods people employ to discover and gain access to information resources" (Wilson, 1999). This is more about "the purposive seeking for information as a consequence of a need to satisfy some goal." This can include interacting with manual information systems, such as using the library or reading a newspaper, or with computer-based systems, such as search engines (Wilson, 2000: 49). In general, this view can also be used to explore students' interactions with library catalogues, as well as their prospective use of social tagging.

A subdivision of information-seeking behaviour is Information-search behaviour, the "micro-level" of behaviour "employed by the searcher in interacting with information systems of all kinds" (Wilson, 2000: 49). It concerns all types of interactions with the system "whether at the level of human computer interaction (for example, use of the mouse and clicks on links) or at the intellectual level (for

example, adopting a Boolean search strategy or determining the criteria for deciding which of two books selected from adjacent places on a library shelf is most useful), which will also involve mental acts, such as judging the relevance of data or information retrieved” (Wilson, 2000: 49).

Figure 2.1 The Nested Model of Information Behaviour Research Areas



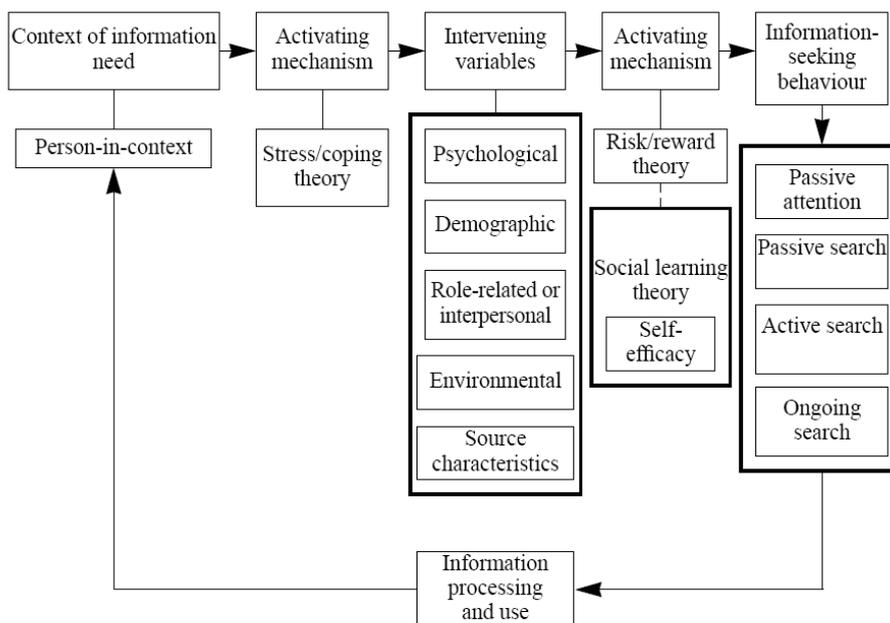
In some studies, information-seeking behaviour is mistakenly used instead of information-searching behaviour. However “within the context of an electronic environment, the action of seeking literally involves ‘search’ strategies, so the seeking behaviour is often described as ‘search behaviour’ ” (Knight and Spink, 2008: 210). Overall, they might be used in parallel, depending on the situation. Within the Wilson model (Figure 2.1), information-search behaviour can be considered the most appropriate area in reflecting the research, which is intended to study aspects of students’ tagging behaviour and students’ language skills in relation to searching and tagging. In particular, focusing on the prospective interaction between students and the social tagging systems to support information discovery and use.

Accordingly, it can be understood that various aspects can be studied under the notion of IB. In relation to this, Wilson’s 1996 Model of IB (Wilson, 1999) considered it useful to illustrate a universal understanding of the major facets of human behaviour, and brought attention to the different approaches that help researchers in investigating aspects of information-seeking behaviour and

information-searching (Figure 2.2). This has been demonstrated in the model as a sequence of aspects, including: the context of information need, the activating mechanism, intervening variables, information-seeking behaviour, information-processing and use, and persons-in-context (Wilson, 1999).

Wilson’s 1996 Model of IB incorporates aspects of other well-known models created by Ellis and Kuhlthau. Ellis’s (1989) model of information-seeking behaviour illustrates various patterns that are involved in information-seeking, including starting, chaining, browsing, differentiating, monitoring, extracting, accessing, networking, and ending (Ellis, 2009). Kuhlthau’s information-seeking behaviour model reflects the information-search process, defining common modes in ‘users’ experience in the process of information-seeking that have been described in six stages, covering thoughts, feelings, and actions, including: initiation, selection, exploration, formulation, collection, and presentation (Kuhlthau, 2009: 231). Both models have similarities in places; mainly in activities, such as recognising, identifying/formulating and gathering information (Wilson, 1999), Both also exhibit differences; for example, Kuhlthau suggests general stages of IB, whilst Ellis produced elements that may vary from person to person.

Figure 2.2 Wilson’s 1996 Model of Information Behaviour (Wilson, 1999)



In Wilson’s 1996 model of IB (Figure 2.2) the ‘active search’ mode reflects both Ellis’s and Kuhlthau’s models of information-seeking behaviour whereby the information-search process is represented as specific aspects of the active search

stages (Wilson, 1999; 2009). The models also describes “intervening variables” which are recognised as potentially supportive causes, such as communication channels, access, and credibility, or demographic factors, e.g. age and gender (Wilson, 1999).

In this research, studying aspects of social tagging systems as a supporting tool in academic library catalogues fits with key aspects of IB. For example, exploring aspects of social tagging systems can be linked with areas of information-seeking behaviour, including passive attention, passive and active search, and the ongoing search in Wilson’s 1996 model of IB (Figure 2.2). In normal scenarios, in the context of an academic library, students (as individuals or groups) usually need to search the online library catalogue to find and refine information for their coursework. In the scenario presented here, tags can support them in finding information (see further in Section 2.5). Investigations carried out in this research are also related to the study of intervening variables, particularly when examining students’ language skills in searching and tagging, which can reflect demographic and environmental factors.

In addition to the models of IB reviewed above, the literature also presents models that show aspects of IB in relation to information systems and IR processes, which are also worthy of investigation as they support the studying of social tagging in academic library catalogues effectively. The following section presents selected models that are more pertinent to studying the use of social tagging systems in academic libraries.

### **2.2.1 Models of information behaviour in relation to information systems and retrieval**

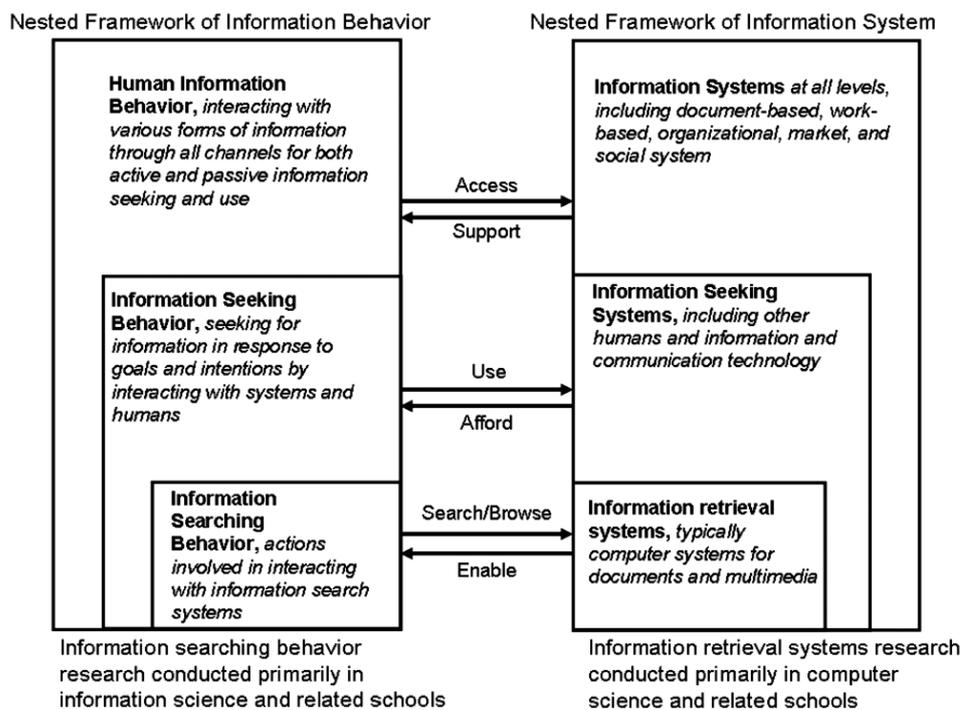
For the purpose of demonstrating how IB can be applied to areas of study for information systems, Jansen and Rieh (2010) proposed a framework that relates human IB and information systems (Figure 2.3). Jansen and Rieh adopted Wilson’s nested model presented earlier (Figure 2.1) to illustrate the links between the two notions (IB and information systems) suggesting that the general field of IB can be linked with information systems to support users’ information access. The middle level that represents information seeking behaviour and information seeking systems supports information-seekers by using the information afforded by the system they used, whereas information-search behaviour engages with the functionalities and

features offered by IR systems, allowing users to conduct different activities, such as searching and browsing.

The term ‘browsing’ describes “the general behaviour that people exhibit as they seek information” (Marchionini, 1997:100). Browsing has been linked to information systems reflecting the creativity and innovation of the services. Bowden (2011:3) states that “search implies, in a way that browsing does not, a clearly defined idea or concept in mind, with information being sought to confirm, support or refute it, or to set it in context. It cannot, as browsing has always been held to do, throw up new ideas or new connections between ideas”.

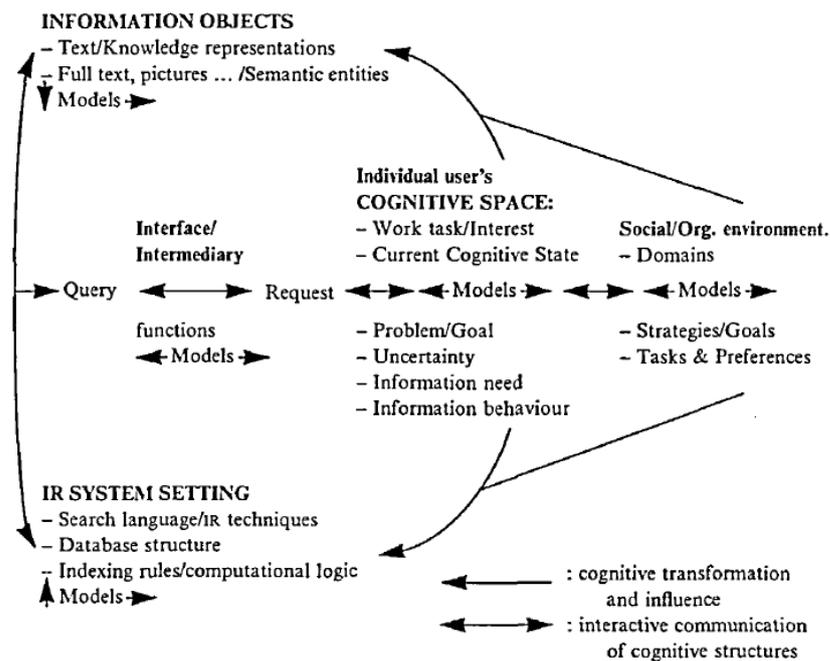
When reflecting on Jansen and Rieh’s framework (Figure 2.3) with regards to social tagging systems as a way to enhance, it is well suited, particularly in supporting “search/browse” activities that are framed in the field of IR. It can also be broadly applied to information-seeking systems that consider aspects of using and interacting with social tagging systems.

Figure 2.3 Framework of Human Information Behaviour and Information Systems (Jansen and Rieh, 2010)



Focused more on the mental models of users, Ingwersen's (1996) model called "The Cognitive model of IR Interaction" (Figure 2.4) arose from the viewpoint of users' interactions with IR systems. The model considers context as an important area in understanding IB. It is focused on identifying the cognitive aspects that may appear in the information process, recognising the features that can affect the intellectual transformations of the users when seeking information. The explicit or implicit cognitive models were clarified, demonstrating that users have models based on information needs, goals, or problems, which are mostly hidden. In contrast, the IR system plays the role of explaining users' cognitive models by offering functions that support those models to fulfil their information needs. The model involves features about the user, the author, and the information-system designer. Overall, the model helps to provide a clear explanation of the "active search" process (Wilson, 1999).

Figure 2.4 Cognitive Model of Information Retrieval Interaction (Ingwersen, 1996)



Ingwersen's model is considered helpful in the context of this research, such as helping to understand aspects of students' behaviour as regards their prospective interaction with social tagging systems. The model aids the capture of aspects of students' tagging behaviour in an academic library context. In terms of influence the factors of students' language preferences and skills in relation to searching and

tagging as well as the text/content influences of the tagged item can influence their behaviour.

Furthermore, studying IB can expand to “cover the broader set of activities (acquiring, managing, generating, etc.)” (Hyldegard, 2006:279). This emphasises the recognition that almost all IR is Interactive Information Retrieval (IIR) and that studies are regularly connected to multi-modal, multi-lingual, and multi-media environments (Ingwersen and Järvelin , 2005).

Consequently, the interaction features or tools of the searching system can play a significant role in how users access information. This can be largely connected to the technological tools and features that have emerged with the evolution of the World Wide Web. Social tagging systems can be seen as a good example of an interactive feature. In this regard, Choo et al. (2000) developed an information-seeking behaviour model focused on the browsing and searching modes offered by the Web. These align well with the main features of social tagging systems. They used Ellis’s categories of information-seeking behaviour, stating that those are capable of meeting the common features offered by Web-browser software. They combined four viewing modes of information-seeking on the Web; by ‘viewing’ they meant browsing. The modes include the following:

- *Undirected viewing*, which describes individuals when exposing “information with no specific informational need in mind”.
- *Conditioned viewing*, which describes individuals when they “direct viewing to information about selected topics or to certain types of information”.
- *Informal search*, which describes individuals when they “actively look for information to deepen the knowledge and understanding of a specific issue”.
- *Formal search*, which describes individuals when they “make a deliberate or planned effort to obtain specific information or types of information about a particular issue”.

Table 2.1 shows additional activities of searching that can be associated with the search process on the Web. Bookmarking, as an activity in modern information seeking behaviour, appears several times<sup>2</sup>. This clearly aligns with social tagging in

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<sup>2</sup> The highlighted text in the table.

which users can add their own label or keyword ‘tags’ on the bookmarked information resources.

Table 2.1 Behavioural Modes and Moves of Information Seeking on the Web (Choo et al., 2000)

		<b>Choo et al. (2000), Four modes of information seeking on the Web</b>			
		<b>Undirected Viewing</b>	<b>Conditioned Viewing</b>	<b>Informal Search</b>	<b>Formal Search</b>
<b>Ellis' categories of information seeking behaviour</b>	<b>Starting</b>	Identifying, selecting, starting pages and sites			
	<b>Chaining</b>	Following links on initial pages			
	<b>Browsing</b>		Browsing entry pages, headings, site maps		
	<b>Differentiating</b>		Bookmarking, printing, copying; going directly to known site	Bookmarking, printing, copying; going directly to known site	
	<b>Monitoring</b>		Revisiting 'favourite' or bookmarked sites for new information	Revisiting 'favourite' or bookmarked sites for new information	Revisiting 'favourite' or bookmarked sites for new information
	<b>Extracting</b>			Using (local) search engines to extract information	Using search engines to extract information

In addition, the notion of ‘collaborative IB’ or ‘collaborative information-seeking behaviour’ has also arisen, which can have a varied meaning “depending on the discipline, a definition may emphasise information handling, search and retrieval, interaction, or the seeking and retrieving of information in support of collaborative work tasks” (Foster, 2006:330). It can involve major “social factors to acquiring, retrieving, seeking, managing, sharing and generating information” (Hyldegard, 2006: 279). This concept can be largely connected to the technological tools that integrate with IR systems, such as Web2.0 functionalities. Using social tagging within online searching and retrieval are considered as core to the use of Web2.0 tools, which the current research focuses on.

### **2.2.2 Information behaviour in relation to information literacy**

The discourse in this section is not the core of this research but it is related to one dimension of it that addresses emerging findings of Phase One (Chapter 4, Section

4.4) that will be further explored in Phase Two. It is primarily driven by the recognition of the importance of exploring ways to support students' information activities, e.g. searching, browsing, and managing, in the academic library online catalogue environment using emerging technologies. The relations between students' information practices and the possible use of social tagging functionalities, e.g. posting and searching tags, were examined; this should help in developing appropriate functionalities to support Information Literacy (IL) practices.

IL is an overall term that covers “concepts such as digital, visual and media literacies, academic literacy, information handling, information skills, data curation and data management” (SCONUL, 2011:3). As has been recognised, in order to be information-literate, a person not only needs to be “able to recognize when information is needed” but also must know how “to locate, evaluate and use effectively the needed information” (ALA, 1989). The Chartered Institute of Library and Information Professionals (CILIP) has defined IL as “knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner” (2004) while the Society of College, National, and University Libraries (2011:3) defines IL as people who will be able to “demonstrate an awareness of how they gather, use, manage, synthesize and create information and data in an ethical manner and will have the information skills to do so effectively”.

Typically, IL assessments have asked individuals to work in their own social environments and be capable of using their IL skills to navigate social change. In this regard UNESCO (2004) noted:

*“Literacy is not uniform, but is instead culturally and linguistically and even temporally diverse. It is shaped by social as well as educational institutions: family, community, workplace, religious establishments and the state. Constraints on its acquisition and application lie not simply in the individual, but also in relations and patterns of communication structured by society”.*

Webber and Johnston (2003:336) define IL as “the adoption of appropriate information behaviour to identify, through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in

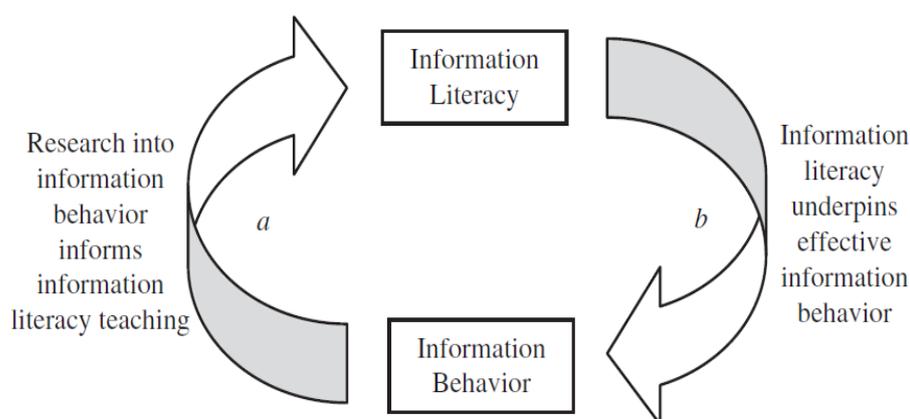
society”, which shows a strong relation between IL and IB. It has been observed that “information-seeking behaviour research has contributed to developments in information literacy and skills training” (Foster, 2004:228) and to other concepts. Boon et al. (2007:207) referred to the relation between these two notions as follows: “one step towards becoming information literate is to acquire an appropriate information-seeking behaviour.”

Researchers in the field have shown this relation by focusing on students’ IB. A study to identify factors affecting students’ IB regarding electronic information sources was carried out by Urquhart and Rowley (2007:1190). IL competencies, were identified as one of the factors that “impact directly on specific student information behaviour” including use, evaluation, presentation, and retrieval of information. Furthermore, Gross and Latham (2007) also indicated the links by underlining the negative relation between students’ IL skills and their “knowledge of the library”, specifying that traditional IL instruction can be insufficient with “non-proficient students” who may not appreciate the benefits of such instruction.

Furthermore, Shenton and Hay-Gibson (2012:30) indicated the possibility to view IB and IL as “complementary concepts, and understand them as existing in harmony within a perpetual cycle”. They proposed an idealised model showing the relationship (see Figure 2.5 below) where ‘*b*’ reflects how IL “underpins effective information behaviour”, and ‘*a*’ reflects “research into [how] information behaviour informs IL teaching”. The authors specified that the model helps in narrowing the gap between information-seeking research and IL teaching.

This research can be categorised with the ‘*a*’ side, where it attempts to capture aspects of students’ IB, e.g. library-catalogue usage, language preferences in searching, and tagging and tagging behaviour. This aims to develop our understanding of the use of social tagging in academic libraries in a way that supports users’ information activities when using the library catalogue, particularly assisting their IL skills practice by using tags and their related functions.

Figure 2.5 “Idealized” Model of the Information Behaviour – Information Literacy Cycle  
(Shenton and Hay-Gibson 2012:31)



### 2.2.2.1 Information literacy standards or models

The IL literature is extensive and presents numerous frameworks or models that describe IL skills. Mostly they provide systematic sets of actions or activities that in turn aid the improving of peoples’ IB. This was observed by Lowe and Eisenberg (2009:63) who indicated that “there are similarities between Kuhlthau’s information search process stages and the various models of information literacy” in that these models offer guidance for implementation of IL skills and instruction in the curriculum. This section presents some IL models related to the current research, mainly to support the emerging findings of Phase One (see Chapter 4, Section 4.4) that will be further explored in Phase Two of the research. The selection of IL standards or models reviewed here particularly highlight those focused on integrating IL in higher education and the learning process.

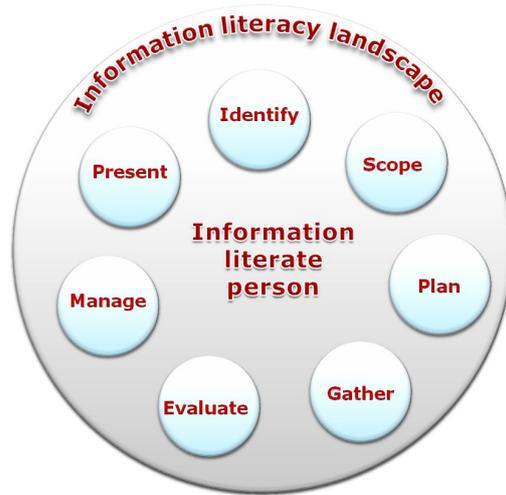
Experts and professionals in the field have delivered several models adopted by scholars and institutions. The Seven Pillars of IL by SCONUL is one of the well-known models which are considered of value mainly because they enhance the investigation of this research. The model was originally established in 1999 (SCONUL, 2011) and endorsed by ACRL and the American Association for Higher Education (ALA, 2000). It was designed to “facilitate further development of ideas amongst practitioners in the field ... stimulate debate about the ideas and about how those ideas might be used by library and other staff in higher education concerned with the development of students’ skills” (Dayal, 2011:49). The model has been used

in many universities. Good evidence of that are the case studies that have been conducted in different universities, such as Abertay, Dundee, Cardiff, Southampton, etc. This confirms the utility of the Seven Pillars of IL (SCONUL, 2004).

Despite the validity of the basic principles of the Seven Pillars model, from the time when the SCONUL model was established it was criticised with regards to its usefulness. It has been perceived as too library-centric, with claims that others should do what librarians believe (Goldstein, 2015). It also fails in addressing the interactive and natural way of how people commonly deal with information (Hepworth and Walton, 2009). The librarians themselves were not totally convinced that the application of the Seven Pillars was applicable for e-learning environments, which made them prefer to use other academic concepts in the curriculum (Goldstein, 2015). There was thus a demand for further evolution of presenting more effective practices of IL skills, especially with the changes happening in the information world.

In 2011, the Seven Pillars of IL was revised and expanded for the higher education sector. The improvement mostly overcame the shortages of the original model. It set out to clearly match the various terminologies and concepts now recognised as IL (SCONUL, 2011). The revised model, accompanied by a series of specialist lenses, includes “research, digital literacy, open educational resources, evidence-based practice healthcare and, most recently, graduate employability” (Goldstein, 2015:2). Figure 2.6 shows the Core Model of SCONUL’s Seven Pillars of IL, which covers the following concepts/pillars: identity, scope, plan, gathering, evaluation, management, and presentation. SCONUL provides clear explanation for each pillar under two main categories: understanding and being able (see Appendix 5).

Figure 2.6 The Core Model of SCONUL’s Seven Pillars of Information Literacy



The circular form of the model illustrates that being information-literate is not a ‘linear process’; rather, a person can improve their skills “within several pillars simultaneously and independently, although in practice they are often closely linked” (SCONUL, 2011:4). The learner can move between pillars “based on their experience and understanding of a particular aspect of information literacy. In each experience, the learner can interact with one or a combination of pillars” (Martin, 2013:118). This shows how students can start the search from any pillar and can be expert on any pillar at any time. This helps to demonstrate how an individual can “develop from ‘novice’ to ‘expert’ as they progress through their learning life” (SCONUL, 2011:3).

This improvement increased the usefulness of the Seven Pillars model, which made it easier to be adapted “by librarians and teachers around the world as a means of helping them to deliver information skills to their learners” (SCONUL, 2011:2). The model was perceived effective in its coverage, with which each pillar represents different, but related, skills that reflect the diverse and overall nature of IL (Goldstein, 2015). Furthermore, the model may be seen as supportive in developing academics’ understanding of IL, and acknowledged in aiding the learning processes, especially in that it could present the IL skills as attributes and behaviours (Walsh, 2012). This made it more accessible, structured, and easy to adapt in the curriculum, further to its capacity to reflect the needs of various environments (Goldstein, 2015).

Additionally, the revised Seven Pillars of IL was perceived as presenting a more inclusive approach of IL, which made it easily complement the wider perspectives of literacy within a framework of “metaliteracy” (Goldstein, 2015). Metaliteracy proposes reinventing the existing IL concept by placing more emphasis on flexibility to align the changes that occur over time (Mackey and Jacobson, 2014). This can include the changes that are occurring nowadays with the use of social media applications. Metaliteracy develops “the scope of traditional information skills (determine, access, locate, understand, produce, and use information) to include the collaborative production and sharing of information in participatory digital environments (collaborate, participate, produce, and share)” (Mackey and Jacobson, 2014:1).

In addition to the SCONUL model, the ALA also developed IL Competency Standards for Higher Education (ALA, 2000) which were considered valuable in showing specific guides to help librarians and faculty members in identifying a student as information literate. The standards comprise five points; each one specified performance indicators and outcomes, including the determining of the nature and extent of the information needed, accessing needed information effectively and efficiently, evaluating information and its sources critically, incorporating selected information into his or her knowledge base and value system, using information effectively to accomplish a specific purpose, understanding many of the economic, legal, and social issues surrounding the use of information, and accessing and using information ethically and legally. It can be observed that the ALA standards mostly cover aspects similar to SCONUL’s Seven Pillars of IL (2011). For example, both are concerned about identifying the information needed, accessing information in an effective way, and evaluating information efficiently. Overall, both of them provide helpful guidance that supports providing for the information literate student. However, SCONUL delivers more specified skills than ALA.

Another acknowledged model is the New Curriculum for Information Literacy (ANCIL) (Secker and Coonan, 2011) that also considers flexible guidelines to suit individuals’ learning activities. ANCIL aimed to assist undergraduates in developing “a high-level, reflective understanding of information contexts and issues which will

empower them with a robust framework for handling new information situations, and to generate strategies for evaluating, analysing and assimilating that information as needed and at the time it is required” (Secker and Coonan, 2011:4).

ANCIL is designed by using ten strands to apply in all levels that comprise a transition from school to higher education, becoming an independent learner, developing academic literacy, mapping and evaluating the information landscape, resource discovery in a student’s discipline, managing information, ethical dimensions of information, presenting and communicating knowledge, synthesising information and creating new knowledge, and social dimensions of information-literacy (Secker and Coonan, 2011). These strands are not necessarily planned to be the basics of individual teaching lessons, but do help in covering the important elements of IL. It can be observed that ANCIL strands share many aspects with the SCONUL model of IL, e.g. managing, evaluating, and presenting skills.

The SCONUL, ALA, and ANCIL models are considered beneficial in supporting the development of students’ IL in higher education. They recognise the impact of technological change on IL. Emphasising the importance of using the emerging technological tools when learning various concepts of IL includes evaluating, managing, and creating information. For example, the present pillars in SCONUL indicate that information literate students need to gain the ability to “develop a personal profile in the community using appropriate personal networks and digital technologies (e.g. discussion lists, social networking sites, blogs, etc.)” (SCONUL, 2011:11).

Researchers, such as Martin (2013), have studied the ANCIL and SCONUL models presented above, as well as the National IL Framework for Scotland (2009) and the IL Framework for Wales (Welsh Information Literacy Project, 2011) to produce standards that help instructors in teaching and promoting IL in higher education. The standards aimed to bring “a holistic, flexible process that embeds IL into learning environments” (Martin, 2013:3). The standards contain six themes: external collaboration, information and IL landscapes, multidimensional learning, academic literacy, expanding participation, and addressing transitions.

In the light of this research, the expanding participation theme mostly reflects exploring how social tagging can support IL skill practices that we investigate in this study. Martin (2013) specified that this theme concerns the technological change in the information landscape from factors such as social media, which increases the roles and responsibilities of individuals when they are engaged in the information process. This suggests that students need to learn not only how to find and use information, but also how to be creators and collaborators in information.

Overall, the models or standards of IL are different in the activities named, but all seek to better support information literate people by proposing several stages, steps, or strands of the required IL skills. They mostly suggest skills that are not necessarily conducted in a linear order, but mainly reflect the ideal activities of an information-literate person. Nevertheless, the systematic presentation of the SCONUL Seven Pillars of IL and the efficient explanations of the represented IL skills and attitudes added additional value to the model's usefulness in practising and developing students' IL in higher education.

#### ***2.2.2.2 Technological information change and information literacy***

Many researchers have explored the changes of information practices in relation to technology. Findings have showed that young people, including university students, commonly take a "least effort" approach when seeking information, and decisions concerning relevance are made based on matters of convenience, which might lead them to miss much useful information (Urquhart and Rowley, 2007; Heinström, 2006; Dresang, 2005; O'Brien and Symons, 2005).

Others point out that students often just use search engines, such as, thus lacking proper search strategies and poorly understanding their information needs; they usually spend little time considering authority and relevance as factors when seeking information to use for their academic work and are generally satisfied with less accurate information (University College London, 2008; Branch, 2003). This trend was also confirmed by the Formative Evaluation of the Nationally Distributed Electronic Resource (ENDER) project (Manchester Metropolitan University, 2002), showing that about 64% of students start their search with Google, Yahoo, Lycos, or Ask Jeeves. The Online Computer Library Center (OCLC) (2002) paper that studied

college students' searching habits, also showed that a notable number of students used commercial search engines as a starting point for their coursework.

Students appear to rely on “one-keyword searches to find the answers” (Timmers and Glas, 2010:46), and scan the resulting pages until they find the needed information (Fiegen et al., 2002). It is mostly because students have “poorly developed information-seeking skills or a propensity to take the easiest path possible” (Dresang, 2005:181). This indicates the weaknesses of students' information skills. Related to this, Adikata and Anwar (2006) showed that 31% of librarians were not satisfied with the level of students' information skills.

Furthermore, with rapid technological changes students are challenged with diverse amounts of information through libraries, the internet, community resources and the media where they have to make the right choices about the information they want to use for their academic work. This information can be in “unfiltered formats”, which raises an issue in relation to the “authenticity, validity, and reliability” of the information, and in evaluating the information (ALA, 2000). This makes IL increasingly important (Timmers and Glas, 2010), and “needed more than ever and at a higher level if people are to really avail themselves of the benefits of an information society” (University College London, 2008:32).

With these changes in the information environment, researchers produced the concepts of Digital Literacy and Media and Information Literacy, which begin with the “creation of content, based on a collection of raw data” that reflect the diverse sources of information available nowadays that can take more than one form (Moeller, et al., 2011). UNESCO defined media and IL as:

*“Knowledge and understanding of how the media operate, how they construct meaning, how they can be used, and how to evaluate the information they present. This also implies knowledge and understanding of personal and social values, responsibilities relating to the ethical use of technology and information, as well as participation in democratic and cultural dialogue”* (Moore, 2008:6).

The International Federation of Library Associations and Institutions (IFLA) (2014) indicated that this empowers individuals with “knowledge of the functions of the

media and information systems” which make it close to lifelong learning in terms of supporting people to meet their goals by using the advantages and “emerging opportunities in the evolving global environment for the shared benefit of all individuals”.

Social media technologies platforms have changed the way we evaluate information. This demands more effort to develop the “information and digital literacy skills of our young people” (University College London, 2008:32). Information can be found in formats other than traditional publications (e.g. Wikis and Blogs), which can be considered as valuable and authoritative based on the creators (Martin, 2013). People now post or upload information onto a website alongside information links that help people to find the information they need; other people who visit the website may add further information that enhances the content. Consequently various kinds of content can be “managed and organized, perhaps using a formal indexing system or tags determined by individuals (often referred to as folksonomies)” (Moeller et al., 2011:5). This emphasizes the need for users to be more information literate where they need to have a critical understanding of ‘media texts’ and “be familiar with what academics recognize as the semantics and semiotics of psycholinguistics” (Moeller et al., 2011:10).

The SCONUL model (2011) reflects this issue, showing that it is importantly for individuals to understand the collaboration activities offered by the digital technologies, where they can take an active part in information creation using digital technologies. Thus, “it is increasingly important to understand how to appropriately use and critique various publication platforms” (Martin, 2013:19).

### ***2.2.2.3 Technological tools and information literacy instruction and practice***

Conventionally, teaching students IL skills can be associated with different learning processes. Webber and Johnston (2000) suggested several stages that cover IL skills, such as recognition of the information need; research formulation; source selection; interrogation; information evaluation; and information synthesis and use. Useful illustrations of the procedure of being information literate were proposed by Hepworth (2000:25) which showed four main areas of learning as follows: learning how to use information tools, such as; “technology, systems and sources to access, organize and distribute data, information and knowledge”; learning the intellectual

processes which are “associated with knowledge creation and information management”; learning how to communicate, particularly “with people to access and exchange data, information and knowledge”; and learning the intellectual norms which are associated with learning “the subject domain associated with the production of knowledge.”

The introduction of new technologies open up great opportunities to support the development of IL skills that should not be ignored. Instructors cannot disregard the vast networked environments available nowadays used by the students to share and communicate information (Selfe and Hawisher, 2004). Vie (2008:21) indicated that “reframing literacy in [the] light of participatory spaces like social networking sites will be key to harnessing the potential of these sites for composition pedagogies appropriate for the 21st century”; this is especially true as most of the students are familiar with social networking websites, which makes it easier to adopt these technologies.

Godwin (2007) explored IL activities that can be supported by the Web2.0 tools, such as Blogs, Rich Site Summary (RSS) feeds, Wikis, Podcasts, YouTube, social bookmarking and social tagging. He indicated that the tools give instructors and librarians “a whole new set of tools to enhance our delivery” that can play an important role in building better information-literate citizens (Godwin, 2007). Another study by Godwin (2009) also suggests the usefulness of these technologies stating that “the link between IL and Web2.0 is novel, encourages constructive learning and enables respected educational methods (e.g. reflection) to be used in different ways.” These findings help to motivate the research carried out in this study.

Librarians’ perceptions about the adaptation of Web2.0 in relation to IL instruction was examined by Luo (2010), where he identified three main motives for using such tools: (i) convenience, (ii) personal enthusiasm, and (iii) relevance to students. Generally, Web2.0 tools are considered as having a positive effect in supporting teaching and learning activities, especially in three different levels including: (i) to organize and manage course-related material for librarians’ own purposes; (ii) to facilitate the delivery of content to students; and (iii) to illustrate IL concepts (Luo, 2010:38). More interestingly, they observed a positive reaction from students

towards using these tools, which has been proved by “the interactions between instructors and students, and students' expression of appreciation” (Luo, 2010:37).

Click and Petit (2010) carried out similar work in exploring the adaptation of social networking technology tools to support IL teaching. They highlighted the possible uses of these tools, and with regard to social bookmarking saw it as providing a valuable example of the use of free social bookmarking sites, such as Delicious. A page of an article can be saved to Delicious, and tagged with “information literacy”, “Web2.0,” “ILLR article”, or even “my article”. The tags “can be searched or browsed, allowing the information to be retrieved more easily and facilitating discovery”. MIT Libraries’ Virtual Reference Collection used Delicious to allow users to browse their tags and access their bookmark list (MIT Libraries, 2009). Thus, implementation of new technologies in information applications and tools can help libraries in better understanding their users’ needs and support them to become effective users and creators of information, which in the end will support libraries’ professional development (Click and Petit, 2010).

Fernandez-Villavicencio (2010) indicated that IL, Media Literacy, Web2.0 tools and Social Networking should be considered as parallel concepts where their applications are made to blend into each other easily. He identified a number of motives: the shifting “in which information creation, communication, searching, retrieval and utilization are taking place”; the affected and “widespread impact the new ICTs are having on all facets of life”; the changes in “the traditional ways people use, access, produce, and share information, even in the short span of a few decades”; and the possible usage of Web2.0 tools to help “teach and to understand Media Literacy and Information Literacy” for a greater use of information in this digital age. (Fernandez-Villavicencio, 2010:134).

In light of the above, we can conclude that closer exploration into the use of emerging technologies to support students’ information practices would be of value. This can help in improving library usage in general, support students’ IL skills practices to increase their awareness and effective usage of the technological tools, as well as improving their information search behaviour, particularly their collaborative IB, bringing better interaction and engagement with the library catalogue system, which is essential in the new library settings.

### **2.3 Globalization, internationalization, and multilingualism**

The challenge related to the impact of the globalization and the movement into internationalization in higher education has been highlighted in the literature. This is considered useful as it reflects the contextual background of the research, particularly in relation to library developments. Altbach et al. (2006:7) reported to the UNESCO World Conference on Higher Education that “universities have always been affected by international trends and to a certain degree operated within a broader international community of academic institutions, scholars, and research.”

Scott (2005:14) observed that the terms ‘internationalization’ and ‘globalization’ are multifaceted where he concluded that while both are suggestive they “cannot be regarded as categorical. They overlap, and are intertwined, in all kinds of ways”. Altbach et al. (2006:7) stated that in the 21st century, globalization is one of the key and most important influences in higher education, describing “globalization as the reality shaped by an increasingly integrated world economy, new information and communications technology, the emergence of an international knowledge network, the role of the English language, and other forces beyond the control of academic institutions”. Teichler (2004:22) indicated that globalization can also be “defined as the totality of substantial changes in the context and inner life of higher education”.

Internationalisation on the other hand can be defined as the “variety of policies and programs that universities and governments implement to respond to globalization” (Altbach et al., 2006:7); or as Knight defined it early in 1994, it is the “process of integrating an international and cultural dimension into the teaching, research and service functions of the institution” (Knight, 2008:19).

Multilingualism is one of the important issues that are highly connected to globalization and cultural openness. Multilingual refers to the person who is “able to speak and understand several languages”, while bilingual refers to the person who is “able to speak and understand two languages” (Merriam-Webster, 2014).

From the second half of the 20th century to the present, English is the leading language found in Web content. However, there are growing numbers of Web users who are not native English speakers. Consequently, within the development of the digital universe, there is a demand for effective and efficient tools to interact with

information across languages and multiple media which mostly remains a challenge in Web search (Peinado et al., 2012).

In view of that, higher education institutions can be affected by different challenges that can raise diverse intercultural and intellectual issues. In the previous decade Brogan (1990) underlined some of the major areas for the development of Higher Education, which are still considered valuable. These areas include foreign language instruction, internationalizing the curriculum, foreign students and scholars, and technical assistance and international development. These areas have an important role in the development of academic libraries.

### **2.3.1 Multilingualism and academic libraries**

Academic libraries as a core service unit in higher education institutions need to align with the global changes. Kalinichenko et al. (2003) highlighted some components of the future global environment that should be considered in academic libraries as follows: being student-centered, being interactive and dynamic, enabling group work on real world topics, enabling students to determine their own learning routes, and emphasizing competencies, such as IL, to support lifelong learning. To address these concerns, academic institutions need to work towards being up-to-date in enhancing their services and functions to align with the global changes and their users' requirements.

Many researchers have discussed the trend of multilingualism in academic libraries, highlighting the need to enrich the library by embracing multilingual features and services. Generally, studying multilingual issues can take either a user or systems approach; however, the majority of the publications centered on the system itself (Dunham and Flores, 2014), while later studies have focused on users and their interaction with the system (Aula and Kellar, 2009).

The current research intends to contribute to user studies by exploring aspects associated with language issues that might face bilingual students when using the library. The problems can occur in various situations; however this research principally reflects academic libraries that serve bilingual students (e.g. Arabic/English speakers). Bilingual students may be following courses taught in a

foreign language either in their home countries or abroad (e.g. international students).

Globally, the number of international students who come from either another country or region is growing (Knight, 2008). Statistics show that in 2011 a considerable number of international students were attracted to the USA with 16.5% and the UK with 13% (Organization for Economic Cooperation and Development, 2011). Further, the Higher Education Statistics Agency (2013) indicated that in the academic year 2012-13, UK higher education had a notable number (18%) of international students.

These students are normally affected by the basic problems of cross-cultural communication associated with second language acquisition, where by nature their learning is hampered by social and first language norms (Scollon et al., 2012). Bilingual students commonly have a range of language skills, or can show a “positive attitude towards both languages and towards code-switching, many switches can be found, even within the same sentence” (Shana, 1980:583). This can obviously affect them when using the library, as they are heavily influenced by their language skills when searching the library system (e.g. formulating search terms).

The language issue in libraries was explored early in the literature. For example, Goudy and Moushey (1984) showed that librarians observed that foreign students had problems when using the library services because they were deficient in their English language skills and lacked the necessary vocabulary; they also highlighted the cultural differences and the lack of library skills. Further, Bilal (1989) surveyed the English language proficiency of international students in relation to library skills. The study identified a number of major factors that affected the students in relation to their library usage skills, including lack of English language proficiency and lack of familiarity with information research skills. Similarly, Liu (1993) examined the factors influencing students from developing countries in the University of California in using the library system, where shortage of English language proficiency and lack of familiarity with the library facilities and services were identified as key problems.

Natowitz (1995) presented a review of 18 articles published between 1987 and 1993, underlining the main issues found by various researchers in the field of international students. Major barriers identified included language, culture, and technology. In

relation to language issues Natowitz found that many non-native English speakers had half the reading and even less oral skills than their peers, which made them avoid asking questions. The study concluded that staff training and library development was needed. Recent studies confirm this; Knight et al. (2010) found that foreign language students are an under-served population who mainly use the library as place to study; he also suggested that the academic library needs to take steps to encourage them to use the library services and resources.

Students who speak the same language were also observed facing difficulties in finding information. Bordonaro (2007) stated that English-speaking students who move to another English-speaking country might face problems in understanding phrases, accents, and words that are unfamiliar. With students following courses taught in a foreign language within their own countries, Ur Rehman and Mohammad (2002) surveyed the effect of language when using the library focusing on undergraduate students of Kuwait University (KU). They found that the English language capability of 32.3% of them was weak. They highlighted that most of the students were second year students who were still having courses to improve their English.

In the light of the above, these students can have diverse language skills, which present obvious difficulties in finding information when searching the online library catalogue. Accordingly, libraries need to facilitate the searching process and improve information access in multiple languages.

### ***2.3.1.1 Language and searching skills***

It has been accepted by several researchers that the level of students' language skills and proficiency can have a great impact on their searching abilities, which clearly affects the success of their fulfilling their information needs when using the library catalogue. Bilal (1989) studied the relations between international students' English language proficiency and their library searching skills. She found that international students lacked adequate English language skills, and lacked self-sufficiency when undertaking research in the library, indicating that these were major problems in comprehending the information they required.

A study by Liu (1993) found that even if the students passed the TOEFL<sup>3</sup> requirement for university registration, they still lacked English vocabulary which made them weak when choosing the correct terminology when searching the library. Robertson (1992) also showed similar findings when studying Middle Eastern students in Scotland, indicating that they faced many difficulties compared to other students.

Further, an examination of the information seeking behaviour of multicultural students conducted by Liu and Redfern (1997) concluded that native English students were normally more fruitful in using the library compared to the other students and showing better searching attitudes. Allen (1993) also showed that not all international students have the appropriate information skills, suggesting that the library needs to consider this group of students by offering them a special instructional service.

More recently researchers also discovered similar findings. Zoe and DiMartino (2000) considered the diversity of foreign students joining American universities particularly in relation to the impact of language and cultural background on searching success, techniques, and satisfaction of using the electronic information resources in academic institutions. Their finding confirmed the relations between the language background and searching ability, where 67% of the students with East Asian language backgrounds stated their dissatisfaction with the library.

Similarly, Safahieh (2007) studied information seeking behaviours of international students in three universities in Malaysia, focusing on their searching behaviour and needs. The findings showed some obstacles that hindered their abilities to meet their information needs, including the lack of familiarity with the library searching system and services indicating that almost all the difficulties related to language barriers. Likewise, Hughes (2010) looked at approaches to meeting the needs of international students from the students' perspective. The study showed that they encountered problems when using the library, due the weakness of their familiarity with the resources and facilities available in the library that were commonly associated with their lack of language proficiency.

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<sup>3</sup> TOEFL refers to Test of English as a Foreign Language

Howze and Moore (2003) examined actual and perceived understanding of technology-based terms used in an academic library by international students. Their findings showed important differences between self-reported and actual understating of terms that do not essentially reflect the accuracy of them. They stated that in order to improve the interaction between the librarians and the students, improvement was needed to overcome the cultural and linguistic barriers, citing the example of providing translated materials or a translated glossary of terms that might improve international students' information seeking processes.

Salmi and Chevalier (2014) compared English native speakers and non-native speakers in completing a searching task. Their results showed that in general the native speakers were faster than the non-native speakers. They also indicated that the non-native speakers formulated their search terms and the language of the queries more than once, and used more keywords than the other group. This reveals the impact of language skills on searching and finding information.

Library initiatives in supporting students' language skills have been discussed by several researchers. Madhusudhan (2012) stated that language is a clear challenge facing foreign students at the University of Delhi when searching the Web Online Public-Access Catalogue (OPAC). Madhusudhan pointed out that the students generally were not aware of the available features in the OPAC; however, the majority of students who had attended library skills training seemed to improve their searching skills. Likewise, Jozsa et al. (2012) found that there were interesting differences in search strategy success between native and foreign language users. Jozsa pointed out that extensive searching strategies training can play an important role in increasing foreign language users' ability to achieve the same success rate.

In the context of Kuwaiti academic libraries, Hamade (2007) examined freshmen students' information skills at KU, and discovered that a notable number of students had difficulties with searching the library catalogue, especially when searching in English. The author stated that it is "recommended that the English proficiency level of students should be taken into consideration in future research" (Hamade, 2007:6). Al-Abassi (2007) also pointed out that many of the databases in KU libraries are in English. Students needed to have a good level of English skill to effectively use the

databases, including understanding their instructions, using appropriate search terms, understanding the search results page, and evaluating the materials found.

In this thesis we study supporting the language diversity of bilingual students when searching the library catalogue. This is particularly in terms of exploring the possible benefit of social tagging that can in turn support their information searching behaviour, taking into consideration the students' point of view, as well as the librarians' perspective on using social tagging systems in academic libraries.

## **2.4 Academic library catalogues**

Generally, the main method to access the library collection is the academic library catalogue whose primary purpose is to facilitate finding information. Most of the libraries used the OPAC, which is “a database of bibliographic records describing the holdings usually of one particular library. It allows searching by name, title and subject, and offers online access through public terminals” (Landoni, 2003:466). Most systems employ the Z39.50 protocol, which refers to the “international standard for communication between computer systems, primarily library and information-related systems” (Kapoor and Goyal, 2007:292).

The OPAC came about as part of an Integrated Library System (ILS) or Library Management System (LMS). The system provides software that interacts with a database, with two user interfaces: one for end users and the other for staff. The system normally comprises a number of modules integrated in one interface including: acquisitions; cataloguing; requests (problems/solutions) knowledge base; and “the OPAC (public interface for users to check-out lending materials, including magazine and newspaper holdings to patrons and with the ability to track those artefacts” (Weldon, 2010:65). Libraries normally deal with suppliers to provide the system. According to a study by JISC and SCONUL (Adamson et al., 2008), ExLibris, Innovative, SirsiDynix and Talis are the main LMS vendors used in UK.

Although academic libraries can differ in the services they provide, OPACs were recognized as a main feature in the LMS. Typically users must enter exact search terms to find relevant information (Madhusudhan and Aggarwal, 2011). A federated search tool is another common feature identified in LMS, where the query can be searched against a set of databases, providing the user with one set of results. This

can save the users time and reduce the need to learn and be familiar with different user interfaces (Boss and Nelson, 2005).

Carden (2004) distinguished between OPAC and the library portal or website. Carden indicated that the library website is an extension of OPAC and could be called the Web OPAC. This allows users to not only to search remote metadata (via Z39.50), but they can also search for information both locally and globally. The author suggested that combining the features of the library website and OPAC can be called an “integrated library portal” that normally provides access to the library collection and to web-accessible resources in a unified interface. This research focuses on academic library searching services considering the related features that newly-adopted (Web2.0 tools) offer to support users in discovering information, as well as facilitating the use of information resources in general. Generally, as Lancaster et al. (1991:379) stated, searching the library catalogue “cannot be considered fully successful unless the user is able to locate the material that is, in some sense, the ‘best’”.

Regardless of the popularity of OPACs as a main searching feature in academic libraries it “soon became clear that searching often proved problematic and results not necessarily satisfactory” (Large and Beheshti, 1997:112). Over the years many studies have shown several issues related to searching the OPAC that are considered worth mentioning. Thus, the following sections will present some problems associated with searching the library catalogue including resource discovery and multilingual discovery, followed by topics in relation to the new generation catalogue focusing on its tools and functionalities as well as user preferences.

#### **2.4.1 Resource discovery**

The literature highlights issues related to searching the library catalogue or OPAC. One of the early studies by Matthews et al. (1983) underlined the fact that the library catalogue typically employs “query-based systems [which] were designed for expert librarian searchers who have a rich conceptual framework for IR; their expertise lies in translating questions into queries on behalf of end users”. Other researchers also confirmed this argument. Borgman (1996:500), for example, claimed that continuing to “require searchers to specify a query in terms of actions, access points, search

terms, and Boolean operators to begin a search” makes using the library catalogue difficult, where most of the users might be novices and lack search skills.

Large and Beheshti (1997:115) explained the problem, saying that “OPAC users try to match search terms they have chosen against terms contained in the OPAC records. A search can be judged successful if the user is able to establish one or more such matches”. Librarians appeared to be aware of this problem showing that conducting subject searching needs considerable knowledge of semantic structures, Boolean operators, controlled vocabulary, and auxiliary tools, such as Library of Congress Subject Headings (LCSH) (Connell, 1995). This makes subject searching be perceived as difficult to many users when formulating the search term, especially when they desire enhancements to topic searches in relation to increasing access points (Matthews et al., 1983).

Large and Beheshti (1997:112) underlined several concerns with searching OPAC, including the following: users can vary when using the library OPAC; some can be experienced enough to conduct successful IR tasks, whereas others may be mere novices in using the system. Users also vary in their knowledge of their search area “and [have] more or less accurate information concerning the sought item”. Additionally OPAC as a system can differ in search “capabilities, interface design, response times, database size, and the bibliographic content of individual records.” OPACs also differ in the way “they provide [facilities] to combine search terms to express complex subjects and to match these terms with the subject terms in the records.” Large and Beheshti (1997:123) concluded that there is no agreement on a solution to the issues of the OPAC, mainly in the area of subject searching. They suggested that the catalogue needs to bring “more sophisticated retrieval engines or natural language processing of user requests”, as well as providing better online help and better user interaction features; however, an enhancement in such search capabilities is demanding.

About a decade later, Villen-Rueda et al. (2007) illustrated that searching OPAC in academic libraries was still a problem for users, where finding information by subject searching was identified as a common difficulty from the user’s perspective. The problem was linked to the indexing and classification policy of the systems, since users have a very limited knowledge of the controlled vocabulary or LCSH. This

negatively impacted on the students' usage of OPAC that might make solving the problem more challenging.

The difficulties were also associated with using Boolean operators that are normally provided in OPAC. Dinet et al. (2004:337) found that satisfaction with results using Boolean operators was highly influenced by user's search skills and expertise. They indicated that even if university students "manage procedural functions of connectives in natural language, [they] do not always manage the whole set of procedural functions". Transaction log analysis was conducted by Lau and Goh (2006) to investigate search and query failure in Nanyang Technological University (NTU) OPAC. Results indicated that almost all the search queries were simple and short in length; Boolean operators were infrequently used, and on average many users were likely to obtain no records or only one record to match their search queries.

The thesis by Al-muomen (2009) investigated factors influencing information seeking behaviour of graduate students at KU. She conducted a questionnaire, focus groups and semi-structured interviews. The findings indicated that the majority of graduate students faced difficulties in finding relevant information, particularly when using the advanced search options. They also heavily used search engines, Internet websites, and personal contacts to find information. The study recommended that more investigation is needed to explore the information seeking behaviour of KU students to enhance their IL skills.

An early observation made by Connaway et al. (1995:150) noticed that "the vast majority of the searches conducted were conservative; that is, they made use of the simplest and most straightforward search modes". This is largely true, especially as the current generation want more enhanced systems that can be used with less effort. For that reason many scholars investigated the problem focusing on students' searching behaviour, mostly because they believed that "by identifying the needs and behaviours of catalogue users, user-centered catalogues can be developed" (Connaway et al., 1995: 142).

Caroline et al. (2010) and Ozel and Cakmak (2010) found that OPAC's performance is insufficient with regard to IR, mostly because university students only occasionally used OPAC during the semester, and preferred to use search engines,

such as Google, to find relevant information. Libraries are aware that “Google has become the symbol of competition to the academic library” (Bell, 2004); students seem to want to find information quickly and generally do not care about the quality. This has produced a generation of users who prefer the simplicity offered by the free search engines available on the Web instead of facing the complexity of using the library services (Brophy and Bawden: 2005). Kakai et al. (2004) also found that the Internet is the most central information source of almost all the students seeking to find information for their academic coursework.

It must “be remembered that not all zero hits represent failures and not all hits represent successes” (Large and Beheshti, 1997:123). However, user satisfaction can be related to many other elements. This is especially the case where using the Web to search for information has increased students’ expectations of the functionalities offered by the library catalogue. In relation to this Sadeh (2007) focused on user searching behaviour using Web search engines to identify user needs for the improvement of the library catalogue, exploring the features that attracted them the most. He found that easy access was a common motive for using such systems highlighting the variety of entry points that can be associated with social networking services; for instance, users can bookmark any webpage using tools, such as ‘Connotea’, the online bookmarking service, to facilitate future retrieval.

A shared conclusion of user behaviour studies included the following: Joint Information Systems Committee (JISC); Research Information Network (RIN); and OCLC; Connaway et al., (2010:4) found that all stated that “users are beginning to desire enhanced functionality in library systems” and “they seem generally confident in their own ability to use information discovery tools”. This supports the importance of developing library searching functionalities and services in a way that meets users’ needs and expectations. Therefore, libraries required to continue to improve their catalogue services and provide more active tools that meet their users’ needs and align with new technological tools.

#### **2.4.2 Multilingual resource discovery**

Users’ characteristics need to be considered for better system design and services. In academic libraries, students’ queries reflect their language proficiency (e.g. abilities, skills, preferences), which can play an important role in search task failure or

success. Park (1997) indicated that it is not sufficient to just evaluate the technical effectiveness of the system; it is also necessary to improve the understanding of the particular group of student users. Since the current research focuses on users' language as a factor influencing the prospective use of social tagging in an academic library, it is necessary to review the related studies in the field that would improve understanding to better explore the support of tags.

From an information retrieval perspective, resource discovery in relation to the user's language is related to the concept of Multilingual Information Access (MLIA), which generally "addresses the problem of accessing, querying and retrieving information from collections in any language at any level of specificity and includes all issues that involve the overall management of multilingual information, such as character encoding, language identification, indexing of collections in multiple languages, etc" (Peters and Sheridan, 2001:52). It mainly integrates tools and technologies from other areas, such as Natural Language Processing (NLP), IR, and MLIA, aiming to help the user find and understand the information they seek, regardless of the linguistic barriers (Peinado, et al. 2013).

MLIA is related also to Cross-Language Information Retrieval (CLIR): the retrieval information written one language by a query written in another. Typically such systems are implemented as a combination of translation and standard IR. The translation can involve translating the document collection or queries into a shared common language. Translation techniques normally combine different approaches, such as "using bilingual dictionaries, extracting word/phrase equivalents from parallel or comparable corpora, and using a Machine Translation (MT) system" (Clough et al., 2006:3).

Multilingual/bilingual IR processes can help in overcoming many of the language issues associated with users' queries. For instance, language ambiguity (e.g. synonyms, homographs, homonymy), or addressing the mismatch between vocabularies used in the query and documents. Within the scope of this research, these problems can occur especially when considering the different language skills of bilingual students. In order to align with the focus of this research, a number of key user-centred studies will be reviewed in the following section.

### ***2.4.2.1 Language skills and multilingual search***

Users' language skills can have a variety of passive and active abilities founded on their mother tongue and any other language(s) studied. Users' language skills and proficiency can play a significant role in their multilingual search experience and search effectiveness (Peters et al., 2012). In the language of Wilson's (1999) model of information behaviour language factors as one of the 'intervening variables'. User language skills, preferences and the field of knowledge have been examined by several of the researchers in the field.

For example, Aytac (2005) focused on IR issues for Turkish Internet users when searching the Internet in their own language. He found that most of the participants used both English and Turkish when searching, indicating that translation tools are important in facilitating the MLIR search process. He pointed out that "despite the fact that English is the most popular communication language, most people are interested in viewing material in their native languages" (Aytac, 2005:281).

The impact of the users' language skills and field of knowledge on multilingual information access has been studied by Clough and Eleta (2010) to understand users' language preferences when searching IR systems. They found that both language and knowledge skills affect the users' language preferences when searching. Similarly, Kralisch and Berendt (2005) indicated that linguistic cognitive effort in a foreign language can be lessened in cases where domain knowledge is high. Furthermore, Gaspari (2004) also discovered that users mostly understand specialized terms related to their subject of interest even if they have limited foreign language abilities.

Rodriguez et al. (2005) studied aspects of users' behaviour when using cross-language search, examining the effect of language skills on their usage of the system functionalities. Their study showed that users with poor language skills usually performed queries in their native language, then translated them into the document. They mostly appreciated an automatic translation functionality offered by the system.

User requirements and preferences for multilingual information access and services have also been explored. Marlow (2006) surveyed the users' needs and requirements with Britain's Tate art galleries. Users' preferred language when searching the Internet was one of the aspects under investigation. The findings showed that 60% of

the multilingual responses indicated that the users' level of English ability is either intermediate or low, with more than half of them saying that it would be useful if the content was displayed in their preferred language and that they would like to visit the collection if it were translated. Clough and Eleta (2010) also indicated that users generally prefer to search in their own language and like to read the document in a language that they understand.

In relation to the academic library context, Wu et al. (2010) studied Chinese students' perceptions of library catalogue functionality, finding that users were generally dissatisfied with the functionalities offered by existing digital libraries. They stressed the need for more development of the tools to aid the information access process, such as translation tools. Similarly, Gauch et al. (2007) suggested that enriching the search functions with multilingual aspects may improve the user's experience. They showed that the European Library offered supportive features that were considered valuable, such as allowing users to type their search queries in different languages, view documents in different languages as well as letting them change their language interface.

Gade (2011) also indicated that users were mostly liked to visit search portals that provided users with the opportunity to change their language preferences, and suggested that multilingualism aspects could address major barriers toward better and more effective searching. Likewise, Budzise-Weaver et al. (2012) recommended that providing a multilingual interface for users to choose their preferred language helped them to find the relevant information quickly within a digital library environment. Clough and Eleta (2010) showed that non-fluent users might understand information written in English yet not necessarily be able to conduct an appropriate query to retrieve it, recommending that cross-language searching features would be helpful for those users.

Budzise-Weaver et al. (2012) explored the features of four American multilingual digital libraries. They noted that all the libraries offered generally beneficial features that supported the library design and access. However, it was recognized that none of the libraries employed CLIR or machine translation facilities. They suggested that with the development of machine translation technologies and the emergence of the various social media applications, multilingual digital libraries might have greater

chances of increasing their multilingual capabilities via crowdsourcing and the application of new technologies. Pablo-Sanchez, et al. (2006) also noticed that CLIR is now affecting things from “classic ad-hoc retrieval scenarios” to accepting new applications and challenges. These applications mostly arise in natural multilingual environments on the Web and are commonly connected to newly-introduced trends, including tagging or blogging. This indicates that in most cases the retrieval unit is shorter than a document; thus, it allows the mixture of methods from IR and from shallow natural language processing.

Overall, it can be argued that users have different backgrounds and mostly have different needs and requirements when accessing information. Yet it needs to be considered that each context can have different aspects that need to be studied; for instance, digital libraries need to meet their user group’s requirements (Clough and Eleta, 2010). Thus, language is a core aspect that needs to be taken into account when designing a system, helping serve the needs of a wide variety of users (Marlow et al., 2008). This is especially the case with the observation made by Vassilakaki and Garoufallou (2013) that there are few studies exploring user behaviour and expectations when interacting with libraries that have multilingual features, emphasising the need for research to grasp some real and practical findings from the users’ point of view.

### **2.4.3 Next generation library catalogue**

The technological evolution in online information platforms has largely changed the search behaviour of users. They “tend not to think in terms of library concepts and flows; they want fast, accessible results” (Adamson et al., 2008:15). Coyle (2007) stated that the transformation happened not just because of a shift in technology but also because of a re-arrangement of how we approach the information. Coyle maintains that the equation “information = library” is no longer true. Part of the reason for this is that “information = book” has been eclipsed by “information = Web”.

Academic libraries are aware that “students increasingly are behaving like consumers, and want to make informed choices about how and where they want to be educated, which implies that students are no longer committed to one institution” (Kalinichenko et al., 2003:6). Thus, libraries must be seen as effective and efficient,

and must use interactive services that satisfy their users (McGillis and Toms, 2001). This is especially the case with Higher Education libraries; they must demonstrate their value as a trusted domain in which to provide all the needed information, and be capable of offering unique and successful user context (Adamson et al., 2008). A huge amount of money has been invested in purchasing and providing electronic resources, which makes it essential for academic libraries to facilitate access to them (Asunka et al., 2009).

In the light of this the concept of Library 2.0 has arisen in the literature. According to Maness (2006) Library 2.0 can be defined as “the application of interactive, collaborative, and multi-media web-based technologies to web-based library services and collections”. In such a library users are involved in participation using different technological tools, such as Wikis, Blogs and social networks, in order to provide feedback on library services so that in turn these services can be improved and evaluated constantly (DeVoe, 2009). Abram (2005) presented four key elements of Library 2.0 as follows:

- It needs to be user-centred by providing users with the opportunity to participate in the library services and content creation.
- It needs to provide a multi-media experience, which suggests providing the newly-emerging functions of video and audio components.
- It needs to be socially rich by providing users with ways to communicate with others and with librarians.
- And more importantly it needs to be collectively innovative to allow users to contribute to the changes in the library; it should continually seek to change its services and functionalities, finding new ways to offer individuals and communities the means to seek, find and utilize information.

Within these developments, the classic library catalogue or OPAC has been transformed into the next generation library catalogue or OPAC. This has been called OPAC2.0, or social OPAC. Breeding (2007) found that there is no single description of this catalogue; however, the central aim is to provide a single point of library information and collection, extending the search scope, improving the interface and the ranking of search results (Breeding, 2007). This in general means to assist libraries to meet today’s user expectations (Sadeh, 2007).

The next generation library catalogue involves enriching the functionality provided by library services and improving the user experience in a more interactive Web environment (Wilson, 2007). Web2.0 applications or tools are commonly employed, such as podcasts, RSS feeds, Wikis, Instant Message (IM), reviews, and social tagging. Web2.0 is generally referred to as a Web environment with a more collaborative and interactive mode, emphasising collective intelligence and users' interaction, providing updated opportunities for using the Web and engaging the users in effectively Web activities (Murugesan, 2007).

Thus the next generation library catalogue “is not really a catalogue at all but more like a tool designed to make it easier for students to learn, teachers to instruct, and scholars to do research. It provides its intended audience with a more effective means for finding and using data and information” (Morgan, 2006). It largely helps by taking on the benefits of the new technological tools as offered by the general Web search services (e.g. Google, Amazon) that attract today's users.

Different approaches can be undertaken to design it. In most cases libraries can incorporate the tools into their online library catalogue services or alternatively adopt a brand new catalogue. The Library of Congress (2006) provides ten-steps for implementing a next generation catalogue and process with “define the community to be served” as the starting step. Thus the new features of the library catalogue must go beyond just providing search options for things in the library; the catalogue needs to offer a more attractive environment, provide a range of features, and engage the students with useful Web activities to create a better searching experience for both individuals and groups. Users are a core element that needs to be studied for better implementation and development of library services.

#### ***2.4.3.1 Tools and functionalities***

Many of the next generation catalogue functions are designed to increase usability. They basically enrich the bibliographic information with content which includes book cover, table of contents, abstract or summaries, reviews and tags, or other data from related records to aid the searching (Breeding, 2007). Further interactive tools and features have also been identified and Ballard and Blaine (2011) list the common features of the next generation catalogue as follows:

- *Enriched content*: associated with the bibliographic information content.
- *Faceted navigation*: associated with the features of navigating search results.
- *Keyword searching*: free-text searching by keyword opposed to more structured searching with controlled vocabularies.
- *Relevancy ranking*: refers to ranking the search results using the frequency and position of search terms found in the bibliographic records.
- *Did you mean . . . ?*: reflects spelling correction features.
- *Recommendations*: reflects providing alternative suggestions for relevant information.
- *Web2.0 or social network features*: reflects involving users in adding content (e.g. tags, reviews, and rating), and integrating social media tools like Facebook, and Twitter.
- *Federated searching*: reflects the capability for the catalogue to incorporate all electronic content; articles may be local or remote.

The new features provide improvements to the classic OPAC; however, they may lack in connecting users with a wider range of library collections (Ballard and Blaine, 2011). This suggests that more investigations on users' needs and preferences are needed for better implementation and usage of the new features. In this regard Thomsett-Scott and Reese (2012) noted the absence in the literature regarding the new catalogue features and discovery tools, specifying the need for more consideration of their implementation, evaluation, and their effectiveness and user satisfaction. So, focusing on users is important, especially since it has been observed that students are frequently more technologically expert than their instructors (Vie, 2008).

Academic libraries have thus started to integrate new technological tools into their services, believing that the “the passive ‘consumer’ journey from ‘Discovery to Delivery’ is itself being transformed under the influence of Web2.0 thinking into an active cycle engaging the user as creator, raising challenges of authority and of new curatorial responsibilities” (Adamson et al., 2008:7). Numerous scholars have studied the existent of these technologies. Harinarayana et al. (2010) explored Web2.0 applications in 57 academic libraries of the top 100 universities that have at least one of the Web2.0 tools. They found that RSS and IM were widely used.

Furthermore, it was surprising that 43% of the libraries are yet to implement these tools. Chua and Goh (2010) found that a notable number of libraries have adopted Web2.0 applications for the purposes of supporting information sharing, organisation, dissemination and acquisition across three regions, including North America, Europe and Asia. Tripathi and Kumar (2010) explored the use of Web2.0 tools in a total of 277 academic libraries located in Australia, Canada, the UK and the USA. The results acknowledge the power of these tools in improving the library service for users. They show that RSS, IM, and Blogs were the most popular tools among the examined libraries. It seems that different regions employ Web2.0 applications differently; nevertheless, academic libraries show a higher adaptation of Web2.0 tools particularly in North America.

Dickson and Holley (2010) studied the use of social networking tools in US academic libraries by examining the literature since 2006. They found that these tools can be effective in highlighting the need to respect students' privacy which can be potential challenging. Ayu and Abrizah (2011) explored the use of Facebook among academic libraries in Malaysia to get a better understanding of the best practices in using social networking sites. In total 14 libraries were using Facebook in their services, yet only three of them were completely employing the service and most of them were using it for marketing purposes.

Recently, Boateng and Liu (2014) also explored Web2.0 applications in the top 100 academic libraries in the USA. The findings showed that Facebook and Twitter were the most commonly-used social media applications in addition to Blogs, RSS, and IM were also used widely, while Wiki was the least used. Overall, the potential benefits of using the newly-emerging technological tools showed the vision of the academic libraries for their development. However, educators need to take up the advantages of using Web2.0 tools especially since they have valuable constructivist approaches to learning that can bring greater socialised online learning (Virkus, 2008).

Several scholars investigated the views of libraries regarding next generation catalogues. With regard to the OPAC2.0 functions and services, an investigation carried out by Wynne and Hanscom (2011) focused on the academic libraries that already use OPAC2.0 features, or are in process of implementing them. With staff

from six different libraries participating, they provided a range of different views, including: 1) the cataloguer and catalogue will not be affected when implementing new tools; 2) cataloguers may lose control of record quality and searching; and 3) this will bring the opportunity not just to improve the services but also to identify the weaknesses of the current process.

It had been observed that a limited number of studies have been carried out in the context of Kuwaiti academic libraries. A number of improvement priorities were identified for the libraries, including speeding up the technical processes to facilitate and enhance library collection access to the end users. Resource sharing across academic libraries, and building co-operation between the participants through computer networks, were also identified (Marimuthu and Paraman, 2011). Further they pointed out that none of the libraries offer translation or technical communication services which are something that needs to be developed.

In relation to students' perceptions, Al-Daihani (2010) investigated postgraduate students' views from KU and the University of Wisconsin-Milwaukee about social software usage; he found that the students were aware of social applications and used them within their online activities. He added that students suggested that academic institutions need to take action to encourage the use of this technology and to provide the students with the skills that they need.

## **2.5 Social tagging systems**

A social tagging system is an example of a Web2.0 technology. Social tagging was identified by O'Reilly (2005) who created the concept of Web2.0. He cited tagging (and folksonomies) as an example of new technological tools that can be an alternative to use of directories (and taxonomies). Social tagging is regarded as a Web2.0 technology because it lets users "add to and change not only content (data), but content describing content (metadata)" (Maness, 2006). The following sections explore social tagging in the context of academic libraries.

### **2.5.1 Overview**

When reviewing the literature various names have been applied to social tagging systems, including social indexing, social classification, shared tagging, tagsonomies, ethnoclassification, collaborative tagging, and folksonomy (Anila, 2008). Mathes

(2004:7) stated that ‘ethn classification’ is inaccurate, because “what is happening is quite unlike classification and far more like categorization”. Nevertheless, collaborative tagging and social tagging are the most widely used terms.

Tags are keywords assigned by users to describe different information resources, such as books, images, videos, websites or any other form of information, for personal use and to facilitate future discovery (Thomas et al., 2009). Users can add their own words, phrases, synonyms, numbers, or acronyms to index information without relying on the use of controlled vocabularies. Therefore, users are at liberty to add the words that they think are the most appropriate for indexing materials (Shirky, 2005). With tags users are able to “organize resources into categories (groups of resources with the same tag) so they can be more easily retrieved later” (Hunter et al., 2008:148). Through tags, the “user can potentially locate like-minded users who hold interests in similarly-themed resources, leading to the creation of social networks” (Lee et al., 2009).

While tagging is related to the process, the action of tagging permits people to label each item with their own controlled vocabulary which provides an additional classification approach (Arch, 2007). Furner (2007:1) indicated that tagging is:

*"The process by which the resources in a collection are tagged—i.e., assigned tags in the form of words, phrases, codes, or other strings of characters—with the dual intention (i) that the tags individually or collectively represent features of the tagged resources (or of resource–tagger relationships), and (ii) that such representations or descriptions may be exploited by search services that enable people to discover the particular resources that are of interest to them at particular times".*

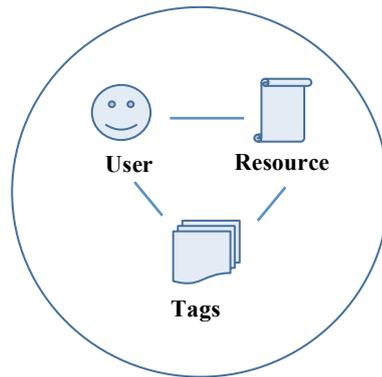
The second stage of tagging comprises the creation of user-created metadata, which are also known as “social classifications”. The term “folksonomy” was created by Thomas Vander Val and represents a merging of the terms “folk” and “taxonomy” (Smith, 2008), which refers to the “underlying structure of social tagging systems” (Marinho et al., 2012:4). Or put simply it means “a taxonomy created by people” (Mathes, 2004:4).

Thomas et al. (2009) indicated that folksonomies are created when users' tags start to be collected and shared among all of the users of the system, for indexing and retrieval purposes. It also can be described as "an Internet-based information retrieval methodology" involving open-ended labels that are generated collaboratively which can be used to organize different Web resources (Noruzi, 2006). Chi and Mytkowicz (2008:82) stated that the term 'folksonomy' is most commonly "used to describe any Web-based technology for generating open-ended labels that categorize content collaboratively".

The classifiers in folksonomy are not intended for information professionals (Thomas, 2004) but for end users, who are the main authors or creators of the labelling (Noruzi, 2006). This makes it unlike traditional classification approaches, such as Library of Congress Classification (LCC) and Dewey Decimal Classification (DDC). An important aspect of folksonomy is that it combines different terms in a flat namespace, which does not involve any hierarchy or direct relationship between these terms (Mathes, 2004). This is different from classification schemes involving controlled vocabularies in which terms are typically organised hierarchically. Accordingly, folksonomies are index terms generated in the vocabulary of the user (Golder and Huberman, 2005).

Smith (2008:4) identifies the basic elements of a social tagging system showing resources, users and tags (Figure 2.7). "Users" refers to the people who use the systems and assign tags; they are also called "taggers". These users can have various interests, goals, motivations and needs. "Resources" refers to the "items that users tag", which can be anything that can be tagged such as a book, Web page, or a video. Resources usually share a common property in each tagging, for example the resources in LibraryThing are books, and in Flickr are photographs, while the "keywords added by users are tags". Since the nature of tagging systems is open-ended any term can be a tag, which can be descriptions of the source subject, the location, the intended use, a reminder or anything users want to add (Smith, 2008). Accordingly, tags are metadata about the resource that can reflect traditional metadata meaning as it "makes it easier to retrieve, use, or manage an information resource" (The National Information Standards Organization, 2004:1).

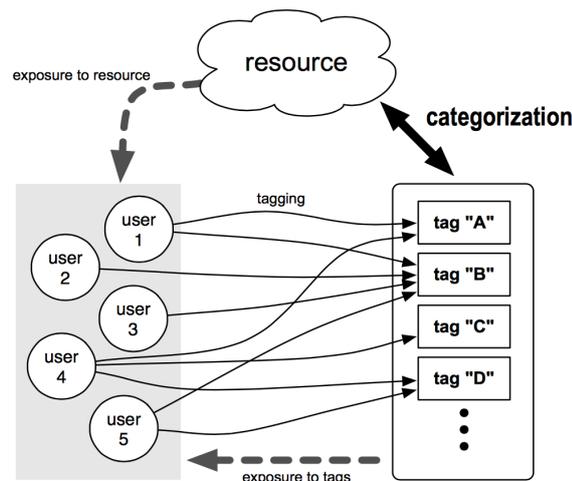
Figure 2.7 Basic Model of Tagging System (Smith, 2008: 4)



Social tagging systems can have different design purposes. Smith (2008) distinguishes between two types of tagging system: 1) Simple tagging systems, such as Flickr, that allow users to tag the original resource only; and 2) Collaborative tagging systems, such as Delicious, where “each user has his or her unique set of tags for that resource and those tags can be aggregated to create a consensus view of each resource” (Smith 2008:55). Golder and Huberman (2005:1) make the distinction that social tagging is “the practice of allowing anyone - especially consumers - to freely attach keywords or tags to content”. Collaborative tagging is “most useful when there is nobody in the ‘librarian’ role or there is simply too much content for a single authority to classify” (Golder and Huberman, 2005:198). The current study considers tagging systems (Figure 2.8), which allow users to freely associate keywords ‘tags’ to describe resources. The user interacts with the system and also exposes tags previously entered by themselves and others. The entire activity of the users’ categorisation of resources in terms of tags is shared by the community (Cattuto et al., 2006).

Three meanings of using tags in the systems were identified as ‘broad’, ‘narrow’ and ‘extended’. Broad tagging is when users are allowed to create tags for every resource (Peters, 2011), which is “many-to-one” (Shiri, 2009). Narrow tagging is when the owner is allowed to add tags to the original resource only (Peters, 2011), which is “one-to-one; typically this user is the person who posted the item” (Shiri 2009). Lastly, extended allows the owner and specific users to add tags, “where each tag may only be indexed once per resource” (Peters, 2011).

Figure 2.8 Collaborative Tagging Process (Cattuto et al., 2006:1)



Ammer and Bertel (2011) noted two principal reasons for the increasing popularity of tagging on the Web, including the growing need to employ control to the large amounts of digital information gathered on a daily basis. It also attempts to “democratize” ways to organize and describe digital information using terminologies and categories more closely related to the needs and views of the actual users, in place of those that reflect an external organization.

### 2.5.2 Common functionalities

In normal scenarios of using social tagging, users create accounts before they start adding tags to bookmark Web resources; each bookmark is then saved with the title and the Uniform Resource Locator (URL) of the resource; some systems notify users if the URLs are no longer available. The system usually asks the user to designate the bookmark as public or private (Noruzi, 2006). Social tagging systems commonly offer various functions that aid resource discovery, mainly searching and browsing activities, as well as managing information.

Tags are not necessary for retrieval (Cox et al., 2008), yet they can support searching typically via offering active search by tags, which generally works like the search engine or the library catalogue works, with users entering search terms and the system retrieving the exact terms from the stored tags (Peters, 2009). Tags can be designed with no specific rules, where the users only determine them. Users’ language and views are representing by their tags, and searching them can offer



Furthermore, Peters (2009:120) presents an overview of the search and tagging functionalities of 11 collaborative information services, including Bibsonomy, LibraryThing, Flickr, YouTube, Last.fm, Amazon, WISO, Engineering Village, 43things and Delicious. Different functions reviewed included: the provider of the resource to be tagged (e.g. author, users, or providers); tag editing functions; tagging accessibility (e.g. all users, author and friends, or only authors); the type of folksonomy (broad, narrow, or extended); available search operators (e.g. AND, OR, NOT, “Phrase”) and browsing visualization (e.g. tag clouds).

An analytical examination of ten social tagging systems that included social bookmarking and social media sharing sites, was conducted by Shiri (2009:902), mainly to discover “the ways in which features and functionalities associated with tags have been designed”. He focused on interface features “that allow users to create, contribute, explore and interact with content, specifically tags”. Four main categories were developed as follows: ‘User tagging features’; ‘Tag browsing and exploration features’; ‘Interface layout’; and ‘Relation between type of content and tagging features provided.’ Based on the analysis, a social tagging recommendation design was presented (Shiri, 2009: 904).

### **2.5.3 Classification, indexing and tags**

IR systems normally employ indexing and classification processes to support document retrieval. A typical social tagging system allows users to assign any terms this can cause problems in the retrieval process. The following sections highlights some of the issues reported in literature.

#### ***2.5.3.1 Tag ambiguity***

A common issue that is often discussed is related to the “consistent, controlled, and hierarchical systems” (Parker, 2006:10), and the ambiguous terms that can occur when using tags, which mostly affect its use as a retrieval tool. Golder and Huberman (2005:2) identify main problems with tagging summarised as follows:

- *Polysemy*: describes the words that have more than one related meaning; “Poly” refer to ‘many’, and “semy” refer to ‘meanings’. So, the Polysemy word can have one or more than a single meaning.

- *Homonymy*: is another problem similar to polysemy; homonymy refers to words that have multiple unrelated meanings, which makes it less problematic because in general it can be controlled in “tag-based search through the addition of a related term with which the unwanted homonym would not appear”.
- *Synonymy*: refers to the words or terms that have parallel meanings which is a key problem with tagging systems. It is caused by the inconsistency of the tags used in the system that makes it difficult for users to be assured that the entire relevant information has been found. As social tagging is by its very nature a collaborative system the issue is compounded, where all users either need to decide on a convention or need to accept that they must conduct multiple queries.
- *Plurals*: if singular and plural forms of tags are not resolved then the users cannot find relevant items when such terms are used.

The ideal social tagging system would provide “automatic suggestions for reformatting tags to fit with international trends” (Golder and Huberman, 2005:3). The main problem is that various users might understand terms at different levels of specification when choosing the most appropriate tag in describing the content.

### ***2.5.3.2 Tags versus traditional indexing***

Indexing methods that make use of classification schemes, such as controlled vocabularies and thesauri, can manage variations of terms. This turn reduces the possibilities of missing relevant resources during a search (Macgregor and McCulloch, 2006). Tagging, on the other hand, uses natural language (or keywords) to describe resources, treated as metadata after their creation (Mcdermott and Pettifer, 2006). Traditional indexing, however, shows problems when it comes to the search process, particularly from the user’s point of view (Section 2.4.1). Some previous studies have contrasted tags with controlled vocabulary terms to explore the usefulness of tagging for retrieval purposes. For example, Tennis (2006) states that social tagging highlights the need to compensate for the weakness of the traditional indexing tools, and helps to determine how indexing can be improved in the formal environment. He suggested that tagging is faster, cheaper, and less strictly controlled in terms of the choice of terms for describing the items.

Smith (2008:84) pointed out that tags cannot “establish equivalence between terms the way a controlled vocabulary does”, where it has specific characteristics such as:

“tagging done independently”; “tags are aggregated”; “relationship are inferred”; “and any inference method is valid (through some are better than others”. This basically makes many researchers conclude that folksonomies are better linked to the traditional classification and indexing methods.

Useful comparative examples were given by Maness (2006) who highlighted the problem of standard classification using the term “cookery” from LCSH. Despite the fact that almost no native English speaker would use this when referring to “cookbooks”, means the use of tags will immediately change the term “cookery” to “cookbooks” which would make later searching much easier. The author stated that using tags in the library catalogue would allow users to find the information in a way that makes sense for them from both “standardized and user-tagged subjects”. Largely, tagging systems are more connected to personal aspects, whereas indexing can be performed as a delegation moderated across various institutions (Tennis, 2006).

Yi and Chan (2009) examined a set of tags from Delicious using the word matching technique between tags and the LCSH tree, that contained a set of categories, including: 1) terms that are used as subject headings; 2) terms that are synonyms with the subject headings; 3) terms that express broad concepts of the subject headings; and 4) terms that express narrower concepts of the subject headings. Further, different tag analyses were conducted, such as tag frequency, multiword tags, singular and plural forms, variants, the overlap of user-tags with LCSH and distributed tags over the LCSH tree. The study found that 61% of tags directly match LCSH, which could be increased by resolving both the different formats of multiword terms and the inflected forms of the terms. They recommend that controlled vocabularies (e.g. LCSH) are essential and play an effective role in the retrieval process.

Lee and Schleyer (2012) also compared tags from CiteULike to MeSH terms for 231,388 citations indexed in MEDLINE, which is a medical database. Around 21 million papers in the biomedical literature were examined using different types of analysis. Overall results show that many tags were distinct from MeSH terms, and only a third of the citations match one or more tags from a total of 231,388 papers.

The authors determined that for a set of papers the CiteULike tags and MeSH terms were mostly separate and relatively distinct lexically showing different viewpoints.

Hunter et al. (2008) produced a system called ‘HarvANA’ that permits the merging of users’ tags with authorised metadata. They stated that the importance of any approach is to optimise the exchange between the benefits of both the hierarchical controlled vocabulary and the simplicity and freedom of tagging. Adaptations of an ‘ontology-directed-folksonomy’ were applied, that provided all users with suggested tags from the ontology when creating tags, yet at the same time gave them the option to assign their own tags. They believed that this method ensured the maximum amount of valuable semantic metadata. In practice, some existing tagging systems apply tag suggestions, as in Goodreads (Goodreads, 2012).

Gelernter (2007) studied the tag clouds of LibraryThing to examine recall, tag cloud format, preferences, and relevance judgements based on LCSH and tags; the results showed that users generally prefer terms that are organised and comprehensive to a distracting cloud. However, tagging is considered as a support for the LCSH for retrieval purposes. Further, they noticed that the tag cloud format is not yet fully understood, suggesting the need to improve the arrangement of the tags in order for them to be better understood, probably by filtering the collection of tags to exclude duplication and display them in a hierarchical way.

Overall, social tagging or users’ tags are not counter to traditional indexing or controlled vocabularies. The social phenomena are concerned with the interfaces of both free-text ‘tagging’ and knowledge organisation systems, commenting that “collaborative tagging is neither the successor of traditional indexing nor a short-dated trend but... a catalyst for improvement and innovation in indexing” (Voss, 2007:7). Maness (2006) noted that a tagged catalogue brings the best approach to overcome the gap between system and users in “an open catalogue, a customized, user-centred catalog” and this “is library science at its best”.

### ***2.5.3.3 Tag categorization***

To understand users’ tags and their usage a number of researchers have focused on analysing categories of tags. Such studies mostly place emphasis on the linguistic characteristics of tags and how they differ from ‘standard’ language, as well as the

occurrence of tags within the content being tagged and the types of tags (Peters, 2009). The datasets used in such studies are drawn frequently from popular tagging systems, such as Delicious and Flickr. Some of the key studies are presented next.

Golder and Huberman (2006) analysed tags from Delicious, focusing on tag frequency, user activities and kind of tag. Seven kinds of tag were presented: 1) tags that describe the topic itself; 2) tags that describe the kind of item; 3) tags that describe the owner of the item; 4) tags that are not understood alone, like numbers; 5) tags that reflect the taggers' opinions; 6) tags beginning with 'my'; and 7) tags that reflect actions. They concluded that almost all kinds of tags are valuable to users, even if they are connected to people's personal use.

While Kipp and Campbell (2006) investigated the structure of tagging systems by applying co-word analysis to a collection of Delicious tags. They stated that the co-word analysis provided a means of assessing people's tags' usefulness, "based as it is on the assumption that the co-occurrence of words in a particular field in two or more documents is a measure of the strength of the relationship between the co-occurring words" (Kipp and Campbell, 2006:2). They found that the related terms are not necessarily disclosed via co-occurrence, but are also related to the variety of tag vocabulary. In addition, they found that time-related tags were popular among users (e.g. 'toread'), stating that: "If temporal tags were to become more sophisticated, their effect on subject access systems might be transformative" (Kipp and Campbell, 2006:10).

A year later a study by Al-Khalifa (2007) focused on folksonomy analysis based on a random sample of Delicious tags, using three main categories from (Golder and Huberman, 2006), including tags for personal organisation use (personal), tags for describing the facts about the resource (facts), and tags that reflect users' views or opinions about the resource (subjective). They added more heuristics to use these categories, such as 'tag occurrences' to agree the meaning of it; 'compound tags vague abbreviations', which are treated as personal tags, where it is difficult to know what they mean; 'misspelled tags' were excluded. The study proposed to measure the potential use of folksonomy tags in structured metadata creation. They argued that classifying tags into semantic categories would be useful for transforming them into valuable metadata.

Another study by Kipp (2007) considered non-subject related tags from three social tagging websites to examine their role and usefulness in tagging systems. These tags deal with users' emotional responses to the content, task or time related to current activities and ignore tags that reflect items. Two main categories were identified: 1) time and task related tags; and 2) affective (emotional) tags. The study found that time and task related tags (e.g. 'toread') could be valuable in sharing interests and specific materials between groups of users. In contrast, affective tags (e.g. 'interesting') can be fun, and not have an obvious implication for the classification systems, but the use of such terms on social networking websites seems to be meaningful to their users.

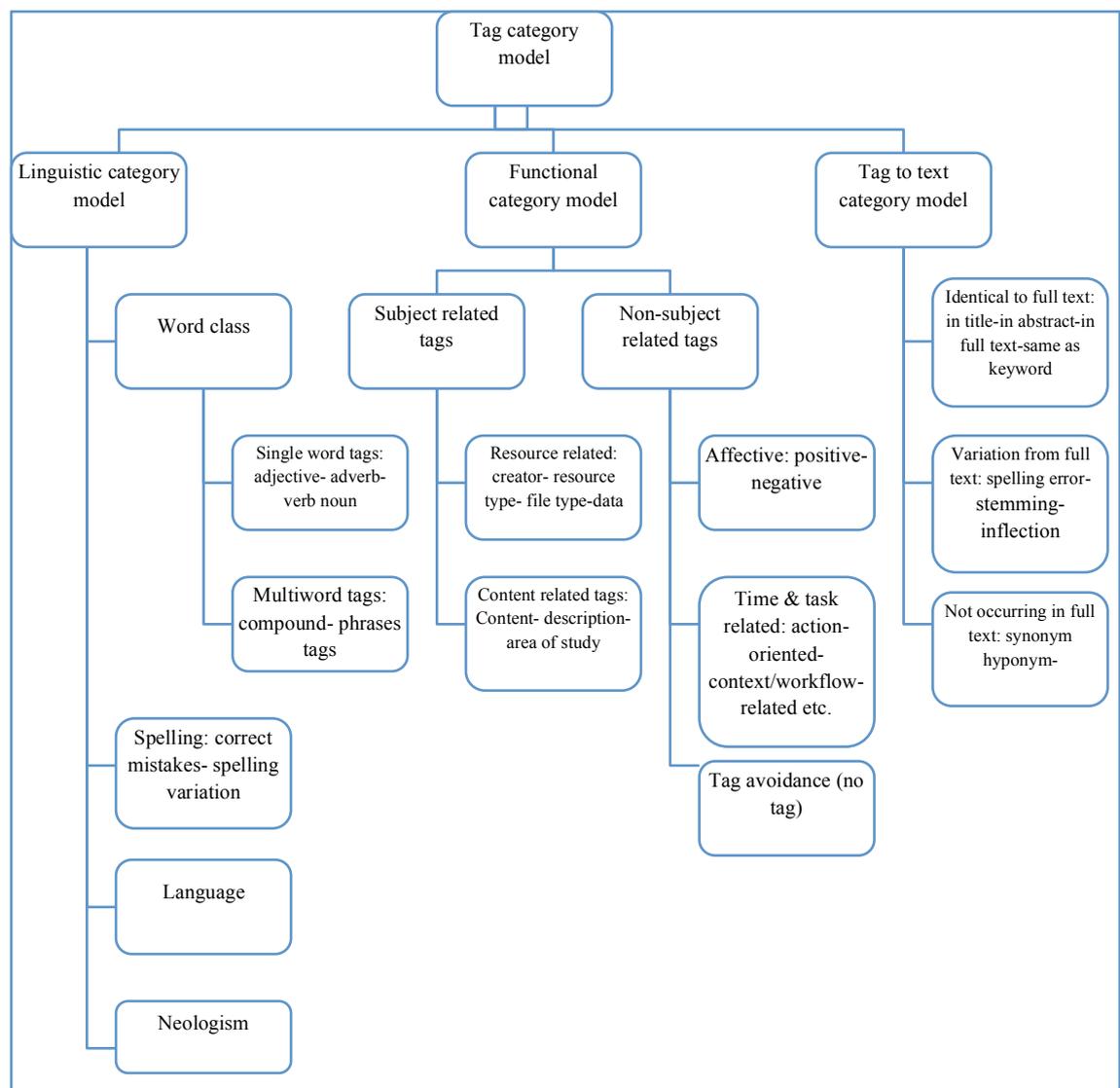
Farhan and Sanderson (2009) studied Delicious tags by capturing recent bookmarks, user details and tags focusing on government-related issues only. They focused on folksonomy's quality, as it is essential to deal with folksonomy as a classification tool. By quality, they meant the ability to describe the content of electronic documents leading to the identification of access points recognized by the majority of users and facilitates information organization and retrieval. They developed folksonomy criteria containing six variables, as follows: 1) Orthography, which refers to the compatibility of tags constituting the folksonomy with standard English (UK/USA), and an acknowledged populist source; 2) motivation, which refers to taggers' motivations as expressed by tag selection; 3) relevancy, which refers to the representation of the aboutness of documents in the folksonomy; 4) subject coverage, which refers to the exhaustiveness and specificity of folksonomy in covering the subject domain; 5) consensus, which refers to the frequency of taggers' agreement upon individual/discrete tags constituting the folksonomy; 6) consistency, which refers to the usage of certain tags from by different users" and 7) findability, which refers to the folksonomy's ability to identify relevant documents.

Wetzker et al. (2010) presented a user-centric tag model that mapped personal tags ('personomies') with the equivalent folksonomy to deduce the meaning of personomies by translating the individual tags into a sharable language by studying tag co-occurrences in the shared public space with a community of users. Four assumptions were presented that motivate this approach: 1) people tag for future retrieval, and the majority of them are not interested in sharing their personal tags; 2) each user tags differently; 3) people share a similar understanding about the content;

and 4) personal tags are valuable in the short term. They evaluated the model via tag recommenders and social search experiments, using a random sample of tags from Delicious and Bibsonomy. The results showed that tag translation brings a better accuracy of tag use for IR, and helped in solving common problems like ambiguity, anonymity and multilingualism.

A holistic Tag Categorisation Model was presented by Hecker et al. (2007) that has been divided into three main models: 1) “The functional category model”; 2) “The linguistic category model”; and 3) “The tag to text category model”. Peters (2009) presented a modified model of tags categorisation from (Hecker et al. 2007), that gave an overview of the tag category models, shown in (Figure 2.10).

Figure 2.10 Categorisation Model for Tags Adopted From (Hecker et al. 2007)



In summary, we can consider that tag categorization is a valid approach for studying users' tags, yet there is no one way, it mostly depends on the type of research and the dataset. This research adopts the Tag Category Model from Hecker, et al. (2007) that will support understanding students' tags by dividing them into several categories particularly the tag to text category model; more details are presented later in Chapter 3, Section 3.8.1.5.2.

## **2.5.4 Social tagging and library catalogue**

Social tagging is typically added to the library catalogue searching services to support its discovery functionalities for end users. The literature on social tagging is extensive, discussing various aspects of using tags to support online searching; however tagging, like any other new technology application, has its benefits and drawbacks, which will be presented in the following sections.

### ***2.5.4.1 Challenges of using tagging***

Some challenges or issues pointed out in the literature relate to using social tagging in academic libraries, in addition to the low precision of tags that is associated with the absence of controlled vocabularies (Macgregor and McCulloch, 2006). The system had its own disadvantages; one of the obvious challenges mostly related to the nature of the system. As the system allowed the users to contribute to the library catalogue by freely assigning their own labels, which made it hard to control (Baslem and Bajahzar, 2014).

Social tagging also requires users to have some technical skills to add and maintain tags; this can be an issue in many libraries especially if they lack the necessary skills and need to provide training sessions for the librarians and the users (Ferguson, 2013). Another related problem might happen in cases where users add inaccurate tags that are not necessarily useful; this emphasises the importance of training for better tag creation (Kehoe and Gee, 2011). The number of tags in the system plays an essential role in the effectiveness of their use; having a limited number of tags might mislead users to incorrect information particularly when having absurd tags (Peters, 2009).

The continuous use of tags may lead libraries to accept new terms, where in practice many libraries have a 'black list' comprising terms considered unsuitable or socially

unacceptable. Terms in these lists are completely banned from the libraries. However, the social tagging may result in confusion (e.g. spelling errors), irrelevant or messy words (Kehoe and Gee, 2011). Another key element that affects the use of social tagging is the lack of hierarchy, which limits users to results based only on tags provided (Baslem and Bajahzar, 2014).

#### ***2.5.4.2 Tagging as a supporting tool***

Despite the challenges and the weaknesses associated with social tagging, many researchers have shown that tags added to searching services improve the “customizable features of library catalogues” (Spiteri, 2005:25). Noruzi (2006) indicated that tags have the potential to improve the search effectiveness, mainly because it categorizes the content using accessible, familiar and shared vocabulary created by the system users. Also, because the tags can add more descriptive information about the content, it would help the users to detect key ideas about the topic available (Golder and Huberman, 2005).

Tags can facilitate future visits to information in a Web space. Users can add tags to organize resources of interest found in the catalogue (Feicheng and Yating, 2014; Spiteri, 2005). It can also assist in finding unexpected information (e.g. browsing tags), reflecting the users’ vocabulary, and providing direct feedback whereby users can immediately see a cluster of tags belonging to the same item (Mathes, 2004).

In a collaborative-based system searching for information is not limited to entering keywords and viewing a list of results but also can be started from the item itself by clicking on the available links. In tagging systems, users can click on tags to find information (Furnas et al., 2006), which can clearly support users’ searching activities. The user can search tags using the search function provided by the system and can perform browsing through tag clouds.

The strategy of browsing interesting resources that the users were not directly seeking for are closely related to ‘exploratory search’ (Peters, 2009). Social tagging systems can support exploratory search activities in two main ways: the first is “where end-users click on a visible name and the bookmarks for that person appear”; the second is “when tags are used to query the bookmark collection” (Millen et al., 2007:23).

Some concepts of exploratory searches within social tagging services were examined by different researchers. Millen et al. (2007) indicated that users are keen to scan recent bookmarks, clicking on user tags and names for social searches, and using tags for personal searches for filtering, revisiting and managing their bookmarks. The authors concluded that social bookmarking tools provided a valuable combination of personal tagging, resulting in more sufficient social navigation. Kammerer et al. (2009) presented a tag-based exploratory system called 'MrTaggy', to examine the usefulness of the system for domain learning. The results showed that the exploratory features of tag searches seem to be beneficial for learning, and supportive of novice users.

The thesis by Jiang (2010) focused on characterising and evaluating user information seeking behaviour, particularly on real user activities with a tagging system. Four fundamental elements of information seeking behaviour from Wilson's model were included, such as encountering, browsing, searching, and monitoring. The study pointed out that the most popular strategy is browsing resources and the most effective one is browsing by tag.

A comparison study between novice and experts users conducted by Kang et al. (2010) examined the performing of exploratory searches using tagging systems and traditional searches through laboratory experiments. The findings suggested that tagging tools facilitate both search activities, yet information seekers rely more on the information provided by the social Web. The study also showed that experts create better tags for the retrieval process; however, more guidance is necessary for better performance.

Shiri (2009:901) conducted a comparison of social tagging features, covering ten sites of social media sharing and social bookmarking, examining how the interfaces of social tagging encouraged users to use the "features to assign, explore, browse and make use of tags during their interaction with social tagging sites". Four main categories of tagging features were determined for the analysis, namely: "user tagging features, tag browsing and exploration features, interface layout, and relation between type of content and tagging features provided". The author found that social tagging interfaces design that reflects aspects of exploratory search and tag browsing features and services were effective.

Recent investigations in exploratory search are generally focused on searching services that support users' interactions (Ruotsalo et al., 2013). This makes social tagging an ideal tool to support users' exploratory search activities, where tags can be used as navigational hints that support exploration of information that other user communities shared and found on the system. Such an environment can support users to evolve in their domain of interest and explore potential paths for meeting their information needs (Ruotsalo et al., 2013).

Additional to the above, studies also proved that tags can add additional access points to information where users can have more variety so will be allowed to use "an integrated cataloguing system based on the librarian's view point as well as users' approach" (Aqil et al., 2011:397). Trant (2009) highlighted a similar point showing that tags would help in providing alternative routes to access works of art. She found that 90% of users' tag terms were not found in the items; this study was within the context of museum documentation (steve.museum-tagging prototype).

Sharing is another important in tagging-based systems whereby users can share tags with their associated resources with other users. This likens the use of tagging to a user-directed reader advisory service (Spiteri, 2005). This normally happens by navigating the tags and their creators. Because of the easy way that users can identify the tags/bookmarks creators, it can also be easy to create a social connection with them, ideally with people who have similar interests. Users can also view the number of tags attached to each resource that may provide an indication of the 'usefulness' of the information. Over a period of time users can have "a unique structure of keywords to define resources" (Noruzi, 2006:201).

Primarily, tagging services allow users to categorise information as an individual and browse other users' categorisations; in this sense tagging can support both public and personal aspects (Golder and Huberman, 2005). Users can collect personal bookmarks, explore other bookmarks and find user groups of similar interest, and can recommend resources which are generally preferred (Noruzi, 2006).

Vuorikari and Põldoja (2010) proposed three broader themes of different uses of tagging within educational tagging systems, looking at the similarities and differences, and the possibilities for helping users to achieve their goals through tags.

The themes include: personal retrieval (favourites tags); attracting others users and sharing resources (tag cloud); and searchable purposes (search tags).

Social tagging systems cannot be ignored. LIS professionals have to learn from the social and interactive aspects shown in such systems, and the positive way that it engaged users with information managements (Noruzi, 2006). This is especially true with the increasing popularity of tagging, suggesting that people have the motivation and interest to add their own keywords (tags) to the resources of interest (Spiteri, 2005). Where tags are combined with controlled vocabularies the combination can create valuable content that merges formal and informal aspects (Macgregor and McCulloch, 2006).

This can be very beneficial to the library catalogue, especially for serendipitous browsing, and for social interaction which is considered an important component in libraries (Kalinichenko, 2003). Tagging is “one of the greatest innovations changing the library discovery experience in addition to the user participation in findability through the use of user-contributed keywords or “tags” associated with particular materials” (Sanders, 2008:53).

Several social tagging have already been designed for educational purposes taking different approaches. For instance, the University of Pennsylvania provides PennTags, a system that allows users to create tags to organise, locate and share their favourite websites (University of Pennsylvania, 2011). LibraryThing, the social networking website, offers the LibraryThing for Libraries (LTFL) service. The service works with the search function from OPACs, where it provides users with tags from LibrayThing when an OPAC retrieves any books owned by LibraryThing; 279 libraries around the world currently use this service (LibraryThing, 2012).

The LibraryThing service has been studied by several scholars. For example, Pera et al. (2009) proposed enhanced library systems using the folksonomy from LibraryThing to provide a query evaluation strategy, including word similarity and word correlation factors. The system showed a significant decrease in the zero-hit query results and increased the ranking relevant ranks records within OPAC. Lu et al. (2010), compared LibraryThing tags with LCSH; results showed that comparing tags with the formal classification method would be beneficial to improve the accessibility of the library collection. However, the non-subject related tags could

impede the use of tags in the library catalogue. Westcott et al. (2009) examined the use of LTFL service at the Claremont University Consortium's libraries. The results showed the usefulness of tags generally, and the use of tags to suggest reading using the library collection.

Users' preferences regarding OPAC2.0 were studied with special consideration of social tagging. Tam et al. (2009) showed that OPAC2.0 must match the users' needs and preferences. Tag clouds were one of the features examined, with results showing that university students find tag clouds useful for narrowing down results, providing faster and better results, and drawing their attention to some relevant words that they may not have considered. Another study of user and staff expectations has been carried out by Ozel and Cakmak (2010) at Ankara and Hacettepe University Libraries. The study showed that most of the participants thought that the appearances of tag clouds, and the other tagging features of OPAC, are useful in supporting user interaction with the system. Overall, the users expect that social tools will provide them with access to items in a faster way, help with their decision making regarding relevant resources, and increase the effectiveness of OPAC. Further, the authors showed that most of the participants already possess the skills required to use social networking tools.

Despite the fact that many scholars have shown the benefits of using tags in libraries, the integration of social tagging in academic libraries is still limited. Harinarayana et al. (2010) found that only five libraries were using social tagging tools from a total of 57 academic libraries, simply providing either a link to the some popular websites, or their own tagging tools. Chua and Goh (2010) found that only 16% of the libraries in North America, Europe and Asia own social tagging tools (e.g. the University of Pennsylvania); whereas others use librarian-defined tags as part of their catalogue (e.g. Santa Cruz Public Library); it was also common to find tag clouds alongside blogs (e.g. the Blue Mountain Library in Australia).

Wakeling et al. (2012) examined 211 public and 118 academic libraries to identify if recommendation features were offered to the users. With academic libraries they found that only 19 offered social tagging tools. Recently Boateng and Liu (2014) also showed that tagging functionalities are used by 100 of a total of 395 academic libraries in the USA. In the light of this we can state that more investigations are

needed to explore the usefulness of social tagging for academic library catalogue development.

### **2.5.5 Multilingualism and social tagging**

Most studies presumed that tags are used in a language that is understood by most users; this is not always the case (Hammond et al., 2005). Only a limited number of studies focused on the language of tags in a multilingual context. Multilingual tags are found in popular tagging systems like Flickr and Delicious. Guy and Tonkin (2006) found that 28% of the tags in Delicious, and 40% of Flickr tags were misspelt, usually in languages that are not understood by the software dictionary, or tags that compound two words or contain more than one language. They found that compound tags mostly contain numbers, such as ‘16thjuly’. They also found that there were fewer single word tags than expected. Tags with different alphabets were also found, which lead to technical issues, like in Japanese, Russian, Chinese, Czech and German. For example, German tags were usually represented in the Latin-1 character set. However, because some characters are unavailable the users used the available characters (e.g. ‘ue’ for ‘ü’) so these tags mostly represent misspelt tags. This type of tag “is hampered both by technical issues and by the fact that many words exist in multiple languages” (Guy and Tonkin, 2006). Eleta and Golbeck (2012) studied tagging in both the English and Spanish languages of an image collection, concentrating on the advantages of social tagging in digital libraries. They argued that assigning different languages would bridge the language barrier and increase access to the collection. Results showed no great agreement in vocabulary when describing images in a second language. However, a different cultural perspective can be found for some images, particularly those less frequently tagged. It is thus necessary to compare and understand tagging behaviour across different languages.

Multilingual tags in an educational context have been studied by some researchers. The needs and expectations of University users regarding social tagging in digital libraries were examined by Wu et al. (2012), who found that the Chinese participants had stronger preferences regarding “allowing users to set up tags in their native languages for multilingual resources”. Furthermore, they indicated that the language that users speak and the countries they come from highly affect “their motivations, behaviours, and expectations of multilingual information in digital libraries”. Tsai et

al. (2010) conducted experiments to compare the novice and expert tagging behaviour of Chinese students who were asked to tag Chinese articles. The study found that, generally, experts act better in terms of the tag similarity and relevance to the document; their tags reflect a better understanding of the item content. Therefore, expert taggers are needed in the formal context, including academic libraries.

Vuorikari et al. (2007) conducted focus groups for teachers to evaluate the description of items with both multilingual tags and thesaurus terms, and to observe users' behaviour when using a multilingual tagging portal. The analysis showed that multilingual tags get as high a score as the thesaurus in describing items, and half of the teachers found these tags useful for retrieval purposes. Further, they found that the users tended to create tags in multiple languages and used interfaces in languages different from their mother tongue language; for instance, only 50% of the English tags were assigned from an English interface portal. It seems that people use the language that they are familiar with, and may choose the English language when tagging for sharing purposes.

Another study by Vuorikari (2007) centred on the role of multilingual tags in discovering and re-using digital educational resources via Social Information Retrieval (SIR). The teachers participated in tagging tasks that focused on the process of adding tags, and the influence of others when applying tags in multiple languages. The analysis showed that none of the tags were considered personal; 7% were subjective and 93% were factual, which was identified as valuable for re-use in retrieving and navigation activities. Regarding the user's engagement with the system and items, it was interesting to find that a "bookmark does not always mean a positive vote for the content" (Vuorikari, 2007:209). Yet, even if it is not positive, this could also benefit other users' retrieval processes. The thesis by Vuorikari (2009) also explored the effect of social tagging in a multilingual digital context, particularly tags for self-organisation in helping users to discover learning resources. The study indicated that social tagging systems can assist users in discovering information resources more effectively, and information resources that are tagged in different languages have added value in cross-context discovery. However, information resources that have tags in one language, or have tags by users in the same country, are less important in cross-context discovery.

The main characteristics of taggers and tags in a multilingual environment have been studied by Ochoa and Vuorikari (2009), focusing on the analysis of the educational environment of the European learning resources exchange. Descriptive qualitative and transaction log analysis were applied. They found that 77% of the users chose an interface in their mother tongue, and 31% of the tags were in English, although none of the users were native English speakers. Overall, they found that users tag in their mother tongue and also in English. They recommended that there is a need for more studies to understand personal tagging preferences: “Does everyone change language while tagging, or only some users?” The language of users’ tags has an effect on the tag display, especially in promoting cross-language information resources.

Vuorikari and Põldoja (2010) found that users tag in different languages and that English is the most common language. Additionally, they highlighted ‘travel tags’ that can be understood across different languages and have a powerful value in the multilingual context. They identified a travel tag that acts as a bridge between different languages and national borders. However, some tags were more valuable than others, such as the names of people and places, which were understood amongst users even with variations in spelling. Travel tags were useful even in languages that were not fully understood.

Jung (2010) analysed a multilingual folksonomy in an online user community, investigating tag matching between multilingual tags, and how collective intelligence can be found across users who speak and write in different languages. He believed that “each user will be more expert when more people have the same opinions” (Jung, 2010:7). Two evaluations were conducted; the first was multilingual tag matching evaluation. Considering ten languages, sampling 28 users from Delicious and Flickr, the average precision showed about a 60% match. The second was the evaluation of multilingual resource retrieval, via experimental tasks involving 18 students from two foreign literature departments to examine their satisfaction. The results indicated that bilingual users with two different family languages (e.g. French and Japanese) mostly performed better and provided more multilingual tags.

Limited studies have addressed the use of the Arabic language in social tagging. A study by El Hussein and Nakata (2010a) focused on folksonomies in retrieving Arabic documents only in e-learning systems. The participants were all bilingual

(Arabic and English speakers) and were asked to tag Arabic documents using Arabic, English or both languages. The study indicated that most users applied a combination of both languages when creating tags. Others translated Arabic tags into English, while some users posted irrelevant tags in documents to express their opinion or write messages. Generally, they indicated that the use of tags will be highly dependent on the user's understanding of the tagging system. Another study by El Hussein and Nakata (2010b) considered the effect of tags in CLIR by investigating Arabic tags in Delicious. Results found that most of the Arabic tags were assigned to Arabic websites; however, there were some Arabic tags assigned to websites in other languages. They concluded that these tags can aid CLIR if used properly; however, more work is needed to confirm this.

El Hussein (2012) presented a descriptive model for Arabic-English cross-lingual (CL) tagging studying bookmarks in Delicious. The author argued that "in theory users are better translators than machines; this means that if they are able to provide better tag translations this will in turn support CLIR". Aspects of users' tagging behaviour of this group of users were identified such as they used translation tools for English using Arabic letters and vice versa; they also commonly created their tags in one language then translated the same tags into another language. With others who mainly used Arabic tagging, 100% of their tags were in Arabic, which made their behaviour unsupportive for CL purposes. The study also highlighted that CL tagging users mostly created tags in languages different from the content; for instance they added tags in the Arabic language for English content and vice versa. The study discovered that 54 of the users used tag translation for CL tagging, 46 of the users used translation of English using Arabic characters, 7 used translations of Arabic using English letters and 31 used mixed CL tagging. The study generally supported ways for CL tagging. Overall, more investigation is needed in the area of tagging and multilingual users, particularly in the area of the Arabic language.

### **2.5.6 Tagging behaviour**

As users are the main element of the success of social tagging systems, studying users 'tagging behaviour' is important. This refers to the relation between the tags and users, aiming to understand why people tag, and how they tag and interact with the tagging system (Peters, 2009). In other words, tagging behaviour considers user

experiences with using social tagging systems. In the work conducted in this thesis this mainly related to the activities in Phase two of the methodology. The following sections review past studies of tagging behaviour.

Sinha (2005) sought to understand the cognitive process behind tagging and the process of categorizing tags. The author illustrated two types of tagging. The first is the tagging process itself. For example, when the person came across a book, a number of candidate concepts were activated mentally: some of them may be related to the topic of the book; others might be more personal (e.g. “favourite author”) or about physical characteristics (e.g. “paper, hard copy”). The second type of tagging is regarding the process the user has to make with regards to selecting an appropriate category to assign.

The relationship between users’ familiarity with tagging, tagging systems, the Web dictionary and search engines was examined by Lee et al. (2009). They believed that people have different experiences, beliefs and perspectives that affect their way of describing items even if they have the same goal of sharing and organising. The results showed that expert users assigned common tags that could be shared and understood between different communities. On the other hand, novice users often created less valuable tags, mostly related to their personal use. Tags are measured based on the correct tags that refers to its agreement with the actual tag associated with the original document. Furthermore, the study showed that users’ familiarity with tagging systems and Web dictionaries resulted in the creation of better tags.

A comparative study conducted by Kipp (2006) examined the similarities and differences between three groups of people: users, authors and intermediaries. Two methods of comparison were used: a more descriptive approach using statistics and a more qualitative tag comparison. Kipp found important differences for each group which should be taken into consideration when designing tagging systems. In addition, an evaluation of tagging behaviour has been conducted by Farooq et al. (2007), focusing on CiteULike. A set of metrics were developed that included:

- *Tag growth*, to examine the growth of tags vocabulary, considering the posting of new tags over time. This is directly related to tag re-use, which is considered as a second metric;

- *Tag reuse*, to investigate the use of ‘previously used tags’ which showed that only a few tags were re-used over time;
- *Tag non-obviousness* or the occurrence of the tag in the text of the paper associated with it;
- *Tag discrimination*, this is concerned with how well the tag discriminates the item;
- *Tag frequency*, this examines how specific tags are being used over time and if they will be used again;
- *Tag patterns*, these focus on “personal interests, domain knowledge, and the willingness to organize resources to different extents” (Farooq et al., 2007:357).

Farooq et al. (2007) found that users mostly re-used tags from their personal collection when they applied a new tag. Non-obviousness tags provided “additional intellectual power” to the collection of tags because they are directly related to the content of the item. On the other hand, tags that do not occur in the text have value in that they add more description to the item itself. Further, he presented suggestions for tagging designs, focused on three main aspects: “1) Tagging interface should facilitate reuse of tags; 2) Recommend tags that are informational powerful; and 3) Supplement seasonal tagging periods with relevant scholarly resources” (Farooq et al., 2007:358).

Tagging motivation is another aspect of interest when studying users’ behaviours in social tagging systems. Marlow et al. (2006) conducted an evaluation of tagging behaviour in Flickr, focusing on users’ tagging motivation differences. The results showed that users’ motivation resulted from both their personal and social interests. Some users had specific purposes; while others sought to use a system that met their needs, or looked to make a contribution to the website. They indicated that: “While we sometimes refer to social tagging systems as a coherent set of applications, it is clear that differences between tagging systems have a significant amount of influence on resultant tags and information dynamics” (Marlow et al., 2006:34). They identified a number of tagging motivations including:

- *Future retrieval*: which refers to “descriptive tags [that] are exceptionally helpful in providing metadata about objects that have no other tags associated”;

- *Contribution and sharing*: which refers to tags that “add to conceptual clusters for the value of either known or unknown audiences”;
- *Attracting attention*: which refers to tags that “get people to look at one’s own resource” because they get inserted in their tags;
- *Play and competition*: which refers to creating tags based on a set of rules for gaming activities;
- *Self-presentation*: that means “to write a user’s own identity into the system as a way of leaving their mark on a particular resource”;
- *Opinion expression*: which refers to tags that are used “to convey value judgments” that users want to share with others (Marlow et al., 2006:35).

Gupta et al. (2011:452) summarised users’ tagging motivations using the above categories and suggested more, including:

- *Task organisation*: which refers to tags that used for organising tasks (e.g. ‘toread’, ‘todo’);
- *Social signalling*: which refers to tags that “can be used to communicate contextual information about the object [to] others”;
- *Money*: which refers to tags that used on some sites that “pay users [for] creating tags” (e.g. Squidoo);
- *Technological ease*: which refers to the technology that “makes it easy to upload resources with tags to the web”.

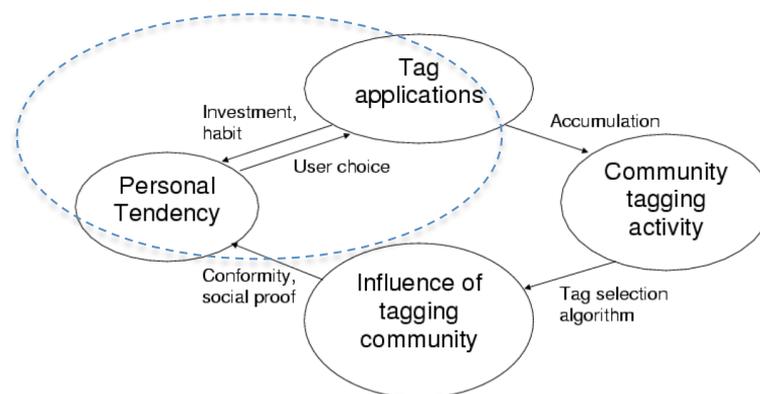
In relation to undergraduate students’ use of, and beliefs about social tagging systems, a study by Kramer (2010) involved a survey and semi-structured interviews. Three main factors were considered: 1) *meaning* in relation to investigating what students mean when they talk and think about tagging; 2) *use* related to exploring the set of uses and practices of tagging; and 3) *experience* related to individual behaviour when using tagging systems. The results showed that tagging is often not used for information organisation or academic purposes, but rather for social and communication purposes, mainly within the context of photo tagging (e.g. Facebook), where 43% of the participants indicated that they viewed tags as a daily social activity. Kramer stated that social tagging systems could be designed to be used as “social grooming, information organization, exploration, socialization and

harmonization, or as a discursive negotiation of privacy and disclosure boundaries” (Kramer, 2010:260). In addition, the author suggested that educators could take advantage of the students’ unfamiliarity with the use of tagging for educational purposes to build a tagging system that introduces this component in a way that meets their needs.

The influencing factor on users’ tagging behaviour from a more complete view was investigated by Sen et al. (2006); he presented four factors including four main themes: tag applications; personal tendency; community tagging activity; and influences of tagging community (Figure 2.11). Personal tendency concerns users’ selection of tags, which came from their preferences, ideas, and previous experiences from other tagging systems, and users’ own understanding of the world. The choice of tags “will lead to user habits which will then cement themselves into a personal tagging vocabulary for the user and hence became his preferred indexing choices” (Peters, 2009:190). This habit can be influenced by the community and on the individual in a way that changes the user’s tagging vocabulary (Sen et al., 2006).

Generally, different aspects can be investigated to gain a better understanding of users’ tagging behaviour. For this research the relations between personal tendency and tag applications were considered of interest, which reflects exploring tags choices and the influences factors, as well as tag language preferences.

Figure 2.11 Relationship Between Community Influence and User Tendency (Sen et al., 2006:182)

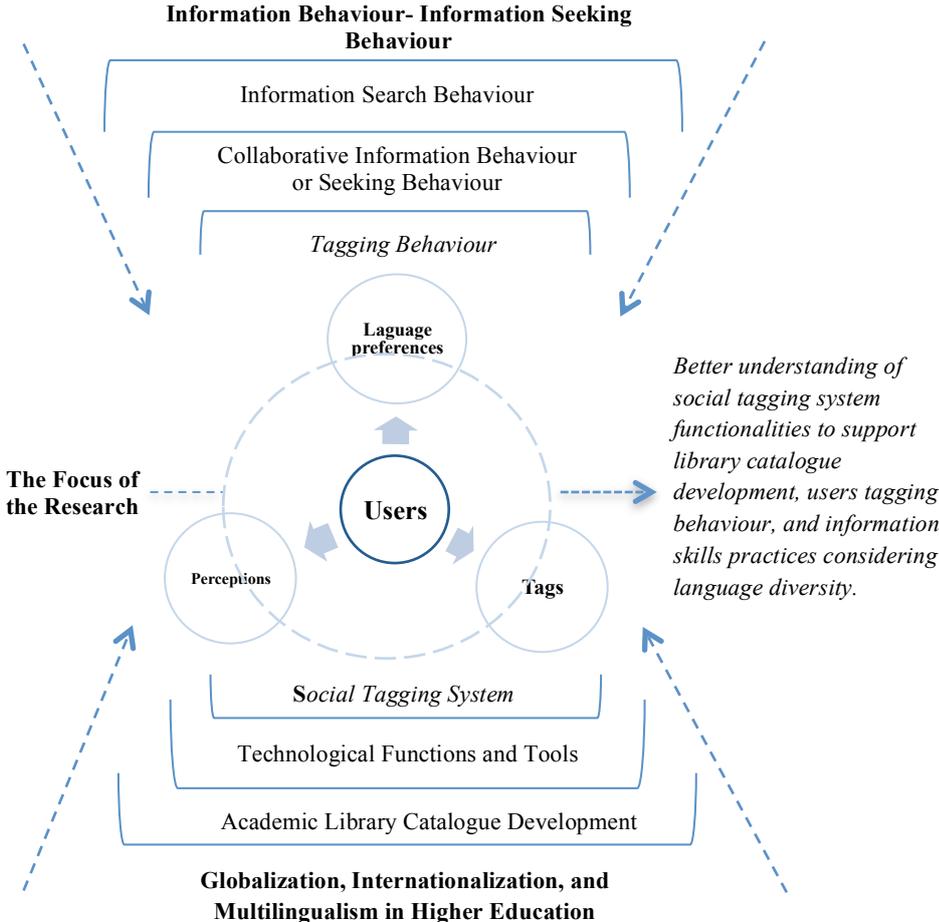


## 2.6 Summary

Chapter 2 has reviewed related literature to this research. While many studies consider social tagging systems and their value in enhancing catalogue services, only

a limited amount of work focuses on users’ perceptions particularly in academic libraries; there are also a limited number of academic libraries using social tagging. Little research to date has focused on exploring the language of the tags, especially on using the Arabic language which was mostly limited to studies by (El Hussein and Nakata, 2010a, 2010b; El Hussein, 2012). Furthermore, the use of social tagging systems in academic libraries is generally limited (Boateng and Liu, 2014; Wakeling et al., 2012; Chua and Goh, 2010; Harinarayana et al., 2010) and therefore warrants further investigation, especially as social tagging appears like a promising approach to enhance the functionalities of a library catalogue. This in turn can support users’ expectations in having “enhanced functionality in library systems” (Connaway et al., 2010:4).

Figure 2.12 Research Focus in Relation to the Broader Areas in the Field



This thesis attempts to provide a better understanding of this area, by investigating the perceptions and potential practices of using social tagging systems in academic libraries, taking into account the diverse language skills that might impact them when searching for information, and when using and adding tags to information resources. An overview of the areas reviewed in this chapter is shown in Figure (2.12).

Two main angles have been considered: information behaviour and information seeking behaviour as the broader concepts; then information search behaviour, leading to collaborative information behaviour where it can generally reflect studying social tagging as one of the emerging technological tools, and consider user (students) language as an element under investigation. This leads to the focus of the research: *Tagging Behaviour*. The second angle focuses on globalization, internationalization, and role of multilingualism in Higher Education as broader concepts influencing activities in academic library catalogue development, and that mostly affect the adaptation of technological functions and tools in academic libraries. This brings us to a further focus of this research: *Social Tagging Systems*.

Figure 2.12 also illustrates that *users* (bilingual students) are the centre of the study; with three main factors explored including: students' *perceptions* of using social tagging systems; the *language preferences* as an influencing factor on using the system; and *tag creation practices*. This is considered helpful in exploring the prospective tagging behaviour of the students that in turn aids the academic libraries' catalogue development when using a social tagging system, and in supporting students' information skills practices in a collaborative Web environment considering language diversity.

## **Chapter 3: Methodology**

### **3.1 Introduction**

Chapter 3 presents the methodological approaches adopted in this study involving mixed methods research. It begins with a general discussion about the research methodology used in social sciences research including: philosophical perspectives; research approaches and inquiries; the methodological approaches of this research; methods chosen for this research; explanations of reasons for adopting them; and the research design. This is followed by discussion about the participants in this research, issues regarding quality, and ethical considerations.

The chapter also presents details about the data collection and analysis used in this research, which has been divided into three phases. Phase one focuses on methodological approaches using two methods: a questionnaire and comparative analysis. Phase two focuses on methodological approaches with respect to the Interactive Tagging Experiment (ITE) and the interviews with librarians. The final phase places emphasis on integrating all the outcomes gathered from the previous phases to produce the final findings and recommendation reflecting the main research aim and question.

### **3.2 Research methodology**

#### **3.2.1 Philosophical perspective**

In order to choose an appropriate research methodology, it is necessary to comprehend the differences between the various possible approaches that require an understanding of the different philosophical perspectives. In social sciences research, there are two well-known philosophical assumptions related to knowledge, which are epistemology and ontology. Grasping these terms assists researchers in choosing the appropriate method in order to investigate the phenomenon under study. Epistemology “is the theory of knowledge or how do we come to know?” (Bernard, 2000:8); this refers to issues concerning “questions of what is regarded as acceptable knowledge in a discipline” (Bryman, 2008:13). Epistemology focuses on what we can know about the true world, or the “nature of knowledge” (Creswell, 2009); whereas ontology refers to “the nature of social realities” (Mason, 2002), or the

nature of social entities (Bryman, 2008). This is concerned with what we can know from reality or the researcher's view of the world.

Ontological and epistemological assumptions underpin every valid research study, either explicitly or implicitly, in which the research adopts its own position. Interpretivist and positivist are two of the major positions used in social science research. Interpretivist research considers that there are "differences between people and the objects of the natural sciences and therefore requires the scientist to grasp the subjective meaning of social action" (Bryman, 2008:16). The interpretivist assumes the researcher and the reality are attached and are inseparable (Weber, 2004). An interpretivist research project often employs a qualitative research method to study the phenomena under investigation, for example using interviews. Whereas positivist studies seek to employ specific methods in order to test a theory, aiming to study the "social reality and beyond" (Bryman, 2008:13) Positivists tend to use quantitative research, involving methods such as questionnaires, experiments and field studies; basically by bringing evidence that is directly observed (Newman and Ridenour, 1998).

Pragmatism is an additional way of studying social reality. Denzin and Lincoln (2008:22) define 'paradigm' as "the net that contains the researcher's epistemological, ontological, and methodological premises may be termed a paradigm... it is guided by the researcher's set of beliefs and feelings about the world and how it should be understood and studied". Dousa (2011:1) states that "pragmatists seek to establish knowledge claims with reference to human action in, and experience of, the ambient world that is to say, to determine which beliefs count as knowledge by considering how they work when put to the empirical test of practice".

Further, pragmatism is more focused on practical explanations, assuming that the "worldview arises out of action, situations, and consequences" (Creswell, 2003:11). The research problem is the main driver in pragmatism, which provides the researcher with the freedom to adopt various tools in order to answer the research question (Creswell, 2003), and often involves mixed methods research (qualitative and quantitative methods).

### 3.2.2 Research approaches and inquiries

In conducting research, two main approaches - quantitative and qualitative - are widely used, yet they differ in terms of their interpretation (Creswell, 2009). The quantitative approach is a “research strategy that emphasises quantification in the collection and the analysis of data” (Bryman, 2008:22). It is mainly identified as a scientific method which involves testing a specific theory or hypothesis and quantitatively analysing and measuring the gathered data (Swanson, 2005).

Furthermore, a quantitative approach intends to produce statistical data using methods such as questionnaires and experiments to gather this from a representative sample of the population under study (Creswell, 2009). As Saunders et al. (2009) state this approach reflects a more deductive view, where a quantitative approach usually begins with a theory (e.g. hypothesis, questions), and then starts gathering evidence that is increasingly predictive. This is also named a ‘top-down’ approach as it begins with the general and moves to the more specific (Koul, 2009).

In contrast, qualitative studies are “tools used in understanding and describing the world of human experience” (Silverman, 2006:65). This approach is used in studies that seek to comprehend social matters related to an individual or group. Phenomena are explored using methods, such as observations and interviews in order to gain in-depth understanding (Creswell, 2009). An inductive approach mostly fits with qualitative studies, where the researchers are likely to be more interpretive, building up theories based on the evidence (Gorman and Clayton, 2004). The researchers in this case start with a particular focus moving to a more general focus, which is a more ‘bottom-up’ approach (Trochim, 2006).

However, in many social science research studies, it is difficult to adopt only a qualitative or quantitative research method (Creswell, 2009). This leads to use of the third methodological movement (Tashakkori and Teddlie, 2003) or approach, which is mixed method research. Tashakkori and Creswell (2007) define mixed methods research as:

*“Research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of enquiry”* (Tashakkori and Creswell, 2007:4).

According to the philosophical explanations of combining methods provided by Johnson and Onwuegbuzie (2004:176) “mixed research makes use of the pragmatic method and system of philosophy. Its logic of enquiry includes the use of induction (or discovery of patterns) and deduction (testing of theories and hypotheses)”. This brings a more flexible approach that has encouraged many researchers to adopt mixed methods research.

However, mixing methods can be associated with weakness, such as: difficulties for a single researcher to conduct both quantitative and qualitative research methods; greater expense and more time-consuming; and the “researcher has to learn about multiple methods and approaches and understand how to mix them appropriately” (Johnson and Onwuegbuzie, 2004:21).

Many studies in the field of Library and Information Science have adopted a mixed methods approach, mostly in subjects such as Web searching, Information Retrieval and information seeking behaviour. This is mostly because mixed methods involves “utilizing the strengths of both quantitative and qualitative research” (Creswell, 2009:203).

### **3.2.3 The methodological approach of this research**

The current research is largely reliant on using a mixed methods approach, adopting a pragmatist approach as:

*“it presents a very practical and applied research philosophy: study what is of interest and of value to you, study it in the different ways that you deem appropriate, and use the results in ways that can bring about positive consequences within your value system”* (Tashakkori and Teddlie, 1998:30).

With pragmatism the two popular views - interpretivist and positivist - can be adopted. The freedom of pragmatism makes it widely used in mixed methods research (Teddlie and Taskhakkori, 2009), where multiple data collection and analysis tools are acceptable. Thus, a mixed method is most suitable to this research, which employs both quantitative and qualitative approaches to answer the research questions (Tashkkori and Teddlie: 1998).

Within the focus of this research, positivism is applicable in answering the research questions related to the social tagging system functionalities and participant characteristics; whereas interpretivism is suitable for answering the research questions that require a deeper understanding of participant views and practices with regard to the potential use of social tagging system.

Fidel (2008) highlights that ‘mixing’ is the central activity of mixed methods research that can be conducted in more than place of the research, for example: 1) in the data collection stage: where one approach would offer insights that feed the data collection process of the other approach; 2) in the design stage: which considers all the chosen methods required to build the design of the research; and 3) in the analysis stage: where the collected data and findings resulting from the two approaches are integrated and support each other.

Bryman (2008) suggests that it is important for the researcher to justify the motives of mixing methods, especially as it has been argued that using different approaches could be difficult for new researchers (Bryman, 2008; Fidel, 2008). The researcher believes that adopting mixed methods research and taking a pragmatist approach can support gaining greater understanding into the use of social tagging functionalities in academic libraries. The reasons behind their selection and the methods used in this research, as well as the research design will be presented in the following sections.

### **3.2.4 Methods chosen for this study**

In order to achieve the aim of the current research - to investigate social tagging functions in facilitating and using information for bilingual (Arabic/English) students in academic libraries - different methods have been chosen and carried out in different stages. These include a questionnaire, a comparative analysis, a controlled interactive tagging experiment, and interviews. A number of concerns guided the researcher in selecting the methods, such as: their helpfulness in answering the research questions; their flexibility in terms of the research timescale and in the practical matters of conducting the methods; and their suitability for use with the participants. Details of the methods used are discussed later in this chapter; however, a brief description is provided below:

- *Questionnaire*: a method perceived useful as it “provides a quantitative or numeric description of trends, attitudes, or opinion of population by studying a sample of that population” (Creswell, 2009:145). This method can assist the researcher to identify claims about the participants (Creswell, 2009).

A questionnaire was employed in two different places throughout the research. First, in the exploratory stage (phase one) where it was used to identify contextual issues, such as general perceptions from the participants about social tagging systems, library catalogue usage, and language preferences in searching and tagging. This supports the researcher in answering sub-research question (a). Second, it was used in the main study (phase two) and combined with other methods to support the design of the Interactive Tagging Experiment (ITE), and to help the researcher in answering sub-research question (c).

- *Comparative analysis*: a method that centres on comparing and analysing different features from the user’s perspective (Goto and Cotler, 2005). This form of data collection has also been referred to as “informal feature analysis”. Previous studies conducted a similar approach to explore the features of social tagging systems. For example, Shiri (2009) studied social tagging interface features, and called it an ‘analytical examination’. Smith (2008) provided an overview of social tagging ‘architectural differences’; while Peters (2009) compared and tabulated the search functions functionalities, calling the experiment ‘differences between tagging features’. In this research, the term ‘comparative analysis’ is used, which means gaining a deeper understanding of the system by exploring social tagging functions, aiming to list the different tag-related functions in order to compare and analyse them. This is conducted in phase one of the research to support the researcher in answering sub-research question (b).

- *Interactive tagging experiment (ITE)*: traditionally, an experiment is a quantitative research method that “seeks to determine if a specific treatment influences an outcome. This impact is assessed by providing a specific treatment to one group and with holding it from another” (Creswell, 2009:15). In Interactive Information Retrieval (IIR), users and their interactions with a search system are considered. Two standard experiment designs were identified, including pre-experimental design and experimental design. The differences between these two designs “rest on the absence

of a control group and baseline measurement”; however these “are not a creation of IIR and do not always fit perfectly with IIR study situations, but they do provide different ways of thinking about study design and measurement” (Kelly, 2009:45). For this research, a further design was chosen - factorial design - that was considered appropriate and commonly used in IIR experiments “when studying the impact of more than one variable” (Kelly, 2009:48). In addition, factorial design can support correlational studies that seek to “predict change in one variable based on knowledge about the other one” (Powell, 2004:177).

Within the focus of this research, studying users’ interaction with social tagging systems as a supporting tool for information literacy is important. Thus, experiments are used to test the use of social tagging systems by bilingual students, particularly when tagging Arabic and English information resources. The potential use of the system will help the researcher to address the sub-research question (c). The ITE mainly combined three data collection methods, including pre-and-task questionnaire, tagging task, and post-task semi-structured interview.

- *Interviews*: a core method in qualitative research as they “provide in-depth information pertaining to participants’ experiences and viewpoints of a particular topic” (Turner, 2010:745). It is also considered as an explorer tool used to capture hidden information via conducting conversations with people (Kvale, 1996).

Semi-structured interviews were chosen to explore in depth issues around the use of social tagging with participants. Interviews were used in the main study stage (phase two), in the ITE design, where they were combined with the other methods; the questionnaire and the tagging task were used as a follow up instrument to get a well-rounded collection of the needed information to support the investigation, and to support the researcher in answering sub-research question (c). In the second phase, the results of interviews were used to answer sub-research question (d).

### **3.2.5 Explanations of adopting mixed methods research**

In the social and behavioural sciences, a number of rationales or reasons have been identified for implementing a mixed methods approach. Tashakkori and Teddlie (2003) provided some motives behind taking a mixed methods: 1) it can provide stronger findings and conclusions; 2) it can answer the research questions that

qualitative or quantitative research alone cannot reach; and 3) it gives an opportunity to present a wider diversity of views on the research. Furthermore, using different methods for research can be productive, as this allows the researcher to bring together different types of data on the same topic. It also produces “more data, thus being likely to improve the quality of the research” (Denscombe, 2008:132).

Bryman (2006a) devised schemes that justify the kind of rationales of combining qualitative and quantitative research methods based on the content analysis of 232 articles drawn from the field of science. The schema contain the following rationales: triangulation or generating validity, offset, completeness, process, different research questions, explanation, unexpected results, instrument development, sampling, credibility, context, lustration, utility or improving the usefulness of the findings, confirm and discover, diversity of view, enhancement. On the other hand, Greene et al. (1989:258) cited in Creswell and Clark, (2007), provided a broader list: 1) *triangulation*, whose “intent seeks convergence in the classic sense of triangulation”; 2) *complementarity*, where “qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon”; 3) *development*, which refers to “mixing methods for development purposes. All involve the sequential use of qualitative and quantitative methods, where the first method is used to help inform the development of the second”; 4) *initiation* which refers to “the discovery of paradox and fresh perspectives may [may] well emerge rather than constitute a planned intent”; and 5) *expansion*, which refers to a “multitask” study “that aims for scope and breadth by including multiple components”.

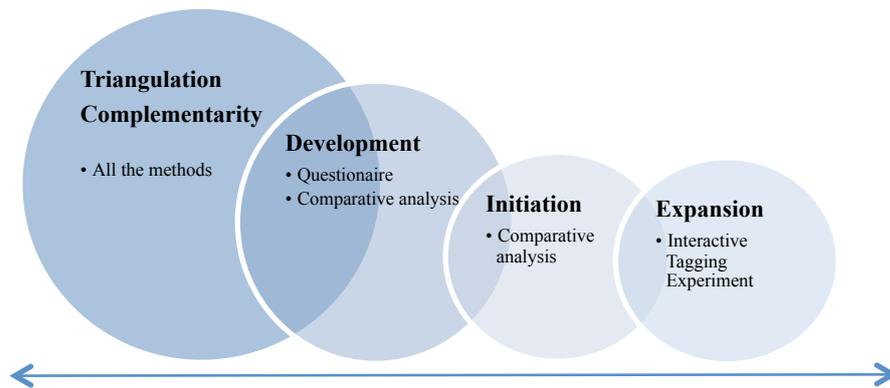
This research aimed to investigate the use of social tagging within academic library catalogue services in facilitating information use and discovery; particularly for bilingual students (Arabic/ English). Different investigations were therefore required to discover the participants’ usage of academic library searching services and social tagging, as well as to explore of their potential use of tagging in enhancing information access. So, combining the quantitative and qualitative research methods provides more effective modes to gather all of the required data. Using different methods enhanced data collection and produced richer findings, whereby each method enabled different questions to be answered.

Referring to the reasons for mixing methods provided by Greene et al. (1989), the decision to choose mixed methods for this research was mainly due to multiple reasons (Figure 3.1). The main ones were *triangulation* and *complementarity* that reflect the motives of selecting all the methods (questionnaire, comparative analysis, ITE, and interviews). *Triangulation*, seeks convergence, corroboration, and correspondence of results from the different methods (Greene et al., 1989), or as Bryman (2006a:107) states, greater validity, which focuses on “the traditional view that quantitative and qualitative research might be combined to triangulate findings in order that they may be mutually corroborated”.

While *complementarity* in this research looks for enrichment and clarification of the results (Greene et al., 1989), employing all the selected methods helps the researcher to answer the main research question and sub-questions. Especially that this “can bring together a more comprehensive account of the area of enquiry in which the researcher uses both qualitative and quantitative methods to form a more comprehensive account of the research area” (Bryman, 2006a:107). Furthermore, using multiple methods “seeks to use the results from one method to help develop or inform the other method, where development is broadly construed to include sampling and implementation (Greene et al., 1989). Within this research the result of the questionnaire and the comparative analysis informed the design of further methods (Section 3.7).

Comparative analysis also reflects *initiation*, that seeks the discovery of paradox and contradiction, new perspectives or frameworks (Greene et al., 1989), where the result from the comparative analysis assisted the researcher in producing an emerging outcome - the initial framework of social tagging and Information Literacy (Chapter 4, Section 4.4). *Expansion*, on the other hand, seeks to extend the breadth and range of enquiry by using different methods for different enquiry components (Greene et al., 1989). This fits with the use of ITE, that combines more than a data collection method, including pre-and-post task questionnaires, tagging task, and post-task interviews. Details of the chosen methods will be presented in the following section.

Figure 3.1 Rationales of Using Mixing Methods Adopted from Greene et al. (1989) cited in Creswell and Clark, (2007)



### 3.2.6 The research design

Selecting appropriate methods and procedures to answer research questions is often complex (Creswell et al., 2003; Fidel, 2008). In mixed methods research this can clearly be connected to the research design stage - the techniques of the framework followed for collecting and analysing the data (Bryman, 2008). It is also necessary to decide how the qualitative and the quantitative methods will be combined in the research. This is especially important with respect to the priority of methods, i.e. whether one controls the other or both are equally important; the ordering of methods, e.g. concurrently or sequentially; and the objective of each method (Creswell et al., 2003). Furthermore, Creswell et al. (2000:127) identified key concerns for research design, including: “what knowledge claims are made?”; “What strategies of enquiry might be used?” and “what method of data collecting and analysing will be then employed?”.

When reviewing the literature, different typologies of mixed methods design have been recognized and a number of the proposed designs are presented here. Creswell et al. (2003) presented six types of mixed methods designs, divided into: 1) *sequential designs* including two types of sequential explanatory design, and sequential transformative design; 2) *concurrent designs* including concurrent triangulation, concurrent nested design and concurrent transformative design. While Tashakkori and Teddlie (2003) proposed other main design including multi-strand, concurrent, sequential, multi-strand conversion, and fully integrated mixed model design. For an overall understanding, Creswell and Clark (2007) identified a number

of research designs that are commonly used in practice; and recommend six main designs as shown in Table 3.1.

Table 3.1 Major Mixed Methods Designs (Creswell and Clark, 2007:73)

Research Designs	Definition
<b>Convergent parallel design</b>	Concurrent quantitative and qualitative data collection, separate quantitative and qualitative analyses, and the merging of the two data sets.
<b>Explanatory sequential design</b>	Methods implemented sequentially, starting with quantitative data collection and analysis in Phase 1 followed by qualitative data collection and analysis in Phase 2, which builds on Phase 1.
<b>Exploratory sequential design</b>	Methods implemented sequentially, starting with qualitative data collection and analysis in Phase 1 followed by quantitative data collection and analysis in Phase 2, which builds on Phase 1.
<b>Embedded design</b>	Either the concurrent or sequential collection of supporting data with separate data analysis and the use of the supporting data before, during, or after the major data collection procedures.
<b>Transformative design</b>	Framing the concurrent or sequential collection and analysis of quantitative and qualitative data sets within a transformative, theoretical framework that guides the methods decisions.
<b>Multiphase design</b>	Combining the concurrent and/or sequential collection of quantitative and qualitative data sets over multiple phases of a program of study.

For the current research, an embedded research design was considered the most appropriate because it aligned with a number of methodology elements when selecting the research design (Tashakkori and Teddlie, 2003: 672). These include the selected data collection methods, analytical procedures, and data interpretation to answer the research question. It also commonly fits the pragmatist approach (Creswell and Clark: 2007). Further, this design allowed the researcher to address “different questions that call for different methods”, and fits the studies with a larger design (Creswell and Clark, 2007:73).

Triangulation is an important concept that should be considered when designing mixed methods research. This refers to the stages in one study of integrating (Jick, 1979). Generally, triangulation can be defined as “the combination of methodologies in the study of the same phenomenon” Denzin (1978) cited in Jick (1979:602). Or as Bryman (2012:717) stated, it is “the use of more than one method or source of data in the study of social phenomenon so that findings may be cross-checked”.

It has been accepted in mixed methods research that when different methods are used to collect the required data, method triangulation can be achieved. Creswell (2003:15), stated that method triangulation can benefit the researcher in different ways, such as bringing better confidence in the results; reducing the biases that might occur when using a single method approach; and bringing new techniques in answering the research question by combining several strategies, methods and approaches.

However, practically triangulation can be applied in different ways, including: 1) *data triangulation* which involves “the use of [a] variety of data sources in a study”; 2) *methodological triangulation* which refers to “the use of multiple methods to study a single problem”; 3) *investigator triangulation* “involving several different researchers in a single study”: and 4) *theory triangulation* which refers to “the use of multiple perspectives to interpret a single set of data” (Denzin, 1978; cited in Teddlie and Tashakkori, 2009:75).

In this research, to study social tagging systems, a partial triangulation approach was taken in which multiple methods were employed and conducted in two phases. A methodological design was drawn up (Figure 3.2) illustrating all the major elements of the research methodology. This contains the *main research question*, *phases of the research*, and the *sub-research questions* that were intended to be answered in each phase. *Phase one* of the research focuses on studying the context, which represents the preparation study to aid the main study. The preparation study aimed to survey bilingual students’ perceptions on using social tagging systems in academic library catalogue services, as well as exploring the social tagging functionalities of the existing system. This phase was directed to answer the first set of the sub-research questions (a): *How do bilingual students use online library catalogue services and existing social tagging systems?* and (b): *What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?*

Whereas *phase two* of the research represents the main study that aimed to answer the second set of the sub-research questions (c): *How would students interact with social tagging systems when dealing with Arabic and English information resources, and how they would perceive the use of social tagging for their academic library*

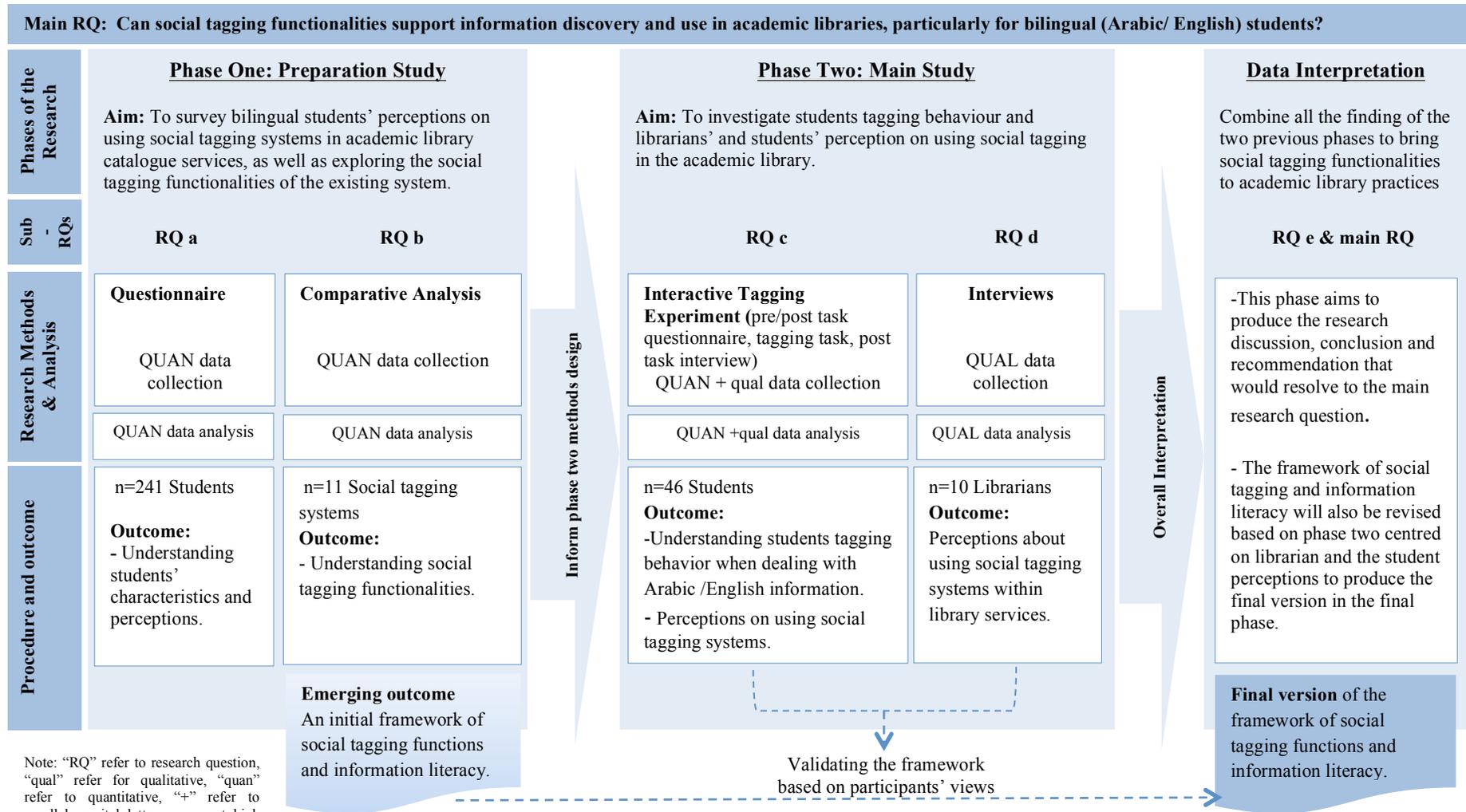
use? and (d) *How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?*

The main study focuses on investigating students' tagging behaviour, particularly when dealing with information resources in different languages (Arabic/ English), and librarians' perceptions about using social tagging systems in academic library catalogue services. The *research methods and analysis* element is presented to outline the data collection methods and the analysis type in each phase; while the *procedure and outcomes* element is presented to give general explanation of the participants/sample and the key outcome of each phase.

Figure 3.2 also shows links between the phases, where the findings of phase one seek to inform the design of data collection methods for phase two (the main study), particularly in selecting a suitable social tagging system and in gaining a better understanding of students' perceptions about the potential use of social tagging systems in an academic library context. Additionally, the emerging outcomes of the comparative analysis are shown that produce the initial framework of social tagging functions and information skills practices.

The findings of phase two were integrated with the findings of phase one to aid the *data interpretation phase*. This phase sought to answer the final sub-research question (e): *What is the potential usefulness of social tagging to support student' information skills in academic libraries?* This part of the study aimed to explore the possible benefits of social tagging functions in supporting students' information practices, and to produce the research discussion, conclusion and recommendations that would fulfil the main research aim and answer the main research question. The framework of social tagging and IL was also revised based on the findings of phase two centred on librarians' and students' perceptions to produce the final version of the framework.

Figure 3.2 Overview of the Research Methodology, Adopting the Embedded Design (Creswell and Clark, 2007)



Note: "RQ" refer to research question, "qual" refer for qualitative, "quan" refer to quantitative, "+" refer to parallel, capital letters represent high priority or weight, and lower case letters lower priority or weight. And "n" refer to total number.

### **3.3 Participants**

The participants were university students who speak both Arabic and English. They were from the three universities: Kuwait University (KU) and the Gulf University for Science and Technology (GUST) in Kuwait; and the University of Sheffield (UoS) in the UK.

This sample was chosen because: 1) the focus of the main research is specifically on students with Arabic/English language skills; 2) the research aimed to investigate the impact of language ability/preferences on using social tagging systems; and 3) because access to a bilingual student population is possible. Further gathering of information from more than one university also helps in understanding the research aspect from a wider perspective across different academic communities. The participants in Kuwait are easily identified because almost all of the students speak both English and Arabic, since learning the English language is an essential subject in all schools as discussed previously (Chapter 1, Section 1.2.1); whereas the call for participants from UoS was clearly directed at bilingual students who speak both Arabic and English.

Librarians were also asked to participate in the study. This sample was selected to gain additional information about using social tagging in academic libraries from a librarian's point of view. They are reached in phase two to give a complete picture of the research investigation.

### **3.4 Research quality considerations**

Quality of the research must be considered whatever research approaches are used. Seale (1999:8) stated that the notion of quality in research is “a somewhat elusive phenomenon that cannot be pre-specified by methodological rules”. Conducting research is generally based upon the abilities and skills of the researcher, where through doing research and reviewing the different methodological approaches of other studies, the researcher can learn how to undertake a good research study (Seale, 1999). However, within each piece of research there are still some quality criteria that should be considered by the researcher in order to achieve valid research.

In mixed methods research there is a debate around the criteria to use; especially when acknowledging some evaluation differences between qualitative and

quantitative studies. For example, some of the quantitative evaluation criteria cannot match the notions used in qualitative research (Onwuegbuzie and Leech, 2010). Bryman (2006a) suggests that in mixed methods research, the purpose and the nature of the study should be a basis for the evaluation, rather than selecting or using a particular model.

However, there are number of well-known quality assessment criteria in social sciences research that it would be valuable to reflect on. Trustworthiness evaluation criteria is one of the models that been produced early in 1985 by Lincoln and Guba which concerns how good the qualitative research should be, including the following aspects: credibility, transferability, dependability, and conformability; Bryman (2012) produced parallel concepts in quantitative approaches that include:

- *Credibility*: which parallels internal validity; that is, how believable the findings are;
- *Transferability*: which parallels external validity; that is, whether the findings apply to other contexts;
- *Dependability*: which parallels reliability; that is, whether the findings are likely to apply at other times;
- *Conformability*: which parallels objectivity; that is, whether the investigator allowed his or her values to intrude to a high degree.

In research carried out in this thesis, quality issues are considered in different places. Generally, validity can be reached through triangulation (Bryman, 2006:107), which is one of the core motives of adopting mixed methods in this research. Onwuegbuzie and Leech (2010) also stressed that triangulation can be a measure for validity, which is usually achieved by combining more than one method, in which the findings can be compared and integrated to study the same phenomena (Seale, 1999). Triangulation is also a good source of reliability (Jick, 1979:603). Therefore, the researcher has attempted to present sufficient detail regarding the way evidence was produced. Accordingly, throughout the research quality aspects are considered for both the qualitative and quantitative methods.

Furthermore, there are some limitations connected to this research, which should be recognized. The investigation is grounded on participants' perceptions about using social tagging systems in an academic library. The findings help to identify the

potential for integrating social tagging functions in academic libraries, highlighting its potential usefulness in supporting and facilitating students' use of information. However, the results may not be generalizable to other academic libraries and student groups, as we particularly deal with bilingual students who are Arabic/ English speakers. Thus, further studies would be necessary to understand the implementation of social tagging for other contexts.

### **3.5 Ethical considerations**

Ethical considerations are acknowledged as being essential in any research, especially in the social sciences, as researchers commonly deal with human subjects. Several ethical aspects should be taken into consideration, especially participant anonymity that stresses the identity of the research participants should not be revealed when reporting the results (Bryman, 2012). The consent form is also important where the participants agree to take part in the study, and be informed of all aspects of data collection and use, including the process of protecting participants' privacy.

In light of the above, ethical issues were taken into account by the researcher. Before data collection commenced, ethical approval was received from the University of Sheffield Information School for all the methods used in the study. An information sheet and consent form was prepared and used (Appendixes 6,7,8,11,12).

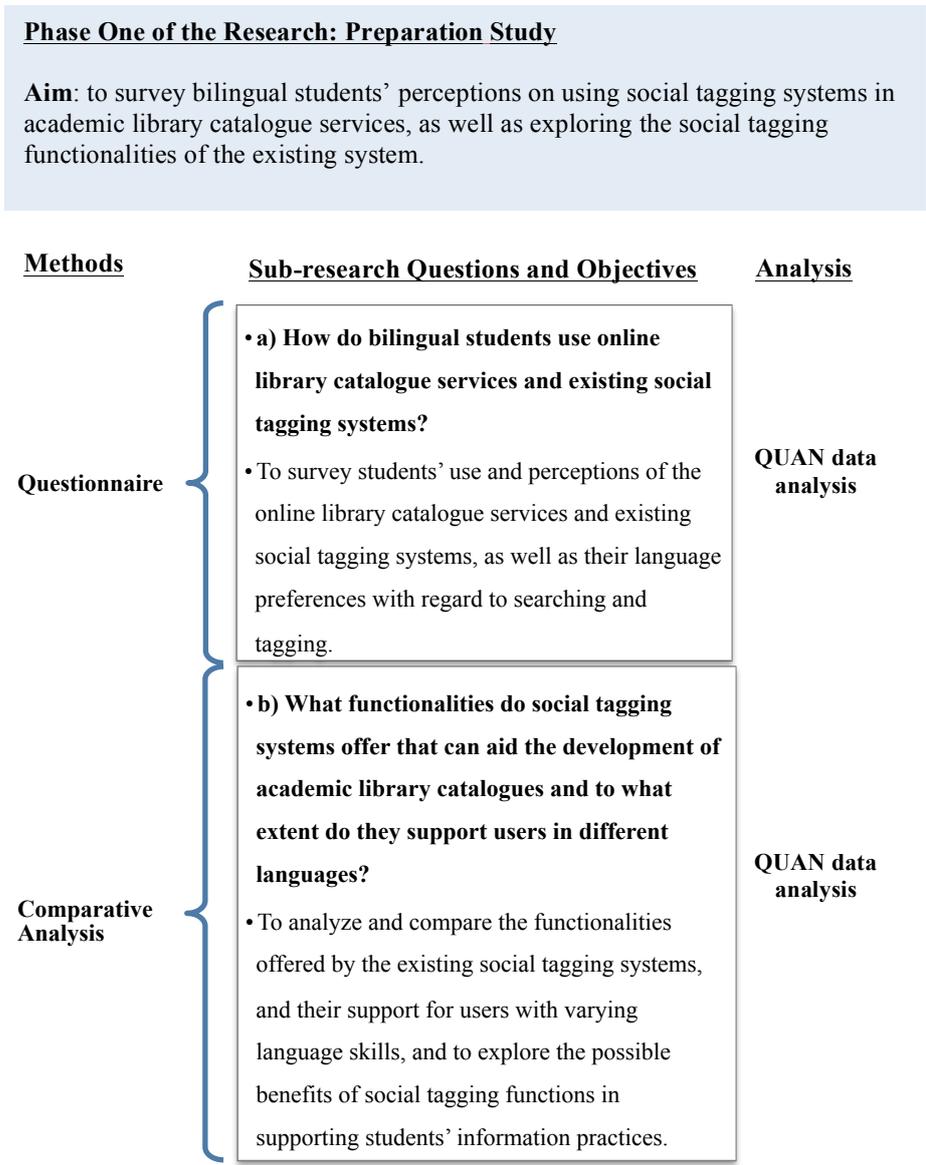
### **3.6 Data collection and analysis procedures of phase one**

The data collected in phase one of the research focused on gaining a better understanding of the research context. It sought to survey users' general perceptions about social tagging systems, as well as exploring the common functionalities offered by existing social tagging systems, i.e. address the first part of the sub-research questions (Figure 3.3)<sup>5</sup>. The first sub-research question (*a*) was examined quantitatively by employing a questionnaire to collect the needed data. The second sub-research question (*b*) that was also examined quantitatively using a comparative analysis. The methods were conducted and analysed separately, but fed into the overall data interpretation that took place in the final phase of the research. Methodological details of phase one will be presented in the following sections.

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<sup>5</sup> “qual” refer for qualitative, “quan” refer to quantitative, “+” refer to parallel, capital letters represent high priority or weight.

Figure 3.3 Phase One Methodology Overview



### 3.6.1 Questionnaire

In this research, using a questionnaire was considered appropriate, as it would help the researcher to obtain a better understanding of bilingual students' potential needs and perspectives, especially in the early stages of their research. The questionnaire considered the following elements: 1) students' satisfaction with, and usage of, the library online catalogue services; 2) their language preferences, in terms of searching and tagging; and 3) their familiarity with the social tagging concept, and tagging functions.

The questionnaire consisted of four main sections; 1) personal information, such as gender, type of school and subject of study; 2) online library searching services that contains questions about students' use of, and satisfaction with, the library services; 3) searching and language preferences of students, including questions about searching proficiency in Arabic and English, as well as search language preferences; and 4) students' perceptions regarding social tagging functions, and preferences for tag language. A copy of the questionnaire is presented in (Appendixes 9,10).

When building the questions, the researcher refers to some related studies that highlight useful questions, which were considered beneficial as guiding the creation of the questionnaire. For instance, Marlow (2006) asked the participants to rate their searching language level in different languages; Eleta (2008) included questions about search language preferences, and Eleta (2008) and Aytac (2005) explored opinions about using cross-lingual search services. Further, Ozel and Çakmak (2010), Tam et al. (2009) and Eleta (2008) asked questions regarding the frequency of library usage, and using library searching options (e.g. search by author name, subject, keyword).

With regard to social tagging systems, questions about using and adding specific tagging functions (e.g. add tags, search tags) were specifically devised for the current research to help in answering the research questions. Other questions were partly guided by other studies, such as Ribi re et al. (2010), who asked about Web2.0 usage across different regions and found differences in usage. In addition, Tam et al. (2009) explored user familiarity with Web2.0, including the ability to tag items. Ozel and Cakmak (2010) and Tam et al. (2009) also explored participants' views about adding a social tagging function to library services, particularly tag clouds.

The questionnaire was designed using Survey Monkey, an online tool that provides useful features for designing, distributing, and collecting data on the Web (SurveyMonkey, 2012). Survey Monkey also supports integration into Social Package for the Social Sciences (SPSS) that we used for quantitative analysis. A number of aspects were considered when planning the questionnaire, including providing detailed instructions, the clear wording of the questions, and steps to minimize respondent fatigue. Most of the questions were closed questions and some

used a 5-point Likert scale. A few open questions were included where appropriate, to enable the students to expand on their answers.

### ***3.6.1.1 Data collection***

Prior to the main phase of data collection the questionnaire was reviewed by the research supervisors and a further research student. Then a pilot test was conducted with four research students and three undergraduate students from the sample population. Based on their comments, the questionnaire was refined, where some modifications were applied to the instructions, and questions reworded to ensure clarity.

Collecting data sought to include more than one university to gain a broader view across several academic communities. Thus, the questionnaire was distributed to participants in three universities: two universities in Kuwait, including KU, and GUST, together with UoS in the UK. A purposive sampling approach was adopted to reach the participants; this approach helps in that it “addresses specific purpose related to research questions; therefore the researcher selects cases that are information rich in regard to those questions” (Teddlie and Tashakkori, 2009:173).

Mixed modes of survey administration were undertaken by combining the online mode with a conventional (paper based) mode of questionnaire. Previous evidence suggested no significant difference in results obtained when using online and conventional questionnaires (Bryman, 2008). This decision was taken to better reach the students from the three universities, in a way that aligned with the universities preferred mode, which helped to ensure the data we needed was collected. Thus, the researcher consulted the universities regarding the preferred mode.

As result, UoS students were approached via the University ‘Volunteers’ mailing list with an invitation to complete the online questionnaire that was clearly directed to bilingual students who speak both Arabic and English. While students in Kuwait, including both KU and the GUST, were approached via their module tutors and by visiting the libraries. A paper-based questionnaire was distributed where it was an appropriate way to reach the students in both of the universities in Kuwait.

An English copy of the questionnaire was directed to UoS students and to GUST students as the teaching is mainly in English and based on universities preferences,

whereas an Arabic and English copy was offered to KU students; this was felt appropriate since they teach in both languages, and the selection was based on their preferences. Data were collected during the first semester of the academic year 2011-2012 (from September until mid-November); the timing was considered suitable as the students were still at the beginning of the teaching semester and therefore likely to have fewer coursework commitments.

### ***3.6.1.2 Data analysis***

Prior to the data analysis process all the printed questionnaires (203) were manually entered into Survey Monkey and data input into the SPSS prior to the analysis. Variables names and their types were checked.

First, a descriptive analysis was carried out on all variables to provide an overview of the data gathered. This helped in identifying factors to focus on when conducting further studies or analyses. The second stage of analysis considered the relationships analysis that was performed in order to understand the relations between some factors.

In the questionnaire, the variables were predominately ordinal (ranked) and nominal (categorical). Therefore, non-parametric tests we deemed appropriate, such as Mann-Whitney used to compare differences between variables, Spearman's Rank to assess the colorations between variables and Kruskal-Wallis test were also deemed appropriate. The Kruskal-Wallis test was considered applicable as it allowed the researcher to "compare the scores on some continuous variable for three or more groups" (Pallant, 2011:232). The parametric alternative to the Kruskal-Wallis test is One-way between-groups, analysis of variance (ANOVA). Conducting this test directed the researcher to discover potential relationships between the examined variables. In order to conduct this test, one categorical independent variable with three or more categories, and one continuous dependent variable, were required (Pallant, 2011). Thus, the choice of variables followed the requirements of the statistical test.

Further, cross-tabulations were performed where it is more appropriate for the categorical data. Therefore, some categorical variables were selected for this type of analysis aiming to identify relations between them and gain a better understanding of

the data. The details will be presented in Chapter 4 with figures and tables where appropriate. Table 3.2 presents the questionnaire sections and variables.

Table 3.2 Questionnaire Variables.

Sections	Variable
<b>1) Personal information</b>	Gender
	Education background
	Year of study
	Domain
<b>2) Online library searching services</b>	Frequently of library system usage
	Frequently of search option usage
	Users satisfaction
	System quality
<b>3) Language and search</b>	English language qualification
	Language searching level: Arabic/ English
	Opinion of cross-language search option
	Search language preferences: Arabic/English/ both.
	Reasons of search language preferences
<b>4) Social tagging</b>	Social tagging familiarity
	Frequently of social networking usage
	Frequently of using tagging tools provided by social networking
	Opinion of adding tagging tools to library searching system(examining some functions)
	Tag language preferences for Arabic material
	Tag language preferences for English material
	Opinion of adding tagging tools for library system

### 3.6.2 Comparative analysis

Conducting the comparative analysis with the social tagging functions in the early stages of this research was considered valuable, and had been used in previous studies (see Chapter 2, Section 2.5.2). This aided the researcher in analysing and comparing functionalities offered by the existing social tagging systems and their support for users with varying language skills; and to explore the possible benefits of tagging functions in supporting users' search and IL activities. This was designed to answer the sub-research question (*b*) (Figure 3.2). Further, the findings were used in assisting the researcher in designing the tagging task in the ITE stage of the methodology, particularly in terms of identifying the most appropriate system and functions to use (Figure 3.2).

### **3.6.2.1 Data collection**

Prior to conducting the comparative analysis, it is important to select appropriate social tagging systems to study, especially given the large number of such systems available on the Internet. Therefore, two social tagging systems were identified: 1) social bookmarking services, and 2) library2.0/ museum systems.

First, the social bookmarking service systems, which are “a class of collaborative applications that allow users to save, access, share and describe short-cuts to web resources” (Peters, 2009:23). This type of service was chosen because it generally provides various functions and is more closely related to the potential use of tagging systems within library activities in terms of the tagged resources and the possibility of taking advantage of their functions and tools, compared to other kinds of tagging systems, such as commercial information services (e.g. Amazon.com), or media sharing services (e.g. YouTube).

Selecting social bookmaking websites to explore was a challenging task. Content sharing tools, such as ‘ShareThis’<sup>6</sup> and ‘Shareaholic’<sup>7</sup> (ShareThis, 2011; Shareaholic, 2011), offer a fast and easy way to access thousands of social media websites. These were considered useful tools for identifying bookmarking websites, especially since these tools are widely used. For example “more than 2 million browser plugin installations for Chrome, Firefox, Safari”, and “over 200,000 websites using Shareaholic’s content sharing tools” (Shareaholic, 2011).

In November 2011, a list of social bookmarking services was created that contains websites found on both ‘ShareThis’ and ‘Shareaholic’. Selection criteria were created, indicating that the service should mainly focus on English websites since it had been observed by the researcher that Arabic tagging websites were mostly not existent or offered very poor functionalities. As a result, six bookmarking websites were found on both sharing services that met the criteria: Delicious<sup>8</sup>, CiteULike<sup>9</sup>, Diigo<sup>10</sup>, Connotea<sup>11</sup>, Folkd<sup>12</sup>, and Jumptags<sup>13</sup>. Other systems were rejected for several reasons, such as errors with the URL and errors in creating accounts.

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<sup>6</sup> <http://www.sharethis.com>

<sup>7</sup> <https://shareaholic.com/>

<sup>8</sup> <https://delicious.com>

<sup>9</sup> <http://www.citeulike.org>

<sup>10</sup> <https://www.diigo.com>

The second type of social tagging system came from the area of library2.0-museum (Peters, 2009). The selection of this type was based on a review of the literature. Accordingly, five tagging systems were identified for the analysis: WorldCat<sup>14</sup>, Penntags<sup>15</sup>, LibraryThing<sup>16</sup>, Goodreads<sup>17</sup> and Steve tagger<sup>18</sup>. These services were considered for examination because they provide examples of tagging systems that deal with information resources (e.g. books). This represents a more formal online environment compared to social bookmarking websites, and it mainly targets library users or readers.

Accounts were created on all of the selected systems to gain full access to the functionalities and different activities were carried out to explore the systems. For instance, items were posted, tags were assigned and tag activities were undertaken for all of the features available. The exception to this was the Penntags tagging system, which is restricted to users from the University of Pennsylvania only. Examination of this system was limited to the information provided from Penntags.

### ***3.6.2.2 Categories of social tagging function***

When conducting the comparative analysis the researcher established a list of all the tag-related functionalities provided by the examined social tagging systems. These were then sorted and organized to establish five main categories of social tagging function: *Posting, Searching, Browsing, Managing, and Sharing*. The researcher created an Excel spread sheet to assist the analysis (see Chapter 4, Table 4.14, which shows all the details of how the functions were listed and organized). A description of these categories will now be presented.

First the *posting*; *this category* refer to the process of adding tags to describe the resource. When users want to add a resource to a system, a certain amount of descriptive information about the resource is required (e.g. the title, description and tags). Adding tags can be optional or complementary, to complete the bookmark,

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<sup>11</sup> <http://www.connotea.org/> (website no longer available since March 12, 2013)

<sup>12</sup> <http://www.folkd.com>

<sup>13</sup> <http://www.jumptags.com>

<sup>14</sup> <https://www.worldcat.org>

<sup>15</sup> <http://www.library.upenn.edu/sitedocs/prototypes/about.html>

<sup>16</sup> <https://www.librarything.com>

<sup>17</sup> <https://www.goodreads.com>

<sup>18</sup> <http://www.steve.museum>

depending on the system. Table 3.3 presents number of functions and aspects are framed under “*Posting*”.

Table 3.3 Functions Framed Under the ‘Posting’ Category

Functions	Description
<b>Web add form</b>	In order to add tags to an item, a tagging system provides a basic Web-based add form for users. When users click on ‘add a bookmark’; the system simply provides a form with specific fields to allow users to add descriptive information about the resource, including tags.
<b>Toolbar button/Bookmarklets</b>	Is another way of adding or creating tags to, or as bookmarks. Peters (2009:26) stated that with this function the browser provides add-ons that allow the users “to add bookmarks with the click of a button”. Further, Smith (2008:120) stated that “Bookmarklets are a small applications built into a bookmark on the browser toolbar”.
<b>Tag suggestions</b>	Refers to the stage of posting tags when the system suggests tags for the item. Smith (2008) identifies three types of tag suggestion, namely: previously used tags, popular tags, and recommended tags.
<b>Tag delimiter</b>	Refers to “the characters that separate several tags” (Smith, 2008:170). A tagging system usually provides notes on how to separate several tags, and each system has its own rules. For example separate the tags by comma (,), or by putting a space.
<b>Multilingual tags</b>	This refers to the ability to tag an item in more than one language, simply by typing in the preferred language or choosing a specific language when adding a tag from the system (e.g. Steve tagger). Another way of posting multilingual tags is when combining two languages into one tag (e.g. Arabic/English tags). In this study, Arabic/English tags were examined either by posting separate tags in both languages or by combining both languages into a single tag without spaces.

Second *searching*; this category refer to the ability to search tags with other descriptions (e.g. title, URL, etc.) or by limiting the search to tags only (searchable tags). Table 3.4 presents number of functions and aspects are framed under “*Searching*”.

Table 3.4 Functions Framed Under the ‘Searching’ Category

Functions	Description
<b>General tag search</b>	This refers to the ability to search all of the tags stored in the website. Some systems are limited to tags only; whereas others search tags with other descriptions.
<b>Personal tags search</b>	This refers to the ability to search the saved tags in the user’s own library or profile (e.g. “my tags”).
<b>Boolean operators</b>	This refers to the ability to search using one or more Boolean operators (AND, OR and NOT).
<b>Advanced search</b>	This refers to the ability to limit or narrow the search query using search options, such as search by user, tag, URL, group or my library.

Third *browsing*: this category refers to functions that offer “the ability to reorient the view by clicking on tags or user names, called pivot browsing, [which] provides a lightweight mechanism to navigate the aggregated bookmark collection” (Smith, 2008:173). “With folksonomies, pivot browsing can be performed via tags (leading the user to all resources indexed with these tags), persons/users (leading the user to a person’s profile as well as to their tags) or resources (leading the user to the resource itself and to the indexed tags and the persons who have also saved the resource)” (Peters, 2011:89). Table 3.5 presents number a number of functions within the “Browsing” category.

Table 3.5 Functions Framed Under the ‘Browsing’ Category

Functions	Description
<b>Tag visualisation</b>	This involves clustering folksonomies “tags” using a “tag cloud” or “tag list”, whereby the user can browse a list of the resources assigned to specific tags by clicking on a particular one.
<b>Browse personal tags</b>	This refers to the ability to browse personal, saved tags in the user’s own library or profile (e.g. “my tags”).
<b>Browse related tags</b>	Refers to when the system provides a list of tags that appear in conjunction with other tags based on the user’s activities.
<b>Browse others’ bookmark list by username</b>	The ability to view others’ saved bookmark list by clicking on a member’s username.

Fourth *managing*: this category refers to tag management functionalities that allow basic tag changes to be made, such as editing, deleting and saving tags. Other

functionalities that help users to manage their tags and bookmarks are also offered. Table 3.6 presents a number of functions are framed under “Managing”.

Table 3.6 Functions Framed Under the ‘Managing’ Category

Functions	Description
<b>Editing and deleting tags</b>	This refers to the ability to make changes to the saved tags by renaming or deleting them, sometimes called re-tagging, or retags (Smith, 2008:132).
<b>Follow/watch tags</b>	This refers to the ability to follow/watch tags that are updated with any new items associated with a specific tag, or to be updated with any future changes or activities, Rich Site Summary (RSS) is a method of tracking. It is also called featured tags, “that are ones that the site chooses to highlight, determined either automatically or manually” (Shiri, 2009:911).
<b>Tag grouping/bundles</b>	Refers to the ability to collect similar tags in a group that could help with managing and organising the collection of tags.
<b>Import library/bookmarks</b>	This refers to the ability to import a user’s library or bookmarks list from one location to another; for example, importing from a desktop reference management system or other social bookmarking service to the service being currently used.
<b>Export library/bookmarks</b>	This refers to the ability to export a user’s library or bookmarks list from the current service to another one, possibly in a different file format. Furthermore, some systems also offer functionality to export citations (e.g. CiteULike).

Fifth *sharing*: this category refers to sharing functions offered on the tagging system; Table 3.7 presents a number of functions are framed under the category of “Sharing”.

Table 3.7 Functions Framed Under the ‘Sharing’ Category

Functions	Description
<b>Sharing tagged items/bookmarks with others</b>	This refers to the ability to share tagged items with others by publishing them in a public space, among a specific group, or by sending them to other users.
<b>Group of users</b>	Refers to when the service provides groups of users created by the system owner or the users.
<b>Recommendation</b>	This refers to when the service provides a list of recommended items based on user interests, every time the user engages in any activity.
<b>Find similar users</b>	Refers to when the system recommends other members who share similar interests based on the user’s activities.
<b>Connect with other social networking services</b>	Refers to the ability to connect with other social networking services (e.g. Twitter, Facebook, Blogs etc.).

Furthermore, two types of tagging service have been identified when exploring the selected bookmarking services. First, services that offer tagging as a “Primary” tool, where creating tags is a main feature of bookmarking, searching, sharing and organising items. Second, services that offer tagging as a “Secondary” tool, where creating tags is only one feature of the system.

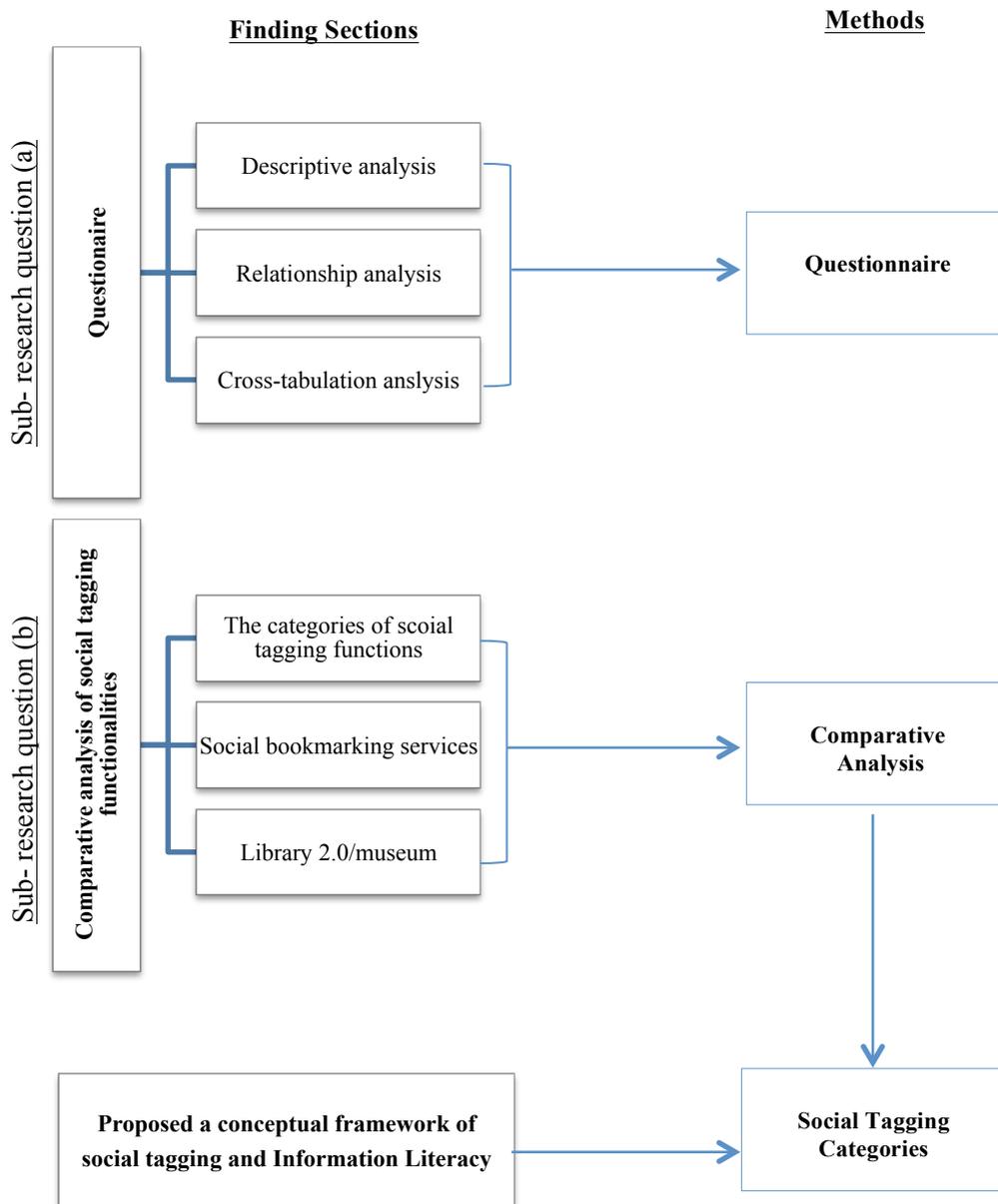
### ***3.6.2.3 Data analysis***

To study the collected data a descriptive analysis was considered appropriate, that was assisted by showing the richer and poorer tagging functions across the examined social tagging system. The established categories of social tagging functions described above were used as a basis for subsequent analysis, mainly by tabulating all of the tagging functions and mapping them to each system. See Chapter 4 for further details.

### **3.6.3 Data presentation**

After completing analysis of data collected in phase, including the questionnaire and comparative analysis, the findings of the data were structured based on the methods used, and then the main themes established for reporting the findings (Figure 3.4). First, the questionnaire findings will be presented, which address sub-research question (a) divided into three main sections, including descriptive analysis, relationship analysis and then cross-tabulation analysis. The second section presents the finding of the comparative analysis, which addressed sub-research question (b) divided into two main sections, including the categories of social tagging functionalities and then overall findings. The emerging findings are used to develop the conceptual framework of social tagging and IL, which was mainly established based on the outcomes of the comparative analysis (social tagging categories).

Figure 3.4 Data Presentation of Phase One of this Research



### 3.7 The connections between phase one and two of the research

Outcomes of the preparation study (phase one) in relation to social tagging functionalities and students' characteristics were obtained and used to support the design of data collection methods of the main study (phase two), which sought to investigate bilingual students' tagging behaviour dealing with information resources in Arabic and English.

Outcomes from the questionnaire (Section 3.6.1) helped to gain grounded information about students' perceptions regarding their language preferences, and their views of using social tagging systems within their academic library catalogue

services; while outcomes from the comparative analysis (Section 3.6.2) were intended to improve awareness of tag-related features commonly offered by existing social tagging systems. Overall these aspects supported the researcher in getting a better understanding of the context under investigation and particularly in selecting the appropriate social tagging system to support the experimental design of subsequent phases of the research.

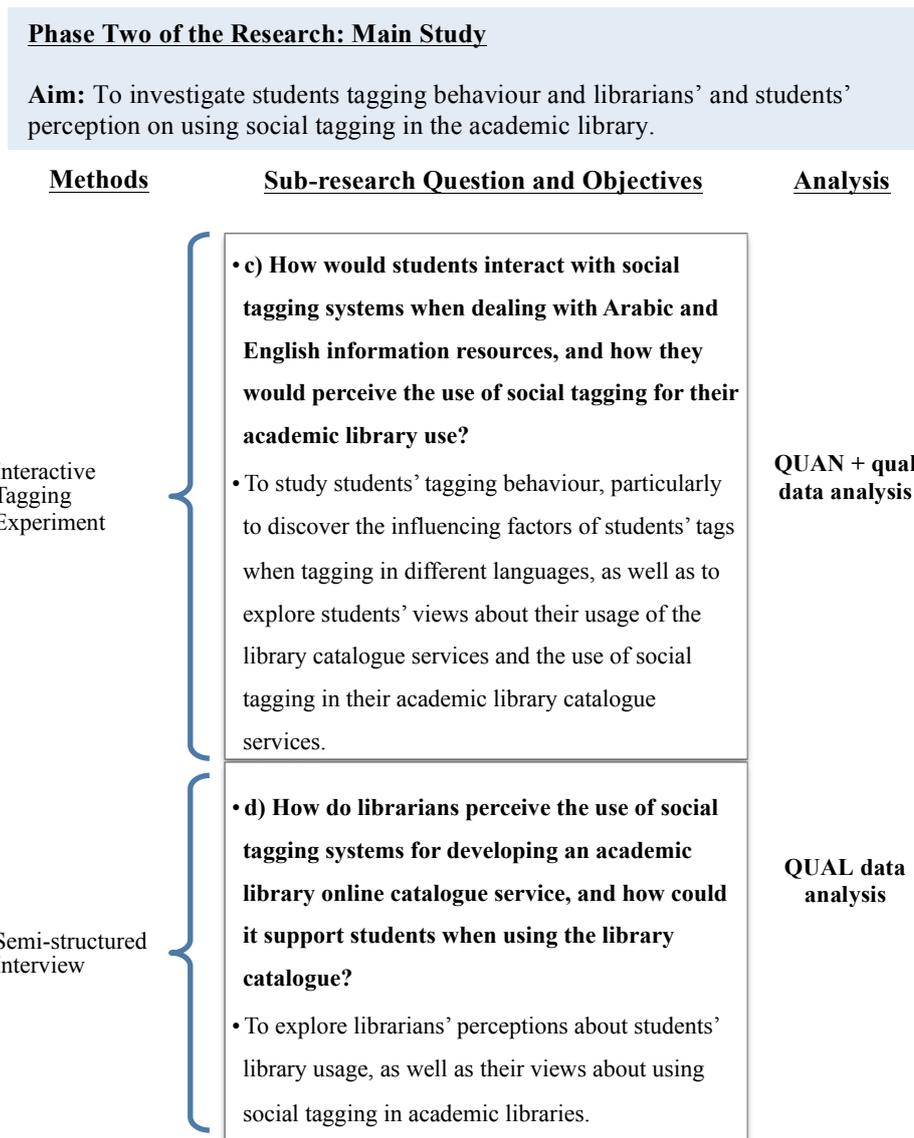
### **3.8 Data collection and analysis procedures of phase two**

The data collection in phase two of the research focused on gaining a better understanding of the prospective use of social tagging systems within academic libraries. This allowed us to investigate bilingual students' tagging behaviour and views in using social tagging systems within information services provided by the academic library. This addressed the second part of the sub-research question (c) (Figure 3.5)<sup>19</sup>. The next section will present details about the data collection and analysis used in this phase, including the ITE, and interviews with selected librarians. Data collection of both methods were conducted concurrently and results are presented in Chapter 5.

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<sup>19</sup> “qual” refer for qualitative, “quan” refer to quantitative, “+” refer to parallel, capital letters represent high priority or weight, and lower case letters lower priority or weight.

Figure 3.5 Phase Two Methodology Overview



### 3.8.1 Interactive Tagging Experiment (ITE)

The ITE was mainly designed to assist the researcher in answering sub-research question (c): *How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?*

As mentioned earlier in Section 3.2.4, the experiment adopts an experimental design (called factorial design) used in lab-based interactive IR experimental conditions and was considered as also suitable for this study. Factorial design will result in higher external validity because it allows the measurement of interaction and can deal with

more than one independent variable (Powell, 2004). The experiment aimed to investigate the potential use of social tagging systems by bilingual students when dealing with information resources in varying languages (Arabic and English). We sought gain further understanding about bilingual students' tagging behaviour. Particularly, identifying potential factors (e.g. language preferences) that could affect student interactions when tagging in different languages. It also sought to explore students' perceptions about existing library catalogue services and the potential benefits of using social tagging systems in this context.

Multiple methods were combined when designing the ITE, including pre- and post-task questionnaires, an interactive tagging task, and post-task semi-structured interviews. Multiple methods are commonly employed in IIR experimental design and helped to provide triangulation of results. Overall, the experiment helped to determine the value of integrating social tagging systems into academic library online catalogue services. Results of the experiment allowed insights into how tagging features could support students in fulfilling their information needs, particularly in libraries that serve bilingual users. Table 3.8 presents a broad description of the aim of the ITE and the focus of each method; more details about the data collection and analysis procedures will be discussed in the following sections.

Table 3.8 Interactive Tagging Experiment Scope and Methods

<b>Aspects wanted to observed</b>	<ul style="list-style-type: none"> <li>• Students' perceptions about using social tagging systems for academic purposes.</li> <li>• Students' tagging behaviour, capturing different aspects such as;             <ul style="list-style-type: none"> <li>○ Factors influencing students' tags when tagging in different languages.</li> <li>○ Students' tagging motivations.</li> <li>○ Tag language preferences for Arabic and English resources.</li> <li>○ Instances of the potential benefits of bilingual students' tags in discovering information.</li> <li>○ Potential social tagging usage.</li> </ul> </li> </ul>
<b>Methods</b>	<b>Purpose</b>
<b>1-Pre task questionnaire</b>	To collect quantitative data about: demographic and background information such as, gender, age, education background, English language qualification, etc.
<b>2-Tagging task</b>	To gather a collection of tags added to Arabic and English information resources, by the bilingual students in a simulated tagging task.
<b>3-Post task questionnaire</b>	To collect quantitative data about tagging task experience, tagging behaviour (e.g. tagging process influences, language preferences), future use, and perceptions about using social tagging system in the academic library catalogue services.
<b>4-Semi-structured interview</b>	To obtain an in-depth qualitative understanding about students tagging behaviour, and perceptions about the usefulness of social tagging system. Interviews considered being supportive in confirming the qualitative results (pre-and-post task questionnaire), and overcome any shortage of the data.

### 3.8.1.1 Pre-and post-task questionnaire

A questionnaire was designed and hosted using Survey Monkey<sup>20</sup>, an online survey tool. Questions were divided into a pre- and post-task questionnaire; the *pre-task* questionnaire aimed to gather demographic and background information, such as gender, age, education background, and English language qualifications.

The *post-task* questionnaire consisted of questions about the tagging task experience, addressing aspects in relation to user experience, including satisfaction and performance. Satisfaction refers to “what the user says or thinks about his interaction with the product” (Tullis and Albert, 2013:44) and can help in exploring aspects, such as ease of use, usefulness, future use, recommendations and importance. The performance aspect refers to “what the user does in interacting with the product” (Tullis and Albert, 2013:44), where in this study it could be in relation to the

<sup>20</sup> www.surveymokeny.com

“cognitive effort” that students make in the tagging task, and can reflect variables, such as tagging motivation and tagging influences.

Overall, most of the questions were closed questions with some using a semantic differential scale. Furthermore, the questionnaire was provided in Arabic and English (Appendixes 14 and 15), where participants could choose the version based on their preferred language.

### **3.8.1.2 Tagging task**

Designing a tagging task was considered helpful in identifying possible factors influencing students’ tagging practices when creating labels or “tags” in different languages. Furthermore, it allowed the creation and gathering of example tags generated by students within a simulated tagging environment. This enriches our understanding of the usefulness of tags in supporting information practices, particularly when using library catalogues. In order to set up the tagging task the researcher completed a number of preparatory steps involving the following:

- 1) *Selecting online social tagging system:* deciding on the appropriate social tagging services was mainly informed by the outcomes of the comparative analysis conducted in phase one. In addition, the selection concentrated on systems that allowed free registration, provided functions for bookmarking URLs, allowed posting tags in both Arabic and English, and provided the ability to browse tags by items/bookmarked and usernames. Subsequently, some social tagging systems were considered as appropriate to use, such as Connotea, which mainly supports researcher reference management, and Delicious, a general social bookmarking system. However, Connotea was excluded because it was closed during the data collection period. The researcher decided to use Delicious, which offers all the necessary functions for the ITE and since it had been used in previous research papers.
- 2) *Selecting the information resources to be tagged:* a list was created that contained 12 information resources representing generic, and different topics, including six Arabic and six English academic articles selected randomly, no longer than 10 pages, and available via a URL. The participants were restricted to selecting articles included in the list provided, because the researcher wanted to

increase the number of tags in a specific set of items to support further tag analysis.

- 3) *Preparing the tagging task scenario*: a scenario was created that clearly introduced all the participants to the tagging task. A simulated work task situation was adopted which refers to “a short ‘cover story’ that describes a situation” (Borlund, 2003) that was directed to individuals who were required to use a system. This approach supports making the objective of the task understandable by all participants in the study. Borlund also argues that the simulated work task situation is “a stable concept”, which helps give the assurance that the test situation is realistic and makes the experiment possible to control “by providing comparable cognitive and performance data in relation to simulated information needs for the same data collection, ideally across different IR techniques” (Borlund, 2003). Accordingly a simulated tagging task situation was created:

*“Assume that you search the library catalogue to find information for your coursework. In your search result you found some good articles that you want to use them. Describe the articles with appropriate tags, so that you can allocate them later using the tags that you assigned. Keep in mind that your tags can help you and others in searching, browsing, managing and sharing information using social tagging functionalities”.*

- 4) *Preparing the tagging task instructions*: detailed instructions were provided (Appendix 13) to ensure that the task is fully understood, especially that it was expected that the student might be unfamiliar with social tagging systems as being understood from the earlier questionnaire outcomes (Phase One). The instructions guided the participants to create accounts in Delicious prior to the tagging task. This was followed by the simulated tagging task. Then participants were asked to choose six articles (three from each language Arabic/English) from a provided list. They were asked to assign at least five tags to each article; this number of required tags was perceived as valid in previous studies (Farhan, 2010). Instructions on how to add tags were also provided. Students were allowed to tag using numbers, words or phrases based on their preference and in any language; Arabic, English, or both languages. Generally, participants were

advised to not spend more than 20 minutes completing the task. This was designed to control the overall timing of the study.

### ***3.8.1.3 Post-task semi-structured interviews***

This method was chosen to collect more in-depth data. In semi-structured interviews the questions are predetermined, and must to be completed; thus the interviewee can ask for explanation, and the researcher can change the order of the questions when applicable. Largely, the purpose is to get the participants to talk openly but at the same time making sure the researcher gets the information needed for what they are studying (Griffiee, 2005).

Furthermore, by collecting qualitative data it is believed that “they can help by validating, interpreting, clarifying, and illustrating quantitative findings” (Miles et al., 2013:43). Post-task semi-structured interviews were used in this study to develop a greater understanding of the research problem and help to confirm and complement any gaps occurring from the pre- and post-task questionnaires. The interviews were designed to be conducted immediately after completing the tagging task. Thus the participants were able to talk to the researcher about their behaviour during the task.

Overall the interview questions were divided into two main sections (Appendix 17). The first section was the tagging task, which focused on exploring aspects in relation to the tagging task experience, perceptions about task ease of use, the usefulness social tagging, tagging motivation, recommendations, future use, importance and utility of adding social tagging to existing academic library services.

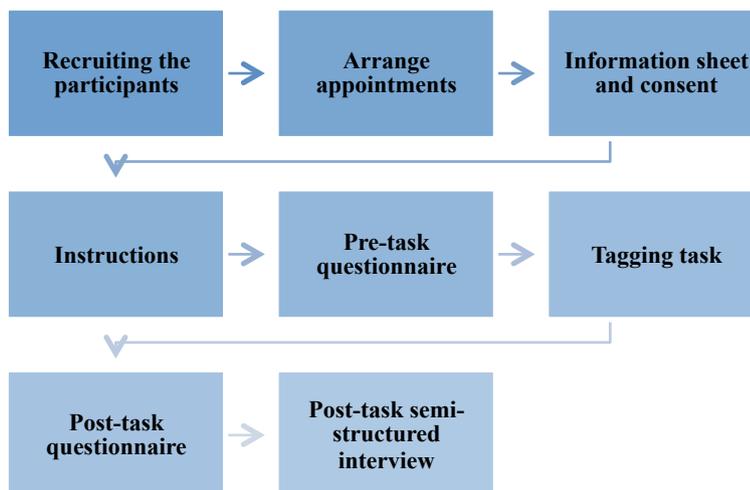
A stimulated recall approach was used to support addressing the tagging behaviour aspects (e.g. tagging process description and influences, language preferences). This approach is commonly used in IIR as it can support the researcher “to gain qualitative insight into the actual working memory processes” (Beers et al., 2006 cited in Turnbull, 2009:205). Accordingly, students were asked to reflect on their thinking, by revisiting their tags during the interview conversation to explain facets around their decision making on the tag choices in describing the articles. While the second section focused on exploring overall perceptions regarding academic library usages, weakness and shortages, and aspects about their information skills.

### 3.8.1.4 Data collection

Before the actual data collection, a pilot test was carried out to validate the design of the ITE experiment with two PhD researcher students, and two undergraduate students. Accordingly, a few changes were made particularly to the instructions, and re-wording of some of the questionnaire and interview questions took place. Thus, a final review to the whole processes was achieved.

Figure 3.6, shows the data collection process of the ITE that consisted of several steps, started with recruiting the participants, arranging appointments, providing the information sheet and agreeing on the consent form, providing the instructions, starting the pre-task questionnaire, the tagging task, post-task questionnaire, and ending up with the post-task semi-structured interview.

Figure 3.6 Interactive Tagging Experiment Data Collection Process



The experiment was directed to same type of participants as approached in phase one (the questionnaire, Section 3.6.1.1). These were students from three universities: two universities in Kuwait (KU, and GUST) and UoS in the UK. A purposive sampling approach was used to reach the participants that is “based on a specific purpose rather than randomly” (Tashakkori and Teddlie, 2003:713). Aspects of snowball (chain) sampling were also used which involved using the participants to identify further subjects who could be involved in the study (Patton, 2002).

An invitation was prepared and used to recruit the students to take part in the study, which clearly stated that participation was entirely voluntary. It also provided

important information about the task and experimental setup. Students from UoS were reached via a centrally managed Volunteer's mailing list; while students from Kuwaiti universities were reached via their tutors and from visits to their academic libraries. As a result, students who agreed to participate were contacted to arrange a suitable time and place to meet up.

Data was collected between January and February 2013 and a total of 46 students participated in the study. Before the ITE took place, the researcher made sure that all the preparatory procedure had been completed, including the following:

- Agreed a time with participants to meet at a room in their University. The researcher made sure that the room had some privacy so the students could feel comfortable during the data collection process.
- An information sheet and consent form were prepared, to allow the participant to read and agreed on before starting the experiment.
- The researcher prepared supporting documents, including the data collection form and the post-task interview questions.
- A laptop with an Arabic/English keyboard was provided and Internet connection checked beforehand.
- The Delicious homepage and an example of an existing Delicious account were opened; the researcher introduced social tagging functionalities to the participant who was given time just to familiarize himself with the system before starting the data collection process.
- The online questionnaire page was opened to make it ready for the participant.
- An audio recorder was prepared to record conversations from the post-task interviews.
- During the data collection process the researchers offered assistance to the participants if required.

The ITE did offer limitations, particularly in relation to designing that tagging task, where students' perceptions and judgments about the tagging functionality was based on experiencing a public social tagging system (Delicious) and not a system offered within their academic library catalogue. Also, the articles being tagged in the task were restricted to prior-identified articles provided by the researcher to provide some control within the gathering of a sample of tags.

### ***3.8.1.5 Data analysis***

The mixture of data collection methods used in ITE brings both qualitative and quantitative data, requiring different approaches to analysis. Mixed methods data analysis involves combining, connecting and integrating both quantitative and qualitative data analysis strategies (Teddlie and Tashakkori, 2009). Therefore, the data gathered from the pre- and post-task questionnaires, tagging task and the post-task semi-structured interview were analysed using different analysis procedures. Details are presented in the following sections.

#### ***3.8.1.5.1 Pre-and post-task questionnaire analysis procedures***

Prior to the data transformation from Survey Monkey into SPSS, 14 questionnaires were completed in Arabic, which needed to be re-entered in English. When this process had been completed, all the completed entries (46) were transferred to SPSS, where the variables and value names were checked. Table 3.9 provides the questionnaire sections and variables. Descriptive analyses were conducted on all the variables, including cross-tabulation for some. Most of the results were tabulated to be presented when reporting the findings (Chapter 5).

Table 3.9 Pre and Post Task Questionnaire Variables

Tasks	Sections	Variable
Pre-task	Demographic / User characteristics	Gender
		Age
		Education background /school
		Language qualification
		University
		Year of study
		Subject of study
		Language of study
	Library catalogue and social tagging previous usage	Library use
		Library use
		Library usefulness
		Familiarity with social bookmarking
		Familiarity with social tagging systems
Post-task	Tagging behaviour and perception	Ease of use
		Use English tags to Arabic article
		Use Arabic tags to English article
		Use both languages
		Influences factors
		Influences factors – language choice
		Tagging motivation
		Usefulness
		Future use
		Recommendation
Important		

### 3.8.1.5.2 Tagging task analysis procedures

The focus of this analysis was to discover aspects around the bilingual students' tagging behaviour through the collected tags. This sought to observe assigned tags and factors influencing their creation. Approaches for analysis of tags were selected to assist answering the sub-research question (c), to fit the research timescale, the available analytical tools, and the nature of the data.

Overall the tag analysis was conducted manually. However, prior to the analysis procedures some preparation been applied to the tags in different stages; details will be discussed as follows:

- To get a complete view on the number of articles being tagged during the tagging task “students’ article choices” (Chapter 5, Section 5.2.4). Tags from all articles (Arabic and English) were listed in an Excel spreadsheet. To do that the

researcher browsed all the participants' Delicious accounts to identify the added tags (Figure 3.7). The tags were organized and numbered based on the articles and the cases (tagging tasks) which were considered useful to facilitate future data retrieval (Figure 3.8).

Figure 3.7 Example of a Completed Tagging Task

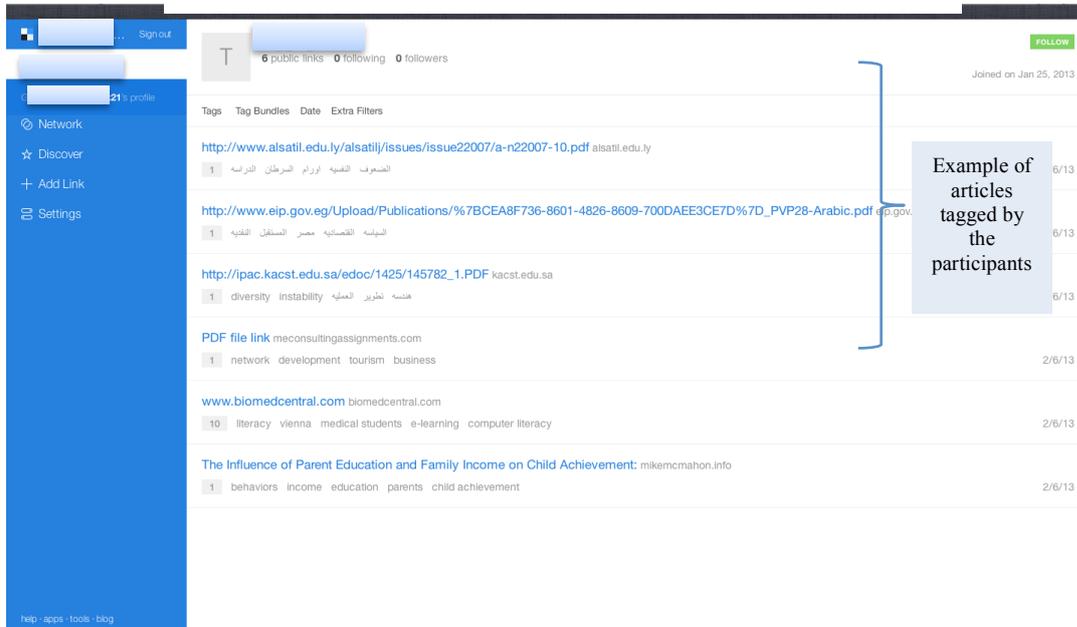


Figure 3.8 Example of the Tags Manual Organization (Excel Spreadsheet)

The screenshot shows an Excel spreadsheet titled "Article numbers" with columns for "Cases numbers" (G), "Participants" (H), "Taggingtask0" (I), "Taggingtask1" (J), "Taggingtask2" (K), "Taggingtask3" (L), and "Taggingtask4" (M). The rows represent different tagging tasks, with each cell containing a list of tags associated with that task.

Participants	E1	E2	E3	E4	E5	E6
Taggingtask0	Facebook friends personal information social communication social networking		after school Evaluation policy teenager youth development		education lifelong learning online learning, social networks, software application	
Taggingtask1		online education Learning medical students social software Student		education, Home environment Parental education parents socioeconomic		Business business research Destination hospitality Tourism
Taggingtask2	communication Information Online social networking	Available Educational learning student Subject				Behavior Business Communities Networks small tourism
Taggingtask3				child achievement home environment parents education Socioeconomic status study	Learning networks life long pen European social software	Development research rural location small business tourism
Taggingtask4	Facebook facebook privacy facebook profile facebook safety personal information			academic achievement education income Parent interaction parents children race effect		networks rural tourism social networking tourism Tourism and networks

- The previous preparation of tags also assisted determining “tag language choices” (Chapter 5, Section 5.2.5.4.1), which focused on identifying tag

language that centred on the total number of Arabic and English tags assigned by all students to all the articles, eliminating numbers and the ambiguous tags.

- Furthermore, in order to observe the overall consistency of tags for each article, tag distribution conducted which is presented in “*General tag examination*” (Chapter 5, Section 5.2.5.3.1) analysis was considered valuable that refers to the repetition of a particular tag by different students (Peters, 2009). To do this, another type of tag organization was carried out where all tags assigned to each article were merged and organized alphabetically.

A process normalise tags (e.g. map United Kingdom and UK to the same tag) was carried out by applying case-folding and tag normalization prior to computing the frequency of tag occurrence (Larkey et al., 2007). The classes of tags can be found in Appendices 20 and 21. This technique is commonly used in cross-lingual experiments to agree match different spellings of words by applying the following steps:

- Reduce plural forms to singular form;
- Replace certain letters to made them consistent, particularly with Arabic words (e.g. replace  $\acute{}$ ,  $\grave{}$ , and  $\bar{}$ , with  $\dot{}$ ;  $\ddot{}$  with  $\circ$  etc.);
- Remove punctuation, symbols, uncompleted words and non-letters. This can be associated with the ambiguous or idiosyncratic tags which mostly refer to tags that may have meaning only to the tagger, or cannot be interpreted by anyone except the tagger. This type of tag was found in this study when the students assigned tags using English characters to describe Arabic words/terms.
- *Tag categorization* is an additional type of analysis undertaken that concentrates on the factors influencing students when adding tags (Chapter 5, Section 5.2.5.3.3). This helps to better understand students’ tagging behaviour. In order to determine the appropriate type of tag categories a review of the related literature was conducted. This showed that studies applied different tag categorisation or classification approaches. However, they typically centre on getting a better understanding of the tags and their possible uses (Peters, 2009). This was mostly to explore the nature of the tags, as well as to study the taggers through their tags; this can feed into the design of the tagging system.

Table 3.10 presents example tag categorization approaches that had been considered useful for the research dataset such as: kinds of tags by Golder and Huberman (2006), which was modified by Al-Khalifa (2007); and tag category models by Hecker et al. (2007) that provide an overall categorization for different kinds of tags, adapted from (Kipp, 2007; Golder and Huberman, 2006; Kipp and Campbell, 2006).

Table 3.10 Review of Example Approaches to Tag Categorization

Tag Categorisation Approaches	Descriptions
Kind of tags (Golder and Huberman, 2006)	<ul style="list-style-type: none"> <li>• Tags that describe the topic itself.</li> <li>• Tags that describe the kind of item.</li> <li>• Tags that describe the owner of the item.</li> <li>• Tags that are not understood alone; like numbers.</li> <li>• Tags that reflect the taggers' opinions.</li> <li>• Tags beginning with 'my'.</li> <li>• Tags that reflect actions.</li> </ul>
Kinds of tags ( Al-Khalifa, 2007)	<ul style="list-style-type: none"> <li>• Personal tags for personal organization use,</li> <li>• Factual tags for describing the facts about the resource.</li> <li>• Subjective tags that reflect users' views or opinions about the resource.</li> <li>• Tags occurrences to agree the meaning of it.</li> <li>• Compound tags vague abbreviations, which are treated as personal tags, where it is difficult to know what they mean.</li> </ul>
Tag categorisation model (TCM) (Hecker et al. , 2007)	<ul style="list-style-type: none"> <li>• The functional category model.</li> <li>• The linguistic category model.</li> <li>• The tag-to-text category model.</li> </ul>

In this research the Tag-to-Text Category Model from Hecker, et al. (2007) was adapted, focusing on the “identical to full text” category only that included tags: 1) in the title; 2) in the abstract; 3) in the full text; and 4) were the same as the keyword. A full list of tag categories is presented in Appendix 23. The analysis examined all the tags collected from students. After finalising the entire tag categorization, all the tags were checked by another researcher to check their validity.

### ***3.8.1.5.3 Post-task semi-structured interviews analysis procedures***

Creswell (1998:140) states that “no consensus exists for the analysis of the forms of qualitative data”. However, to explore the interview data gathered in this study qualitative thematic analysis was adopted to assist the researcher to code, analyse, and present the findings. The thematic qualitative approach is “a method for identifying, analysing and reporting patterns (themes) within data. It minimally organizes and describes your data set in (rich) detail” (Braun and Clarke, 2006:79). This can support describing and organizing the data in complete and rich detail.

The flexibility of thematic analysis is beneficial as is it easy to learn and use, particularly by researchers with little or no experience with qualitative research. Using thematic analysis helps in summarizing the core concepts of the data to provide a “thick description” of the collected data (Braun and Clarke, 2006). In this study, the step-by-step guide suggested by Braun and Clarke (2006:87) for thematic analysis was used, which is considered beneficial:

*1- Familiarizing yourself with your data:* this refers to “transcribing data (if necessary), reading and re-reading the data, noting down initial ideas”. In this step data were prepared and all interview data were transcribed to transfer the oral conversation to written text. “A transcript is a translation from one narrative mode – oral discourse – into another narrative mode – written discourse” (Kvale and Brinkmann, 2008:178).

In most of the interviews, the language of the conversation switched between Arabic and English based on participants’ preferences. So, translation was needed to transform Arabic data into English. Because the researcher has the language skills needed for the translation, the translating process was applied during the transcription by the researcher.

*2- Generating initial codes:* this refers to “coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code”. The coding process “involves attaching one or more keywords to a text segment in order to permit later identification” (Kvale and Brinkmann, 2008: 202). In this step the researcher coded each transcript in a Word document, where each file was entitled with a participant number and the university name; for example [P39, UoS], where ‘P’ refers to the participant and UoS refers to the

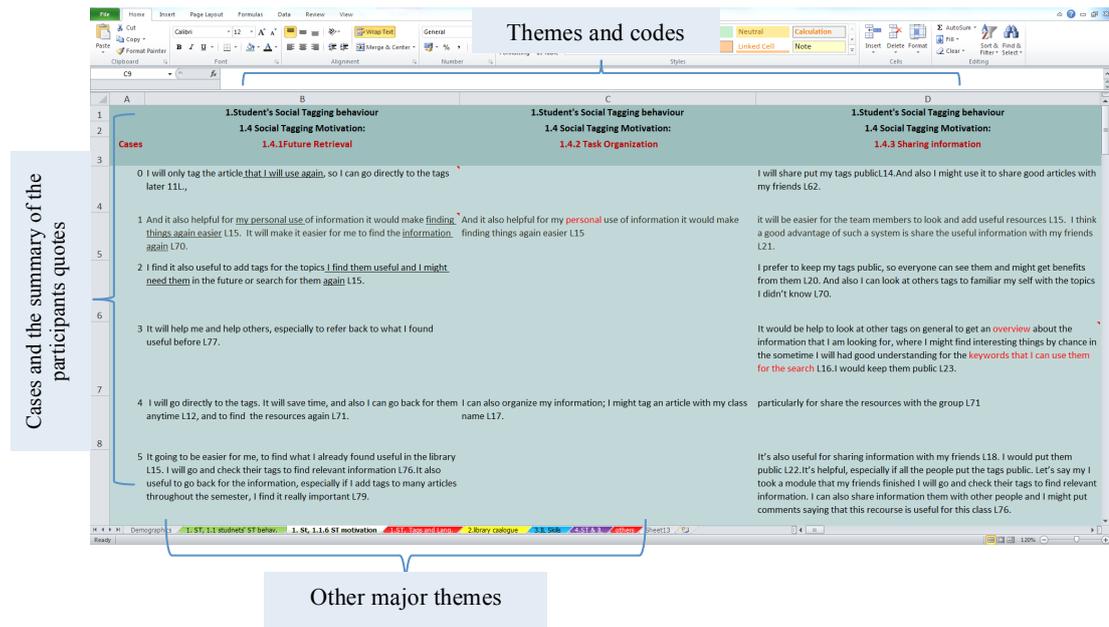
name of the university. The same shortcuts will be used when reporting participants' quotations.

The researcher tried to reach a “deep reflection about and, thus, deep analysis and interpretation of the data’s meaning” (Miles et al., 2013:72). Most of the codes emerged from the data via a “bottom up approach”; while other codes were driven from the focus and questions of the study in a more “top-down approach”. This approach aligns with Srivastava and Hopwood’s (2009) argument suggesting that codes do not arise from the text independently; they emerge from what the researcher seeks to discover. At the end of this stage, an initial list of codes was produced, which was refined and revised more than once during the coding process. The sorting of the data will assist the researcher to understand the meaning of coded data (Rubin and Rubin, 2005).

- 3- *Searching for themes*: refers to “collating codes into potential themes, gathering all data relevant to each potential theme”. At this stage the related codes were grouped under broad topics or “themes”, in which the researcher produced an initial code-book which helped in explaining the meaning of each theme. The research supervisors and a research student were approached to check the code-book (themes and coding) and see if they represent the correct meaning against a sample of data transcripts. Based on that the code-book was modified where some codes were re-organized and some overlapping codes were deleted.

Then, in order to organize the gathered data under themes and codes, a qualitative thematic *framework* approach was used. This was first developed by Ritchie and Spencer in 1980 to “manage qualitative and undertake analysis systematically” (Smith and Firth, 2011:53). This is particularly important in relation to using a case and theme-based approach for data management, where a coding and themes matrix is generated, which “enable changes to be tracked and progress to be recorded” (Smith and Firth, 2011:56). Figure 3.9 show an example of the developed framework for the gathered data.

Figure 3.9 Example of the Developed Framework for the Gathered Data



- 4- *Reviewing themes*: this refers to checking “if the themes work in relation to the coded extracts and the entire data set”. The initial themes were reviewed in this stage across all the data by re-reading, reflecting, and reorganizing. All the interviews transcribed were checked and re-coded when appropriate based on the developed code-book, using the *framework* (Figure 3.9) to give a more stable matrix and ensure consistency. Accordingly, the code-book was modified and a number of broad themes developed, including: students’ social tagging behaviour, social tagging motivation; general perception about social tagging; library catalogue services; IL skills; and social tagging and IL skills (the framework).
- 5- *Defining and naming themes*: this refers to “ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme”. After rechecking all defined codes and themes across all the interview transcripts, a modified code-book was developed. A matrix of codes and themes was developed earlier in the framework and found effective in developing the naming of final themes. This was checked once more with the same research supervisor and the research student to produce the final code-book (Appendix 18).

6- *Producing the report*: this refers to “the final opportunity for analysis, selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis”. So, when producing the findings the main themes guided the structure of reporting given in Chapter 5.

### **3.8.2 Semi-structured interviews with Librarians**

Conducting semi-structured interviews with librarians was also used for data collection. According to Kvale (1996), the best approach to knowing people’s worlds is to let them talk about their views and experience using their own words. Consequently, the researcher decided to conduct semi-structured interviews with the librarians, who can mainly support answering sub-research question (d): *How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?*

This will bring further understanding of the research investigation from the librarian’s point of view. Mainly by exploring their views about adding or using social tagging in academic library services; concentrating on the possible challenges and opportunities. It will also explore their perceptions about students’ library usage and information skills, focusing on the language aspect in relation to the effect of students’ language skills and the libraries’ initiatives in supporting their students.

The interviews also aimed at examining social tagging and the IL framework that emerged from the findings in phase one (Chapter 4, Section 4.4). This approach was considered valuable as it can provide validity. It was mainly intended to explore librarians’ views on the relationship between the main categories of social tagging functions: posting, browsing, searching, managing, and sharing shown in the framework and the Society of College, National and University Libraries (SCONUL) seven pillars of IL: identify, scope, plan, gather, evaluate, manage and present. The following sections will discuss the data collection and analysis processes in detail.

#### **3.8.2.1 Data collection**

Before the actual interviews were carried out pilot tests were undertaken with two researchers from the Information School. As a result, minor changes were made

based on their comments and suggestions, particularly in relation to the wording of questions, to bring more clarity when asking the interviewees.

The interview covers four sections (see Appendix 19). The first section was designed to gather *demographic* data, such as nationality, academic qualification, years of experience, job position, and library/department name. The second section sought to explore aspects about *library development* focusing on their interest in using Web2.0 technological applications, particularly about adding social tagging functionalities to the library catalogue services (e.g. challenges, opportunities). The third section focused on discovering aspects about *students' language skills*, especially their impact on searching for information using library catalogue services. The last section focused on exploring librarians' perceptions about the relationships between social tagging functions and IL skills presented in the *proposed framework* (Chapter 4, Figure 4.11), and the potential use of social tagging.

A purposive sampling approach was considered appropriate for reaching librarians. This approach was mainly “conducted with reference to the goals of the research, so that units of analysis are selected in terms of criteria that will allow the research question to be answered” (Bryman, 2012:418). The intention was to explore librarians' perceptions from the same universities under investigation; KU and GUST in Kuwait, and UoS in UK. This was found valuable in letting the comparable data stand up from the same academic library environment.

The actual interviews were carried out alongside the ITE between January and February 2013. To recruit the participants, the researcher arranged visits with head librarians in the three libraries, to introduce information about the study and ask them to recommend possible candidates whose could aid the study. Contact details of the candidate librarians were received, and in order to get an initial acceptance from them to take part in the interviews, information about the study was provided to them either by visiting, by email, or by a phone call. Consequently, appointments were set up out with the librarians who agreed to do the interview. Introducing and familiarizing the librarians with the researcher encouraged the interviewees to talk and express themselves openly and create trust for a better interview conversation.

Prior to conducting the interviews with the librarians, some considerations had been taken into account as follows:

- The researcher made sure that the librarians were provided background information for the study by providing the research information sheet (Appendix 12), and explaining any further information when needed.
- An agreed time and place was arranged with the interviewees in advance, usually in the librarian's offices; which were deemed an appropriate environment for an interview.
- An audio recorder was prepared for use.
- A document outlining the interview questions was prepared in advance to guide the interview conversation.
- The consent forms were signed by the participants before starting the interviews.

### **3.8.2.2 Data analysis**

The collected data from the interviews with librarians were explored using thematic qualitative analysis, applying similar procedures as used earlier in analysing the post-task semi-structured interviews (Section 3.8.1.5.3). Consequently, Braun and Clarke's (2006:87) steps for qualitative thematic analysis were adopted; details of what was undertaken in each step are presented in the following:

- 1- *Familiarizing yourself with your data*: at this stage all the interviews were transcribed and translated by the researcher. This was to prepare the data for analysis by transferring all the oral data recorded during the interview conversation into textual form. Each interview was placed in a single Word document. On average each interview lasted from 60-90 minutes, which takes around four hours to transcribe. Each file was titled with a participant number and the university name; for example [L1, KU], where 'L' refers to participant and KU refers to the name of the university. The same conventions will be used when reporting participants' quotations.
- 2- *Generating initial codes*: this stage focused on creating the codes, which basically takes a "bottom up approach" where the majority of the codes emerged from the data. Each interview transcript was coded by the researcher with the intention to point out all the interesting information arising from the data. Throughout the coding process the codes were refined and revised to produce an initial list of codes. It was believed that this can play an essential role in sorting

and understanding the data, as well as in supporting the further analytical procedure.

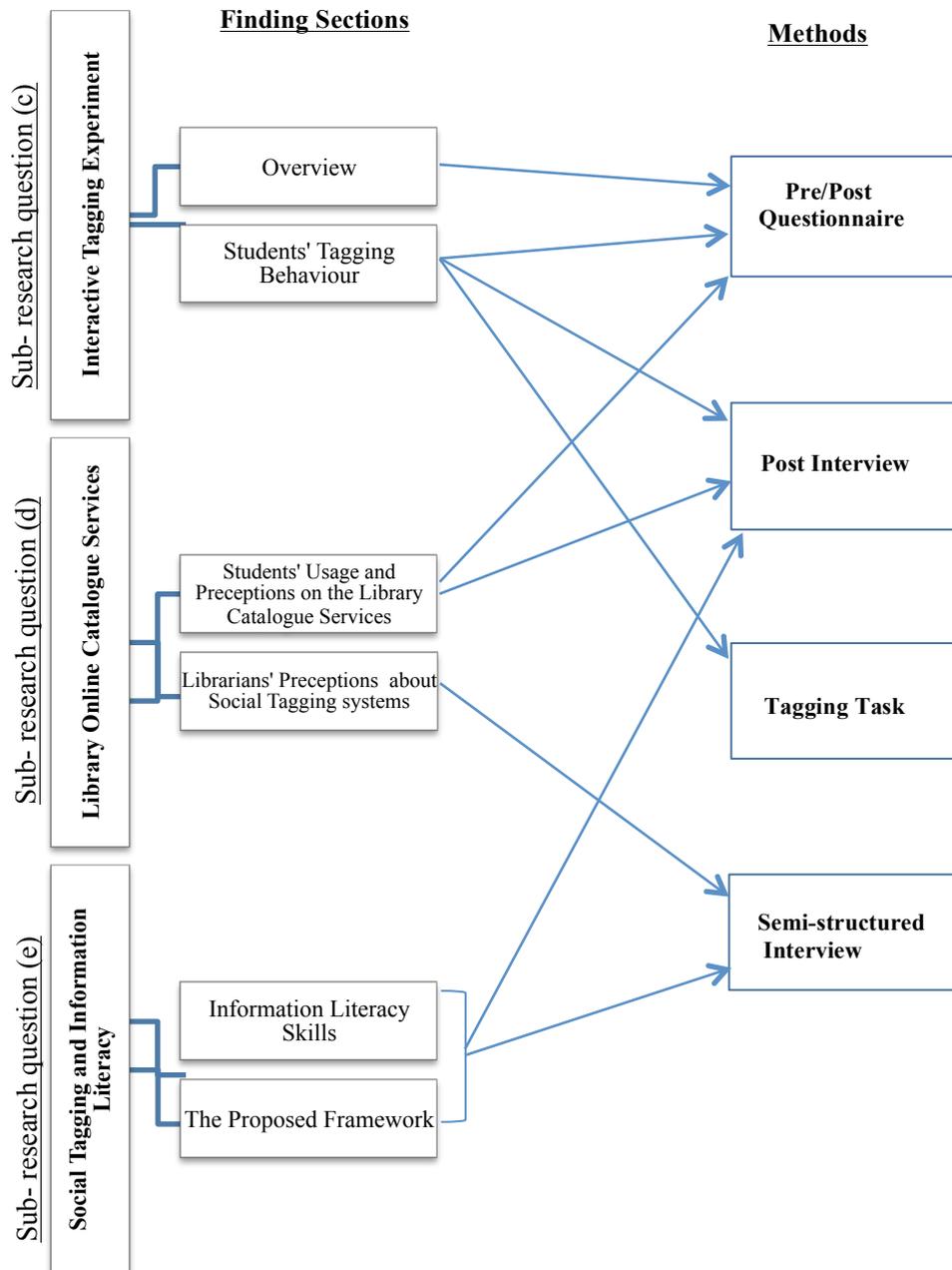
- 3- *Searching for themes*: in this stage the initial codes were grouped and categorized under main topic “themes”. Based on that the researcher developed an initial code-book that defines the meaning of the themes. To validate the whole list, the research supervisors and a research student were approached. This was to check if the themes and the codes produced the correct meaning with a sample of coded data transcripts. Accordingly, the initial code-book was reorganized and modified to develop a more stable list.
- 4- *Reviewing themes*: for more accuracy all the interview transcripts were checked by re-reading and re-coding the data if necessarily based on the pre-defined themes and codes provided in the initial code-book. Thus the researcher could check to determine whether the themes and codes reflected the right data. During the process the code-book was altered when appropriate.
- 5- *Defining and naming themes*: in this stage broad themes were defined based on the code-book developed previously, and the themes were named consisting of: library catalogue development; library catalogue usage; library services; social tagging system; social tagging implementations; and social tagging and IL framework assessment.
- 6- *Producing the report*: in this stage the analysed data were connected to the research question(s) and related literature. This assisted the researcher with reporting the findings that been guided by the main theme; more details will be presented in Chapter 5.

### **3.8.3 Data integration and presentation**

After completing both qualitative and quantitative data analyses, all the outcomes gained from phase two were triangulated including: the pre- and post-task questionnaire; the tagging task; and the post-task semi-structured interviews. Data were structured under a number of themes (Figure 3.10) as follows: ITE which addresses sub-research question (c) divided into two sections; the first presenting an overview of the data and the second focusing on students’ tagging behaviour. The second theme (library catalogue services) addresses sub-research question (d), which will be divided into students’ usage and perceptions of the library catalogue services and librarians’ perceptions about social tagging systems. The final theme will focus

on social tagging and IL, which addresses sub-research question (e) presenting the findings under IL skills and followed by the framework assessment.

Figure 3.10 Data Integration and Presentation of Phase Two Results

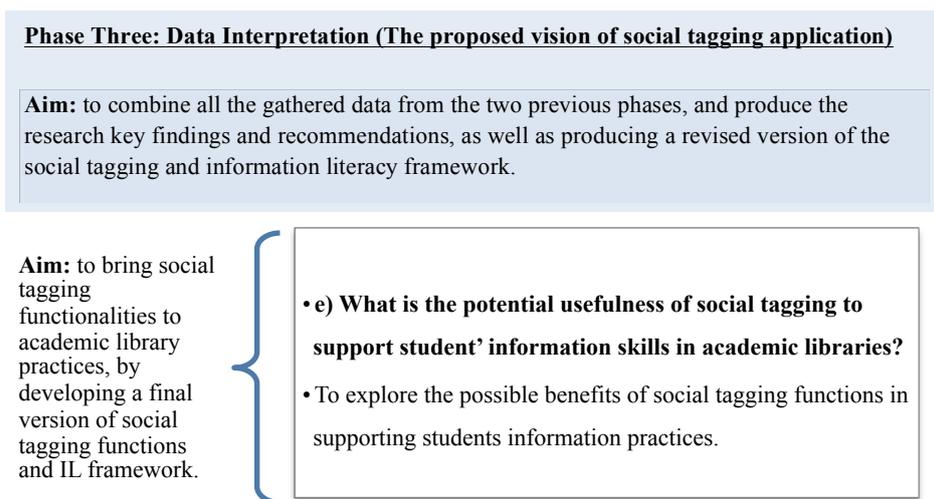


### 3.9 Data interpretation phase

In this phase we address sub-research question (e): *What is the potential usefulness of social tagging to support student' information skills in academic libraries?* (Figure 3.11) This is achieved by exploring the potential benefits of social tagging functions in facilitating students' information practices when using the academic library

catalogue. Hence, the outcomes of both previous phases of the research are integrated, and discussed and presented in relation to relevant studies (Chapter 6). This stage also adapts the proposed social tagging functions and IL framework in light of the findings of from perceptions of students and librarians (see Chapter 6, Section 6.6.3).

Figure 3.11 Overview of Phase Three of the Research



### 3.10 Summary

The research in this study has adopted a mixed-methods approach where both qualitative and quantitative methods were used. Chapter 3 has given a general description of the philosophical perspective, approaches and research methods chosen in this research, an explanation of adopting mixed-methods, and the research design. This is followed by a discussion about the participants, quality issues, and ethical considerations.

The chapter also presented details about the research strategy, providing details about the data collection and analysis procedures. These are divided into two main phases. Phase one seeks to understand the research context through gathering students' perceptions about existing library catalogue services, using social tagging in academic libraries and language preferences when searching and tagging. Two main methods were employed, including a questionnaire, which was analysed using descriptive statistics (via SPSS), and a comparative analysis of social tagging system functionalities, which was also analysed using descriptive statistics (via Excel).

Phase two of the research represents the main study of the research aiming to get an in-depth understanding of students' tagging behaviour and perceptions of using social tagging in academic libraries from the students' and librarians' perspectives. This involved an interactive tagging task (or ITE) comprising of three stages of data collection: pre- and post-task questionnaire, analysed using quantitative methods; a tagging task to investigate the kinds of tags generated from users within a setting. This manually analysing and categorising the tags produced. The final stage was post-task semi-structured interviews, analysed using thematic analysis. Semi-structured interviews were also used with librarians. The final part of this chapter describes the data interpretation phase where all the outcomes of the different methods of data collection are used to produce a final version of the social tagging and IL framework, and produce the concluding findings and recommendations that reflect the main research aim and question(s).

## Chapter 4: Phase One Findings

### 4.1 Introduction

Phase one of the research (the preparation study) focused on discovering the context of the research, by exploring social tagging functions and the perceptions of users. It mainly sought to answer sub-research question (a): *How do bilingual students use online library catalogue services and existing social tagging systems?* This was investigated through a survey of students' use and perceptions of the online library catalogue services at their institution and existing social tagging systems, as well as their language preferences with regard to searching and tagging.

This phase of the research also sought to answer sub-research question (b): *What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?* This was examined by analysing and comparing the functionalities offered by existing social tagging systems, and their support for users with varying language skills. The following section reports the findings of Phase one.

### 4.2 Questionnaire

This section mainly seeks to answer sub-research question (a). The questionnaire findings addressed several aspects, including online library searching services, searching and language preferences, and current and prospective usage of social tagging systems. As Table 4.1 shows, the total number of responses was (309); the number of valid responses received was (241), the rest were rejected as they contained missing answers. This gives a response rate of 78%, which refers to the number of usable questionnaires divided by the total number of the sample (Bryman, 2008:181). From 241 completed responses, 41 male and 79 female students participated from Kuwait University (KU); 32 male and 51 female students participated from the Gulf University for Science and Technology (GUST); and 16 male and 22 female students from the University of Sheffield (UoS). As the responses were from three universities only and specifically limited to Arabic/English speakers, generalisation cannot be achieved.

Table 4.1 Response Details of all Students Participating in the Questionnaire

University	All responses	Valid responses
KU	139 responses	120 completed
GUST	97 responses	83 completed
UoS	73 responses	38 completed
<b>Total</b>	<b>309 responses</b>	<b>241 completed</b>

#### 4.2.1 Descriptive analysis

The following subsections present findings based on the descriptive analyses of all the data gathered.

##### 4.2.1.1 Demographics

Table 4.2 shows that most (32%) of the students were in year 2 followed by years 1 and 3; the remainder were year 4 undergraduates. Students were from different domains including Law, Science, Engineering, Business and Management, Accounting and Finance, Computer Science, English, Medical and Social Sciences. Table 4.3 presents the education background of the participants; education background refers to the type of school that students attended before starting college. The highest number of students studied in Arabic schools with 63.5%, while 25% studied in English schools, but only 9.5% studied in a bilingual school. The rest of the students studied in other schools, including a French/English school, a Malay/English school and a Lithuanian school.

Table 4.2 Demographic Information of Participants

Year of Study	UoS		GUST		KU	
	Male Count (%)	Female Count (%)	Male Count (%)	Female Count (%)	Male Count (%)	Female Count (%)
Year 1	10 (62.5%)	8 (36.4%)	6 (18.8%)	6 (11.8%)	15 (36.6%)	32 (40.5%)
Year 2	2 (12.5%)	9 (40.9%)	9 (28.1%)	26 (51%)	14 (34.1%)	26 (32.9%)
Year 3	3 (18.8%)	5 (22.7%)	14 (43.8%)	18 (35.3%)	8 (19.5%)	13 (16.5%)
Year 4	1 (6.3%)	0 (0.0%)	2 (6.3%)	1 (2%)	3 (7.3%)	8 (10.1%)
Other	0 (0.0%)	0 (0.0%)	1 (3.1%)	0 (0.0%)	1 (2.5%)	0 (0.0%)
<b>Total</b>	16 (100%)	22 (100%)	32 (100%)	51 (100%)	41 (100%)	79 (100%)
<b>Total count</b>	<b>38</b>		<b>83</b>		<b>120</b>	
	<b>241 participants</b>					

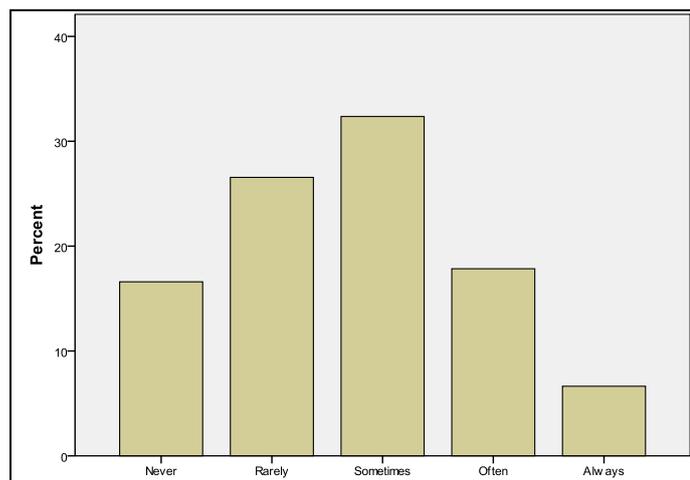
Table 4.3 Education Background of Participants

Type of school	Count (%)
Arabic school	153 (63.5%)
English school	61 (25.3%)
Bilingual school	23 (9.5%)
Other	4 (4 1.7%)
<b>Total</b>	<b>241 (100%)</b>

#### 4.2.1.2 Online library searching services

This section examines online library searching services that include electronic resources, databases and OPACs. Figure 4.1 shows how frequently the students use the library searching services: 32.4% state sometimes; whereas about 25% state they used them frequently.

Figure 4.1 The Use of Library Search System Services



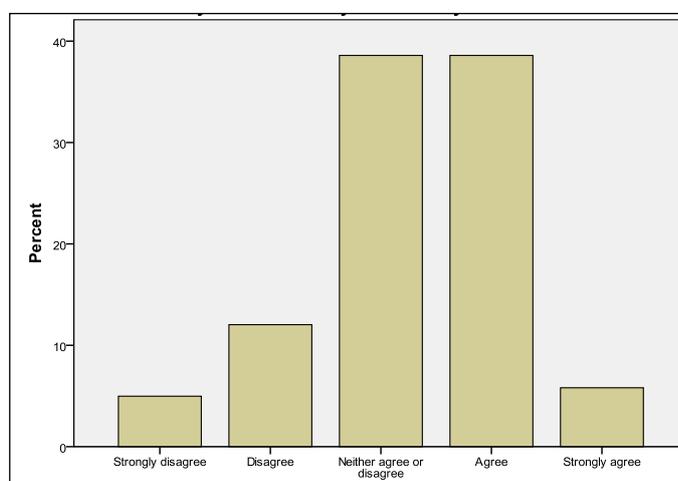
In terms of the frequency of use of the search options provided by the online library catalogue services, search options include title, author, keyword, series and ISBN. Table 4.4 shows that searching by title was the most commonly used option, where 20.3% state ‘always’ and 17.4% state ‘often’. Only 9.1% of the students ‘always’ search by author. For the keyword search option only 12.9% of the students ‘always’ use it. Also high numbers of the students ‘never’ use the series with 48.1%, and ‘never’ use ISBN search options with 55.2%.

Table 4.4 The Frequency Use of Library System Search Options

Search options	Never	Rarely	Sometimes	Often	Always	Don't Know	Total
	Count (%)	Count (%)	Count (%)	Count (%)	Count (%)	Count (%)	Count
<b>Title</b>	52 (21.6%)	45 (18.7%)	45 (18.7%)	42 (17.4%)	49 (20.3%)	8 (3.3%)	241
<b>Author</b>	71 (29.5%)	59 (24.5%)	48 (19.9%)	32 (13.3%)	22 (9.1%)	9 (3.7%)	241
<b>Keyword</b>	55 (22.8%)	53 (22%)	51 (21.2%)	36 (14.9%)	31 (12.9%)	15 (6.2%)	241
<b>Series</b>	116 (48.1%)	63 (26.1%)	31 (12.9%)	9 (3.7%)	0 (0.0%)	22 (9.1%)	241
<b>ISBN</b>	133 (55.2%)	49 (20.3%)	23 (9.5%)	2 (0.8%)	1 (0.4%)	33 (13.7%)	241

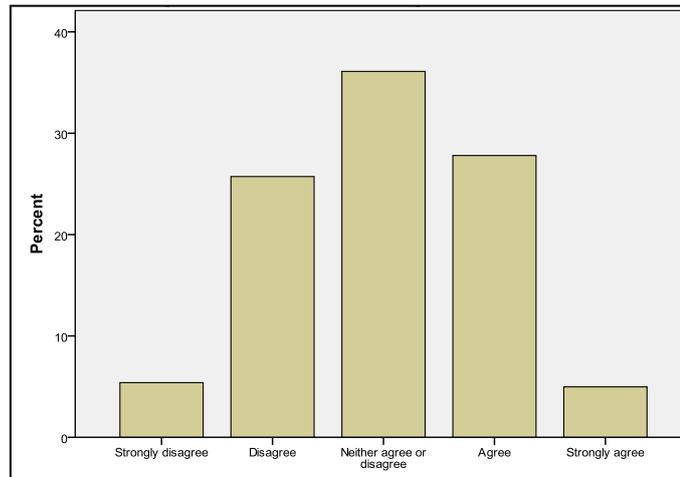
Figure 4.2 shows that 38.6% of students agree that they were satisfied with their search result, and similarly 38.6% state that they neither agree nor disagree. Furthermore, when students were asked to give reasons for their answers, 12 students said that they never or do not use the system at all, five students state that some of the result are not accurate and making changes is necessary, five students state that they sometimes cannot find what they are looking for, and three students state that the system is old and has poor functionality.

Figure 4.2 Satisfaction with Online Library Search Result



When the students were asked about the difficulties of searching for relevant information using the library online catalogue searching services, Figure 4.3 shows that 36.1% of the students state that they neither agree nor disagree with the statement; whereas 32.8% agree that they found difficulties when searching.

Figure 4.3 Agreement about the Difficulties of Searching for Relevant Information Using the Search Services



Furthermore, as shown in Table 4.5, 22 students provide comments regarding their agreement with the statements; 12 students said that they do not use the library system, while 2 students said that they cannot find information that meets their needs. Others comment that there are “a lot of similar subjects” and “if you know what you’re looking for it won’t be hard to find”.

Table 4.5 Students' Comments Regarding their Satisfaction with their Searching Experience and Difficulties Encountered

Factors	Examined Statement	
	Students' satisfaction with their search result	Difficulties in searching for relevant information
<b>User engagement with the system</b>	12 students said: “I never use the library system”.	12 students said: “I don’t use the library system”.
<b>System quality</b>	5 students said “the results are not accurate”.	_____
<b>Lack of information skills</b>	5 students said: “I can’t find what I am looking for”.	2 students said: “I can’t find what I am looking for”. 1 student said: “If you know what you’re looking for it won’t be hard to find”.
<b>System functions</b>	3 students said: “the system is old and provides poor functions”.	1 student said: “A lot of similar subjects”.

#### 4.2.1.3 Searching and language preferences

This section examines the language factor: 64.7% of participants have an approved English language qualification (e.g. TOEFL, IELTS)<sup>21</sup>, while 30.8% of them do not; the rest with about 5% answered ‘don’t know’. Table 4.6 shows how students rate

<sup>21</sup> TOEFL refers to the Test of English as a Foreign Language, and IELTS refers to The International English Language Testing System

their searching level for Arabic and English material. In terms of English language searching level, the majority (90.7%) of students rate themselves from ‘good’ to ‘excellent’. In terms of Arabic language searching level, the majority of students rate themselves from ‘good’ to ‘excellent’ with 78.5%, while a notable number of students rate themselves from ‘poor’ to ‘very poor’ with 21.5%.

In relation to general search language preferences, 44.4% of students prefer to search in English, 34% prefer to search in both languages, and 15.4% prefer using the Arabic language. Table 4.7 shows the reasons for students’ search language preferences; the students here were allowed to choose more than one option if they preferred to do so.

Table 4.6 Searching Language Level for Arabic and English Materials

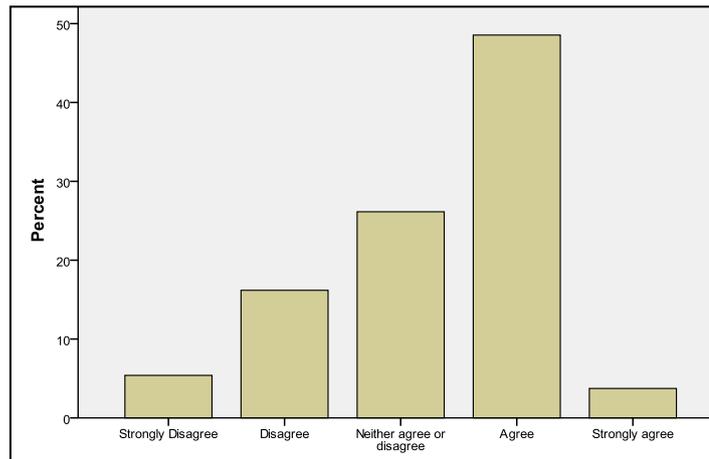
Language	Very Poor (%)	Poor (%)	Good (%)	Very good (%)	Excellent (%)	Total
English	8 (3.3%)	14 (6%)	81 (33.6%)	74 (30.6%)	64 (26.5%)	241
Arabic	24 (10%)	28 (11.5%)	73 (30.3%)	55 (22.8%)	61 (25.4%)	241

Table 4.7 Reasons for Search Language Preferences

Reasons	Arabic (Count)	English (Count)	Both languages (Count)	Total (Count)
The important information in my field is in that language.	7	34	26	67
I often find more information in that language.	14	62	25	101
It's the language of the subject I am studying.	18	63	40	121

In terms of cross-language searching, Figure 4.4 shows whether students agree with cross-language functions or not: 50% of the students agree with the statement. Findings show that many students have variations in language search abilities and preferences; there is also wide acceptance that being cross-lingual helps. This encourages the researcher to investigate further the language variation skills aspect; this will be explored in Phase two.

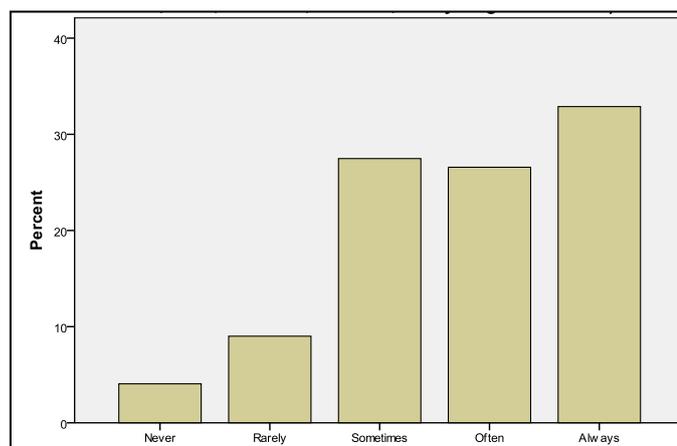
Figure 4.4 Agreement with the Use of Cross-language Functions



#### 4.2.1.4 The current and prospective usage of social tagging system tools

This section examines social tagging tools; students were asked if they know what Social Tagging is. Only 19% of the students said ‘yes’, where most of them (68.7%) did not have any knowledge about the concept; 11.2% stated ‘don’t know’. As a consequence of these responses, an explanation of what social tagging is and its functionality was presented to students to clarify the concept. All students were asked about how frequently they use the social networking websites (social tagging tools are normally provided by these websites), Figure 4.5 shows that about 60% of the students often or always use social network websites, with only about 10% never or rarely using these websites.

Figure 4.5 Frequency of Use of Social Networking Websites



Students who frequently use social networking websites were asked about their use of social tagging tools when visiting social networking websites. Table 4.8 shows the

number of functions that were examined. For searching personal tags, 17.4% of the students said ‘often’, and 8.6% said ‘always’. This was followed by the function of adding tags to useful items, where 15.4% of the students state ‘often’ and 7.8% said ‘always’. Searching other people’s tags was the third most-used function, where 13.7% of the students said ‘often’ and 8% said ‘always’. Using tags to organise favourite items, and browsing or viewing tag clouds were the least-used functions.

Table 4.8 Frequency of Using Social Tagging Tools

Activities	Never	Rarely	Sometimes	Often	Always	Don't Know	Total
	Count (%)	Count (%)	Count (%)	Count (%)	Count (%)	Count (%)	Count
<b>Search your tags</b>	42 (17.4%)	54 (22.4%)	67 (28%)	42 (17.4%)	21 (8.6%)	15 (5.607%)	241
<b>Add tags to items you find useful</b>	54 (20.3%)	49 (21.5%)	70 (29%)	36 (15.4%)	18 (7.8%)	14 (6%)	241
<b>Search other people's tags</b>	51 (21.1%)	52 (21.5%)	70 (29.6%)	33 (13.7%)	20 (8%)	15 (6.1%)	241
<b>Use tags to organise your favourite items</b>	59 (24.3%)	53 (22%)	32 (13.2%)	60 (25.2%)	17 (7%)	20 (8.3%)	241
<b>Browse/View a tag cloud</b>	50 (20.7%)	62 (26%)	59 (24.5%)	39 (16%)	14 (5.8%)	17 (7%)	241

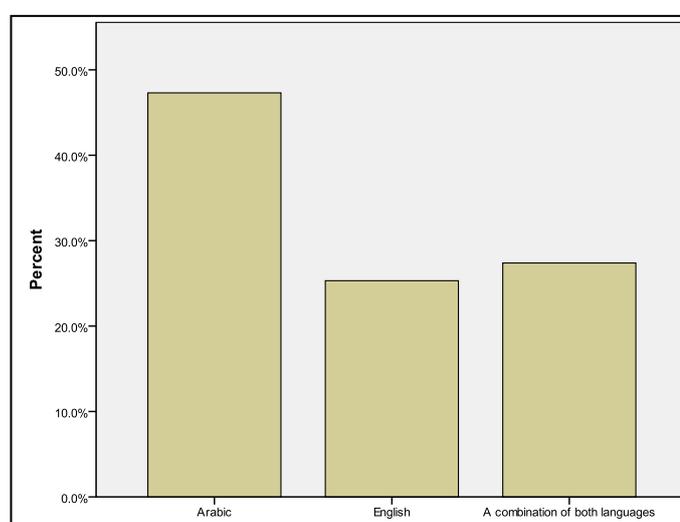
As an explanation of what a social tagging system is was presented to participants (Appendices 9 and 10), all students were asked their opinion about adding social tagging functions to online library catalogue searching services. Table 4.9 shows that students generally agreed that adding social tagging tools was useful, with about 46% of them agreeing to ‘Add tags to items you find useful’, ‘Search personal tags’, and ‘Use tags to organise your favourite items’. ‘Browse or view tag cloud’ takes about 45.5% agreement. Lastly, 36.5% of students could not decide about ‘Search other people’s tags’. A notable number of students choose neither to agree nor disagree, which indicates that they could not decide about the statement even if they know about the use and meaning of the tagging features. ‘Don’t Know’ refers to students who were not familiar with the tagging features, where “this option has been found to reduce the number of uninformed responses without reducing overall response rate” (Malhotra, 2006:85).

Table 4.9 Agreement with Adding Social Tagging Tools in Library Searching Systems

Features	Strongly Disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)	Don't Know (%)	Total
Add tags to items you find useful	22 (9%)	25 (10.5%)	64 (26.5%)	98 (40.6%)	13 (5.4%)	19 (8%)	241
Search your tags	12 (5%)	41 (17%)	62 (25.6%)	96 (40%)	13 (5.4%)	17 (7%)	241
Use tags to organise your favourite items	18 (7.5%)	27 (11.3%)	64 (26.5%)	93 (38.6%)	19 (7.8%)	20 (8.3%)	241
Browse/View tag cloud	15 (6.2%)	28 (11.6%)	77 (32%)	88 (36.5%)	12 (5%)	21 (8.7%)	241
Search other people's tags	12 (4.9%)	33 (13.7%)	88 (36.5%)	77 (32%)	8 (3.4%)	23 (9.5%)	241

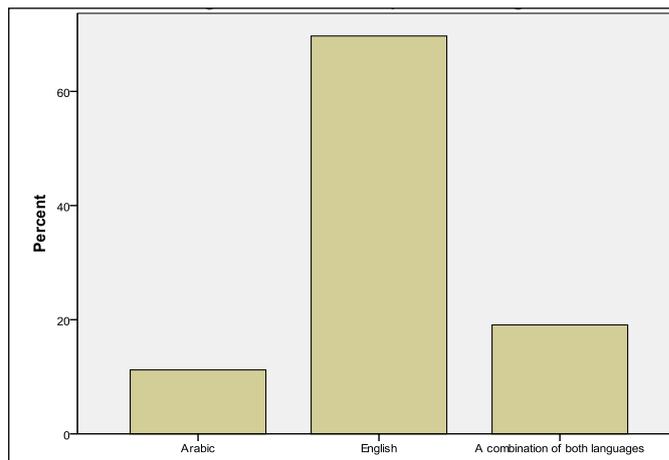
Tag language preferences were examined for English and Arabic material. For Arabic materials, Figure 4.6 shows that 46.5% prefer to tag in Arabic, 24.8% prefer to tag in English, and 28.7% prefer to tag in both languages.

Figure 4.6 Tag Language Preferences for Arabic Material



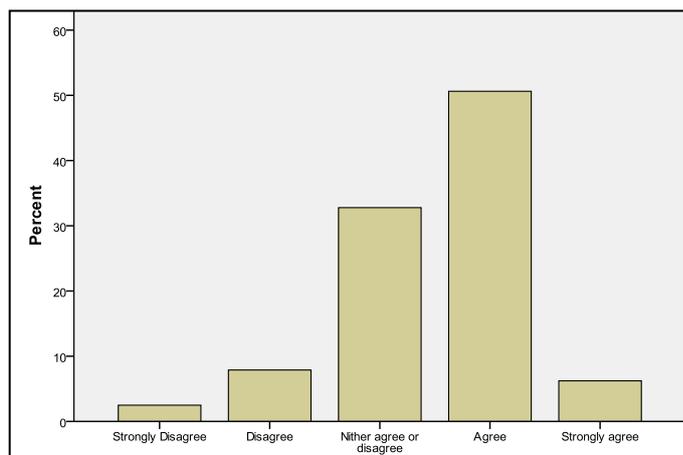
Whereas for English material, as shown in Figure 4.7, most (69.6%) students want to create tags in English, 18.7% would assign a combination of both languages, and only 11.7% would assign Arabic tags for English material.

Figure 4.7 Tag Language Preferences for English Material



It was interesting that about 60% of students agreed that adding social tagging tools to the online library searching system would be useful, as shown in Figure 4.8.

Figure 4.8 Agreement with Adding Social Tagging Tools to Library System



#### 4.2.2 Relationship analysis between university and user satisfaction, and difficulties with library searching services

This section will present the result of applying the Kruskal-Wallis test. Some variables selected for this type of analysis are intended to find any relationship between university and user satisfaction, and difficulties with library searching services; the results are presented below.

The Kruskal-Wallis test was used to examine the relationship between university attended by the user, and users' satisfaction with library search services. The test revealed a statistically significant difference in user satisfaction with library

searching services across three different universities. Table 4.10 shows the results as statistically significant ( $p=.002$ ). The highest rank goes to UoS with 150.87, followed by GUST with 124.81, then KU with 108.90, where the higher number refers to a higher satisfaction. While regarding university and difficulties with library searching services, the Kruskal-Wallis test revealed a statistically significant difference in difficulties of using library searching services across three different universities. Table 4.11 shows the result is statistically significant ( $p=.045$ ). The highest rank goes to KU with 128.10, followed by GUST with 121.60, then UoS with 97.28, where the highest number refers to high difficulties.

Table 4.10 Kruskal-Wallis Test of University and User Satisfaction with Library Searching Services

Ranks			
	University	N	Mean Rank
Satisfaction with library searching services	UoS	38	150.87
	GUST	83	124.81
	KU	120	108.90
	Total	241	

Test Statistics <sup>a,b</sup>	
	Satisfaction with library searching services
Chi-Square	12.271
df	2
Asymp. Sig.	.002

a. Kruskal-Wallis Test  
b. Grouping Variable: University

Table 4.11 Kruskal-Wallis Test of University and Difficulties with Library Searching Services

Ranks			
	University	N	Mean Rank
Difficulties with library searching services	UoS	38	97.28
	GUST	83	121.60
	KU	120	128.10
	Total	241	

Test Statistics <sup>a,b</sup>	
	Difficulties with library searching services
Chi-Square	6.182
df	2
Asymp. Sig.	.045

a. Kruskal-Wallis Test  
b. Grouping Variable: University

### 4.2.3 Cross-tabulation analysis on tag language preferences for Arabic and English materials, and search language preferences in Arabic and English

This section presents the cross-tabulation analysis. The categorical variables selected for this analysis were tag language preferences for Arabic and English materials, and search language preferences in Arabic and English.

Table 4.12 shows that most of the students who prefer to search in Arabic would, as expected, like to tag Arabic material in Arabic. However, students who prefer to search in English present differences in their preferred language for tagging Arabic materials, where 17.4% prefer to tag in English, 14.3% prefer to tag in Arabic, and 13.5% prefer to tag in both languages. Here English tags will be useful in Cross-lingual Information Retrieval (CLIR) to access Arabic materials, when employed using retrieval tools (e.g. browsing and searching). Furthermore, most of the students who prefer to search in both languages want to tag Arabic materials in Arabic (16.1%), while 13.5% want to use both languages. 3.5% of the students could not decide which language they prefer to search in, so they were excluded from the analysis.

Table 4.12 Summary of Search Language Preferences and Tag Language Preferences for Arabic Materials

Cross-tabulation		Tag language preferences for Arabic materials			Total (%)
		Arabic (%)	English (%)	Both languages (%)	
Search language preferences	Arabic	14.8%	0.4%	0.9%	16.1%
	English	14.3%	17.4%	13.5%	45.2%
	Both languages	16.1%	5.7%	13.5%	35.2%
	Don't Know	1.3%	1.3%	0.9%	3.5%
	Total	46.5%	24.8%	28.7%	100.0%

Table 4.13 shows that students who prefer to search in Arabic prefer varied tag languages for English material, where about 7% prefer Arabic and English languages, and a few students prefer both languages. 40% of students who prefer to search in English want to tag in English as well, and only 3.9% prefer to tag in both languages. 20.4% of students who prefer to search in both languages want to tag English materials in English, and 12.2% of them want to use both languages. Similar

to the last results, students who could not decide what language they prefer to search in were excluded from the analysis.

Table 4.13 Summary of Search Language Preferences and Tag Language Preferences for English Materials

Cross-tabulation		Tag language preferences for English materials			Total (%)
		Arabic (%)	English (%)	Both languages (%)	
Search language preferences	Arabic	7.4%	7.0%	1.7%	16.1%
	English	1.3%	40.0%	3.9%	45.2%
	Both languages	2.6%	20.4%	12.2%	35.2%
	Don't Know	0.4%	2.2%	0.9%	3.5%
	<b>Total</b>	11.7%	69.6%	18.7%	100.0%

### 4.3 Comparative analysis of social tagging functions

This section mainly seeks to answer sub-research question (b). This question sought to analyse and compare the functionalities offered by existing social tagging systems, their support for users with varying language skills; and to explore the possible benefits of social tagging functions in supporting students' information practices.

#### 4.3.1 The categories of social tagging functionalities

Full details of the comparative analysis are presented in Table 4.14 that shows all the selected social tagging systems, separated into two main types: social bookmarking; and library2.0/museum. The comparative analysis is divided into five categories following the framework presented previously (Section 3.6.2.2), including: posting, searching, browsing, managing and sharing. Furthermore, the type of system shows whether it is primary (P), or secondary (S); tagging type (narrow/ broad) and website translation are also presented. The total number of functions provided by each service is presented, as well as the total number of each function across all systems.



The following sections will describe the findings that map the comparative elements to the system types.

#### ***4.3.1.1 Social bookmarking services***

In social bookmarking services it seems that tagging systems play an important role in service popularity whereby almost all of the services provide a primary tagging system, except for Diigo. Details of the function analysis are presented as follows:

- *Posting functions*: all of the services provide a toolbar button/bookmarklets and Web add form in order to create tags. With a tag delimiter, almost all of the services require users to separate tags either by a comma or space, except for Connotea and Jumptags that accepts both delimiters. Five services provide tag suggestion functions, mostly from previous tags entered by the user him/herself. Multilingual tags are found in all the systems except the CiteUlike and Folkd tagging systems.
- *Searching functions*: all of the services allow the users to search public and personal tags, and most of them deal with Boolean operators, except Jumptags. Advanced search options are widely offered; Connotea does not offer them.
- *Browsing functions*: it is interesting to note that every service provides all of the browsing functions, including tag visualisation, either in a tag cloud or list or both. That to show public tags, browse personal, related tags, and browse other bookmarking lists by clicking on the member's username.
- *Managing functions*: all of the services allow the users to edit, rename or delete their saved tags. Half of the services allow tracking tags, but only three allow tag grouping. In regard to import and export bookmarks, importing is offered by all services, whereas the export function is found in three services only. Follow/watch tags are provided by three systems including Delicious, Diigo and Connotea.
- *Sharing functions*: sharing tagged items with others and with groups of users is the most popular function across all services. The ability to find similar users is provided by all services, apart from Jumptags, and recommendation was found to be a less popular function.

Across all of the social bookmarking services, Diigo was richer, providing almost all of the examined functions, followed by Delicious and Connotea, then CiteULike, Folkd and Jumptags.

Other interesting features were found on some social bookmarking websites; for example, Delicious offers stacking, which allow users to create a collection of links around common themes: “stack creators can choose link order, images, descriptions, and ultimately frame the conversation or topic with personal titles and comments”(Delicious, 2012). Connotea offers geotagging, which adds geographical information.

#### **4.3.1.2 Library 2.0/museum**

In library 2.0/museum, three of the services (Penntags, LibraryThing and Steve tagger) provide a tagging system as a primary tool; whereas WorldCat and Goodreads provide social tagging as a secondary tool. Details of the functions analysed are presented as follows:

- *Posting functions*: most of the systems provide a Web add form to post tags except for Penntags. All of the services require users to separate tags with a comma, except Goodreads, where a space and a comma are treated as part of the tag, and the only way to separate tags is to submit a new one. Only two systems provide tag suggestions, including WorldCat and LibraryThing. Three services support multilingual tags. Penntags and Goodreads do not provide such functions. Tag notes, which allow users to describe the tag, were only offered by Connotea.
- *Search functions*: the most popular function is to search other tags that are provided by all of the services except for WorldCat. Search personal tags, Boolean operators and advanced search options are less popular, being provided by only three services.
- *Browsing functions*: similar to social bookmarking services, almost all library2.0/museum services offer all browsing functions.
- *Managing functions*: it seems that the managing function is less popular among the library 2.0/museum tagging services. Only the edit, rename or delete

functions are available across all services, whereas the follow or watch tags option and exporting saved bookmarks are offered by three different services. The import option is available from only two services, namely LibraryThing and Goodreads. Tag grouping was only offered by LibraryThing.

- *Sharing functions*: recommendation was the most popular among the five services, where the other functions are found in three different services.

Across all library2.0/ museum tagging functionality, LibraryThing was the most popular, followed by Penntags, Goodreads, WordCat and Steve tagger. LibraryThing was popular as it serves users from different backgrounds and includes public, as well as, academic users (e.g. from academic libraries).

### **4.3.2 Overall findings**

Generally, nine services provide a primary tagging system from both social bookmarking and library2.0/museum services. As shown in Figure 4.9, browsing was the most popular function, compared to other categories, which varied in popularity. Under Posting, adding tags using the Web add form was a popular function, which is mostly a basic way to add tags. Searching other tags was a popular function under Searching, edit tag was the most popular function under Managing and Sharing a tagged item with others was the most popular function under Sharing.

Figure 4.10 shows that Diigo, Delicious and Connotea were the services with the richest functions, and Steve tagger was found to offer the poorest functions. Overall, the social bookmarking services provided richer functions compared to library2.0/museum services. Keep in mind that CiteULike and Connotea are a kind of social bookmarking service, but are designed for scholarly references where they offer special functions to support scholarly work. For example, the ability to search or add bookmarks using Digital Object Identifier (DOI), export citation and bibliographic information. In contrast, library2.0/museum services are more limited to specific users; LibraryThing and Goodreads are designed for book readers and provide a tagging system with primary functions. In contrast, WorldCat and Penntags are designed for library resources and provide a secondary tagging system.

Figure 4.9 Popularity of Social Tagging Functions

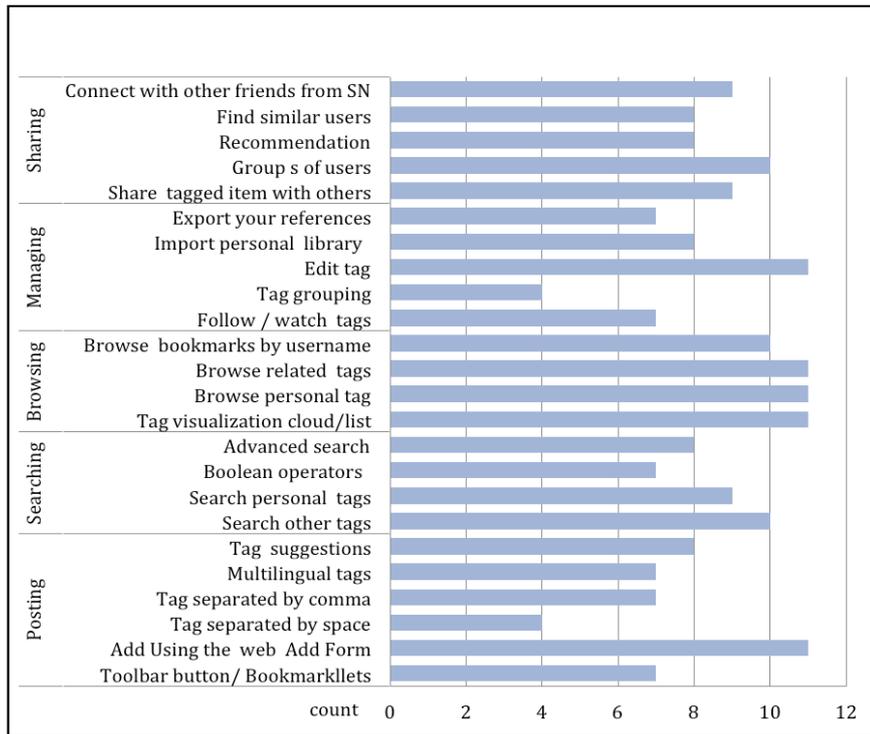
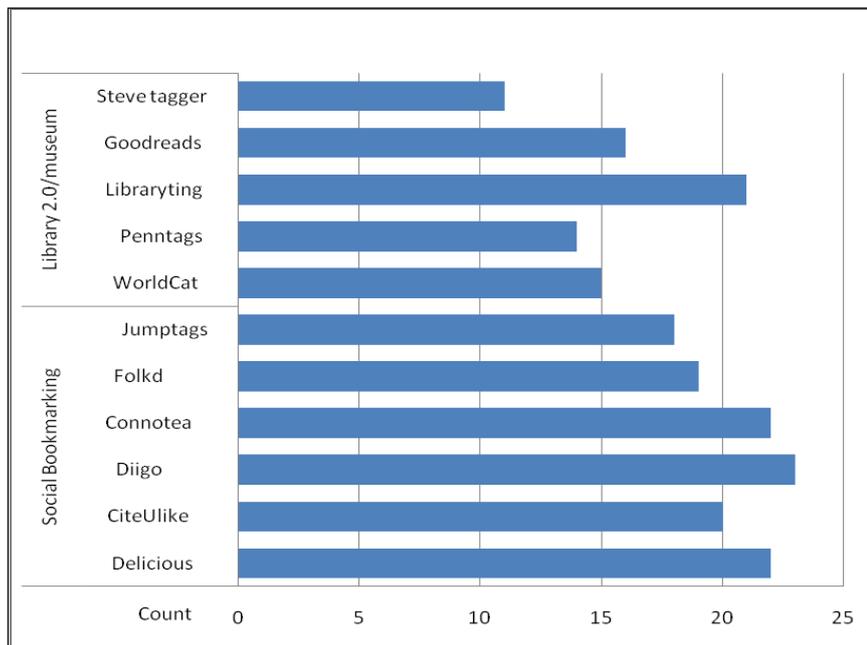


Figure 4.10 Total Number of Functions Provided by Each Social Tagging System



Furthermore, in the analysis exploring how tagging systems support multilingual or bilingual users was considered. Popular tag clouds were explored; it has been identified that all of the popular tags in CiteULike, Diigo, Folkd, Penntags, Goodreads and Steve tagger were in English. In WorldCat, Connotea popular tags

were found to be in languages other than English (e.g. French tags). The popular tag cloud feature in Delicious was deactivated.

Some of the services offer website translation to support multilingual users. Folkd offers translation into German, French and Spanish, and WorldCat is available in seven languages: German, Spanish, French, Dutch, Portuguese, Chinese and Korean. Goodreads offers some translation support in Spanish, French, Italian and German, and has future plans to increase the number of languages available (Goodreads, 2012). French, German and Spanish were the most widely available languages.

Diigo's advanced search options offer the ability to choose one language, and offers three language preferences within users' account settings, where users can identify their preferred language in which to recommend content and people based on their language preferences. Steve tagger offers an option to select the language of the tag from a drop-down menu. "English is the default language and you will see this listed initially. Chinese and Japanese are included but not Arabic" (Steve tagger, 2011). LibraryThing offers the opportunity to explore groups by language, and offers translation into many languages. Where the Arabic language is available, all the translations are "written, edited and approved by LibraryThing members", using a simple 'wiki-like' system", which offers only 1.5% translated into the Arabic language. However, the website translation instructions indicate that translating tags seem to bring issues (Librarything, 2012). Generally, we can say that supporting multilingual access in the existing collaborative tagging services is limited, particularly with regard to the Arabic language.

#### **4.4 Proposed conceptual framework of social tagging and information literacy**

Based on the five categories of social tagging functions shown above, namely: posting, searching, browsing, managing and sharing, an initial conceptual framework was developed (Figure 4.11); showing the prospective relationship between the main categories of social tagging functions and the IL seven pillars. The framework focused on what the users can find and do in the process of assigning tags to an item, finding information using tags, and interacting with or controlling their tags and tagged items. This helps in clarifying the users' view of social tagging functions, and

so will consequently reflect the research aim. In other words, it helps in showing how tagging could be used to improve aspects of IL practices.

Furthermore, linking the framework more closely to the library setting was considered beneficial. Therefore, employing the core model of Society of College, National and University Libraries (SCONUL) Seven Pillars of Information Literacy (IL) was considered valuable. The IL seven pillars consist of seven information activities, including: identify, scope, plan, gather, evaluate, manage and present. The “model has been adopted by librarians and teachers around the world as a means of helping them to deliver information skills to their learners” (SCONUL, 2011: 2). It has been perceived that to be information literate, a person should “demonstrate an awareness of how they gather, use, manage, synthesise and create information and data in an ethical manner and will have the information skills to do so effectively” (SCONUL, 2011: 3). A review of the SCONUL seven pillars of IL was presented earlier (Chapter 2, section 2.2.2.1).

Hence, acknowledging the IL model will help further investigation and analysis, particularly in matching the social tagging functions to the IL, which will feed into the development of IL practices in academic libraries. The framework presented here does not directly follow the IL model, but can support their development. A brief description of the categories and IL in relation to the current research is presented below (detailed of each category presented in Chapter 3, section 3.6.2.2). The categories of social tagging system functions are:

- *Posting* functions, which concerns features related to the process of adding tags to describe the resource.
- *Searching* functions, which concern features that allow users to search tags with other descriptions (e.g. title, URL, etc.) or limit a search to tags only.
- *Browsing* functions, which concern features that offer “the ability to re-orient the view by clicking on tags or user names, to navigate the aggregated bookmark collection” (Smith, 2008).
- *Managing* functions, which concern the features that offer the basic tag management tools such as editing and saving tags. It also covers the functions in relation to grouping the tags.

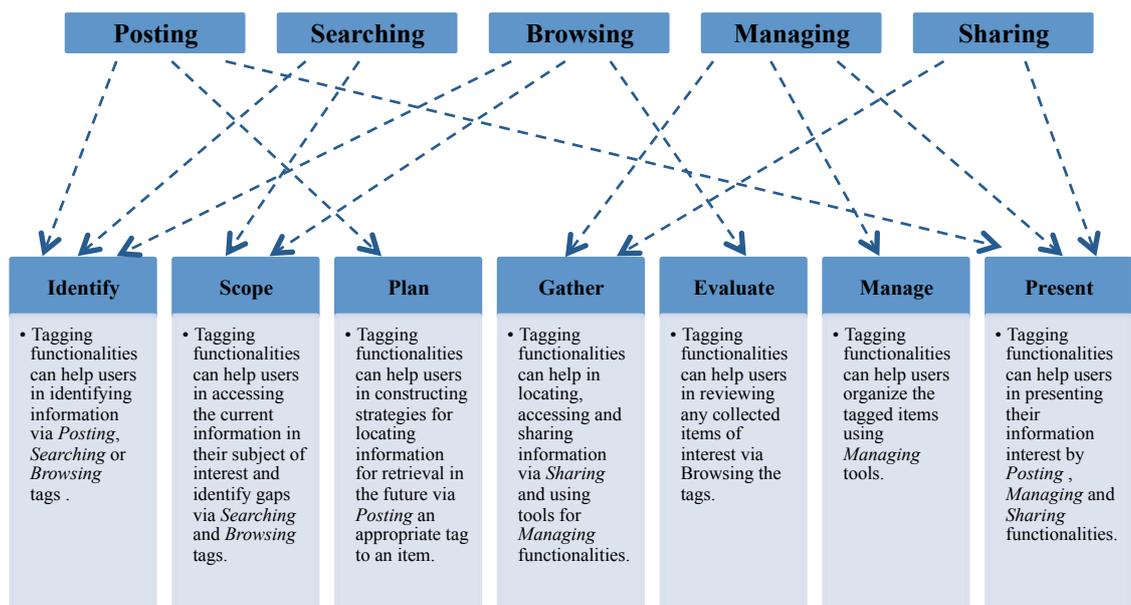
- *Sharing* functions, which concern the features that allow the users to share tagged items with others, create groups of users and resources, and import/export items.

The seven pillars of IL are:

- *Identify*, which concerns the ability of the individual to identify a personal need for information.
- *Scope*, which concerns access to current knowledge and identifying gaps.
- *Plan*, which focuses on constructing strategies for locating information and data.
- *Gather*, which focuses on how the individual can locate and access the information and data they need.
- *Evaluate*, which focuses on the ability of the individual to review the research process and compare and evaluate information and data.
- *Manage*, which concerns the ability to organize information professionally and ethically.
- *Present*, which focuses on the individual where they can apply the knowledge gained: i.e. present the results, synthesize new and old information to create new information and manage it in a variety of ways (SCONUL, 2011).

Figure 4.11 The Conceptual Framework of Social Tagging Functions and the Seven Pillars of IL

### Main Categories of Social Tagging System Functions Developed by the Current Research



## 4.5 Summary

The findings of Phase one, including the comparative analysis and questionnaire, were used to explore aspects of the research topic. Questionnaire results showed that the use of library catalogue services, as well as users' satisfaction with their searching results, varied across the three universities. Students mostly presented negative comments about the existing search system, particularly the KU students. Student's opinions regarding Cross Language Information Retrieval (CILR) functionality were positive with around 50% of students stating they would find it helpful. This helps stress the importance of students' language level and preferences, particularly with bilingual students who mostly have different language preferences to search with. Furthermore, about 60% of students indicated that they would like to have social tagging system functions in their library catalogue services. Students' usage of the social tagging functions offered in social networking services provides a good indicator of the potential use of tagging functions. Students' search language level and capability in finding information in both languages varied; a notable number of students would search and tag using both the Arabic and English languages.

The comparative analysis helped with understanding the functions of existing social tagging systems, showing browsing as the most popular function, compared to other function categories, which varied in popularity. Searching other tags was a popular function under the areas of 'searching'; editing tags was the most popular function under 'managing', and sharing a tagged item with others was the most popular function under 'sharing'. Between the two types of tagging system, social bookmarking services provided richer functions compared to library2.0/museum services. Diigo, Delicious and Connotea were the services with the richest functions, and Steve tagger was found to offer the poorest functions. Supporting multilingual access in the existing social tagging systems is largely limited, particularly with regard to the Arabic language.

We also presented an emerging conceptual framework that matches the main categories of social tagging functions with the seven pillars of IL. The framework shows an interesting match between social tagging function and information skills. This can potentially benefit information practices in the academic context. However,

more investigation is needed to confirm the usefulness of the proposed framework. Overall, the findings provided useful insights into the planning of further studies to address the research aim; where we understand that students have an interest in having functions like social tagging in their academic library catalogue. Furthermore, the data collection enabled a closer look at the functions of social tagging, opening up interesting avenues for further exploration. In addition, the finding supports the identification of the potential selected tagging system for the tagging task design which was planned to be conducted in phase two. The following chapter will present the results of conducting further investigations.

## **Chapter 5: Phase Two findings**

### **5.1 Introduction**

Phase two of the research (the main study) focused on capturing an in-depth understanding of the prospective use of social tagging systems in academic libraries. It mainly aimed to address sub-research question (c): *How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?* This was examined by looking at the tagging behaviour of bilingual students in relation to influencing their choice of tags. It also focused on studying their perception of the utility of social tagging and tag-related functionalities for their academic information needs and uses. This was achieved by conducting an Interactive Tagging Experiment (ITE) that helped in exploring the possible use of students' tags to support finding and using information, and to identify the factors that influence bilingual students when tagging in different languages.

This phase also sought to answer sub-research question (d): *How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?* This was dedicated to exploring librarians' perceptions with regard to library development, particularly enhancements with new technologies and focusing on the usefulness of social tagging, including challenges and advantages. The following sections will present details of the finding where all the collected data is integrated to be presented under three main themes as follows: ITE, library catalogue services, and then social tagging and Information Literacy (IL).

### **5.2 Interactive Tagging Experiment (ITE)**

The following sections will report on the qualitative (post-task semi-structured interview), the quantitative (pre- and post-task questionnaires) and the outcome of analysing all tags collected from the ITE. To analyse the collected data, different approaches were used as mentioned in the previously (Chapter 3, Section 3.8). Statistical analysis was employed to examine the quantitative data (using SPSS); whereas, thematic analysis was used to explore the qualitative data, employing a framework analysis approach (using Excel). The tags were examined manually using

various approaches based on their appropriateness to the research investigation. Results from all methods were integrated under the main headings (Chapter 3, Figure 3.9) presented in the following sections.

### **5.2.1 Overview**

As mentioned earlier (Chapter 3, Section 3.8.1), all participating students in the ITE completed the pre-task questionnaire in order to collect background information. This was followed by the tagging task where they were asked to select six articles (three Arabic and three English). A list of articles with different topics was provided, where they were allowed to select articles based on their preferred tagging language (Arabic, English or mixture of both). The task was followed by the post-task questionnaire and then by a short post semi-structured interview whose purpose was to collect information about participants' perceptions of the usefulness of using tags for academic purposes.

### **5.2.2 Demographic information**

Table 5.1 shows the demographic information of the participants. In total 46 bilingual students from the three universities agreed to take part in the ITE; 18 (39.13%) came from Kuwait University (KU), 14 (30.43%) from Gulf University for Science and Technology (GUST) in Kuwait, and 14 (30.43%) students were from the University of Sheffield (UoS) in the UK. They were further divided into 18 (39.1%) male and 28 (60.9%) female. They also came from different age groups: 30 (65.2%) students were aged 18-20 years old, 10 (21.7%) were aged 21-23, and 6 were aged 24-26 (13.0%). In regard to their year of study most of them were undergraduate students 12 (26.1%) of them were in their third year of undergraduate study, followed by 10 (21.7%) in their second year, 9 (19.6%) were in their first year, with only 7 (15.6%) in their final year; the remaining 8 (17.4%) were doing postgraduate courses. The bilingual students were studying in different domains, including: Business, Computer Science, Engineering, English, Social Sciences, Medical Science, Law and Education.

Table 5.1 Summary of Participant Demographics in the ITE: University (Gender, Age group and Year of study)

	Description	KU	GUST	UoS	Total
		Count (%)	Count (%)	Count (%)	Count (%)
Gender	Male	9 (19.6%)	4 (8.7%)	5 (10.9%)	18 (39.1%)
	Female	9 (19.6%)	10 (21.7%)	9 (19.6%)	28 (60.9%)
Age Groups	18-20	17 (37.5%)	9 (19.6%)	4 (8.7%)	30 (65.2%)
	21-23	1 (2.2%)	3 (6.5%)	6 (13.0%)	10 (21.7%)
	24-26	0 (0.0%)	2 (4.3%)	4 (8.7%)	6 (13.0%)
Year of study	Year 1	1 (2.2%)	5 (10.9%)	3 (6.5%)	9 (19.6%)
	Year 2	7 (15.2%)	2 (4.3%)	1 (2.2%)	10 (21.7%)
	Year 3	8 (17.4%)	3 (6.5%)	1 (2.2%)	12 (26.1%)
	Year 4	1 (2.2%)	3 (6.5%)	3 (6.5%)	7 (15.2%)
	Postgraduate	1 (2.2%)	1 (2.2%)	6 (13.0%)	8 (17.4%)

### 5.2.3 Language

Students were asked to give their responses to questions examining the language aspect, such as their proficiency in using the English language, the language they were taught in in previous and current education, and the influence of their language skills on finding relevant information. The aim of this was to gain background information. In the pre-task questionnaire they were asked to state if they have an international English language certificate (e.g. TOEFL, IELTS)<sup>22</sup>. Over half (52.2%) stated that they had a certificate; however, 21 (45.7%) did not have a certificate, and only one student stated ‘don’t know’.

Taught language was examined in two stages: previous education (e.g. high school) and current education (e.g. university course). In relation to the previous education, Table 5.2 shows that a high number of bilingual students 21 (45.7%) mainly studied in Arabic and 15 (32.6%) of them studied in both Arabic and English, while only 10 (21.7%) were taught in English. With the current education stage, the majority of students 32 (69.6%) were mainly being taught in English. This clearly reflects the nature of the teaching system in both UoS and GUST universities where English is the main teaching language, except for a few elective modules in GUST. Less than a quarter of the bilingual students 9 (19.6%) studied in both Arabic and English; most

<sup>22</sup> TOEFL refers to the Test of English as a Foreign Language, and IELTS refers to The International English Language Testing System

were from KU and the rest from GUST. Finally, only 5 (10%) of KU students had been taught in Arabic.

Table 5.2 Summary of the Main Taught Language in Previous and Current Education Stages

Descriptions	Language	Total Count (%)
Main taught language in previous education	English	10 (21.7%)
	Arabic	21 (45.7%)
	English/Arabic	15 (32.6%)
Main taught language in current education	English	32 (69.6%)
	Arabic	5 (10.9%)
	English/Arabic	9 (19.6 %)

The language skills of bilingual students can play an important role in their success when searching for information. Therefore, students were asked to rate the influence of their language skills on finding relevant information in both languages (Arabic/English) based on their own experiences when searching for information for their academic needs. As displayed in Table 5.3, more than a quarter (14, 30.4%) indicated that their language skills affected them when searching for information in both languages. This is a notable number that should be considered.

Table 5.3 Summary of the Influences of Students' Language Skills on Finding Relevant Information in both Arabic and English

Influence of Students' Language Skills on Finding Relevant Information in both Arabic and English	Choices	Total Count (%)
	Not at all	19 (41.3%)
	2	8 (17.4%)
	3	5 (10.9%)
	4	7 (15.2%)
	Extremely	7 (15.2%)

Some students commented on the question to explain their answers, saying that they have a weakness in language skills that affects them occasionally: *“My English skill is not very good and it affects me to find and search things in English and understand the results”* [P9, KU]. Other students stated that they have problems when searching in Arabic saying that: *“Finding Arabic resources is worse than*

English... because I studied in English school and rarely I need to search in Arabic, plus am not good at all in expressing myself in Arabic” [P41, UoS]. They also indicated that their language skills might differ based on the topic being searched or sometimes the language most commonly used in that topic: “I think my knowledge of a certain subject influences the search. I am good in searching for a specific topic that I have enough vocabulary about” [P42, UoS]. This shows that even if the students are studying in an English environment they still have difficulties in searching for information which need to be considered. Furthermore, although all the participants are native Arabic speakers it is interesting that they also faced problems when searching for Arabic information.

Table 5.4 Article Topics Used in the Tagging Task and the Number of Students Selecting Each Article in Both Languages: Arabic and English.

Articles language	Article number	Main Topics	Total (Count)
Arabic	Article no.1	Linguistic digital divide in Arabic language	18
	Article no.2	Globalization and organizational culture	12
	Article no.3	The quality of performance in software development	21
	Article no.4	Monetary policy in Egypt	33
	Article no.5	Total quality management	15
	Article no.6	Life and the psychological stress	39
English	Article no.1	Disclosure in online social networking profiles	31
	Article no.2	Computer literacy and students e-learning	17
	Article no.3	Youth sport programs	22
	Article no.4	The Influence of family education and income on child achievement	27
	Article no.5	Social software for life-long learning	11
	Article no.6	Tourism business networks and destination development	30

#### 5.2.4 Students’ article choices

To give an overview of the articles being tagged, Table 5.4 shows the total number of students (taggers) selecting each article in both languages (Arabic and English), together with the main topic of each article. Arabic article number six that talks about (Life and the psychological stress) was selected most frequently by 39 students, followed by article number four which talks about (Monetary policy in Egypt) with a total of 33 students. Whereas with the English articles, article number six that talks about (Tourism business networks and destination development) was selected most frequently by 30 students, followed by article number four that talks about (The

Influence of Family Education and Income on Child Achievement) with a total of 27 students. The articles selected most frequently will be have more tags attached.

## **5.2.5 Students' tagging behaviour**

### ***5.2.5.1 Familiarity with social tagging***

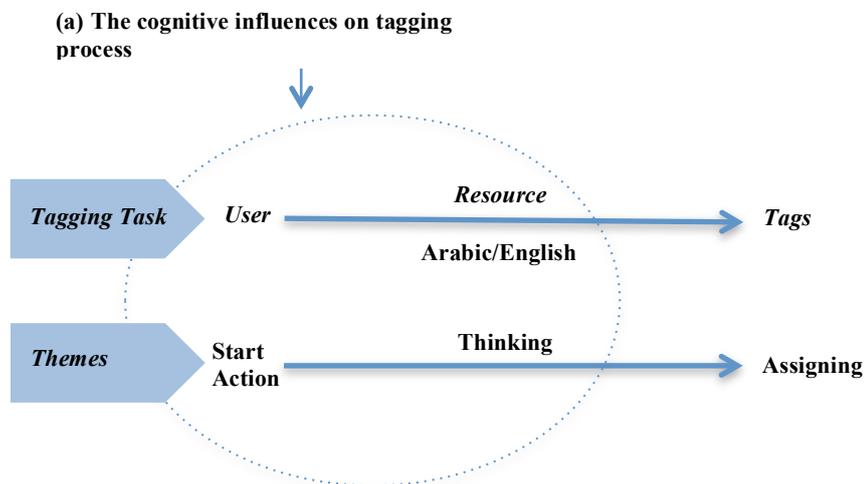
Familiarity with social bookmarking online services that usually offer social tagging functionalities (e.g. LibraryThing, Delicious, CiteULike) was investigated. The frequency distribution of students' usage shows that only 9 (19.5%) of the students were familiar with these online services; whereas more than three quarters of them 35 (76.1%) had never used it before. Students who used social bookmarking were also asked to indicate if they were familiar with the social tagging features. Results show that just 7 (15.4%) of the students frequently used tags, whereas 27 (58.7%) of them had not used tags before. Accordingly, it is important to be bear in mind that the majority of the students who participated in this ITE were introduced to and used social tagging for the first time; however, by providing clear instructions and letting the students become familiar with the system, as well as providing assistance from the researcher when needed, it was hoped to overcome this limitation. The following sections will present different aspects that were explored in relation to students' tagging experiences that occurred during the ITE.

### ***5.2.5.2 The cognitive influences on tagging process***

After completing the tagging task, students were asked to talk about their tagging behaviour focusing on the cognitive influences on the tagging process and the motives behind the assigned tags. This was started by asking them the following question: *“Can you tell me about the article and the tags you assigned? For example, can we look at this tag (...) why did you add this tag, what were your thoughts when deciding to choose this/ these tags?”* So, each student was asked about the tags that they added by recalling them to explain the reasons behind the choice of tags they added; this was used as a means of discovering what they were thinking when they decided to add tags to an article. Figure 5.1 demonstrates the scope of this section, which focused on exploring (a) the *‘cognitive influences on tagging process’*, that shows the steps the students (or *‘User’*) had been directed to follow when completing the *‘Tagging task’* where they were asked to choose articles *‘Resources’* (Arabic and English) to described them with *‘Tags’*. The figure also

shows the ‘Themes’ that reflects cognitive aspects of their tagging process, including ‘Start Action’ and ‘Thinking’ that focused on the early stages of the tagging process.

Figure 5.1 The Analysis Model of Students’ Tagging Behaviour: (a) The Cognitive Influences on Tagging Process



For many students, getting an ‘Overview’ of the article being tagged was a major factor in the ‘Start Action’ part of the tagging process. They stated that they tried to understand the main idea being discussed in the article believing that this will help them to create useful and more precise tags. They quickly scanned the article by looking at the abstract, title and subtitles, and then the content, saying: “When you scan the article you can get a good picture of what the article is about. Then it is easily to add tags to it” [P36, UoS]. Many of them also said that it is not necessary to get into the detail of the article at this stage: “It’s mostly not a deep understanding... I looked at the main text, title, and abstract to get an idea about the articles before I started to type the tags” [P2, KU].

The wording of tags and terminology used seems to be driven by different motives that reflect students’ ‘Thinking’ and prospective use; many students indicated that they created their tags to be ‘Simple’, ‘Easy to remember’, and ‘Understandable for future use’. Accordingly, they decided to assign tags that might have similar meaning (synonyms) to the terms occurring in the article being tagged, but that were simpler. This was done so that when they looked at the tag later they could remember the information that interested them in the first place, stating: “I used terms that I understand... I used a basic simple word that could come in my head when I search” [P9, GUST]. This might reflect their need for simplicity in searching for information;

it also could be related to the difficulties that they faced in the traditional searching process that required formal search terms (i.e. controlled vocabulary). This process also helped them to understand the content better:

*“I might put tags that are not from the title but another related word that gives the same meaning, and that shows to what extent I understand the topic” [P6, KU].*

Some of the students thought that it was not necessary for details to be tagged; tags needs to ‘*Reflect the main topic*’ of the article only, stating: *“I just pick up the main idea of the topic... it is not necessary to understand the topic in detail to tag it” [P25, GUST]*. On the other hand, a notable number of participants suggested that to make better use of social tagging, tags should be ‘*Descriptive*’ of the actual text, highlighting important concepts reviewed in the article, as follows:

*“I think it can help a lot. When I read something I can tag it with words that describe the key issue discussed in it, so when I came later, I will go directly to what I found useful and not spending time again on identifying the main ideas” [P16, KU].*

A minority of students stated that they wanted to write ‘*Searchable terms*’ as tags; they thought about the words they might use to search for the information in the article and then added those words as tags, stating:

*“I was thinking about the words that I would use if I want to search for something... It is maybe not clear for everyone, but it can help me” [P13, KU].*

Number of words per tag was also pointed out by a small number of students during the interviews; they suggested that tags should to be ‘*Multiple words*’ where they see that this would be helpful in providing a better description of the information discussed in the articles. Other students considered that adding ‘*More tags*’ would give a better picture of the article, saying: *“I think when I see more than a tag assigned to an article I will have better indication of the main text” [P40, UoS]*.

In general the majority of the students felt ‘*Confident with their own tags*’; confident here reflects the usefulness of their tags in describing information, so when they use

them in the future they can recall the specific piece of information which helped them use tags effectively. Most students indicated that they added meaningful tags that gave a useful representation of the articles. Some of them said they may not apply tags to the whole article, but more likely just to the information that they found interesting, commenting that:

*“I think my tags are accurate for parts of the articles and describes specific points that I want ... so, yes I think my tags can be headlines for the article”* [P11, UoS].

Some students gave a more personal view of tags saying that the tags are their own descriptions of information which would make it easier for them to find the information later on, as follows:

*“I am the one who added the tags, so I will know which tag I would go to if I want to go for specific information, each one has a meaning that describes the article”* [P30, KU].

While most students were satisfied with their tags, others commented that ‘Familiarity with the social tagging system’ can play an important role, indicating that with time they would become better at tagging and create more precise tags:

*“I am happy with them now, but with time I think I would be better in tagging, so maybe I will change them to be more specific”* [P36, UoS].

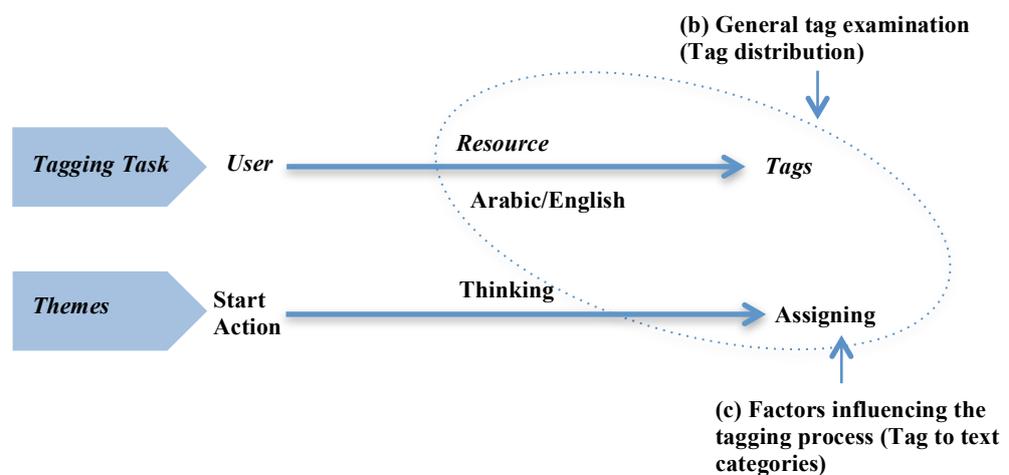
Only a small number of students highlighted language as an issue in relation to their confidence at assigning their own tags, mostly because they were not completely sure of the meaning of the English tags they added. Where they copy/paste the terms from the article, this happens with English but not with Arabic tags, stating:

*“With the Arabic tags I know exactly what I wrote so I think I will use the correct tag to visit the original article when I look at my tags later, but with the English articles I am not sure, because I copy/ paste some of the tags so I might not be 100% sure of all of them”* [P26, UoS].

### 5.2.5.3 General tag examination and the influences factors

Figure 5.2 shows the scope of this section, which concentrated on (b) ‘General tag examination’ (tag distribution), and (c) the ‘Factors influencing the tagging process’ (tag to text categories). This mainly focuses on the relationship between ‘Assigning’ tags, the ‘Resource’ being tagged and the ‘Tag’ itself.

Figure 5.2 The Analysis Model of Students’ Tagging Behaviour: (b) General Tag Examination and (c) the Factors Influencing Tagging Process



#### 5.2.5.3.1 General tag examination

A general examination of tags was conducted to observe the frequency of the assigned tags for each article. This is considered a useful technique to examine students’ tagging behaviour. Peters (2009:170) said that “the calculation of tag distributions allows for various probability calculations, for informatics analysis and the ascertainment of any regularities in users’ tagging behaviour. The observations can then play a role in the creation of tagging tools”. This can be most effective with large datasets; however, within the collected tags set, this type of analysis was considered useful to understand the tag to resource relationship, and to get an overall understanding of the collected tags (Figure 5.2).

As mentioned earlier, case-folding and tag normalization was applied to all collected tags prior to calculating frequencies (Larkey, 2007). The classes of tags derived from this analysis can be found in Appendices 20 and 21. The results below include

students' tags choices that occur more than once in each article. (Note: during the tagging task students did not repeat the tags for a single article.) Table 5.5 shows total tag frequency per article in both the Arabic and English article groups. The highest frequency of tags (21) was found in article number 6 from the English articles group. This was followed by 18 times, found in articles numbers 1 and 4 from the English group and article number 3 from the Arabic group. The lowest frequency (8) was found in Arabic article number 1.

Table 5.5 Total Tag Frequency per Article in Arabic and English Groups.

Article numbers	Total tag frequency	
	Arabic articles (Count)	English articles(Count)
Article no.1	8	18
Article no.2	9	14
Article no.3	18	17
Article no.4	15	18
Article no.5	11	12
Article no.6	16	21

To obtain a closer look, Table 5.6 shows the consistency of tags per article: the usage of a specific tag by different students. Within the Arabic articles, the most frequently used tag was found in article number 4, which is (مصر) that was repeated by 14 students. While the second highest tag is (ضغوط نفسيه) which was assigned to article number 6 by 10 students, followed by the tag (عولمه) found in article 2, assigned by 9 students.

In contrast, the consistency of tags found was higher with the English articles than the Arabic ones as shown in Table 5.7. The most frequently used tag found was (facebook) in article 1 which was assigned by 22 students; this article was the one chosen by the most students during the task, so the high consistency in tags was not surprising. This was followed by the tag (network) which was assigned to article number 6 by 17 students. Then came the tag (education) that was assigned to article number 4 by 13 students. Generally, students' consensus was on a limited number of tags per article. This was obviously affected by the nature of the tagging task, which restricted tag growth. It is understood that with time, users' agreement should increase. Looking at all the collected tags showed that students agreed on three tags including (بحث), (عولمه), and (دراسه) amongst all the Arabic articles. While for the

English articles students showed more tag agreement, such as for (social network), (computer), (online), (network), (learning), (education), (social software), and (development); these tags discuss similar concepts among the group of articles (Arabic and English) as a whole.

Table 5.6 Tag Distribution of Arabic Articles

Article no.1	Count	Article no.2	Count	Article no.3	Count	Article no.4	Count	Article no.5	Count	Article no.6	Count
بحث	4	عولمه	9	تطوير برمجيات	6	مصر	14	quality control	3	ضغوط نفسيه	10
تواصل	2	ثقافه تنظيميه	3	برمجيات	5	اقتصاد	9	اداره جوده جوده اداره	3	علم النفس	7
انترنت	2	بحث	3	هندسه	5	Egypt	6	جوده منتج	3	cancer	6
الالكترونيه بيئه	2	ابعاد العولمه	2	اداء جوده	4	اقتصاد مصرى	6	قطاع خدمات	3	احداث الحياه	6
عولمه	2	الثقافه	2	متطلبات هندسيه	4	سياسة نقديه	6	جوده عمليات	2	اورام سرطانيه	6
فجوه رقميه	2	سلوكيات نظمي	2	عالم عربي	3	سياسه	5	ادوات وتقنيات	2	سرطان	6
عربي له لغه	2	بحث حاله	2	انواع برمجيات	2	economy	4	جوده	2	دراسه	4
arabic language	2	تعليم	2	تطوير	2	politic	4	دراسه ميدانيه	2	stress	3
		متغيرات	2	تقييم	2	اسعار	4	مشاريع	2	امراض	3
				جوده المنتج	2	اداره سياسه نقديه	2	مقاييس جوده	2	حياه	2
				دراسه	2	اسعار نسبيه	2	quality improvement	2	اورام	2
				مشاريع	2	مصر فى نقديه سياسه	2			مشكله الدراسه	2
				متطلبات	2	تحديات	2			احداث حياه سرطان	2
				culture	2	تضخم اسعار	2			ضغوط	2
				globalization	2	صدمات اسعار	2			negative	2
				requirment uncertainty	2	---				effect	2
				engineering equipment	2	---					
				development	2						

Table 5.7 Tag Distribution of English Articles

Article no.1	Count	Article no.2	Count	Article no.3	Count	Article no.4	Count	Article no.5	Count	Article no.6	Count
facebook	22	e learni ng	9	adolescence	7	education	13	social software	8	network	17
social network	13	medical student	8	youth development	7	parent education	12	lifelong learning	5	tourism	15
computer	6	computer literacy	7	youth	5	home environment	9	informal learning	3	business	12
internet	6	online education	7	youth development program	4	child achievement	8	social network	3	destination development	9
online	5	learning	6	caring	4	income	6	blogs	2	development	7
personal information	4	computer	5	program	4	parents	5	education	2	small business	5
online communication	4	student	3	program evaluation	3	family income	5	learning network	2	destination	4
social communication	4	education	3	competence	3	parental expectation	4	lifelong	2	hospitality	4
privacy	4	literacy	2	policy	3	socioeconomic status	3	online learning	2	tourists destination	3
disclosure	3	online	2	program activities	3	influence of parent	3	software	2	small tourism	3
communication	3	own personal computer	2	confidence program evaluation	3	influence	3	software application	2	small tourism business	3
facebook article	2	social software	2	development	3	expectation	3	technology	2	social network	3
friend	2	vienna	2	program evaluation	3	children	3	___	___	business research	2
human behaviour	2	___	___	evaluation	2	behavior	3	___	___	complex system	2
identify theft	2	___	___	risk	2	academic achievement	3	___	___	definition of network and networking	2
learning	2	___	___	teenager	2	socioeconomic	2	___	___	management	2
network	2	___	___	activity	2	family	2	___	___	research	2
security	2	___	___	___	___	achievement	2	___	___	rural location	2
___	___	___	___	___	___	___	___	___	___	small	2
___	___	___	___	___	___	___	___	___	___	tourism business	2
___	___	___	___	___	___	___	___	___	___	location	2

### 5.2.5.3.2 Factors influencing the tagging process

Several influences are likely to affect the students while assigning tags to information resources. In the post-task questionnaire students were asked to provide their answers on a set of factors that might influence the tagging process; they were allowed to select more than one option if appropriate. As shown in Table 5.8, the full text of the article seems to be a major factor in influencing students' tags (35, 76.1%), followed by the article abstract (25, 54.3%); whereas the bibliographic information of the article appears to have minor influence (6, 13%).

Table 5.8 Factors Influencing the Tagging Process

Factors Influencing the Tagging Process	Choices	Total Count (%)
	Full text	35 (76.1%)
	Abstract of the article	25 (54.3%)
	Bibliographic Information of the article	6 (13.0%)

The qualitative results explore tag creation influences in more detail. A major influence on tags was the 'Topic of the article', where almost all students stressed that the topic discussed in the article was a core component of their tag choices, which also confirms the above result. This was expected to happen where the main reason for adding tags is to describe the topic. Two students commented as follows:

*"I tried to identify the words that appear many times the main paragraphs and I write them as tags. Actually most of my tags were from the article itself" [P32, UoS].*

*"Most of the tags were from the text, because I don't want to manipulate the ideas I want to make sure that this text includes the ideas in the tags that I put" [P35, UoS].*

Components from the 'Full text' were another important influence on students' tags, which were divided into related sub-factors. The majority of the students stated that the 'Headings' (e.g. title and sub-headings) mostly affect the creation of their tags:

*"For example when I read the title of the article many ideas come to my mind where I tried to type the most related ones to keep it clear for me and for the others" [P8, GUST].*

*“Most of my tags came from the title and the subheadings, in some cases I used words gives similar meaning of the things in the article”*[P31, KU].

The “*Abstract*” seems to be another important influence, which was mentioned by a large number of students earlier (Table 4.7), commenting:

*“Well by reading the abstract I have a good idea about the topic and can check whatever is in the abstract is also in the body of the text by scanning the full article... so if matches I put it as a tag”* [P45, UoS].

A limited number of students mentioned ‘*Keywords*’ as an influences factor to their tags: *“The keywords if available of the article were also useful”* [P19, GUST]. Similarly, ‘*Authors*’ name was mentioned by some students: *“I use the author’s name like ‘Dr. Mohammed’ ”* [P34, GUST].

The ‘*Familiarity with the topic*’ discussed in the article was also highlighted by many students as an important factor; they commented that the better they understand or have previous knowledge of the topic of the article being tagged, the better tags they would assign, as follows:

*“With the topic that I am aware of... it’s easier to notice the keywords, but if not I will put tags that make sense to me, but I am not sure if this is what the reader wants to know about the article”* [P45, UoS].

Another student mentioned that familiarity with the topic would also make them type the author names as tags, saying:

*“I think it gives me more consistent tags... if I am familiar with topics I would put more precise tags and I would definitely put the name of the authors, because if you know the topic, you would be familiar with the opinion of the writer, and this basically how I would identify the articles later on. Actually, I didn’t use any authors name here, but if I were going to tag things in my actual search I would definitely do that”* [P41, UoS].

By contrast, almost half of the students expressed an opposite opinion stating that it is not necessary to be familiar with the item being tagged, commenting that: *“It*

*affects but not that much... when I look at the article for sure I am going to have an idea of the topic that helps in writing the tags” [P17, KU].*

### **5.2.5.3.3 Tag categories**

To examine the actual influences on the collected tags it was necessary to analyse them. The Tag-to-Text Category Model adapted from Hecker et al. (2007) was used for this (see Chapter 3, Section 3.8.1.5.2). Focusing on the identical to full text categories, most of the categories were included, such as tags found in the title, abstract, and in the full text, treated in the same way as a keyword. A full list of tag categories is presented in Appendix 23. The findings of this examination also support the examination of influencing factors presented in the previous section. The analysis examined all the tags assigned by the students during the tagging task of the ITE.

The tag categories of the full range of tags assigned to the English articles is presented in Table 5.9. It was interesting to discover that a high number of tags (222) did not occur in the full text of the article across all articles; this shows that participants were not necessarily influenced by the information resources. This would definitely increase the access to information resources, particularly in the information systems that employ traditional indexing methods. The second most frequently found category of tags that occurred in the full text totalled 194 tags. This was followed by tags that occurred in the abstract (84); these categories are considered less useful which is mostly revealed in traditional indexing. The rest of the tags assigned were in the title (73) and tags the same as keywords (17).

The full range of tags assigned to Arabic articles is shown in Table 5.10, which is similar to the result of the English tags presented above in terms of the ordering of categories: tags that are not occurring in the full text (382) of the article; followed by tags that occurred in the full text (138); then tags that occurred in the title (59); then 35 in the abstract and 10 the same as keywords.

Table 5.9 Tag Categories for English Articles

Article number	Identical to full text categories				Not occurring in full text (Count)
	In title (Count)	In abstract (Count)	In full text (Count)	Same as keyword (Count)	
Article no.1	15	11	28	6	52
Article no.2	9	8	20	-	29
Article no.3	9	24	44	1	39
Article no.4	22	15	37	-	58
Article no.5	6	10	21	9	14
Article no.6	12	16	44	11	30
<b>Total</b>	<b>73</b>	<b>84</b>	<b>194</b>	<b>17</b>	<b>222</b>

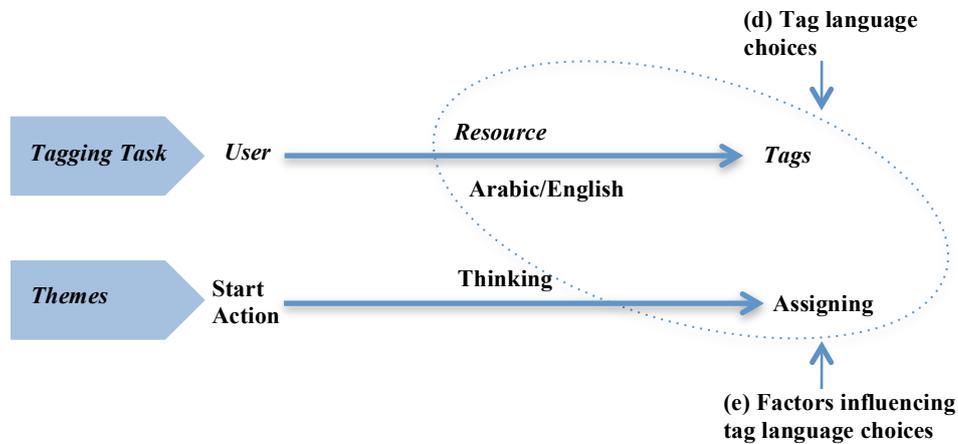
Table 5.10 Tag Categories for Arabic Articles

Article number	Identical to full text categories				Not occurring in full text (Count)
	In title (Count)	In abstract (Count)	In full text (Count)	Same as keyword (Count)	
Article no.1	4	4	8	1	60
Article no.2	6	10	17	-	24
Article no.3	17	8	27	9	52
Article no.4	15	10	38	-	88
Article no.5	6	3	5	-	55
Article no.6	11	-	43	-	103
<b>Total</b>	<b>59</b>	<b>35</b>	<b>138</b>	<b>10</b>	<b>382</b>

#### 5.2.5.4 Tag language examination and influences factors

This section focuses on two type of analysis as shown in Figure 5.3, which illustrates the scope of this examination. First, analysis concentrated on (d) '*Tag language choices*' that aimed to discover the frequency of students' tags by calculating the tag language that been assigned to both Arabic and English articles. The second concentrated on (e) '*Factors influencing tag language choices*' that aimed to look at the relationship between '*Assigning*', '*Resources*', and the '*Tag*' that students chose to add focusing on language as a core element.

Figure 5.3 The Analysis Model of Students' Tagging Behaviour: (d) Tag Language Examination and (e) Factors Influencing Tag Language Choices



#### 5.2.5.4.1 Tag language choices

In the post-task questionnaire students were asked to provide their tag language choices (Arabic, English, or both languages) assigned to Arabic and English articles during the tagging task. As shown in Table 5.11, tag language appears to be mostly identical to the main language of the article being tagged; 42 (91.3%) of the students preferred to assigned English tags to English articles, and 21 (45.7%) assigned Arabic tags to Arabic articles. However, with the Arabic articles, a number of students (15, 23.6%) assigned tags in both the Arabic and English languages. Interestingly, a notable number of students (10, 21.7%) chose to assign English tags to Arabic articles, but the reverse was not the case with the English articles where few students assigned Arabic or mixed language tags.

Table 5.11 Tag Language Choices for Arabic and English Articles

Descriptions	Tag language	Total Count (%)
English articles	English	42 (91.3%)
	Arabic	2 (4.3%)
	English/Arabic	2 (4.3%)
Arabic articles	English	10 (21.7%)
	Arabic	21 (45.7%)
	English/Arabic	15 (32.6%)

To examine frequency in tag language use within the collected tags, calculations based on the total number of Arabic and English tags assigned by all students were

conducted, excluding numbers and the ambiguous tags. Results in Table 5.12 show that in total students assigned 1,380 tags for both Arabic and English articles in both languages (Table 5.12 provides further details). For Arabic articles students assigned a higher number of mixed language tags; the total of tags assigned was 680, including 175 English tags, and 505 Arabic tags. Students from UoS assigned the highest number of English tags (101); whereas students who added the highest number of Arabic tags (243) were from KU.

As presented in the same table, in total 700 tags were assigned to the English articles; this is close to the total number assigned to Arabic articles. This occurs because the instructions given to participants asked them to add at least 5 tags to each article. However, the language chosen for tags by students was different, where almost all of the English articles were attached with English tags totalling 694; only 6 tags were assigned in the Arabic language, all of them from KU.

Table 5.12 Total Count of Arabic and English Tags Assigned to Arabic and English Articles

Language	Article Number	English Tags (Count)	Arabic Tags (Count)	Total (Count)
Arabic articles	A1	25	66	91
	A2	16	46	62
	A3	18	77	95
	A4	44	117	161
	A5	19	48	67
	A6	53	151	204
	<b>Total</b>	<b>175</b>	<b>505</b>	<b>680</b>
English Articles	E1	157	1	158
	E2	81	0	81
	E3	117	0	117
	E4	139	5	144
	E5	53	0	53
	E6	147	0	147
	<b>Total</b>	<b>694</b>	<b>6</b>	<b>700</b>

Furthermore, it was interesting to discover that with Arabic articles students assigned 40 tags using English characters to describe Arabic words/terms typically founded in the full text of the article being tagged. Although those tags can be treated as ambiguous tags which are typically excluded from the retrieving process, it is still worth highlighting this since it reflects the actual tagging behaviour of prospective bilingual students. This is especially that these tags were assigned by a noteworthy

number of students who were studying in an English-based educational environment (GUST and UoS). The following are examples of those tags:

- ‘m9r’ which means ‘مصر’ in Arabic and ‘Egypt’ in English;
- ‘drasa’ which means ‘دراسة’ in Arabic and ‘study’ in English;
- ‘masharee3’ which means ‘مشاريح’ in Arabic and ‘projects’ in English;
- ‘siyasa’ which means ‘سياسة’ in Arabic and ‘politics’ in English.

In light of the above it was interesting that, during the interview, a few students mentioned that they commonly use an English keyboard when writing using electronic devices (e.g. mobile, laptop) in their daily life; this includes writing in their mother tongue language which mostly explains the reason behind assigning the above mentioned tags, saying that: *“I prefer English when writing because nowadays we use Arabic words in English characters, so it hard for me to find Arabic letters in the keyboard”* [P26, KU].

#### 5.2.5.4.2 Factors influencing tag language choices

The factors influencing the language choice of tags was another aspect examined. Table 5.13 shows the results of students’ responses from the post-task questionnaire; students had the option to select more than one factor if appropriate. *‘The language of the item being tagged’* seems to have a major effect on the majority of students (28, 60.9%). This confirms the results of the previous question where nearly all the students’ assigned tags were identical to the language of the article, particularly with the English language articles. Results also indicate that *‘Students’ own language preferences’* has an important influence on many students (18, 39.1%). Furthermore, *‘Students’ language abilities’* also have an influence but less than the other factors with only 13 (28.3%) students indicating this as an influence.

Table 5.13 Factors Influencing Tag Language Choices

	Choices	Total Count (%)
<b>Factors Influencing Tag Language Choices</b>	The language of the item being tagged	28 (60.9%)
	Your language preferences	18 (39.1%)
	Your language ability	13 (28.3%)
	Others	4 (8.7%)

During the interview students were also asked: *When you tag an article what informed you to choose Arabic or English tags?* Many students stressed that the language of the article being tagged was core influence of their tag language choices, where mostly they found it easier for them to use the same language, commenting: *“Mainly the article itself. I think it is much clearer and more organized to keep the language of the tags the same as the articles”* [P3, KU]. Furthermore, another student also indicated that it:

*“Depends on the language of the article. I found it much easier for me to look at the language that I want. If I want something in Arabic I will look at Arabic tags and if I want things in English I will look at English tags”*[P4, KU].

They also thought it sensible to keep the same language for prospective search terms which they felt should be identical to the information they were seeking, as follows:

*“I thought about putting English tags in Arabic, but then I decided to put them the same as the article itself, because if I want to search for Arabic I will use Arabic words. I think this way will be easier for me”* [P7, KU].

Many students commented on their language preferences in both English and Arabic. Despite the fact that English is the second language of all participants, they stated that they feel more ‘*Comfortable*’ when using English, as follows:

*“I can’t express in Arabic, this is an issue I have. It’s easier for me to express in English... also when I search the Web I usually search in English, even if I want Arabic information I just type it (in Arabic) in the end of the search term, or I translate the result... so all the tags I used in the task were in English”* [P14, KU].

Another related reason for their preference for assigning English tags is the ‘*Education*’ factor, both for the previous and current education stages. Some students referred to the main language used in their area of studies that drives them to use English even when using Arabic resources, indicating that:

*“For Arabic I might but English tags, because I mainly do work in English and I might use Arabic resources so tagging them with English would be easier for me” [P42, UoS].*

Likewise, others indicated that they needed to search in English if they needed to find information for their coursework; consequently they preferred to use English tags to be prepared for future activities, saying that:

*“Generally, I prefer using English for academic work, that’s why I put all my tags in English including the Arabic articles. Because even if I use Arabic resources, I will write them in English at the end, so it’s better for me to use English from the beginning” [P39, UoS].*

*“I put English instead of Arabic, because I felt it difficult to express in Arabic. I would use English more often for resources in my major. It is better for me to put the tags in English as I use English for academic purposes” [P4, KU].*

Furthermore, some comments about students’ language ability have arisen. This shows their lack of Arabic language skills, basically in vocabulary, grammar and expressions. This was mainly because their previous education focused on English learning rather than Arabic. Some examples of students’ comments are the following:

*“I tagged all the articles in English because my Arabic is bad. I can read Arabic but my writing is bad, especially the grammar, so I prefer writing and using English than Arabic” [P29, GUST].*

*“I didn’t use Arabic at all, because with the vocabulary that I have in Arabic I find it hard to describe my opinion, or even anything in Arabic. I know it seems weird because I am native Arabic, but because my education after my secondary school was totally in English I think this has affected me a lot” [P34, GUST].*

For Arabic, ‘Comfortable’ and ‘Education’ were also essential reasons for their tag language preferences; some students find Arabic easier and more convenient to use, as one of them mentioned: *“I put whatever is easier for me. For example I assigned*

*Arabic tags to English articles because using Arabic is easier and more comfortable for me*” [P33, UoS]. Other students refer to their previous education affecting their language skills and making them better in Arabic than English, for example:

*“My education was mainly in Arabic, so I feel more comfortable using Arabic. I used some Arabic tags for English because I find it difficult to express in English”* [P26, KU].

#### **5.2.5.4.3 Tagging in mixed languages (Arabic / English)**

Views from the students about having tags in mixed languages were also explored. They were asked: *What do you think about having tags in mixed languages? Would you add tags in both languages? When would you prefer to add them?*

Generally, many students felt that tags should match the language of the information sought, as discussed earlier. They believed that assigning tags in both languages for a particular information resource would be unclear and could be misleading for the future use of tags for them and for others, as explained below:

*“I thought about writing English tags in Arabic, but then I decided to put them in the same language as the article itself because if I want to search for Arabic I will use Arabic words. I think this way will be easier for me”* [P7, KU].

Despite this, a notable number of students were more flexible in accepting tags in mixed languages. However, they mentioned that in some cases they might need to add tags that are not identical to the language of the information being tagged. A group of students stated that they may tag English information in Arabic, particularly if the English words occur in the actual text; this was confirmed by their usage of tags as shown earlier, saying that:

*“The only time that I actually wrote in English was when I found it to be very relevant, especially when they talked about ‘psychosomatic medicine’. I didn’t write it in Arabic. I thought it would be very relevant if I just wrote it in English. I wrote ‘technology’ in English as well”* [P46, UoS].

Other students appeared to be largely dependent on their own language skills in their tag language preferences; they indicated that if they faced difficulties in expressing their thoughts using one language they would use the other. This could happen with resources in both Arabic and English languages; as they indicated: “*with one or two of the Arabic articles I felt it difficult to express in Arabic so I used English*” [P44, UoS]; “*I chose to use Arabic tags for English articles because I found it difficult for me to describe it in English. Sometimes Arabic is easier for me*” [P6, KU].

Students’ views about displaying tags in mixed languages (tag cloud or list) were also explored. Results showed that almost all of the students accepted the idea saying that using both languages made it more understandable:

*“I have no problem with that because I know both languages, unless there is a language that I don’t understand... I think everyone can write whatever they think is good to describe the information resource”* [P38, UoS].

However, another group of students did not accept the idea, stating that mixed languages would be confusing. A couple of their comments are presented below:

*“I just thought if you use two different languages for tagging it will be difficult for me if I want to go back to it... it will take longer time to organize... so, I prefer using just one language”* [P45, UoS].

*“It might be a bit confusing because I would not be sure if the article is in Arabic or English. I prefer it to be in the same language”* [P46, UoS].

Interestingly, some students highlighted the notion of splitting the Arabic and English tags from each other based on their user preferences, saying that: “*It would be good if I can choose only Arabic tags or only English tags for each resource*” [P40, UoS]. Others also indicated that specifying the language of the article would be a useful option to make it easier to lead them back to the correct information resources in the future, commenting that: “*But giving an option to specify the language of the resources when adding the tags would be great*” [P6, KU].

Noteworthy thoughts about the potential benefit of providing tags in mixed languages were also highlighted during the conversations with students. The majority

of the students found it useful, indicating that it can provide a more complete picture in describing the information being tagged, as follows:

*“Some students do not understand English very well, but they have to do searches in English. So I think that finding Arabic tags will help them to understand the content of the article, the same for the Arabic article”* [P8, GUST].

*“It would be helpful. I might use Arabic tags to find English information, maybe the term in English is difficult for me, and vice versa. Maybe other students are not that good in Arabic”* [P26, KU].

Furthermore, they mentioned that tagging could help them in supporting weaknesses with specific language skills and assist in finding information. For example:

*“I know many students even if they are studying in English have some problem... they would rather look at the Arabic tags to give them clear indication that this is the correct information they were looking for”* [P36, UoS].

*“I think a mixture of languages will make it easier for users....I mean the coverage will be wider, different opinions from different people will give you better picture, and because I can read both languages this will be ok with me... I think the opportunity to use Arabic and English would be good for some students... I’ve seen it with couple of friends; they tend to search in Arabic”* [P41, UoS].

### **5.2.6 Overview of social tagging perception and prospective use**

To have a clearer picture of the potential use of social tagging systems, some important aspects need to be examined, which were discovered in the post-task questionnaire and the post-task semi-structured interviews. These are discussed below.

#### **5.2.6.1 Ease of use**

Based on the tagging task that the students completed in the ITE, an overview of their tagging experience was attempted. Table 5.14 examines the ease of use of social tagging during the process of assigning tags to the articles. A substantial number of

the students 39 (84.8%) indicated that social tagging was ‘*Easy to use*’; some students indicated that the process was simple saying that: “*I feel it is easier, especially as I will be already searching for something, so it’s easy to add a number of tags to each article*” [P19, GUST]; “*I learned to do it now in less than 10 minutes, so it’s easy*” [P44, UoS], and one of them highlighted that tagging was interesting as well: “*The process was interesting, reading and choosing the ideas that I might come back later on was great and make you think better about the information*” [P40, UoS]. Only 5 (10.9%) gave a moderate answer; while a small number said that the process of tagging was difficult for them.

Table 5.14 Frequency of Social Tagging Ease of Use

	Choices	Total Count (%)
<b>Frequency of Social Tagging Ease of Use</b>	Very difficult to use	1 (2.2%)
	2	1 (2.2%)
	3	5 (10.9%)
	4	11 (23.9%)
	Very easy to use	28 (60.9%)

### 5.2.6.2 Tagging motivation

Aspects about the potential ‘*Tagging motivation*’ adapted from (Gupta, 2011) were explored in the post-task questionnaire where students were provided with a set of possible motivations that could encourage them to use social tagging systems within the academic library catalogue services. Students were free to select more than one answer if appropriate; results are presented in Table 5.15.

Table 5.15 Frequency of Tagging Motivations

	Choices	Total Count (%)
<b>Frequency of Tagging Motivation</b>	Future retrieval	31 (67.4%)
	Task organization	25 (54.3%)
	Sharing information	19 (41.3%)
	Attract attention	10 (21.7%)
	Opinion expression	9 (19.6%)
	Social signalling	9 (19.6%)
	Self-representation	3 (6.5%)

Based on the students' perspective as shown above some motives seem to be more important than others. Overall, 31 (67.4%) of the students indicated that *'Future revival'* could be a major motive for using the social tagging system for academic purposes. This was also confirmed during the interview, where the majority of the students pointed out that tags would make it easier for them to find the pre-defined information, and would assist them to go directly to the points that interested them in the first place, as one of the students commented:

*"I think each tag that I put is really direct to each point that I want to go for, so I will manage to go back and click on the tag that will be really easy instead of going back and search again for the article. I think the whole issue is direct and a shortcut to the information I want"* [P35, GUST].

The second motive selected by many students (25, 54.3%) was *'Task organization'*, which was confirmed by a similar number of them when interviewed. They raised several situations where tags could be useful to organize their uses of information. Principally when searching the library catalogue and finding relevant items, stating that they would add tags to the items with the name of their coursework (e.g. assignments and projects), or class name. This also would help them to save time and effort, commented on as follows:

*"Let's say I am writing down a piece of information, and I want to refer to an article that I remember I read before. Instead of searching again for the article online or on the files that I saved which will take time and effort, I can simply tag the information I found useful to the name of the project so I can find them easily all when I go back to the tags"* [P35, GUST].

*"I also can use them [tags] to organize my ideas related to each coursework. I can write the tag with the name of the assignment, which will make it easier for me to find information"* [P8, GUST].

Some students also recognized the usefulness of repeating tags with information resources that discuss similar topics. They felt that adding the same tag to a number of

relevant articles would make things more manageable, which would help in collecting the resources, indicating that:

*“It would help me to sort my search... if I have many articles the tags will help me to find the articles again, especially if I assign the same tag resources that talk about the same thing”* [P38, UoS].

‘Sharing information’ seemed to be an important factor for using social tagging systems that was indicated by 19 (41.3%) students. Their views came from different perspectives. Many of them commented that tagging features can be used as an alternative way of sending useful references between friends and classmates, saying that: *“Instead of copying the references to my friends I can tell them look at my tags in the system to find them”* [P28, GUST]. It may also be effective for group coursework, where the tagging system can assist the students in collecting relevant resources and tagging them with their thoughts. One student commented that: *“I think it would be useful for us, especially for groupwork where every member of the group can add tags to the collected articles”* [P8, GUST].

Additionally, some students highlighted that through the tags and other tag-related functions they can find people who share similar interests, which could be valuable, indicating that:

*“I can also identify users who are interested in the same topic that I am studying. By looking at their tags and resources will help to share information and exchange thoughts... this is a great benefit of tagging”* [P40, UoS].

*“I think it would be beneficial if more people used it, or if I can communicate with someone else who also used it then I can share information with”* [P43, UoS].

It is already established that in order to get the most benefit from sharing knowledge through tags, users should set them to public. This issue was discussed during the interviews where the majority of students gave positive opinions about sharing awareness. They indicated they are willing to set their tags to public, believing that this would be more effective for their academic information use, saying that:

*“I would keep them public... It would be helpful to look at other tags in general to get an overview about the information that I am looking for, where I might find interesting things by chance... I will also have good understanding for the keywords that I can for the search” [P4, KU].*

*“It’s helpful, especially if all the people made their tags public. Let’s say I took a module that my friends finished... it would be good if I can go and check their tags to find relevant information” [P6, KU].*

Others seem to be encouraged to share their tags if other students do so too, as they commented: *“If more people used it I would probably share my tags. I mean it’s like Instagram or Facebook, the reason why you use it because there are other people using it” [P43, UoS].* On the other hand, some students mentioned occasions that would make them keep their tags private; one was driven from competitive: *“I would keep them private because I made an effort to find information, maybe when I finish the assignment I will make them public, or maybe send them to specific people” [P13, KU].* While another comes from personal reasons, stating that: *“I might use private for tags that not necessary describe the resources, but it has meaning to me” [P4, KU],* which might be not understandable by the public, and just refer to the student’s personal choices.

The ‘*Self-representation*’ factor seems to be not important at all, but the ‘*Attract attention*’ factor gets a good number of responses: however ‘*Opinion expression*’ and ‘*Social Signaling*’ were selected by only 9 students (19.6%). They stated that through tags they could express their thoughts about the information being tagged, as follows:

*“Tags can help me to look at different perspectives... see what other people have done and say about it and that will give useful information about the topic in a quicker way” [P34, GUST].*

*“It will remind me with the summary, with what interested me in the first place... because you can simply go for the tags and the keywords that you looking for and find many resources that someone else read and tagged” [P43, UoS].*

In relation to ‘*Social signaling*’, students wanted to show others what they are reading and interested in, for instance by assigning their names as tags: *“I may also*

*put my name as a tag so my friends know that those tags are from me when they they look at them* [P8, GUST], or by looking at their teacher’s name and the information that they tagged: *“The teacher for example can tag useful references so we can go and check them”* [P28, GUST].

### 5.2.6.3 Future use

Exploring the possible ‘Future use’ of social tagging tools showed that more than half of the students (26, 56.6%) would use the tagging features regularly when using their academic library catalogue services; 14 (30.4%) would consider themselves as average to rarely prospective users; the rest would not be particularly interested in using social tagging (as shown in Table 5.16).

Table 5.16 Students’ Frequency of Future Use of Social Tagging in their Academic Library

	Choices	Total Count (%)
<b>Students’ Frequency of Future Use of Social Tagging in their Academic Library</b>	Non-use	1 (2.2%)
	2	5 (10.9%)
	3	14 (30.4%)
	4	17 (37%)
	Frequently use	9 (19.6%)
	Total	46 (100%)

More than half of the students during the interview commented about future use; only two of them made negative comments, saying that: *“I don’t think everybody will use it”* [P34, GUST]. Another student stated that he was not sure about trusting others’ tags in describing resources, commenting that: *“I am not sure if I would trust other tags in describing the information, but I will definitely use it... it’s really helpful”* [P13, KU]. However, the rest stated that they liked the system and would use it in the future if it was provided within their library catalogue services.

Students mentioned aspects regarding the benefits that social tagging features might make to library usage. It was felt that tags would help in overcoming some of the perceived weaknesses in the library services and assist students when conducting a search, for example one student commented:

*“I think tags will make the search easier, and when you make the search easier you will encourage the people to use the library. I think people don’t use the library because it’s difficult to use and because of the*

*weaknesses of the services they provide. So, I think tagging will add a value to the library” [P7, KU].*

Other students linked that to their regular Google searches, which they felt were not always successful, indicating that:

*“I really like the system. I think it’s useful, because it will let me go the library to search for information which is better than Google. It will give me trusted resources” [P3, KU].*

*“I think adding tagging within the library will make me use the library more, especially that I will be sure that all the resources are scientific research, not like Google” [P5, KU].*

Almost half of the students commented that tags can facilitate access to resources which would motivate them to use the library system, especially where they had problems in locating relevant information previously found in the library catalogue, saying that: *“Many times I lose what I found. If tags were available in the library this will help me to find the resources again” [P1, GUST].*

Nevertheless, students stressed that in order to use it regularly and get the most of its features they should be aware of social tagging benefits; this mostly connected to the concept of ‘tagging literacy’, as the following shows: *“I think many students will like it especially when they learn the benefits” [P1, GUST].* Related to this, one student recommended that the library should take steps to teach students it appropriately; underlining the importance of learning how to assign good tags and use other related functions (e.g. sharing, browsing) offered by the system, saying that: *“I learn to do it now in less than 10 min so it’s easy... I think it’s important to teach people about tags to use it” [P44, UoS].* They also see that teaching materials should also be designed to be delivered in a simple and direct way; one of the students commented that: *“The best way to promote this is to show us searching with and without tags, I think that searching with pre-existing tags is much easier” [P36, UoS].*

Students were also asked to give their views about effective ways of informing them about the new features added to the library online catalogue services, such as tags. Several advertising methods were highlighted, such as promoting social tagging via the electronic tools used. It was deemed important to give clear instructions about

using social tagging over the library website homepage or the main searching webpage, as well as displaying announcements via the digital screens located in the library and across the university campus were suggested as beneficial, as the following comments show: *“Giving an announcement in the library screen, and the library websites... will be good to introduce the students to social tagging”* [P41, UoS]; *“It’s easy, I think if they put instructions or a demo on how to use it the library website will be something very useful”* [P32, UoS].

In addition, ‘Social media tools’ seem to offer a useful way to reach, inform and educate students specifically so that they will probably use it on a regular basis; many students said that: *“They can tell us about tags in Twitter, I check it all the time”* [P33, UoS], *“the library Facebook page will be effective for many students... they use it even in their mobiles”* [P45, UoS]. Associated with that, mobile phones were considered an easy way to reach students. One student commented that: *“I think texting us through the mobile would be something effective, better than using other ways”* [P28, GUST]. Unexpectedly, sending emails was not found as a good way as many assumed that students do not check their emails regularly; they commented that announcement emails were usually ignored by many students: *“Other ways maybe better than the emails, because in my perspective a lot of students ignore it”* [P37, UoS], *“It’s much better than sending an announcement email, I think the students will not give it any attention”* [P35, GUST].

Some students also suggested that the faculty members can play a valuable role in promoting social tagging systems to them especially if the educators themselves use tags; this would encourage their students to use the system, commenting that: *“If faculty starts using it I think this will encourage students to use it more effectively”* [P44, UoS]. They also stated that they commonly give more consideration to information provided by their teachers, as the following comment shows: *“I think the best way is by our teacher, I think the students will consider it in this way”* [P13, KU].

#### **5.2.6.4 Usefulness, recommendation and the importance of social tagging system**

An interesting finding came out of bilingual students’ perceptions about the ‘Usefulness of social tagging’ systems for their academic library use. Table 5.17 shows that a high number of students (35, 76%) agree that providing social tagging

features is a useful tool for their academic library usage; 16 (34.8%) who said this were from KU.

Table 5.17 Students' Agreement about Social Tagging System Usefulness for their Academic Library Uses

<b>Students' Agreement about Social Tagging System Usefulness for their Academic Library Uses</b>	<b>Choices</b>	<b>Total Count (%)</b>
	Strongly disagree	0 (0.0%)
	2	2 (4.3%)
	3	9 (19.6%)
	4	10 (21.7%)
	Strongly agree	25 (54.3%)
	<b>Total</b>	<b>46 (100%)</b>

Another helpful indication of the potential use of social tagging was examining whether the students would recommend social tagging to others or not. Table 5.18 shows that the majority of students 38 (82.6%) said they would recommend the use of social tagging to other students.

Table 5.18 Students' Perception about Recommending Social Tagging to Others

<b>Students' Perception about Recommending Social Tagging to Others</b>	<b>Choices</b>	<b>Total Count (%)</b>
	1 Not recommend	0 (0.0%)
	2	3 (6.5%)
	3	5 (10.9%)
	4	15 (32.6%)
	5 Highly recommend	23 (50%)

Additionally, Table 5.19 shows that a high number (36, 78.3%) of students perceived social tagging as an important tool for their academic library websites which is interesting; the rest (10, 21.7%) were not that clear when providing their responses. It is important to note that more positive responses were gained from KU and the GUST students about recommending and perceiving social tagging as an important tool.

Table 5.19 Students' Perceptions of Social Tagging Importance for Academic Libraries

Students' Perceptions of Social Tagging Importance for Academic Libraries	Choices	Total Count (%)
	1 Unimportant	0 (0.0%)
	2	0 (0.0%)
	3	10 (21.7%)
	4	15 (32.6%)
	Very important	21(45.7%)

During the interview students made some supportive comments about the importance of adding social tagging illustrating the point that tags would bring better access to information. For example:

*“At the moment I am happy with what’s provided by the library, but I think with this service is going to be more accessible and maybe more easy to return rather than saving article for potential using, so with the tagging thing it will be really handy” [P35, GUST].*

Simplicity was considered to be important by many students, in terms of finding information and the process of adding tags, commenting that: *“If the library adds the tagging in a simple way... activating this feature would be really useful” [P8, GUST]; “it’s easy and simple, we use things similar to this daily... I mean in twitter or Instagram we use tags” [P27, KU].* This motivates the use of social tagging within functions of the library catalogue.

### 5.3 Library catalogue services

The findings reported here are based upon qualitative data analyses that focused on exploring library catalogue services. This will be divided into two dimensions. The first concerns discovering the actual use and perception of bilingual students about their library catalogue services; the findings reported in this section are based on the analysis of data from the ITE (pre-task questionnaire, and post-task semi-structured interview).

The second section will report on the data analysis of the librarians' semi-structured interviews. This was designed to explore librarians' perceptions regarding some aspects of library catalogue services developments particularly related to their interest in implementing Web2.0 functionalities focusing on adding social tagging

systems (e.g. advantages and challenges). This is in addition to discovering their views about the effect of students' language skills on use of library catalogue services. This will help in answering sub-research question (d): *How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?*

It is worth mentioning again that this investigation is not intended to evaluate the library's catalogue services, which is beyond the scope of the current research. It is more about gaining an understanding and general overview of library catalogue services from both the student's and the librarian's points of view. This helps to form a more complete picture of the potential benefits of using social tagging systems in academic libraries. The following sections provide further details starting with students' usage and perceptions and then moving onto librarians' perceptions.

### 5.3.1 Students' perceptions about the library catalogue services

Table 5.20 shows students' 'Frequency usage of library online searching' services/functionalities. A significant number of students (21, 45.7%) never used the library or used it but for less than once a month. These students were from KU and GUST. In contrast 18 (39.1%) of the students used the library online services regularly between once a week to using it on a daily basis; however none of them were from KU. One commented that they did not have to use the library saying that: *"I was never directed to use the online library services and never was introduced to it... because the courses that I took do not require using the online library services"* [9, GUST].

Table 5.20 Frequency Distribution of Students' Usage of the Library Online Services

	Choices	Total Count (%)
<b>Frequency Distribution of Students' Usage of the Library Online Services</b>	Never	8 (17.4%)
	Less than once a month	13 (28.3%)
	Once a month	5 (10.9%)
	Once every two weeks	2 (4.3%)
	Once a week	7 (15.2%)
	Two or three times a week	4 (8.7%)
	Daily	7 (15.2%)

Students were also asked to express their opinion of the ‘*Usefulness of their library online services*’ in general. Table 5.21 illustrates that in total only 15 (32.6%) of them found the services useful, acknowledging that all of them came from the GUST and UoS. They attached some comments to their responses saying that library services: “*Gives you lots of information about the subject that you are interested in*” [P37, UoS]; another student mentioned that: “*Online guides and manuals for search are really useful*” [P41, UoS]. Although this is a good result, it is still quite low, and mostly under idealised expectations of the usefulness of academic libraries services that need to be overcome. On the other hand, a notable number of students (21, 45.7%) did not give a definite answer. The rest have negative impressions of the usefulness of library services with most of them coming from KU. Students who gave negative answers supported this by saying that they do not use the library regularly and refer to Google as the first place they go to find the information they need: “*I don’t use it a lot, I use Google*” [P14, KU].

Table 5.21 Frequency Distribution of the Usefulness of the Library Online Services

	Choices	Total Count (%)
<b>Frequency Distribution of the Usefulness of the Library Online Services</b>	Not useful	0 (0.0%)
	2	10 (21.7%)
	3	21(45.7%)
	4	10 (21.7%)
	Extremely useful	5 (10.9%)

The qualitative data uncovered more details about the perceptions of students. Participants talked about their libraries, responding to the following main question: “*Tell me about the library website, what do you use it for, what information resource do you use when searching the library catalogue and for what purpose?*”. Students disclosed their motives for using the library catalogue services, indicating that searching for ‘*Books*’ to complete their coursework (e.g. assignments and presentations) was an essential goal of most of them; others students had also been using ‘*E-resources*’, articles and audio-visual material and found them useful.

Furthermore, ‘*easy access to information*’ also appears to be an important motive for using the library, commenting that: “*I use it a lot to find information. Basically I search StarPlus [the library catalogue]... I had difficulty using everything in digital*

*manner, but now I use it a lot because it's easier to access information*" [P41, UoS]. As stated by the students, 'Teachers' also seem to have an important role in encouraging students to use the library, basically by providing a reading list or checking the quality of the references that their students use; some comments are as follows: *"I basically use the library to search for books to borrow to do the assignments... sometimes the teachers recommend books and I find it useful to look at them, or I just do the search by myself"* [P46, UoS]; *"the teacher asked us to search the library databases to do the assignments and it was useful; I use it for other subjects as well"* [P8, GUST].

During the conversation, the type of services was also explored in terms of the functions that they use when searching the library catalogue. A notable number of students mentioned the use of the 'advanced search' options to narrow down the results page. Other students liked to specify their searches, *"I search by author, title, keywords which is helpful to filter the result and to get exact results"* [P38, UoS].

During the interview the students uncovered some 'Strengths and weaknesses' of the library catalogue services from their point of view. One group of students were satisfied with the 'search options' especially the advanced search and pleased with the 'Variety of information resources', stating that: *"I use it a lot, it's good and comprehensive... especially when you search using the advanced search options"* [P36, UoS]. In addition, it seems to be 'Easy to use' when they know the exact information they need as commented on by one student: *"I use it few times. It's not bad. I find what I am looking for... the teacher recommended an author and it was easy to find the books by the author"* [P12, KU]. Others were satisfied because they can 'access information' remotely showing that: *"They [the online library catalogue] have good services. It is much easier than going to the library to find information"* [P14, KU]; while another student said:

*"Well, just sitting at my desk and finding what I want is something great. Sometimes I type the title or the author name to find a book. Or just type what I have in mind and end up with lots of articles and books"* [P35, GUST].

Students who were partly satisfied indicated that getting 'irrelevant results' is annoying, stating that: *"Sometimes something not related to my search comes up at*

*the top of the results page*” [P19, GUST]. Similar to their comments in the questionnaire, a notable number of students stated again that they mostly use Google to find information instead of visiting the library websites; they mostly had a bad indication or were not aware of the services provided by their libraries, saying that: “*I rarely used the library website... I don’t think they provide any interesting functions... I usually search Google if I need information*” [P6, KU]. Others seems to be ‘*Not using the library*’ online services at all and could not give useful comments. They obviously were not aware of the resources and the services offered by the library. What made it worse is their impression of unnecessarily having to use the library, as commented on by one student:

*“I don’t think I need it... I can’t evaluate their services... everything is available online where I can find any information from anywhere. I don’t think I am going to need the library to find books. I search Google a lot for coursework, homework, research and many things”* [P7, KU].

Others refer to some ‘*Technical issue*’ that appears when using the library catalogue that was revealed as something upsetting, which might also be connected to their unawareness of the available services; an example of that from one of the students is presented below:

*“I can never go back to my previous search... I have to search again and I have to remember the titles otherwise I have to search for it again and again. Some of the subject matter is hard to find. The problem in our website is that sometimes suddenly the page disappears and I can’t find the search again until I remember the exact keyword that I used before... this is annoying... maybe there is a way to go back to the resources, but I don’t know how”* [P19, GUST].

An interesting point that should be considered was highlighted by one of the students about their ‘*Lack of awareness*’ of library catalogue services, as follows:

*“I think we aren’t aware of all the services they [the library] provide. There are some people even in my class that didn’t know about Star and how to reserve a book, until they got to the second or fourth year... I think there is not enough awareness or we’ve never told about it... I don’t think*

*there is a tool that helps to share or manage the searches or the resources that we find” [P46, UoS].*

### 5.3.2 Librarians’ perceptions about library catalogue services and usage

In total ten librarians participated in the semi-structure interviews from the three universities. As presented in Table 5.22 three female librarians were from UoS, all of them British. Four female librarians were from KU, all of them Kuwaitis and two females and one male librarian were from the GUST; two of them were Indian and one came from Guinea. All the librarians were well-qualified, specializing in Library and Information Science (LIS), and had many years of experience (between 9 to 40 years) in the field, with different positions (see Table 5.22).

Table 5.22 Demographic Information of the Librarian Participant

University	Age	Gender	Nationality	Qualification	Position	Experience
KU	43	Female	Kuwaiti	MA in LIS	Assist director for library affairs	20 years
KU	40	Female	Kuwaiti	MA in LIS	Head, College of Engineering & Petroleum Library	18 years
KU	48	Female	Kuwaiti	MA in LIS	Head, College of education library	24 years
KU	45	Female	Kuwaiti	MA in LIS	Head, College of women library	20 years
GUST	36	Male	Guinea	MA in LIS	Technical services librarian	10 years
GUST	39	Female	Indian	MA in LIS.	Digital content coordinator. Assists the library director	9 years
GUST	57	Female	Indian	MA in LIS	Library director of GUST Library	21 years
UoS	50	Female	British	MA in LIS	Associate Director	27 years
UoS	49	Female	British	MA in LIS	Assistant Director & Head of Collections & eStrategy	26 years
UoS	58	Female	British	Trained in the job (18 years’ experience)	Liaison Librarian	40 years

#### 5.3.2.1 Views about students’ library usage

Several aspects regarding the perception of librarians towards students’ searching behaviour emerged during the interviews, highlighting possible factors affecting the use of library services by students. Almost all the librarians indicated that their students mostly refer to Google instead of searching the library to find information,

commenting that: *“Students thought that Google is the best source to find information”* [L5, GUST]. Another librarian commented that:

*“But we notice that students, especially in their first years, prefer to go and search in other search engines, like Google. They do not realize the importance of library resources, until their fourth year, where they have to work on their graduation project and need to present high quality research and reports”* [L4, KU].

In light of the above, some of the librarians, particularly from KU, stressed the importance that the teacher’s role can play in encouraging students to use the library, with one librarian stating that:

*“I believe faculty members do not really encourage the students to use the library. If they do so the students will use the library, because they care about their grades”* [L8, KU].

Another comment from GUST librarians also confirmed this, stating that their students *“use the databases because they have to do a lot of assignment that require using library resources. The faculty insists they use library resources”* [L1, GUST].

The lack of students’ use of the library catalogue may also be affected by the difficulty of using the services, as one librarian commented: *“We feel it’s not easy for them to use all the services, but the problem is that they hesitated to ask the librarians about any difficulties”* [L8, KU]. This highlights the need for the libraries to look for more initiatives to promote and develop their services to reach a wider range of students, especially since the library offers a wide range of good information resources.

### **5.3.2.2 Students’ language skills**

Some aspects of students’ language skills were also discussed in the interviews, highlighting issues relating to the effect of students’ language skills on finding relevant information, particularly when searching the library catalogue services. Findings also identified whether the library offered any language support to facilitate the use of the library catalogue. This fed into the current research investigation regarding the potential benefit of social tagging in multiple languages.

Results show that some librarians do not always take into account the level of language skills students have that can impact on whether they find relevant information successfully. Some indicated that they were not aware of any complaints from students, commenting that: *“Rarely we see students complaining about their language difficulties when using the catalogue”* [L2, GUST]; or because they assumed that all students have a good language skills, saying that: *“I don’t think there is a problem with delivering the services in English; the majority of the students are good in English”* [8, KU]. Others stated that the problem of some students’ lack of English language skills was mostly discounted because librarians believed that students learn the language from an early stage:

*“People usually ignore the language issue, I think even with the new education systems students still face difficulties in using English correctly. This obviously affects finding information, especially information with some subjects as the good quality information is mostly available in English”* [L6, KU].

In spite of the above, other librarians acknowledged this issue where they observed that many students faced difficulties in expressing the correct search terms during the training sessions, saying that:

*“I had an experience teaching students in which I noticed that many had weaknesses in using English, especially when trying to find the correct search terms. Of course some students are good, but I think language weakness is a problem that should be considered”* [L6, KU].

Librarians from the UoS also mentioned this issue might be found with non-native English speakers that subsequently affected their searching process, stating that:

*“Yes, I think students whose first language is not English will face difficulties when searching. This is because it very much depends on their experiences when they come here and the kind of institution they had been involved in before”* [L11, UoS].

Further initiatives that the library may offer to support the language skills of students were also explored during the interviews. For example, librarians from KU said that their library website interface language can be changed into Arabic or English based

on users' preferences, indicating that: *"The website offers Arabic interface, so they can see the content in Arabic"* [P8, KU]. Another librarian from GUST indicated that they tried to increase subject access of some books by adding keywords in the other language to be more accessible, stating that: *"The Arabic books that deal with technical terms, we sometimes add English keywords, because the Arabic terms of technical terms are not understandable"* [L2, GUST]. The same librarian also highlighted issues with using controlled vocabularies, which may be difficult to use by all students. They indicated that adding more keywords would reach a wider group of users:

*"Because the keywords are more professional, that might be difficult to reach by some students. So we analyse the book and see what terms can be assigned to it to make it easier to the students, so we think what might the students use to find this book. We add more terms to the subject headings that already come with the books"* [L2, GUST].

Furthermore, a librarian from the UoS talked about recent developments in their catalogue ('Starplus') that has enhanced the system through the addition of a spell checker, stating that:

*"Starplus now offers a spelling checker, which was a real problem with the old Star system. It also give you a lot of options to refine your search, and it suggests new searches so it will suggest to you alternative search terms that are really useful for people where English is not their first language, and also useful for native speakers. We still tell people about some of the common words that have American/English spelling differences, like behaviour and organization, but Starplus is quite good. It comes to you and gives you suggestions in the form of 'did you mean?'"* [L11, UoS].

### **5.3.2.3 Library catalogue services development**

#### **5.3.2.3.1 Future vision**

To find out more generally from librarians their views on future developments of the library system, they were asked to talk about their library development plans or strategies: *"Tell me about library catalogue development, what strategy the library*

*follows to develop the services?”* The main purpose of upcoming developments, as many of the librarians indicated, was to enhance and provide better delivery of library catalogue services. This was covered by different rationales, with all the libraries indicating that they intended to support the functionalities of the library catalogue, basically by improving the access to facilities for finding information. Examples of their explanations included: *“the library wants to make the process of finding information easier for the students”* [L1, GUST]; *“the interest mainly focuses on feeding the delivery of the library catalogue services”* [L4, KU]; *“in terms of servicing we want to make it a little bit more accessible than it used to be”* [L9, UoS].

Generally, many librarians showed an interest in using ‘*Technological tools*’ which seemed to be a core motivation for libraries, with a particular interest in social media tools, stating:

*“We have an interest to implement the newly technological tools in our library. The library is always looking to develop its services to offer a better web environment for the users and make the services easier to use”* [L2, GUST].

This is true especially if the system did not support the delivery of the library collection in a way that they wanted it to:

*“The library staff will review the catalogue system and may decide to change the system because they feel that the current system is at the end of its life. And particularly because it is able to service the material we are putting in the repository”* [L9, UoS].

‘*Achieving users’ needs*’ was another interesting driver for developments of the library catalogue. As some of the librarians stated, they attempted to find out what their users wanted in order to satisfy users’ needs, stating: *“We do regular evaluation of our website services, and we consider our users’ opinions including the students and the faculty members”* [L8, KU]. One of them gave an example about renewing the subscriptions of journals and databases, stating: *“Database subscriptions were updated based on faculty requirements”* [L7, KU]. This perhaps does not reflect the views of the students, but in the end the educators know what types of databases are

suitable for their students. Another librarian commented that they tried to stay aware of all the developments in the field and consider what would be appropriate for their library, saying that: *“We study and we want to know what’s going on in the field of information science, and we would see whatever would be applicable for libraries”* [L1, GUST].

The librarians were also asked about those responsible for technical development and maintenance of the library, particularly with regards to improving the library catalogue with any new functions (e.g. Web2.0 tools). It was found that each university had its own setup, which was mostly affected by the size of their libraries. Librarians from KU, who were heads of the college libraries, indicated that within the main library administration it is only the director who can make decisions regarding any changes to library catalogue services: *“If we have any ideas to develop the services, we have to send them to the library administration because we have no permissions to add any new features, the library administration have to do that”* [L6, KU]; *“we don’t deal with the catalogues services, we report any issues to the library administration and they fix them”* [L8, KU].

Librarians from the UoS indicated that the library had specific members of staff who dealt with technical matters: *“we have a specific team in the library which does all the changes”* [L11, UoS]. The situation with the GUST library was more straightforward since they only have one library, which is administered by a small group of librarians.

Although libraries have specific staff to deal with the technical concerns of the library catalogue services, it appears that when it comes to adding new functions it is highly dependent on the company who provide the library catalogue system, where they choose the functions that they want to offer, but mostly limit local customization, as the following comment highlights:

*“We have input in the development of it [the library catalogue] but it’s maintained by Libexirs... and the upgraded is done automatically by them. We have limited changes that we can do, but the basic functionality is set by the company”* [L10, UoS].

### 5.3.2.3.2 *Recent and future improvements*

During the interviews the librarians were also asked to indicate recent and future development to their library catalogue services. The recent most important improvement in all libraries was providing a ‘*Federated search*’ option. This allows users to search all of the library’s collections, including books, journals, databases, electronic resources, etc. Two librarians commented that: “*Putting a main search box in the library homepage was a vast improvement to the library services*” [L9, UoS]; “*the federated search is one of the useful enhancements to our library catalogue services*” [L7, KU].

Other enhancements to library catalogue features were also mentioned. GUST library services had recently added a shortcut to *Google Scholar*, where students could access the full text if needed via the library database: “*We now link to Google scholar, so they can access the full text through our database*” [L5, GUST]. Further areas of improvement to catalogue services were also mentioned, including the use of a Twitter account used to update users with new functions: “*The library is working on creating a Twitter account for the library*” [L1, GUST].

With regards to language support features, librarians from UoS stated that they offered more than one language on the webpage interface, though limited to specific languages:

*“There are alternative languages but there are very limited. There is German, Welsh, and French. You can change the personal settings to change the interface language with only these three languages at the moment”* [L11, UoS].

The UoS library have recently added a brand new library management system which: “*Supports things like delicious and it can export stuff into more traditional tools like endnote... obviously there are RSS feeds*” [L10, UoS]. The system provides a range of new benefits to users, such as “*the bookmarking service and the ability to add stuff to e-self to create their own little areas within the catalogue for the useful things that they found*” [L9, UoS].

As an example of the above, social tagging is one of the newly-added features; however, there is a lot still to discover about how to best use it, as one of the

librarians commented: *“I think there is a lot of potential in tagging that we really have not explored yet”* [L9, UoS]. Initially it only offers basic functions: *“We have just basic word cloud functionality; people can tag and write reviews using the system”* [L10, UoS]. An essential reason behind adding tags was the ability to share resources: *“The ability to tag materials and share what has been collected... that’s what we liked about the product”* [L9, UoS]. Furthermore, the social tagging feature was available within a newly-added system, so they decided to offer it to their users:

*“The library added a tagging function to the library catalogue system because it was easy for us to do. We knew there was a lot of interest in social media and tagging and exploiting all these tools available, so initially we just made it available to see what would happen... it’s kind of experimenting with how people will use the tagging system, and more effort to promote the system will be done in the future”* [L9, UoS].

It was interesting to discover that, although there is no specific interest to implement social tagging, especially in KU and GUST libraries, they are open to looking at it for future development: *“Tagging can be one of the new services; we can look at it for our future development... we keep our services in line with the best universities around the world”* [L1, GUST]; *“the tagging implementation could be discussed for future development... it can be useful for our users”*. [L5, GUST]. The UoS library also sought to develop social tagging services: *“If there is any Web2.0 and tagging functionalities on the road map, yes we want to implement it”* [L10, UoS]. In particular they had been encouraged by good uptake of newly-provided functions in their catalogue services: *“The usage of the new function in Starplus encourages the library to do more effort on implementing and developing the new services”* [L9, UoS].

Libraries need to take a closer look at the potential benefit of adding new functionalities, such as social tagging, to be convinced of its usefulness for their library users: *“Actually, if the tagging would be something helpful to our users and to the development of the library, we will look at it in the future”* [L7, KU].

### 5.3.2.4 Social tagging systems in library catalogue services

#### 5.3.2.4.1 Familiarity with social tagging systems

While a few librarians were not familiar with social tagging, one stated that: *“I don’t have any experience with tagging”* [L1, GUST]. The remainder had a range of different previous experiences with using it. Some of them had used tags in social networking websites, such as ‘Facebook’, ‘Twitter’ or Blogs, stating that: *“For sure I have some idea [about tagging]. Usually some Blogs have tags and social networks like Facebook, and I do use tags sometimes in Facebook”* [L2, GUST]; *“we do tagging but through social networking websites, such as Facebook and Twitter”* [L5, GUST]. Others indicated that they had used tags for searching: *“I have some experience of searching but not posting tags”* [L10, UoS].

It was interesting to discover that librarians also had used social tagging systems for research purposes where they used the general online bookmarking service ‘Delicious’, and found it useful. As one librarian from KU stated:

*“Yes I used delicious before... I use it for my work and for research. It is easy. I created groups for all the related links, sorting the resources, based on topics... as well to identify new people... I like it a lot”* [L4, KU].

Others had used tags when searching *databases*, saying: *“Some databases have tagging features, which I find it really useful”* [L8, KU]. They also used tags with ‘Libguides’ to classify items:

*“In some library files we use tags like lib-guide tags here like taxonomy to classify the items according to their subjects... so it’s not like the social tagging or bookmarking but it is kind of labelling”* [L2, GUST].

Many librarians also indicated that students nowadays are mostly familiar with the new technological tools, which will simplify the process of introducing the use of tags within the library catalogue:

*“Librarians think students are already familiar with social media networks and the use of tags in other places, so it would be easy to get them to use tagging in the academic library”* [L4, KU].

It was believed that this provides a positive indication of introducing tagging in the library and would encourage librarians to add it to their libraries:

*“The new generations are highly connected with the new technology; I think that tagging will attract them to use the library more... this encourages the library to add the new features”* [L6, KU].

#### **5.3.2.4.2 Social tagging system advantages**

During the interviews librarians mentioned some possible advantages of social tagging for the library catalogue. Two librarians indicated that adding functions, such as social tagging, would be a good enhancement to the library catalogue services believing that this would encourage students to use the library more: *“We can use the tagging features to enrich the library tools. I think this would encourage the students to use the library more”* [L8, KU]. Another librarian added that this would bring a more attractive Web environment to their users, commenting that:

*“This will encourage the students to use the library, and it will be useful for the students, because we felt that the catalogue is not attractive to the students... so the tags will add something useful to this”* [L2, GUST].

Some librarians also stressed the importance of making the use of tags active to get fuller benefit from the system: *“I think it will be a useful service, especially if the tagging keeps active and many users use it”* [L6, KU]. In particular, allowing students to add tags to resources using their preferred language would help to increase access to library resources and support students in finding information:

*“If the opportunity is there to let the students add keywords to the library items, that will be very useful and I believe it will bring additional access to information and will assist the students to find information easily”* [L2, GUST].

Sharing information was also considered a valuable advantage of using social tagging: *“They can share the resources with others and go back for the resources easily through their tags”* [L6, KU]; *“I think is a great idea, the students can take advantage of the tagging, to access the resources they found and to share them with their friends”* [L8, KU].

Tags were also deemed useful for collecting resources for a particular subject, as one librarian commented: *“I think tags are also helpful in pulling together resources for a particular class and particular module”* [L9, UoS]. A prospective benefit of sharing comes from identifying materials to a specific class or group, which can be treated as an updated reading list:

*“What we think is very useful for tagging is identifying the materials that they [students] found what they think will be useful for their group, when thinking about the reading list and saying for students coming after them ‘look we found this, this is maybe useful for module A,B,C’ and to then tag it with that so other student can search for those tags”* [L11, UoS].

One of the librarians suggested that educators should contribute to the tagging process, to inform students about new materials and maybe advise them to search for specific tags:

*“There have been some suggestions that academic staff might use the tagging to draw attention to books they discovered which they haven’t put in the reading list, but they would like to. I think it will be very good to informally flag things... they can alert students on something they found and invite them to search for the tag. This will identify relevant items to the module or to a particular topic”* [L9, UoS].

The discussion with the librarians about the possible advantages of social tagging also highlighted tagging in multiple languages; with a particular focus on Arabic/English tags, where they showed a general interest in exploring the actual practice of using tags in more than one language: *“In language terms it could be helpful... it will be very interesting to see how students use it”* [L11, UoS]. Furthermore, in order to reach a wider group of students with different language skills, Arabic should be used: *“I think the Arabic language should be considered in the tagging functionalities, to reach all the users with different language skills”* [L6, KU]. It is expected to find different language preferences with bilingual students, and having tags in both languages would be something useful, and supportive:

*“For bilinguals having both languages will be useful, because they have different preferences. Maybe someone familiar with one terms in Arabic*

*and another familiar with the same term but in English... having them both there will be something useful... they can relate the terms, they might find the term and its meaning in the other language, this will be helpful” [L2, GUST].*

#### **5.3.2.4.3 Challenges of using social tagging systems**

Aspects about some challenges of using tags in library catalogue services were also discussed during interviews with the librarians. As many stated, enhancing the library catalogue with new technological functions will be mostly beneficial, but some might face different challenges, as one of the librarians commented when asked about adding social tagging and the library catalogue: *“It will be very useful but the implementation of such a kind of technology might be challenging” [L2, GUST].* The ‘*Technical issue*’ seems to be one of the most important concerns that mainly influenced adding social tagging; each library also had its own contextual concerns. For example, librarians from KU raised the issue of procedures with technical updates that the library would need to undertake which usually delays implementing improvements: *“Now we work with a corporation with the university information systems centre... they are not bad, but it’s a very long process to do any of the updates or any modification to our website” [L8, KU].*

However, the case in the UoS was quite different. For instance, when it comes to improving or modifying the newly-added ‘tagging functions’ the librarians stated that it all depended on the Library Management System (LMS); where a company updates the functions regularly based on the library’s needs and suggestions, it was mentioned that: *“If we suggest things to be improved they do listen and co-operate with what the customer says... the functionalities are improved within each upgrade” [L11, UoS].*

Another important concern highlighted by some librarians relates to the issue of trust of online contributions from students. For example, the GUST library chose to monitor the library’s Facebook account by blocking the comments option, as their librarian mentioned:

*“We controlled the features of letting the students comment, so their comments have been blocked. We don’t want to have any issues, we*

*don't know what students' comments could lead to if we keep them open" [L1, GUST].*

In the light of the above, libraries showed their fear of providing uncontrolled features that enables contributions from students. This might affect libraries' decisions to add social tagging, especially if it is open or free. This needs to be considered for future developments. This issue was also mentioned by librarians from KU, indicating that the library should monitor tags provided by students: *"The library administration should approve on adding students tags" [L8, KU],* or possibly monitor the tags, saying: *"Maybe the students tag the items in a wrong way. This is an issue so some kind of control would be necessary to take benefit from tags" [L2, GUST].* Further comments include:

*"In some cases tags may not be acceptable in our culture, especially if the students evaluate or review the resources in a negative way by putting negative tags about the author or the book. I think we need to monitor the use of tags to keep them acceptable" [L6, KU].*

This issue might also be overcome via providing the necessary training to teach students and librarians how to assign useful tags and get the most from using social tagging features (i.e. a form of tagging literacy). With regard to providing training to library staff, almost all librarians indicated that they are able to provide the necessary training to their staff: *"The staff will be fine with this kind of technology. They can be trained and deal with it appropriately" [L2, GUST];* *"the library staff can get the training required for any new development so they can use it appropriately" [L6, KU].*

Promoting social tagging systems could also be associated with training to get the most out of tags. Librarians from the UoS indicated that they are working on promoting the recently-added tagging features by providing online tutorials and through information skills sessions:

*"We see thousands of students in the beginning of the semesters in the information skills tutorials... so it's quite a significant number and we do have online tutorials as well... so here we will promote the use of tags more" [L11, UoS].*

The other librarians were also asked about promoting social tagging as one of the possible additional features in the future. Most of them indicated that this could be advertised using numerous means, as one of the librarians commented: *“We usually promote our new services to the users, by telling them in the workshops, brochures, newsletter, posters, and emails”* [L6, KU].

Yet, a few librarians highlighted communications issues with their students, stating that: *“It’s not easy to reach all the students, especially as many students ignore their emails, and the students now are not visiting the library”* [L8, KU]; *“we do our most to reach them all, but unfortunately we can’t unless they come and ask for help”* [L4, KU]. Therefore, they seek other ways to deliver the information to them, mostly via social media tools believing that this would probably reach more students: *“We usually advertise our new services using social media that is used more often by the students, like Twitter, Facebook and Instagram”* [L8, KU].

#### **5.4 Social tagging and Information Literacy (IL) skills**

The results here will centre on reporting student views on Information Literacy (IL) skills, focusing on their awareness of learning the skills and the sources that they use. It will then report the findings of librarians’ perceptions about different aspects of IL skills instruction. This will assist in getting a general idea of the nature of IL training offered by the academic libraries.

The findings support this research in relation to the possible uses of social tagging systems to support academic library development and links with IL skills and practices (i.e. the conceptual framework of social tagging and IL). This will help in answering sub-research question (e): *What is the potential usefulness of social tagging to support student’ information skills in academic libraries?* This will be discussed further in Chapter 6 (Section 6.6).

##### **5.4.1 Information literacy skills**

###### **5.4.1.1 Students’ perceptions**

Many students showed a lack of engagement with information skills, stating that they never attended the training sessions provided by their libraries, even if they had been aware of them. Because it was not compulsory they tended disregarding it, as one of

the student's commented: *"We receive emails about information skills sessions, but we don't have to attend... I never attend them"* [P8, GUST]. This emphasizes their lack of awareness of the benefits of learning information skills, as the following comment highlights:

*"I heard about some searching skills workshop from the library but I never attend them as I don't think they will give me the information or the skills that I want"* [P31, KU].

This also might be affected by their belief that they already have the necessary skills which discourages them from learning new or additional skills, as mentioned by several students: *"I learned some searching tips in high school and I use them now"* [P32, GUST]; *"at the moment I don't think I need to learn new skills"* [P28, GUST]. Additionally, their views may be influenced by their lack of using library catalogue services and relying on Google to find information: *"I think I know how to search, because I can find what I want when I search Google"* [P15, KU].

Some students seemed to be more interested in learning the skills, indicating that: *"I never heard about them [social tagging tools] but I might need to use the library in the next semester, so I will ask for these workshops"* [P9, GUST]. Furthermore, their intention to educate themselves appeared to increase in the final years of their study where they have to work on producing a research project which requires them to search for relevant references: *"But for next year I think I would need to know more about searching, because I will start do my dissertation"* [P45, UoS]; *"I think I should ask for the library help. I would definitely need to learn more skills in the future"* [P20, GUST].

Nevertheless, a number of students showed their awareness of learning the skills saying that they had attended the sessions provided by their libraries and found them beneficial: *"They gave us sessions at the beginning of the year... the sessions were good to learn the basics and then you can learn by yourself"* [P46, UoS]; *"in the department I took a searching skills session, and I learned useful things like using AND, OR, NOT between the search terms"* [P41, UoS]; or additionally that:

*"They teach us how to search the library catalogue, databases and other online services. I didn't know about the online services, but now I can"*

*do better search and find better information... when I first use if it was complicated but later on I get used to it... attending the lecture was helpful” [P14, KU].*

Yet, students seemed to need further support where some of them mentioned the lack of practice during the sessions, saying: *“I attended the library lecture. It was not that useful because we had no chance to practice the skills” [P42, UoS]; “we have been encouraged to use the library services, but not in the actual practical, which can be an issue” [P34, GUST].* Others showed that they still found conducting a search as difficult; they usually compared the library system to Google, commenting that:

*“I attended a number of information skills sessions... but I still find the search process not an easy task. Sometimes I feel that searching Google is much easier than searching the library website” [P4, UK].*

*“I learned how to search the library online services at a workshop in the library but I found it complicated. I personally found using Google much easier” [P12, KU].*

During the interviews students also highlighted other sources of learning information skills that they tended to use. ‘*Online materials*’ that appear to be convenient to them have been divided into two types. First learning materials from the library website (e.g. online tutorials, documents, links), where some students showed a positive view about them; however, they are useful only to an extent, as the following comment highlights: *“The library website does help but not that much, it has just a few instructions about searching” [P15, KU].* Also, students were not aware of all the training information available on their websites. Which made them refer to second sources of learning, which is general online learning materials (e.g. websites, videos, documents), where some students showed that they made personal efforts to educate themselves by searching for learning materials available online: *“I did a lot of learning on my own to be better in searching” [P46, UoS].*

Another source of learning as stated by many students was their ‘*Teachers*’ and the library staff where they commonly asked them if they needed help in finding information: *“I remember when I start using the library websites, I asked the librarians for help and they taught me how to search, which was useful” [P29,*

GUST]. It was also interesting to discover that some students were satisfied when they learned the skills from their teachers, as the following comment shows:

*“One of our teachers gives us good tips on how to search the library to find relevant resources... knowing those tips was really helpful... I might get lost if I didn’t follow my teacher’s search tips before using the online library resources... It’s important to learn how to search”* [P8, GUST].

Lastly, some students indicated that they found the support of their friends and peers a good source of learning information skills: *“I didn’t find out about the resources from our teachers, I learn how to search the library from my friends”* [P19, GUST]. Another student commented: *“I asked my friends for help... my friend taught me how to search, he gave me some tips of how to choose the correct keywords and find alternatives or synonyms”* [P4, KU].

#### **5.4.1.2 Librarians’ perceptions**

Throughout interviews with the librarians, the instruction of IL skills was discussed. The majority of librarians indicated that the purpose of the information skills training is to educate the student with the skills needed to conduct a successful search session mainly by using the library searching services, as one of the librarians commented:

*“The IL skills training aimed to teach the students how to use and get the most benefit from the library services... the IL session helps them to understand and be better in how to retrieve information”* [L5, GUST].

The content of the learning materials can cover searching tips outlining the benefit of adding synonyms to the search terms, as one of the librarians commented: *“We teach them some search tips... the alternatives to search with more than keyword until they found what they are looking for”* [L4, KU]. Libraries mostly promoted the new services and features through information skills sessions: *“We usually tell the students about the things in the library through the information skills session”* [L2, GUST]. This is where promoting social tagging features could fit, as one of the librarians from the UoS indicated:

*“In the session the library gives an introduction and instructions about the new library services, so they would promote the use of tagging in the library catalogue in these sessions” [L9, UoS].*

Throughout the interviews librarians showed different types of learning materials that they employed to teach their students. Offering online materials seems to be a fundamental tool: *“The library provides online tutorials and instruction on how to use various searching services in the library” [L1, GUST].* This is additional to printed learning materials as the following quotation indicates: *“We have brochures and a newsletter that give useful information about searching and how to use different services offered in the library catalogue” [L7, KU].* These learning materials are updated regularly to align with the changes happening in the library services: *“Learning materials updated regularly to match all the services development” [L1, GUST].* An additional comment from one librarian indicated that:

*“They change with the changes in the catalogue. It was a challenge to write IL skills that support the new catalogues... because it was a completely new interface compared to what we had before” [L10, UoS].*

In addition to the above, many librarians indicated the library staff at the helpdesk were always ready to support the students with their queries: *“The librarian in the help desk is always prepared to help the students... so we do our best to help the students” [L6, KU].* This is in addition to the support offered through reference librarians: *“Plus we have reference librarians, which are ready to help any student’s needs helps” [L7, KU].* Libraries commonly seek for other alternatives to teach their students the necessary information skills:

*“We try our best to reach all the students with all the methods available... we usually tell the students about the thing in the library through the information skills session... the helpdesk, the website, email, and in the future in Twitter” [L2, GUST].*

In relation to ‘*IL sessions arrangement*’, librarians indicated that they offer training sessions covering the basic information skills that they typically deliver to first year students to help them gain the skills required to fulfil their information needs. These

sessions were often arranged in co-operation with different departments and were commonly organized based on faculty requests:

*“Usually we do orientation for students in each semester... and we also co-operate with professors from different departments to teach the students how to use the library and search the databases, usually with library director” [L2, GUST].*

*“For the first year students, we mostly give them general information about using and searching the library catalogue, databases, e-journals, etc. includes things like how to use, how to search, how to write the Boolean search, and how to formulate a good search” [L8, KU].*

Furthermore, other librarians stated that they also offered advanced sessions at different levels: *“We actually give two levels of workshops - basics and advanced skills” [L6, KU].* These sessions can also be provided based on teachers’ requests: *“In each semester the faculty members ask for more advanced workshops for their students, to show them how to use the library system” [L6, KU].*

The co-operation may likely occur because of students’ unwillingness to attend the information skills sessions provided by their libraries: *“And it rare to see students come by themselves to join the workshops offered in the library” [L8, KU].* On the other hand, librarians from the UoS indicated that they arranged to run with different departments workshops within the curriculum: *“The session planned with the department as part of the curriculum, besides other session running in the university libraries” [L9, UoS].* Making the sessions compulsory would help libraries to be certain that all students learned the necessary information skills and could get the most benefit from the library catalogue.

Almost all the librarians indicated that the training sessions are typically run by some of the library staff who are trained to teach the students: *“A number of qualified and trained librarians are responsible for teaching” [L4, KU].*

The language of teaching the skills was also explored. For the UoS the language is English. For the Kuwaiti universities, many of the librarians stated that they delivered the sessions in English to match the services on their websites which are mostly offered in English. Librarians commented that: *“All the sessions deliver in*

*English languages because most of the teaching session is in English” [L1, GUST]; “all the website and services in English so we teach them in English, but sometimes we use mixture of both Arabic and English” [L8, KU]. Nonetheless, they may switch between Arabic and English in teaching the skills to students depending on their subject of study, the main language of their studies, and English language proficiency of the students. However, they showed their preferences as follows:*

*“For the students it depends on the teacher and the subject of study we choose, either Arabic or English, or sometimes both languages. Some students who are not that good in English prefer Arabic, but they have to learn and use English because all most of the subject in the college in English... we prefer to use English but if necessary we use Arabic” [L4, KU].*

## **5.5 Summary**

It can be summarised that phase two of the research highlighted interesting information about the potential use of social tagging systems by bilingual students and the factors influencing their tag choices, highlighting their tag language preferences when tagging Arabic and English resources for academic purposes. In general, students showed a positive view towards having functionalities, such as social tagging functionalities, in their academic library catalogue services. They were interested in social tagging to support future retrieval, organisation of their tasks, and sharing information. Furthermore, tags were considered as valuable for increasing access points for accessing materials. They also generally accepted as useful tags in multiple languages where they believed that it would enable a better description of information sources and may support students with varying language.

Students showed a lack of use of their library catalogue, which appears connected to their lack of IL skills and awareness of services available on their library websites. Many of them rely on Google to find the information they need instead of using the search functionalities offered by their libraries. Students also showed that their language skills would affect their search patterns when searching for information in both languages (Arabic and English). However, they showed a preference for using English more than Arabic, which seems to be highly connected to the main language of their study in both previous and current education stages. Librarians also showed

their awareness of students' shortage in library usage and IL skills, and recognized the effect of bilingual student's language skills on finding information, particularly when formulating correct search terms.

Librarians showed a general interest in implementing social tagging and perceived social tagging systems as beneficial; however, they highlighted the fact that they need to be aware of all the possible usefulness of using tags, and emphasised the important role of providing clear tutorials on how to use and create useful tags (i.e. tagging literacy). They also highlighted possible challenges that could be associated with adding social tagging features in academic libraries, which were mostly connected to the appropriate provision of technical support.

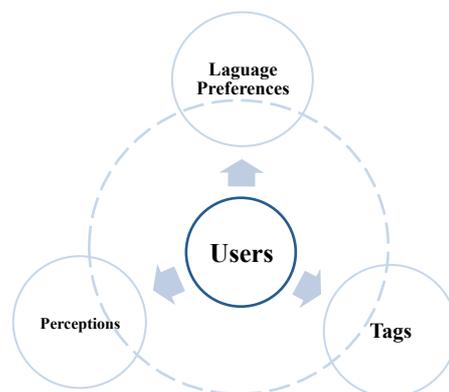
## Chapter 6: Discussion

### 6.1 Introduction

This research seeks to answer the following main research question: *Can social tagging functionalities support information discovery and use in academic libraries, particularly for bilingual (Arabic/ English) students?* It addresses this by investigating social tagging functions to help *users* (i.e. bilingual Arabic/English students) with finding and using information in academic libraries. Figure 6.1 shows the key components of the *Users* investigation, which concern bilingual students. Aspects in relation to three main elements were explored as follows:

- 1) Students' *Perceptions* of library catalogue services and social tagging systems. These have been addressed in phase one using a questionnaire and in phase two during the Interactive Tagging Experiment (ITE).
- 2) Students' *Language* preferences in searching and tagging were also addressed in phase one of the research in the questionnaire and in phase two during the ITE.
- 3) Students' *Tags* have been mainly addressed during the ITE in phase two.

Figure 6.1 Main User Elements Investigated in this Research: Language Preferences, Tags, and Perceptions



Chapter 6 presents an integrated discussion of the findings from Chapters 4 and 5 that is supported by the relevant literature. This reflects the data interpretation phase as illustrated previously (Chapter 3, Figure 3.2) that gives a full outline of the research design and methodology. The discussion is structured around the following sub-research questions:

- a) *How do bilingual students use online library catalogue services and existing social tagging systems?*
- b) *What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?*
- c) *How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?*
- d) *How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?*
- e) *What is the potential usefulness of social tagging to support student' information skills in academic libraries?*

The following section discusses the findings specific to each sub-research question.

## **6.2 a) How do bilingual students use online library catalogue services and existing social tagging systems?**

This research question was designed to investigate the use and perception of online library catalogue services and existing social tagging systems by students, as well as their language preferences with regard to searching and tagging. This was addressed in phase one of the research using a questionnaire (Chapter 3, Section 3.6.1). In total, 241 bilingual students from three universities - Kuwait University (KU), the Gulf University for Science and Technology (GUST) in Kuwait, and the University of Sheffield (UoS) in the UK – participated in the survey. The survey respondents included both male and female students studying a range of subjects, and from different years of study (Chapter 4, Section 4.2.1.1).

### **6.2.1 Library searching services**

There is general agreement among many researchers in the field about the weaknesses of the current searching behaviour of students. Previous researchers have indicated that students commonly refer to general search engines, such as Google, to find information (University College London, 2008; Branch, 2003; ENDER, 2002;

OCLC, 2002). This coincides with their lack of awareness and usage of the library catalogue services where they generally only use the OPAC occasionally during the academic year (Caroline et al, 2010; Ozel and Cakmak, 2010). The survey conducted in this research differs in terms of the user group as it involves bilingual students, and the academic context (KU, GUST, and UoS). However, it confirms findings from previous studies regarding the limited usage of library searching services as the highest percentage of students stated 'sometimes' (32.4%) for using library searching systems, while only about 25% stated that they used them frequently. Further discussion about students' searching behaviour is presented in Section 6.4.4.

Furthermore, this research showed that searching by title was the most commonly used option amongst participants, where 37.7% of the students used it regularly; whereas only 12.9% of the students used the keyword search option regularly; this was followed by 9.1% of the students who stated 'always' for searching by author name. This is inconsistent with the findings of previous studies that showed students used keyword search options more frequently than the other options (Tam et al., 2009; Eleta, 2008). These differences might suggest that bilingual students exhibit different searching behaviour that should be considered.

This research also brings to our attention that high numbers of the students 'never' use the series (48.1%) and ISBN search options (55.2%). Furthermore, 14% of students did not know what these options were used for. This suggests that these are potentially not valuable options to offer in an online library catalogue unless we find a way to teach students about how to use them effectively.

Many studies over the years have showed that searching the OPAC can be difficult, particularly in requiring the users to formulate appropriate search terms to find relevant information (Eckert et al., 2009; Villen-Rueda et al., 2007; Lau and Goh, 2006; Dinet et al., 2004; Large and Beheshti, 1997; Borgman, 1996; Connell, 1995; Matthews et al., 1983). This study largely confirms this, where 32.8% of the students stated that they face difficulties when searching the library catalogue system. Furthermore, only 38.6% of students were satisfied with their search results commenting that they cannot find what they are looking for and that the system is old and has poor functionality. This can be connected to the argument that students nowadays generally desire more enhancements to library search functionalities

(Connaway et al., 2010), and want easier access to information, which has been identified as an important motive for using searching systems (Sadeh, 2007).

However, it is important to point out that students in different universities seemed to have different opinions. The Kruskal-Wallis test analysis between university and users' satisfaction with library searching services revealed that the highest overall ranking goes to UoS with 150.87; this indicates that the UoS library offers more satisfying features to their users. This is followed by GUST then by KU. A previous study by Al-muomen (2009) also found that 31.4% of the graduate students in KU were dissatisfied with the library system. Results also show that the difficulties with searching the library were more apparent with KU students with 128.10, followed by GUST with 121.60, then UoS with 97.28. Similarly, Al-muomen (2009) also found that half of KU library graduate students felt uncomfortable when searching the library system.

### **6.2.2 Searching and language preferences**

With bilingual users language can play a significant role in their search experience and success as discussed earlier in Chapter 2. A study by Aytac (2005) found that bilingual people often search in both languages and usually view resources in their native language. In this research students were asked to rate their searching level in Arabic and English. Overall, they rated themselves as 'good' in both languages that aligned with findings from the Aytac (2005) study. Yet students seemed to be better in English than Arabic, mostly because of this being the main language of study. 90.7% rated themselves from 'good' to 'excellent' in English language searching. By contrast, for their Arabic language searching level, the rates were lower; 78.5% rated themselves from 'good' to 'excellent' and 21.5% rated themselves 'poor'.

In addition, even though all the students in this research were native Arabic speakers and many of them studied in Arabic schools (63.5%), it was interesting to find that 44.4% of them preferred to search in English and 34% preferred to search in both languages. This seemed mostly affected by their domain of study where many of the students studied in courses that teach predominately in English, such as Engineering, Business and Management, Accounting and Finance, Computer Science, English, Medical and Social Sciences. These results support a previously highlighted relation between users' language skills and field of knowledge (Clough and Eleta, 2010;

Kralisch and Berendt, 2005; Gaspari, 2004); thus native Arabic speakers students are also influenced by the common language of their domain of study.

In addition, based on the responses of students, it seems that the domain and the availability of information in English highly affected their search language preferences. This confirms Eleta's (2008) findings showing that these factors directly affected making English the first or second choice of searching language. However, we cannot ignore the fact that 15.4% of the students prefer using the Arabic language when searching for information. This aligns with the results of previous research, such as Aytac (2005) who noticed that even while English is the most popular language of communication, users were still interested in using their native language when finding and using information. This observation needs to be considered, especially when about 50% of the students agreed that having cross-language functions in their library catalogue would be beneficial. This also stresses the need for improving support for students with varying language skills while searching for information. A similar result was found by Clough and Eleta (2010), indicating that 54% of the participants would find Cross-lingual Information Retrieval (CLIR) functions helpful, especially for non-native English users.

This reinforces the point that students need help when formulating queries. This is mostly because of language affecting their ability to express appropriate search terms, especially since a notable number of students choose to search in two languages. Furthermore, students often have to form queries in English, especially students who study in English, which might not be easy for all of them. A study by Al-muomen (2009:184) highlighted this fact indicating that in KU libraries "the better students think their English skills are, the more likely they are to use electronic journals".

### **6.2.3 The current and prospective usage of social tagging system tools**

Many students (60%) stated that they often use social networking sites. However, the concept of 'social tagging' was not well understood among the students who participated in this research. This aligned with Tam et al.'s (2009) study which showed that students did not value tagging features and the ability to contribute tags. Even so, this study found that students do carry out some tagging activities while using popular social networking sites. Similarly, Kramer (2010) also found that

students used tagging for social and communication purposes: they commonly used it within the context of photo tagging (e.g. Facebook). This suggests that more investigation of the potential use of social tagging systems within the academic library context may prove fruitful.

Related studies indicated that social tagging can support exploratory search activities, showing the usefulness of browsing tags to discover information (Jiang, 2010; Peters, 2009; Millen et al., 2007; Furnas et al., 2006). Tagging was also considered as a supporting tool for organizing information (Feicheng and Yating, 2014; Smith, 2008; Spiteri, 2005). Despite these indicators of helpfulness, in this research students showed that their actual use of social tagging was moderate. The highest use for the tagging function goes to 'sometimes use' for 'search personal tags' (28%) and 'posting tags to useful items' (29%); while 'browse/view tag cloud' were the least used functions where the highest use goes to 'rarely' (26%). This is completely different from Kramer (2010) who indicated that many undergraduate students (43%) viewed tags as a daily social activity when using social and communication tagging systems (e.g. Facebook).

In relation to this, Tam et al. (2009) observed that half of the international students from those sampled at the UoS were familiar with user commenting features provided by the general Web services (e.g. Amazon, YouTube), yet they were not active content creators in Web2.0 technologies. This suggests that libraries need to educate and encourage students to contribute to Web2.0 functions when available in the academic libraries for better practice, and especially when implementing social tagging features are key to success.

The findings also discovered motivational responses about the potential usage of tags in academic libraries, showing that 'search personal tags' and 'create new tags for useful items' and 'add tags to organise favourite items' were important functions. These were followed by 'browse/view tag cloud' and 'searching other peoples' tags'. Furthermore, it was interesting that high numbers of students (60%) agree that adding social tagging tools to the online library searching system would be useful. This provides motivation for the future investigation of social tagging. It also confirms the previous studies that have adopted a positive perspective on the value of tagging functions in enhancing the customizable features of library catalogues

(Spiteri, 2005). It also supports Tam et al. (2009) who specified that students viewed tagging features in a positive way as they felt it would make the library catalogue look more modern.

Results of this research found that there is no clear agreement between students' actual use of social tagging tools and their views on adding tagging functionalities to their academic library searching services, except for 'search personal tags' and 'post/create new tags'. However, students gave more optimistic responses about their views on adding tags than on their actual use of tagging systems available on social networking sites. This would stress the point that students are interested in enhancing library system functionality (Connaway et al., 2010).

#### **6.2.4 Tag language preferences**

Results of this study showed that tag language preferences were generally varied. Many students (46.5%) preferred to add Arabic tags for Arabic materials; while a notable number of them (28.7%) preferred to add tags in both languages. 24.8% preferred to add tags in English. This clearly shows that the bilingual community can be diverse in their language usage. El Hussein et al.'s (2010b) study showed that bilingual (Arabic and English) users combined both languages when assigning tags to Arabic materials, which aligns with the findings of this study. In contrast, for English material, most students (69.6%) wanted to create tags in English, 18.7% would assign a combination of both languages, and only 11.7% would assign Arabic tags only. Tags that were created in a language different from the content reflect the idea of cross-lingual tagging, which can be beneficial to employ in cross-lingual retrieval or CLIR (El Hussein, 2012).

When compared to students' tag language preferences for Arabic materials and their search language preferences, we discovered that students who prefer to search in Arabic would like to tag Arabic materials in Arabic. By contrast, students who prefer to search in English show variances in their preferred language when tagging Arabic materials; 17.4% prefer to tag in English, 14.3% prefer to tag in Arabic, and 13.5% prefer to tag in both languages. English tags here would be useful for CLIR to access Arabic materials (e.g. browsing and searching) as suggested by El Hussein (2012). Furthermore, students who prefer to search in both languages mostly divided into

two groups: firstly, those who wanted to tag Arabic materials in Arabic (16.1%); while the other group wanted to use both languages (13.5%).

Comparing tag language preferences for English materials and search language preferences results show that 40% of students who prefer to search in English want to tag in English as well, and only 3.9% prefer to tag in both languages. 20.4% of students who prefer to search in both languages want to tag English materials in English, and 12.2% of them want to use both languages.

### **6.2.5 Summary**

This section has discussed aspects that help to understand bilingual students' perceptions regarding online library catalogue services and existing social tagging systems, and their language preferences in searching and tagging; the following will highlight the key findings.

*Library searching services* findings show that only 25% of the students indicated that they use library searching services frequently; this is aligned with previous studies that showed the lack of students' use of library catalogues. Furthermore, the research found that students more commonly search by title than by keyword search or other options. This highlights the fact that many of them commonly only use the catalogue when they already know the title of the needed information which clearly underlines their lack of searching skills.

In addition, only 38.6% of students were satisfied with their search results when using their library catalogue. Many of them commented that they could not fulfil their information need when using their library system and 32.8% of them stated that they faced difficulties when searching the library catalogue services. It should be noted that most of the negative responses about their usage of library catalogue services came from GUST and KU students.

*Searching and language preferences* findings show that students generally rated themselves as good in both languages: Arabic and English. Furthermore, even though all the students in this research were native Arabic speakers and many of them studied in Arabic schools, it was interesting to discover that the majority of them prefer to search in English, followed by their preferences to search in both languages. This was mostly affected by their domain of study that reinforced previous

observations on the relation between users' language skills and their field of knowledge.

Despite this, we cannot dismiss the fact that some students prefer using Arabic when searching for information. This confirms the point that bilinguals still prefer to use their native language to find information, especially as many of them agreed with having supportive CLIR functions in their library catalogue services. This appeared to be largely because they faced difficulties in formulating their search queries which was connected to the variation in their language skills levels in expressing their information needs in an appropriate search term.

*The current and prospective usage of social tagging system tools* results show that many students were familiar with social network services, yet the concept of social tagging was not well understood by the majority of students. In contrast, some students indicated that they used tagging functions offered by the social networking services, mostly by adding and browsing tags. They also agreed that having social tagging in their library catalogue services would be beneficial, and were particularly interested in searching personal tags and adding tags to useful information they found in the library.

*Tag language preferences* results show that many students prefer to add tags in the identical language to the item being tagged. Yet a noteworthy number of them preferred to add tags in both the Arabic and English languages, which can be beneficial to increase access points to information resources and support students with varying language skills.

### **6.3 b) What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?**

This research question was designed *to analyse and compare the functionalities offered by the existing social tagging systems, and their support for users with varying language skills, and to explore the possible benefits of social tagging functions in supporting students' information practices.* This was addressed in phase one of this research particularly by conducting a comparative analysis of social tagging systems available online as mentioned previously in (Chapter 3, Section

3.6.2). This is considered valuable to improving the overall understanding of social tagging functionalities, which would in turn assist the further investigation of the topic.

### **6.3.1 Categories of social tagging function**

The literature highlights a limited number of studies that explored social tagging functionalities taking different analytical approaches. Peters (2009) presented an overview of the search and tagging functionalities of 11 general tagging systems. Smith (2008) showed the architectural differences of four general social tagging systems, while Shiri (2009) took another approach to examine ten tagging features of bookmarking and social media sharing websites as reviewed earlier (Chapter 2, Section 2.5.2).

This research differs from other studies in terms of the approach taken, which focused on users as a main component in using social tagging systems to address the functions offered that support tagging activities which in turn were useful to support the use of information. It also examined 11 existing social tagging systems, including six social bookmarking services and five Library 2.0/museum ones. The strategy was followed by selecting social tagging systems and particularly by identifying popular social bookmarking services as detailed earlier (Chapter 3, Section 3.6.2.1).

The social tagging functions were examined and categorised into five main categories: *Posting, Searching, Browsing, Managing and Sharing*, as presented in Table 6.1 (more details are given in Chapter 3, Section 3.6.2.2). The browsing category had been previously identified by Shiri (2009) as a '*Tag browsing and exploration feature*', and by Peters (2009) who called it '*Browsing visualization*'. This emphasises that support for browsing is a major function of tagging services. The categories of social tagging functionality can be valuable in reflecting different tagging activities and in supporting other information practices. Section (6.6) will present further discussion of these categories.

Table 6.1 Overview of the Main Categories of Social Tagging Functions

Brief Description of Social Tagging Functionality Categories	
<i>Posting</i>	<p><b>Description:</b> this category refers to the process of adding tags to describe the resource. When users want to add a resource to a system, a certain amount of descriptive information about the resource is required, such as the title, description and tags.</p> <p><b>Functions:</b> Web add form, Toolbar button/Bookmarklets, Tag suggestions, Multilingual tags.</p>
<i>Searching</i>	<p><b>Description:</b> this category refers to the ability to search tags with other descriptions (e.g. title, URL, etc.) or by limiting the search to tags only (searchable tags).</p> <p><b>Functions:</b> General tag search, Personal tags search, Boolean operators, Advanced search.</p>
<i>Browsing</i>	<p><b>Description:</b> this category refers to functions that offer “the ability to reorient the view by clicking on tags or user names, called pivot browsing, [which] provides a lightweight mechanism to navigate the aggregated bookmark collection” (Smith, 2008:173).</p> <p><b>Functions:</b> Tag visualisation, Browse personal tags, Browse related tags, Browse others’ bookmark list by username.</p>
<i>Managing</i>	<p><b>Description:</b> this category refers to basic tag management functions that allow changes to tags to be made, such as editing, deleting and saving tags.</p> <p><b>Functions:</b> Editing and deleting tags, Follow/watch tags, Tag grouping/bundles, Import library/bookmarks, Export library/ bookmarks.</p>
<i>Sharing</i>	<p><b>Description:</b> this category refers to sharing functions offered by the tagging system.</p> <p><b>Functions:</b> Sharing tagged items/bookmarks with others, Group of users, Recommendation, Find similar users, Connect with other social networking services.</p>

### 6.3.2 Common functions and language support

The results show that social bookmarking services produce richer tagging functions compared to library2.0/museum services. This is to be expected to some degree as social bookmarking services are very popular and used widely on the Web. Furthermore, most of the scholars when studying tagging aspects used popular social bookmarking services, particularly Delicious, which confirms its popularity.

Findings show that across all of the social tagging systems examined, *Browsing* was the most popular function compared to the other categories, which emphasises its role in such systems. Browsing was mainly offered as a visualisation tag cloud or simply as a list of tags which is commonly associated with ‘browse personal tags’, ‘browse related tags’, and ‘browse bookmarks by username’. This reflects the notion of ‘pivot browsing’ in social tagging activities, which describe the movements used in information spaces by selecting “reference point to browse” (Gupta et al., 2010).

In addition, browsing functions offered by social tagging systems reflect essential facets of information seeking behaviour and Information Behaviour (IB). For example, Ellis's model of information seeking behaviour has identified browsing as "semi-directed searching in an area of potential interest" (Ellis, 1989: 238). Jansen and Rieh (2010) described browsing as functions offered by the information systems that support information search behaviour actions that are involved in interacting with the system functionalities. Foster's nonlinear model of information seeking behaviour (2004) also identified browsing as one of activities under the opening process. Furthermore, in modern information seeking behaviour, browsing can be associated with the conditioned viewing mode as suggested by Choo et al. (2000), where tags can be used to browse related information through tags.

Looking at the other functionalities, the findings of *Posting* tags show that using the Web add form is a common way to add tags. This does not require users to apply or change anything in their Web browsers, and so can be considered as a useful tool to be offered by academic libraries when using social tagging functionalities. This process was mainly supplemented by saving the information of interest (Smith, 2008).

*Searching* tags was also found as a common function offered by almost all the examined systems, which stresses the essential role of tag search functions in social tagging systems that had been underlined by previous studies (Peters, 2009; Jorgensen, 2007). However, the searching functionality varied between systems particularly with being able to search personal tags, offering Boolean operators, and providing advanced search options. It should be noted that most of the examined systems were primarily tagging systems; i.e. they offer tagging functions as main features with no other support for searching. Searching tags can generally support information search behaviour activities in which it enables users to interact with the functions offered by the system to find information. This can be aligned with Jansen and Rieh's (2010) framework of human IB and information systems.

Existing social tagging systems also commonly offer functions that support tag editing which can be framed under the *Managing* category. This has been considered as a basic support function (Smith, 2008), and was identified as a common feature by Peters (2009). These functionalities can clearly support users' information seeking

activities in “organizing the information they collect or use in facilitating their research” (Meho and Tibbo, 2003: 581).

*Sharing* information was considered as an important aspect of tagging systems (Noruzi, 2006; Golder and Huberman, 2005; Spiteri, 2005). This research showed that existing social tagging systems might vary in offering features that support sharing information via tags. However, sharing tagged items with others was identified as the most popular feature, followed by the ability to create groups of users to share information.

Furthermore, it was interesting to note that popular tags in WorldCat and Connotea showed tags in languages other than English (e.g. French). This confirms the observations made by other researchers when focusing on multilingual tags (Jung, 2010; Guy and Tonkin, 2006; Hammond et al., 2005). However, the results of this research showed that social tagging systems generally offered poor features to support users with different languages. Some systems offer translation into other languages; these include Folk, WorldCat, and Goodreads; while with Diigo’s advanced search options users can select the language of the information they want to find. Steve tagger offers a feature that allows users to select the language of the tag from a drop-down menu. With regards to Arabic, LibraryThing allows users to explore groups of users by language and the Arabic language was included; however, it is basically “written, edited and approved by LibraryThing members” (Librarything, 2012).

### **6.3.3 Summary**

This section has discussed typical functionalities offered by social tagging systems. These functions can aid students as they use academic library catalogue services, if implemented in an effective way. Social tagging functions reflects collaborative information behaviour, or seeking behaviour (Foster, 2006; Hyldegard, 2006) and have the potential to support “social factors to acquiring, retrieving, seeking, managing, sharing and generating information” (Hyldegard, 2006: 279).

Furthermore, proposing main categories of social tagging functionalities, including *posting*, *searching*, *browsing*, *managing*, and *sharing*, was considered valuable in that it can help in reflecting and mapping the theoretical aspects of users’ information

practices by turning them into more practical activities. Having a conceptual framework of social tagging and Information Literacy (IL) as presented previously (Chapter 3, Section 4.4) helps to demonstrate the benefits of social tagging and how the technology could be used in academic libraries to support students' IL practices.

#### **6.4 c) How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?**

This research question was designed *to study students' tagging behaviour, particularly to discover the influencing factors of students' tags when tagging in different languages, as well as to explore students' views about their usage of the library catalogue services and the use of social tagging in their academic library catalogue services*. This was addressed in phase two of this research by conducting an ITE that comprised pre- and post-task questionnaires, a tagging task, and a post-task interview. The discussion presented here is based on data integrated from the quantitative and the qualitative methods used in the ITE, as previously discussed in Chapter 3 (see Figures 3.2 and 3.9).

##### **6.4.1 Overview**

In total 46 bilingual students from the three universities agreed to take part in the ITE; 18 from KU, 14 from the GUST in Kuwait, and 14 from the UoS in the UK. They included both male and female students studying different subjects and from different years of study.

##### **6.4.2 Library catalogue services**

This research found that students' frequency of library catalogue usage was moderate. Only 39.1% of the students stated that they search the library catalogue regularly between once a week to using it on a daily basis; however, none of them were from KU. In contrast, a noteworthy number of students (45.7%) stated that they used it but for less than once a month or never used it at all; most of these students were from KU and GUST. This supports the results found in phase one (Chapter 4, Section 4.2.1.2) and generally suggests that libraries need to improve their performance and services, especially in light of students selecting other places to

search for information, e.g. Google. This recommendation was also made by Alharbi and Middleton (2011) when they studied libraries in Kuwaiti higher education institutions.

With regards to the usefulness of library catalogue services only 32.6% of the students found the services useful; all of them came from the GUST and UoS. This supports the previous study by Tam et al. (2009) who examined the UoS library by interviewing undergraduate and postgraduate international students and found that these students generally made positive comments about the library catalogue (StarPlus).

On the other hand, most of the KU students showed a negative view regarding the usefulness of their library services; many of them supported their answers by saying that they do not use the library much. This matches Alharbi and Middleton's (2011) study of Kuwaiti university libraries, which found that "only for a minority of students, academics and administrators, the university library plays an important role in their lives" (p. 8). This also appears to be connected to their use of Google as the first place to find information. Accordingly, we can state that KU library offers the poorest services compared to the other libraries covered in this research, where it generally did not satisfy their users with the services they offer. This also supports the results discussed earlier (Section 6.2.1), and Al-muomen's (2009) observation that KU students felt uncomfortable when using the library system.

Several motives for using the library catalogue services were revealed by the students, with searching for 'books' to complete their coursework (e.g. assignments and presentations) being the main goal among them; finding other resources including e-resources, articles and audio-visual material were also mentioned as reasons to search the library catalogue. Tam et al. (2009:12) also discovered that students' "searching was quite course-centered, as they tended to use the library catalogue only when they needed to do assignments or prepare for examination", and mainly to search for books.

Despite this it has been observed that "the correlation between library usage factors and the perceived educational achievement is low" with the Kuwaiti university libraries (Alharbi and Middleton, 2011:7). Findings of this study show that students see that their 'teachers' have a core role in encouraging them to use the library,

mainly by providing a reading list or checking the quality of the references they used. This point should be reflected in library practices to improve library services mostly by co-operating with faculty members to encourage students to use resources offered by their academic libraries.

The findings also reveal some strengths and weaknesses in the library search systems from the students' perspective. Findings show that a group of students were satisfied with the 'search options', especially the advanced search one where they found it useful to narrow down the results page. This appears connected to the filtering options usually offered by academic library OPACs; however, users need to enter exact search terms to discover relevant information (Madhusudhan and Aggarwal, 2011). Students must therefore have the necessary information literacy skills to use these options. Al-muomen (2009) in particular specified that graduate students at KU faced difficulties when using the advanced search options. Students also stated that they were pleased with the 'variety of information resources'.

In addition, it also appears that offering easy access to information plays an essential role in using the library, especially with the remote access to information: "*They have good services, it much easier that going to the library to find information*" [P14, KU]. Yet, many students indicated that searching for information seems to be much easier when they know the exact information they need. This clearly reflects searching using traditional OPACs, which requires users to match their search terms against the records of a particular information resource (Large and Beheshti, 1997).

Despite some students being partly satisfied with services for searching the library catalogue, they also stated that getting 'irrelevant results' was annoying. Furthermore, students mostly were not aware of the services provided by their libraries. A significant number of them stated in the questionnaire and during the interview that they mostly prefer to Google to find information instead of visiting library websites, stating that: "*I rarely used the library website...I don't think they provide any interesting functions... I usually search Google if I need information*" [P6, KU].

This also supports the earlier findings discussed in (Section 6.2.1), and strengthens previous statements about the effect of Google on the libraries (University College London, 2008; Branch, 2003, ENDER, 2002; Online Computer Library Center,

2002). Furthermore, Tam et al. (2009:12) also indicated that UoS international students used Google on a daily basis including for their academic searching. This can clearly affect them when searching the library where they “generally use keyword-searching and seldom use author-search”. On the other hand, some of the students specified that Google or Google Scholar provided too many results that are not relevant at the time. A noteworthy group of students perceived finding information using the library catalogue searching services as ‘complicated’, for example one of the students commented:

*“What I don’t like is that there is no direct way to access the journals; I prefer to access the journals and databases based on the main topics... sometimes I search Google Scholar instead of using the library. If I cannot find what I am looking for I go to the library”* [P40, UoS].

In light of the above, libraries needs to find a strategy to improve catalogue services and encourage students to use the library in a more dynamic and engaging way. Particularly, because some students seem to be ‘not using the library’ online services at all and could not give useful comments about the research investigation. They obviously were not aware of the resources and the services offered by the library; what made it worse is their impression of ‘unnecessarily’ having to use the library, as stated by one of the students:

*“I don’t think I need it... I can’t evaluate their services... everything is available online where I can find any information from anywhere. I don’t think I am going to need the library to find books. I search Google a lot for coursework, homework, research and many things”* [P7, KU].

### **6.4.3 Language and searching**

Results show that more than half of the students (52.2%) have an English language certificate. This is largely connected to the fact that a minimum level of English is required to join many universities; this is not only in the UoS for the non-native speakers but also in the GUST where the main teaching language is English. This also applies in KU (e.g. the medical and science subjects). This statement stresses the huge influence of globalization in higher education institutions in terms of the role of the English language (Altbach et al., 2006).

In general, this research found that many students (69.6%) are learning in an English environment, and mainly being taught in English. Yet a notable number of them (30.4%) indicated that their language skills affected them when searching not just when searching for English information, but also for Arabic. This is a significant number that should be considered by the libraries when developing their services.

Furthermore, it seems that students' English educational background, and the main taught language in their subject area influenced their language skills which will in turn affect their searching success. As one of the participants said: *'Finding Arabic resources is worse than English. Because I studied in an English school and rarely do I need to search in Arabic. Plus I am not good at all in expressing myself in Arabic'* [P41, UoS]. This again stresses the impact of the language of the study area on the user's language skills.

In light of the above it is clear that, while all the participants are native Arabic speakers, they also faced problems when searching for Arabic information. This fits with the findings of Bordonaro (2007) who observed that English-speaking students might face difficulties in understanding words that are unfamiliar with when joining a university in another English speaking country.

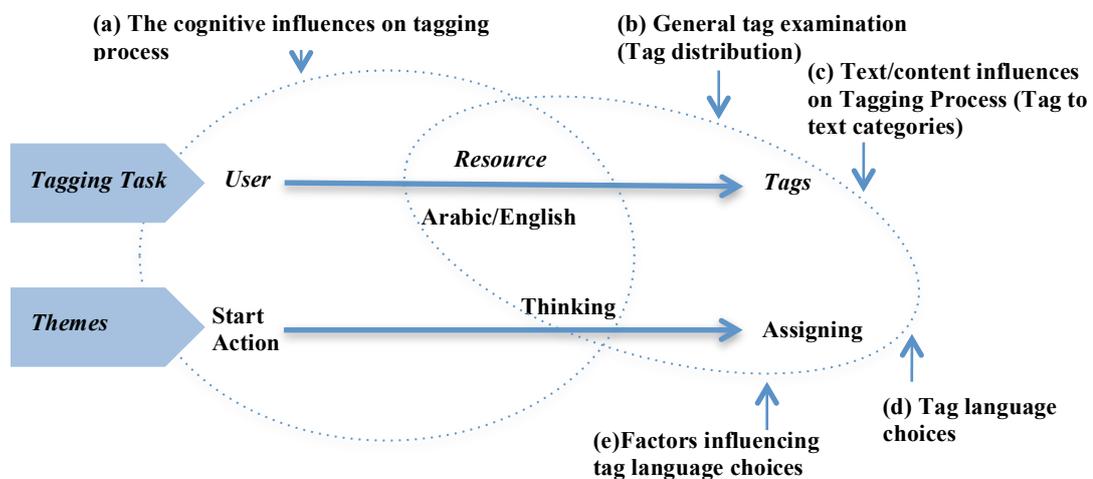
#### **6.4.4 Students' tagging behaviour**

Studying how users tag and interact with social tagging systems helps to understand users' tagging behaviour (Peters, 2009). The ITE results showed that many students (58.7%) had not used social tagging systems before; this was to be expected as the same was found in the survey results (Section 6.3.2). Accordingly, it has been acknowledged that this might limit students' contributions as a tagger in the ITE; as an earlier study observed, expert users can generally add better tags (Lee et al., 2009). Thus, during the experiment it was ensured that all the participants understood and were familiar with the social tagging system used as explained earlier (Chapter 3, Section 3.8.1).

Exploring students' tagging behaviour in this study covered a number of subjects; Figure 6.2 combined the earlier proposed student tagging behaviour models that were presented in Chapter 5. This explains the discovery of aspects influencing the process of adding tags during the ITE, beginning by asking *Users* (students) to select

*Resources* (Arabic/ English), and then think about assigning *Tags* to them. Different types of examination were undertaken including (a) ‘*the cognitive influences on tagging process*’, (b) ‘*General tag examination*’ (tag distribution), (c) ‘*Factors influencing tagging process*’ (tag to text categories), (d) ‘*Tag language choices*’, and (e) ‘*Factors influencing tag language choices*’; the findings of these examinations will be discussed in the following sections.

Figure 6.2 The Analysis Model of Students’ Tagging Behaviour



#### 6.4.4.1 The cognitive influences on tagging process

It has been found that the tagging process has been under-explored in previous studies. A general description of the cognitive process behind tagging and the process of categorization was explored by Sinha (2005), which was useful in capturing an overall understanding of the tagging process. The findings of this study highlights interesting aspects reflecting bilinguals’ cognitive influences of adding tags to information resources in Arabic and English.

Results showed that students’ mostly start the tagging process with getting an ‘Overview’ of the article being tagged. They tried to understand the main idea being discussed in the article believing that this will help them to create useful and precise tags. Mostly by quickly scanning the article, and most of them agreed that it is not necessary to get into the detail of the article at this stage: “*I just pick up the main*

*idea of the topic... it is not necessary to understand the topic in detail to tag it” [P25, GUST].*

The wording of tags and terminology used seems to be driven by different motives that reflect the cognitive and prospective use of tagging. Many of them specified that they created their tags to be ‘Simple’, ‘Easy to remember’, and ‘Understandable for future use’. Furthermore, some students appear to choose tags that have similar meaning (synonyms) to the terms occurring in the article being tagged, but were simpler. These synonyms were indicated as one example of tag ambiguity in using social tagging systems (Parker, 2006; Golder and Huberman, 2005) which affects their use as retrieval tools. It might be caused by the inconsistency of the tags used that makes it problematic for users to be sure that the entire relevant information has been found. However, tags were preferred by many students to support information access. This may also reflect their need for simplicity and increasing access points in searching for information; it also could be related to the difficulties that they faced in the traditional searching process that required formal search terms (controlled vocabulary).

Students also indicated that when choosing their tags they did it in a way that made their later use of tags easier. For example, they revealed that they wanted to remember the information that interested them in the first place when they looked at tags at a later date. This clearly reflects facilitating future discovery or retrieval of information by using tags, which has been identified as a core factor in using social tagging systems (Feicheng and Yating, 2014; Gupta et al., 2011; Wetzker et al., 2010; Spiteri, 2005).

Besides facilitating later access points to information resources through tags, many students thought that they wanted to add simple words as tags. Other students thought that it was not necessary for details to be tagged; however, tags need to ‘Reflect the main topic’ of the article. Another group of students suggested that tags should be ‘Descriptive’ of the actual text saying that it would make better use of social tagging systems:

*“When I read something I can tag it with words that describe the key issues discussed in it so when I come later I will go directly to what I*

*found useful and not spend time again on identifying the main ideas”*

[P16, KU].

Descriptive tags were considered as “exceptionally helpful in providing metadata about objects” (Marlow et al., 2006: 35). They can also reflect tag quality, as Farhan and Sanderson (2009:310) stated: “the ability to describe the content of electronic documents leading to the identification of access points recognized by the majority of users... facilitates information organization and retrieval”. Furthermore, seeing tags as descriptive pointers that reflect information resources can enrich content or the bibliographic data which [was] identified as a main feature of the next generation library catalogue (Ballard and Blaine, 2011). In addition, some students stated that they wanted to create ‘Searchable terms’ as tags, stating that: *“I was thinking about the words that I would use if I want to search for something... It maybe not clear for everyone, but it can help me”* [P13, KU].

This is an important aspect of the potential usefulness of social tagging, which gives a positive sign for using tags in the academic library; especially as searching tags was perceived as an important feature of social tagging (Vuorikari and Põldoja, 2010; Furnas et al., 2006). Furthermore, a minority of students pointed out that tags should be ‘Multiple words’ where they saw that this would be helpful in providing a better description of the information discussed in the articles. Others saw that having ‘More tags’ would give a better understanding of the article content: *“I think when I see more than one tag assigned to an article I will have a better indication of the main text”* [P40, UoS].

Additionally, despite the fact that most of the students were introduced to social tagging systems for the first time, most of them felt ‘Confident with their own tags’. This confidence reflects the usefulness of students’ tags in describing information resources, so that when they use them in the future they can recall the specific piece of information which helped them use tags effectively. The majority of the tags showed that they added meaningful tags that gave a useful representation of the articles. Some of them said they may not apply tags to the whole article but more likely just to the information that they found interesting. Furthermore, students perceived that the tags are their own descriptions of information which would make it easier for them to find the information later. As one of the students indicated:

*“I think my tags are accurate for parts of the articles, maybe not as a whole, but it describes specific points that I want... so, yes I think my tags can be headlines for the article” [P11, UoS].*

Using students’ language in the form of terms (tags) to facilitate and enrich access points to predefined or other information resources is a core benefit of using social tagging systems, especially since “tags are closer to natural language than to controlled vocabulary” (Peters, 2009:192); thus they would be closer to the language of the students.

In relation to the impact of students’ language skills on their tags, a small number of students highlighted that their inadequate language skills have a negative effect on their confidence with their own tags. The issue was mostly associated with writing English tags, when students showed that they were not completely sure of the meaning of the English tags they wanted to add. This made them copy/paste the terms from the article. This happened with English but not with Arabic tags; this is typically because it is their mother tongue and thus they were confident using the language, as one of the students said:

*“With the Arabic tags I know exactly what I wrote so I think I will use the correct tag to visit the original article when I look at my tags later, but with the English I am not sure because I copy/paste some of the tags so I might not be 100% sure of all of them” [P26, UoS].*

#### **6.4.4.2 General tag examination and the influences factors**

The dataset of tags collected in the ITE (see Chapter 3) was analysed to explore the frequency of tag distribution to provide useful information for further understanding social tagging practices, particularly with those that served bilinguals in an academic environment.

The results of student tags occurring more than once in each article, showed that the highest frequency tag associated with English articles was repeated 21 times in a single article (see Chapter 5, Table 5.5). This demonstrates that students typically agreed on a single tag in each article. In social tagging systems this will increase the appearance of the tag and in turn increase the access point of the tag or information which is naturally be displayed in the tag cloud or list. This can be in both popular

tags and tags associated with a particular information resource, group of users, users themselves, or a specific topic. This is especially the case as it is believed that “users will be more expert when more people have the same opinions” (Jung, 2010: 7).

The frequently-used tag per article groups (Arabic and English) found that within the Arabic articles, the highest tag was ‘مصر’. This tag means ‘Egypt’ in English, which was also created as a tag by several students. In contrast, the consistency of tags was found to be higher with the English articles than with the Arabic ones. The most frequently-used tag found was ‘Facebook’. In general, students’ agreed on a limited number of tags per article. This was clearly affected by the nature of the tagging task, which restricted tag growth.

#### ***6.4.4.3 Factors influencing the tagging process***

In the tagging process users can be influenced by different factors that can affect them when choosing their tags. These influences can “act on the design of the tags in particular” (Peters, 2009:190). As presented earlier in Chapter 2, Sen et al. (2006) showed a number of factors that could influence users’ tagging behaviour, including: personal tendencies and previous experiences from other tagging systems and users’ own understanding of the world.

This study explored factors influencing the tagging process and users’ choice of tags, mainly through the questionnaire and the post-task semi-structured interview (Chapter 5, Section 5.2.5.2). Many students (76.1%) perceived that the full text of the article was a major factor influencing them when adding tags. ‘Headings’ (e.g. title and sub-headings) mostly affect the creation of their tags. This was confirmed by many students in the interview. As one of the students said:

*“For example when I read the title of the article many ideas come to my mind where I tried to type the most related ones to keep it clear for me and for the others” [P8, GUST].*

These tags might generally be considered as non-added value tags, particularly those that were exactly the same as the title (Peters, 2009). This is mostly because the title of resource was indexed and registered by the system anyway.

The full text was followed by the abstract of the article, which was also mentioned by more than half (54.3%) of the students during the interview. By contrast, the bibliographic information of the article appeared to be a minor influencing factor, where during the interviews students just occasionally mentioned ‘Keywords’ as an influences factor on their tags, together with ‘Authors’. Generally, tags that match the information resource’s title, abstract, and bibliographic information have less value in increasing access points as they are normally indexed by the IR system. Yet they can still be useful for students’ personal retrieval and information management. This aligns with Vuorikari (2009) who demonstrated that using social tagging was considered as useful in helping users to discover learning resources in a multilingual context, particularly with tags that were categorised as self-organisation tags.

In addition, ‘Familiarity with the topic’ discussed in the article was perceived as an important influencing factor by many students; they commented that the better they understand or have previous knowledge of the topic of the article being tagged, the more accurate tags they would assign. This can be related to the expert taggers as they were perceived to create better tags (Lee et al., 2009). As one of the students indicated:

*“With the topic that I am aware of it’s easier to notice the keywords, but if not I will put tags that make sense to me. I am not sure if this is what the reader wants to know about the article” [P45, UoS].*

Yet many the students expressed an opposite opinion stating that it is not necessary to be familiar with the item being tagged. Noting that: *“It affects but not that much... when I look at the article for sure I am going to have an idea of the topic that helps in writing the tags” [P17, KU].* Students believed that tags do not need to reflect details of the topic discussed yet they need to make it easier for them to locate or find the tagged item later on.

#### **6.4.4.3.1 Tag categories**

It has been observed that tag categorisation can help in understanding users’ tags and their usage, commonly by dividing them into several categories. Previous studies (Al-Khalifa, 2007; Hecker et al., 2007; Kipp, 2007; Kipp and Campbell, 2006; Golder and Huberman, 2006) focused on exploring the linguistic characteristics of

tags, their differences from ‘normal’ language and the occurrence of tags within the content of the tagged item and the types of tags (Peters, 2009). Tag categories were also perceived helpful in shaping the personal tendency of students’ tagging (Sen et al., 2006).

As explained earlier in Chapter 3, content-related tag categorization was used, which is a sub-set category of the Tag-to-Text Category Model. This type of categorization was considered appropriate for the tags dataset that resulted from the tagging task in the ITE. The model has also been adapted by Hecker et al. (2007) who studied 500 tagged articles from Connotea and found them useful in understanding users’ tags, in terms of the tag types and how it is different from, or identical to, words occurring in the text.

Results across all articles demonstrated that with the English articles a high number of students’ tags (222) did not occur in the full text of the article. Similar results were found with the Arabic articles, yet the total number of tags which did not occur in the full text was higher (382) than those assigned to English articles (Chapter 5, Tables 5.9 and 5.10). This suggests that even if a number of students indicated that they were influenced by factors of the article being tagged, in practice their tags were not necessarily influenced by the information resources. This is interesting as these tags can increase subject access by offering additional descriptions to information, which can be found by browsing or searching tags. This is particularly noteworthy since this would positively improve their tagging behaviour, which would help in increasing the access points to information resources mainly with information systems that employ traditional indexing methods.

These results support Hecker et al.’s (2007:11) findings which showed that 30% of the tags do not occur in the text; this was seen as providing “some kind of novel information which cannot be provided by full text analysis of the respective documents”. This also supports Farooq et al.’s (2007) findings in terms of suggesting that the non-obvious tags were perceived as “additional intellectual power” tags because they reflect the content of the item being tagged which made them higher in their value to describe the resources.

The second most common category of tags found in the full text totalled 194 assigned to English articles and 138 assigned to Arabic articles. These categories

were considered useful in enriching the common metadata description of information resources that is normally used in traditional indexing. Many tags occurred in the abstract: 84 for English articles and 59 for Arabic articles. The remainder of the tags assigned occurred in the title (73) and in keywords (17) for English articles, and for Arabic articles 35 of the tags occurred in the abstract and 10 were the same as keywords.

This reflects student perceptions about the factors influencing the tagging process discussed in the previous section. It is also similar to Hecker et al.'s (2007) results when showing that the highest categories go to tags that match the title (49%) and full text (42%), followed by tags that match the abstract (9%). They explained that having tags that match title, abstract, author name, and keywords was important as either users might not bother to read the full text or might not have access to the full text, especially as these elements can often be a prominent feature of documents, such as scientific journals provided by digital libraries or an online journal.

#### ***6.4.4.4 Tag language examination***

The description of the tagging process related to tag language, particularly in relation to when students chose to assign tags to resources will be discussed in the following sections.

##### ***6.4.4.4.1 Tag language choices***

Studies about tagging in multilingual environments showed that, although users are not native English speakers, they choose to add tags in English in addition to their mother tongue language (Ochoa and Vuorikari, 2009). Vuorikari and Pöldoja (2010) discovered that user tags in diverse languages and English were most common. While these studies are regarded as useful, they are limited; Ochoa and Vuorikari (2009) suggested that there exists a need for further investigation to better understand personal tagging preferences. This indicates that the language of users' tags has an influence on the tag display, especially in promoting cross-language information resources.

Studies that have explored bilingual (Arabic/ English) use of social tagging have generally studied tags that existed in social bookmarking services (e.g. Delicious), and not explored tags in an academic context. El Hussein and Nakata (2010a) found

that most of the users added a combination of Arabic and English tags to Arabic information resources. Another study by El Hussein and Nakata (2010b) found that most of the Arabic tags were assigned to Arabic websites. Yet there were some Arabic tags assigned to websites in other languages, which was also confirmed (El Hussein, 2012). Aspects of cross-language tagging behaviour were also discovered by El Hussein (2012) showing that users usually added tags in the Arabic language for English content and vice versa.

This study differs from other studies in terms of having students as users add tags to Arabic and English articles (academic documents). Results showed that students mostly added tags identical to the main language of the article: 91.3% of them preferred to add English tags to English articles, and 45.7% added Arabic tags to Arabic articles. Yet a notable number of the students (23.6%) assigned tags in both Arabic and English. This is similar to El Hussein and Nakata's (2010a) findings, where they found that the highest number of mixed language tags was assigned to Arabic articles that contained English and Arabic tags. This also confirms Wu et al.'s (2012:190) observation that bilinguals' preferences allowed them "to set up tags in their native languages for multilingual resources".

Additionally this study shows that selecting the language of the tags mostly reflect students' learning language, where the maximum numbers of English tags (101) are from the UoS. This is mostly because English is their main language of study; whereas students who added the highest number of Arabic tags (243) were from KU where Arabic is the main language of study for many of them. In addition, it was interesting to find that some students (21.7%) decided to add English tags to Arabic articles, but the reverse was not the case with the English articles where few students assigned Arabic or mixed language tags, which is mostly effected by the main language of their studies.

Furthermore, results showed a close match between students' perceptions discovered in the questionnaire in phase one and their actual tagging behaviour revealed in the ITE in phase two in relation to their choices of tag language. Overall, a student tended to add tags identical to the content of the item being tagged. This is followed with their preference to add a combination of Arabic and English tags, and adding cross-language tags which differ from the content language of the item being tagged.

It was also discovered that with Arabic articles students assigned 40 tags using English characters to describe Arabic words/terms (e.g. daleel, 3ilmelnafs); these tags were mostly found in the full text of the article being tagged. The majority of those students were studying in an English-based educational environment (the GUST and UoS). Students commented that they commonly used English keyboards saying that: *“I prefer English when writing because nowadays we use Arabic words in English characters, so it hard for me to find Arabic letters on the keyboard”* [P26, KU].

This behaviour was also found in a study by El Hussein (2012), where 46 of the users added English tags using Arabic characters, and a minority added Arabic tags using English letters. Although those tags can be treated as ambiguous tags, which might be excluded from the retrieving process, it is still worth highlighting this since it reflects the actual tagging behaviour of prospective bilingual students.

#### **6.4.4.2 Factors influencing choices of tag language**

A number of factors were discovered that influenced students when deciding upon the language of the tags they assigned. This mostly reflects the tagging behaviour model by Sen et al. (2006), particularly in relation to the aspect of personal tendency reflecting users’ choice of tags, which came from users’ preferences and ideas. Results show that many students (60.9%) considered the language of the item being tagged as the major influence on their tag language choice. This confirms the results discussed in the previous section about the tag language preferences and the actual tags assigned by the students during the ITE. Students also stressed that it is easier for them to use the same language as the content. They also believed that this will be more practical in terms of supporting their prospective search terms which usually matched the language of information they want to find. As one of the students indicated:

*“I thought about putting English tags as Arabic, but then I decided to put them the same as the article itself, because if I want to search for Arabic I will use Arabic words. I think this way will be easier for me”*  
[P7, KU].

Results also point out that students' own language preferences are a main influence on many students (39.1%). This research suggests that, although English is the second language of all the students, many students commented that they feel more 'Comfortable' when using English. Vuorikari et al. (2007) also showed that people usually used the language that they are familiar with and mostly decide on using the English language when tagging. In this regard, one of the students said that:

*"It's easier for me to express in English... also when I search the Web I usually search in English, even if I want Arabic information I just type it (in Arabic) at the end of the search query, or I translate the result... so all the tags I used in the task was in English"* [P14, KU].

Additional results show another related reason which is the 'Education' factor that consists of both the previous and current education stages of the students. To explain this students indicated that their area of studies drives them to use English not only with English resources but also when using Arabic resources. They also showed that they were mostly required to search in English if they wanted to find information for their coursework; therefore they preferred to use English tags to facilitate their future activities (e.g. browse or search tags). In relation to this one of the students commented:

*"Generally, I prefer using English for academic work, that's why I put all my tags in English including the Arabic articles. Because even if I use Arabic resources, I will write them in English at the end, so it's better for me to use English from the beginning"* [P39, UoS].

This also supports previous studies about multilingual user behaviour which showed that those users habitually search in the same language used in the information they wanted to discover (Dunham and Flores; 2014; Clough and Eleta, 2010; Aula and Kellar, 2009). It also reinforces the essential role of the language used in a course of study on shaping students' information seeking behaviour (Kakai et al., 2004).

On the other hand, findings also showed that some students (28.3%) indicated that their language abilities influenced them when choosing the tag language. For example, some students commented that their previous education was mostly in English, which made them lack proficiency in Arabic vocabulary, grammar and

expressions. Therefore, they decided to use English tags even with Arabic articles because they cannot express their thoughts in Arabic.

Similar factors of influence were discovered in choosing Arabic tags, including ‘Comfortable’ and ‘Education’, where some students found it easier and more convenient to use Arabic tags. Others commented that their previous education affected them to be better in Arabic than English. In relation to that, an interesting comment was provided by one of the students showing how bilinguals switch between languages based on the purpose of use, as well as the skills they have, saying that:

*“Maybe my problem is in English and Arabic, because my original language is Arabic but my study is in English. I never came across a topic that had mixed languages so the terminology that I describe in English are hard for me to translate in Arabic and vice versa because I don’t know what they mean in the other language” [P43, UoS].*

#### **6.4.4.4.3 Tagging in mixed languages (Arabic / English)**

Opinions about using mixed language in social tagging systems can differ. For example, Guy and Tonkin (2006) observed that in a multilingual tagging environment the chances of having misspelt and tags with different characters would increase, which was perceived as associated with technical issues. However, focusing on users prospectively having tags in multiple languages was generally perceived as beneficial. Wu et al. (2012) found that the Chinese students had greater preferences in having the ability to add tags in their native language for information resources, particularly for multilingual resources. Furthermore, Vuorikari et al. (2007) showed that people tended to add tags in different languages and used interfaces in languages different from their mother tongue language.

Hence, it was pertinent to explore students’ perceptions about having mixed languages. Generally perceptions resulted from students indicating that tags should match the language of the information itself. They believed that assigning tags in both languages for a single information resource could be unclear and might be misleading for the future use of tags for them and others. As one of the students said:

*“I didn’t think about mixing the languages... when I look at my tags it will be clear to differentiate between the two languages... I think it going to be easier for me and others... the mixing would be confusing” [P30, KU].*

Other students were more open to accepting tags in multiple languages. They indicated that in some cases they might need to add tags that are not identical to the language of the information being tagged; this supports their previous perception and their tags added during the ITE. Others gave examples of adding English tags to Arabic articles especially if the English word stands out in the actual text; this was confirmed by their usage of tags:

*“Except one Arabic article I use English tags because it contained English words, which occur more than once in the full text, so I use them like ‘product’” [P24, GUST].*

In relation to displaying tags in mixed languages (tag clouds or list), results show that the majority of the students accepted the idea, especially since they can understand both languages (Arabic /English). Yet a group of them stated that mixed languages would confuse them, and suggested the idea of splitting the Arabic and English tags from each other based on their user preferences, which is interesting to consider when using social tagging in an academic library. Specifying the language of the article during the process of adding tags, usually in the add tags form, would be a useful option to make it easier to find the correct information resources in the future.

In addition, having mixed languages in social tagging systems was perceived as useful by the majority of the students, particularly since this was perceived as providing a better picture in describing the information being tagged. They also stated that it can aid in supporting some students’ language skill weaknesses, as well as assist them in finding information. An example of their comments follows:

*“There are a lot of students who are not very good in English. For example, when Arabic tags assigned to English resources this will give an overview of the topic of the articles. And I think this can help students to understand the topics and search for more information. I remember how some students in my English class those were not very good in*

*English and try their best to learn and improve their English. I believe Arabic tags will help them a lot” [P20, GUST].*

This is also aligned with Eleta and Golbeck’s (2012) observation when studying tagging in both the English and Spanish languages of an image collection. They suggested that allocating tags in different languages would bridge the language barriers and improve access to the collection.

#### **6.4.5 Overview of the perception of social tagging and prospective use**

As it is perceived that the success of using social tagging is based upon users’ usage and contribution, in consequence understanding some aspects of student perceptions and prospective usage is considered as valuable in supporting the development of academic libraries particularly when deciding to implement such a system. Aspects were explored based on students’ experience of using Delicious as a social tagging system during the ITE.

It was interesting to find that the majority of the students (84.8%) indicated that social tagging was easy to use; some students indicated that the process was simple; saying that: *“I feel it is easier, especially as I will be already searching for something, so it’s easy to add a number of tags to each article” [P19, GUST].* This reflects Sinha’s (2005) arguments when describing the process of tagging as simple, especially the cognitive process of the tagging idea. This can be considering as a positive motivation to use social tagging systems within an academic library catalogue.

##### **6.4.5.1 Tagging motivation**

Scholars have studied users’ tagging behaviour on popular social tagging systems (e.g. Flickr, Delicious) to categorise their tagging motivation, which was mainly presented by Marlow et al. (2006) and Gupta et al. (2011). These categories have been adopted to investigate bilingual students’ tagging motivation, including: future retrieval; contribution and sharing; attract attention; self-presentation; opinion expression; task organisation; and social signalling.

The quantitative findings in this research show that the majority of the students (67.4%) stated that they would use social tagging for ‘Future retrieval’. This was also confirmed by the students during interview, showing that tags would facilitate the

process of finding pre-defined information, and make it easier to refer to the points that interested them in the first place. Students' explanations directly reflect the personal retrieval incentive described by Marlow et al. (2006) in the future retrieval motivation category. Facilitating future retrieval as a motive was also found as one of the features that attract users to use the Web search engine in a previous study by Sadeh (2007). This can be considered as an encouragement to offer social tagging in academic libraries especially since use of the online bookmarking service is readily available online; this was given as an example to use the open Web. In this regard Vuorikari (2007:209) indicated that a "bookmark does not always mean a positive vote for the content"; but, even if it is not encouraging, this could also be considered as an advantage for other users' retrieval processes.

The second motive selected by numerous students (54.3%) was 'Task organization', which is also confirmed during the interviews where the students mentioned situations of possibly beneficial tag usage. These occur mainly when searching the library catalogue, indicating that they would add tags to useful information resources they found with the name of their coursework (e.g. assignments and projects), the class name, or maybe the coursework name/title. This was considered by them as a good way to refer to information saving them time and effort. For example:

*"I also can use them to organize my ideas related to each coursework assignment... I can write the tag with the name of the assignment, which will make it easier for me to find information" [P8, GUST].*

This can be connected to Tam et al.'s (2009) findings that students like to have features that help in saving them time and supporting them to carry out faster and more effective searches. Previously discussed findings also showed that bilingual students were keen to have features that saved them time and effort.

In addition, other students detected the usefulness of repeating tags with information that has similar topics. They felt that having the same tag for a number of relevant articles would be more manageable, and help in collecting the resource. Generally, students' views of using tags for organization purposes took a broader view than Gupta et al.'s (2011) explanations that were limited to giving examples of tags such as 'toread', and 'todo', as one of the students commented:

*“It would help me to sort my search... if I have many articles the tags will help me to find the articles again especially if I type the same tag to number of resources that talk about the same thing” [P38, UoS].*

Gupta et al. (2011:451) described the sharing category as adding tags to “the resources’ conceptual clusters or refined categories for the value of either a known or unknown audience”. Findings show that ‘Sharing information’ was an important reason for using social tagging systems given by a noteworthy number of students (41.3%); their views came from different perspectives. They suggested that tags can be used as an alternative way of sending useful references between friends and classmates: *“Instead of copying the references to my friends I can tell them look at my tags in the system to find them” [P28, GUST].* It also could be useful for group work assignments, where tags can support students: collecting relevant resources and tagging them in their own words. Additionally, they highlighted that with tagging functions they can identify people who share similar interests, which could be beneficial. As one student said:

*“I can also identify users who are interested in the same topic that I am studying, where looking at their tags and resources will help to share information and exchange thoughts... this is a great benefit of tagging” [P40, UoS].*

This point has been highlighted by Noruzi (2006) showing the value of social tagging features in supporting users in creation of a social connection through the use of tags. In this regard Marlow et al. (2006:35) said that: “Many users begin with the conception that they are tagging for themselves; some begin to appreciate the sociable aspects over time, while others have no interest in that component”.

Furthermore, social tagging can be different when users are offered the choice to set their tags as either private or public. Therefore, students’ opinions about sharing their tags were explored. Results show that many of them are willing to set their tags to public, considering that this would be valuable for their academic information use. For example, one of the students indicated that:

*“It’s helpful, especially if all the people make the tags public. Let’s say I took a module that my friends finished... it would be good if I can go and check their tags to find relevant information” [P6, KU].*

Others seem to be influenced by the community; in other words were encouraged to share their tags if other students also do so. This behaviour seems to be expected as it had been previously mentioned by Marlow et al. (2006:35) who found that social tagging users would be “persuaded by the norms of their friends and how they think that a particular system fits into their use”.

Furthermore, some students showed that they might keep their tags private. For example, some said that they made an effort to find the appropriate information for their coursework so might only send them to specific people or share them after finishing the assignment. Other students provided more personal explanations for keeping their tags private where they might be not sure if their tags would be understandable by the public. This is really important in using social tagging systems, since it would be good to give students the choice to either share or not share their tags, especially as in the end their tags will support them in using information.

‘Opinion expression’ and ‘Social Signalling’ were also considered as useful motives to use social tagging systems by some students (19.6%). They indicated that via tags they could express their thoughts about the information being tagged. For example they might assign their names as tags so other students can see what they are reading or interested in; as one of them said: *“I may also put my name as a tag so my friends know that those tags for me so they can they look at them”* [P8, GUST]. They also gave the example of looking at their teacher’s name and the information they tagged. This was in line with Gupta et al.’s (2011:451) description of opinion expression where users can convey their opinion about the tagged information. The ‘Self-representation’, and ‘Attract attention’ motives got the fewest (6.5%) responses from the students.

#### **6.4.5.2 Future use**

It is interesting to find that more than half of the students (56.6%) would use the tagging features regularly when using their academic library catalogue services;

30.4% would consider themselves as average to rarely potential users. This gives a positive indication of good practice for the use of social tagging, especially since active users are core to the success of such a system. Comments about future usage were generally positive; however, some were not sure about trusting other students' tags in describing the resources, commenting that: *"I am not sure if I would trust other people's tags in describing the information, but I will definitely use it ... it's really helpful"* [P13, KU]. This stressed the need for effective tutorials showing social tagging functionalities and prospective advantages of tags in supporting their information use not only for themselves but also for others.

This is also associated with media and IL skills, where users need to learn how to make the right choice in contributing and selecting the information they use in their academic context. This reflects the importance of "authenticity, validity, and reliability" of information, and in evaluating information (ALA, 2000).

Interestingly, students indicated that adding social tagging features in academic library catalogues would encourage them to use the library more; it would also help them to overcome some of the perceived weaknesses in the library services. In particular it would motivate them to use the library because tags would help them to access resources, especially when they had difficulties in locating relevant information previously found in the library catalogue. This is very valuable for the development of academic libraries, as one of the students commented:

*"I think tags will make the search easier, and when you make the search easier you will encourage the people to use the library. I think people don't use the library because it's difficult to use and because of the weaknesses of the services they provide. So, I think tagging will add value to the library"* [P7, KU].

Nevertheless, many students indicated that they need to be aware of social tagging benefits for them to use it regularly and get the most from its features, as the following shows: *"I think many students will like it especially when they learn the benefits"* [P1, GUST]. This is mostly associated with the concept of tagging literacy, which will be discussed in more detail in Chapter 7 (Section 7.3.1.2). In relation to this, they recommended that the library should teach them how to add good tags and how to use other related functions (e.g. sharing, browsing) offered by the system.

This aligned with Kramer's (2010) suggestion that educators should focus on introducing tagging systems to the students stressing the advantages for effective usage of tagging functionalities.

In relation to that, the most appropriate advertising methods were explored that came from students' perceptions. Results show that students generally perceive that the electronic tools are good in promoting new services. Yet it seems that some methods are considered as being more effective than others. For instance, providing clear guidelines about how to use social tagging over the library website homepage, the main searching webpage or displaying announcements through the digital screens placed in the library and across the university campus, were recommended as helpful.

In addition, social media tools were considered as a valuable way to reach, notify and teach students, particularly that they used these tools on a regular basis. For example, several students suggested that *"they can tell us about tags in Twitter, I check it all the time"* [P33, UoS]. Furthermore, mobile phones were considered as accessible which could help ensuring reaching everybody. On the other hand, sending emails was not perceived as an effective way to reach the students as the majority of them do not check their emails regularly, and they usually ignored announcement emails. For example, one said that: *"Other ways may be better than the emails, because in my perspective a lot of students ignore it"* [P37, UoS].

Another group of students also suggested that their faculty members can have a valuable role in promoting social tagging systems to them particularly if the teachers themselves use the system, which would encourage them to use it. This reinforces the point made earlier that they normally give more attention to information delivered by their teachers. For example, the following comment shows this: *"I think the best way is by our teacher. I think the students will consider it in this way"* [P13, KU].

#### **6.4.5.3 Usefulness, recommendation and the importance of social tagging systems**

Bilingual students' perceptions give an indication of the usefulness of social tagging systems. A high number of students (76%) stated that having social tagging features would be a beneficial tool for their academic library usage; a high number of these

students (34.8%) were from KU. This stressed again that the KU library is the one that needs the most development.

In addition, the majority of the students (82.6%) said they would recommend using social tagging to other students; likewise many of them (78.3%) saw social tagging as an important tool to be added to academic library catalogue services. This supports Tam et al.'s (2009:20) study; however, their findings showed that some students' considered tagging features (e.g. tag clouds) as useful, especially in making the library catalogue "look modern and fancy". In addition, they also found that some students saw social tagging as an advantage; for example one of their participants indicated that: *"I like tags very much... because it suggests some other term that is related to my search and probably I could not think of before... and I can just have to click on it"*.

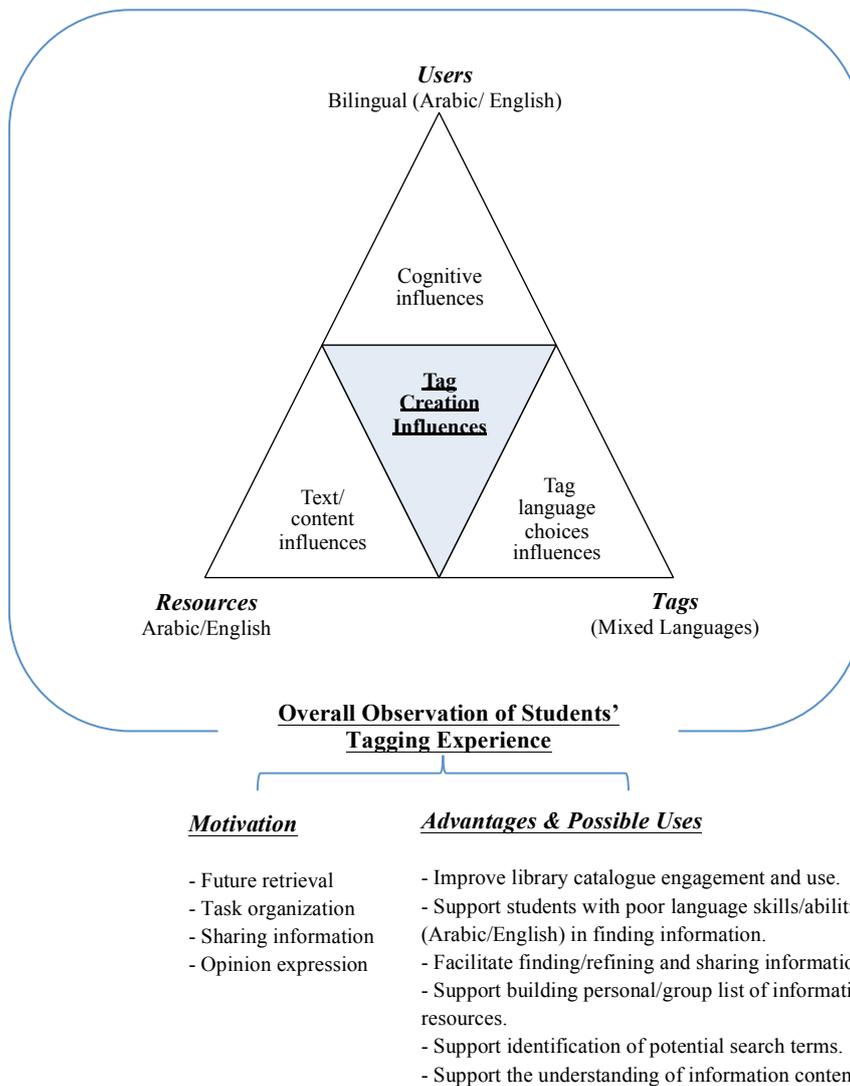
It is noteworthy to recognize that more positive responses were gained from KU and the GUST students about recommending and perceiving social tagging as an important tool. This mostly suggests that KU library catalogue services need to be developed more than the other libraries.

#### **6.4.6 Proposed descriptive model of bilingual (Arabic/English) students tagging behaviour**

Based on the findings of the main study presented under research question (c), a descriptive model of bilingual (Arabic/ English) students' tagging behaviour emerged, reflecting the aims of the research. Figure 6.3 shows the proposed model which illustrates the interaction between the main elements of the tagging process including: *Users* which refers to bilingual (Arabic/English) students; *Resources* which refers to the tagged item in both languages (Arabic/English); and *Tags* which reflects a collection of tags in mixed languages. The model also describes the influences factors on the creation of tags that was comprised of: the *Cognitive influences*, which were discussed previously in (Section 6.4.4.1), that mainly explains influencing factors of adding tags to information resources in two languages: Arabic and English, where students specified that the terminology and wording of tags should be simple, understandable, search terms tags; *Text/content influences* which were discussed previously in Section 6.4.4.3 that focused on the influences of the tagged items on tag creation, including tags occurring in the full

text such as the title or abstract; tags not occurring in the full text; and *Tag language choices influences* which were discussed previously in Section 6.4.4.2 that concentrated on the influence of the tagged item language on students' choices of the tag language.

Figure 6.3 A Descriptive Model of Bilingual (Arabic-English) Students Tagging Behaviour



### 6.4.7 Summary

This section has discussed aspects regarding students' tagging behaviour that have been integrated from the multiple methods used in the ITE (pre- and post-task questionnaire, tagging task, post semi-structured interview); the following will highlight key findings.

Students' tagging behaviour shows positive practices, particularly regarding the cognitive influences when assigning tags (Section 6.4.4.1), where the majority of them stated that they created their tags to be simple, easy to remember, understandable for future use, reflect the main topic, and searchable terms, believing that this would make their later use of tags easier. Students were mostly influenced by the full text of the article, including headings (title and sub-headings); this was followed by the abstract of the article; these might be considered as less valuable in increasing access points as they are normally indexed by the IR system. Furthermore, many students specified that their familiarity with the topic discussed in the article being tagged can have a high impact in making more accurate tags to describe the content.

It was interesting to discover that the majority of students' tags were considered valuable to increase access points (tags not occurring in the full text); other tags appeared supportive for catalogues that use traditional metadata only to increase access points (tags found in the full text); whereas some tags (tags occurring in the abstract) can be useful as the catalogue excludes abstracts from the retrieving process. However, they can clearly aid students' own information practices (e.g. organizing information).

Results also discovered that the majority of students added tags identical to the main language of the article; yet, many of them assigned tags in both Arabic and English. It was also exciting to find that some students added English tags to Arabic articles, yet few students assigned Arabic or mixed language tags to English articles. Overall, it can be stated that selecting the language of the tags mostly reflects students' learning language.

Additionally, results indicated that the majority of students agreed with adding social tagging in library catalogues, and showed that social tagging was easy and simple to use; specifying that the main motives to use such a system seem to be future retrieval, task organization, and sharing information. They were also optimistic regarding having tags in mixed languages considering that this would be more beneficial in providing a better picture of the information being tagged.

## **6.5 d) How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?**

This research question was designed *to explore librarians' perceptions about students' library usage, as well as their views about using social tagging in academic libraries*. This has been addressed in phase two of the research mainly by conducting semi-structured interviews with librarians from KU, GUST and UoS. The findings will be discussed in comparison to students' views when applicable.

### **6.5.1 Students' library catalogue usage**

Getting an overall view of students' library usage from the librarians' point of view was helpful especially since it could help us to recognize the weaknesses and link them to the potential use of social tagging in a way that would overcome the weaknesses and support students when using the library catalogue. Findings showed that student usage slightly differs from one library to another; however librarians generally perceive that students only made moderate use of the library catalogue. Furthermore, the majority of them have been aware that students commonly refer to Google instead of searching the library to find information. For instance, one of the librarians commented that: *"Students thought that Google is the best source to find the information"* [L5, GUST].

This generally lined up with students' responses on using Google or other Web search engines to find information, as discussed earlier (Section 6.2.1 and 6.4.3). The findings also support previous studies that highlighted this issue. For example, Kakai et al. (2004) found that the Internet is the most popular source for almost all of the students to find information for their academic coursework. Online Computer Library Centre (OCLC) showed that an important number of students used commercial search engines as a starting point for their coursework (OCLC, 2002). Similar indications were also found by Caroline et al. (2010) and Ozel and Cakmak (2010) with regard to students' preference to search using Google rather than the library catalogue.

Caroline et al. (2010:64) stated that it is not a problem to use Google, particularly if Google Scholar was used to find information for an assignment; however, "to find

information of acceptable quality it is important that search strategies are applied and information is evaluated". This is an important point, especially as libraries already have Google Scholar links in their websites or have recently added them, as mentioned by one of the librarians from UoS: "*Also we are now linked to Google Scholar, so they can access the full text through our database*" [L5, GUST]. This is also connected to the point made by Brophy and Bawden (2005:498) that "Google is superior for coverage and accessibility" in comparison to library systems, yet the library provides greater quality of results in contrast to Google.

In light of the above, libraries need to work on supporting their students' IL, especially since it has been observed that students mostly rely "on one-keyword searches to find the answers" (Timmers and Glas, 2010:46). This makes it difficult for them to select the appropriate terms or keywords. An early observation by Larson (1991) indicated that many students had difficulty in formulating a subject search. In turn this might reduce their usage of the academic library catalogue because they need to be more precise in their search terms to successfully fulfil their information needs.

This is also related to the fact that many library catalogues employ query-based systems. This makes searching the OPAC, particularly by subject, perceived as problematic by students, mainly because it requires matching their queries with the item record (Villen-Rueda et al., 2007; Large and Beheshti, 1997; Borgman, 1996; Matthews et al., 1983). For that reason, libraries need to seek for more initiatives to promote and improve their facilities to reach a broader range of students, particularly as the library provides a wide range of scholarly and quality information resources that should not be missed by the users.

Librarians in this research connected the lack of students' usage of the library catalogue to other observed factors that might explain their attitude. For example, KU pointed out the importance that the teacher's role can play in encouraging students to use the library, which can be achieved by asking them to use the library resources, arranging a visit to use the library and introducing them to the services on offer and how to use the available collection, as well as by checking the quality of the references used in the assignments when correcting them. For instance, one of the librarians said that: "*It highly depends on the teachers, if they ask the students to use*

*the library resources they will use them... but if not they usually use other search engines or Google” [L7, KU].*

#### **6.5.1.1 Students’ language skills**

Previously discussed findings (Section 6.4.3) show that some bilingual students faced difficulties when using library catalogue services. In this respect librarians offered several opinions regarding the effect of students’ language skills on finding information. Some librarians highlighted this issue; they frequently observed that many students have problems in identifying the correct search terms during the training sessions. For example:

*“I noticed that many students have weaknesses in using English especially when they try to find the correct search terms... of course some students are good, but I think language weakness is a problem that we should consider” [L6, KU].*

This aligns with the findings of Ur Rehman and Mohammad (2002) who found that KU undergraduate students have weaknesses in their English language capability, even in their second year of study and even if they were still taking English language courses to improve their skills. Similar points were also made by Hamade (2007) and Al-Abassi (2007). Librarians from UoS also noticed this problem, particularly with non-native English speakers, commenting that:

*“Yes, I think students for who English is not the first language... I have to say yes their English might affect their view. Because it very much depends on their experience when they come here and the kind of institution they had been involved in before” [L11, UoS].*

This effect aligned with early observations by Hughes (2010), Liu (1993), Bilal (1989) and Moushey (1984) that international students face difficulties in using the library, which are normally associated with their deficiency in English language skills. This matter also reflects the basic problems of cross-cultural communication that are normally connected to second language acquisition. It was found that the learning of bilingual students was hampered by social and first language norms (Scollon et al., 2012). For the most part this impacts them when choosing the search terms as observed earlier by Liu (1993) and Robertson (1992). It has also been

observed that international students fail in conducting successful search tasks in comparison to native English students, where the problems are commonly associated with their English language proficiency that hides their abilities to find relevant information (Salmi and Chevalier, 2014).

By contrast, the results in this research specify that some librarians generally disregarded the influence of students' language skills in finding relevant information, while others stated that since they are not having any complaints from the students, then there is no problem: "*Rarely we see students complaining about their language difficulties when using the catalogue*" [L2, GUST]. Other librarians showed their belief that students learn the language from an early educational stage, or had an acceptable skills level since it is an essential requirement to enter the university. Therefore they presumed that students have no problems with their language skills, one stating that: "*I don't think there is a problem with delivering the services in English; the majority of the students are good in English*" [L8, KU].

However, this is not always correct especially as the students in this research showed some weakness regarding their language skills. Further to this, Al-Abassi (2007) and Hamade (2007) observed that students in KU lacked English language proficiency. This affected them completing a successful search when using the library catalogue services, especially since many of them needed to search in English.

Despite the variation in librarians' views, they highlighted some initiatives in supporting students' language skills. For example, one librarian from GUST stated that they tried to increase subject access for some books by providing additional keywords in another language to make them more accessible; this was driven by the awareness of controlled vocabulary issues. Therefore they added more keywords to reach a wider spread of users, stating that: "*The Arabic books that deal with technical terms, we sometimes add English keywords, because the Arabic terms of technical terms are not understandable*" [L2, GUST].

In addition, librarians from UoS mentioned that features recently added to the catalogue includes a spellchecker that was considered supportive in helping to overcome the variation and spelling mistakes that might found in students' search terms. This was considered a common feature in the next generation library catalogue, which was usually presented as "*Did you mean...?*" (Ballard and Blaine,

2011). UoS librarians also stated that they offered more than one language on the web-based interface, though limited to certain specific languages. It was also observed by the researcher that KU and GUST libraries offered their website interface in both the Arabic and English languages.

### **6.5.2 Library catalogue services development**

It was interesting to explore aspects of library catalogue service development from the librarians' point of view, which would support the investigation of the use of social tagging in academic libraries. Overall, results show that libraries' future vision for library catalogue service development shows considerable interest in using technological tools and particularly in enriching their services with social media tools. This is mostly aligned with the global movement and the technology changes, and with the common features of next generation catalogues (Ballard and Blaine, 2011).

They also were interested in improving the delivery of the library collection in a way that supports their users. Meeting users' needs by gaining a better understanding of their requirements was a major motive for catalogue development in libraries. For example, one of the librarians from KU stated that: *"We do regular evaluation to our website services, and we consider our users' opinions including the students and the faculty members"* [L8, KU]. This is interesting, especially since studies show that most students want enhancements made to their academic library catalogue services (Connaway et al., 2010). Thus, this research could be valuable in improving libraries' understanding of students' perceptions regarding use of social tagging in their academic libraries.

Regarding the responsible unit for the technical improvement and maintenance of the library catalogue, it was found that each university had its own situation which was generally affected by the size of the libraries. For example, librarians from KU revealed that only the central library administration can make decisions concerning any changes to the library catalogue services. Thus, they normally have to first contact their senior managers about any improvements they wanted to make. For instance one of the librarians said: *"We don't deal with the catalogues services, we report any issues to the library administration and they fix them"* [L8, KU]. Librarians from UoS specified that the library has specific librarians responsible for

all technical matters; whereas the GUST library appeared more manageable since they only have one library which is directed by a small group of librarians.

Generally it seems that when it comes to implementing new functions it is greatly dependent on the company that delivers the Library Management System (LMS). In this respect, the library selects the functions they want to provide, yet are commonly offered only limited local customization. In this regard, a librarian from UoS commented:

*“We have input in the development of it but it’s maintained by Libexirs... And the upgrade is done automatically by them and we have a limited changes that we can do ... but the basic functionality is set by the company”* [L10, UoS].

This research also discovered common tools recently added to the library catalogue services. Findings show that the federated search seems to be a commonly-delivered option on the library homepage or on the main search page. This allows users to search the entire library collection including books, journals, databases, etc. For example, one librarian commented that: *“federated search is one of the useful enhancements to our library catalogue services”* [L7, KU]. This was also found in previous studies that considered the federated search as a popular option in LMS and the next generation catalogue (Ballard and Blaine, 2011; Boss and Nelson, 2005).

In addition, a Google Scholar shortcut is another recently-added feature in the GUST library services. They also mentioned that a Twitter account was recently created to update users with new functions. This generally aligns with Boateng and Liu’s (2014) findings on the usage of Web2.0 applications in the academic libraries of the top 100 universities in the USA.

### **6.5.3 Social tagging systems in library catalogue services**

#### ***6.5.3.1 Familiarity with social tagging systems***

In this research librarians’ familiarity with social tagging has been explored. The results found that only a few librarians were not familiar with social tagging at all. Most had some previous experience with different types of social tagging mostly by using tags offered in social networking websites like ‘Facebook’, ‘Twitter’ or ‘Blogs’. They commonly used either adding or searching tags; for example one of

the librarians said that: *“For sure I have some idea, usually some blogs have tags and social networks like Facebook, and I do tags sometimes in Facebook”* [L2, GUST].

It was also interesting to find that some librarians were familiar with using social tagging systems for research purposes. For instance they used the online bookmarking service Delicious, and found it useful, with one of them saying: *“I used Delicious before... I use it for my work and for research. It is easy ... I created groups for all the related links, sorting the resources, based on topics...as well to know new people... I like it a lot”* [L4, KU]. Others had experience of using tags when searching databases which was also considered as a beneficial feature. This is in addition to having experience of adding tags in ‘lib-guides’ to classify information resources; one commented that: *“In some library files we use tags like lib-guide tags here like a taxonomy to classify the items according to their subjects... so it’s not like social tagging or bookmarking but it is kind of labelling”* [L2, GUST]. Librarians’ familiarity with using tags can be a great motivation for the potential implementation and facilitation of the usage of tags which would be helpful in improving library catalogue services.

In addition, the majority of the librarians believed that students nowadays are generally familiar with the new technological tools, as the following comment showed:

*“The new generations are highly connected with new technology. I think the tagging will attract them to use the library more... this encourages the library to add the new features”* [L6, KU].

Librarians’ familiarity with the new technological tools can be considered beneficial in making it easier to introduce students to the use of tags for academic purposes. Luo (2010) also observed a positive reaction from students to using Web2.0 tools, which has been shown by students’ interactions with the instructors. Likewise Vie (2008) showed that many students were familiar with social networking websites that would make it easier to adopt these technologies.

When reflecting on using tags, Kramer (2010) recommended that educators may take advantage of the students’ unfamiliarity with the use of tags for educational purposes

to build a social tagging system that could be offered in a way that meets students' information needs in an academic environment. This may work well, especially as students in this study also showed that they used social networking websites and showed positive perceptions regarding the use of tags. In addition they indicated that they would like to have tagging functions within catalogue services as previously discussed (Section 6.2.3 and 6.4.5.3). All of this gives positive signs to encourage libraries to add social tagging functionalities within their catalogue services.

#### ***6.5.3.2 Social tagging system advantages***

Previous studies showed that social tagging functions could generally enrich the searching system (Spiteri, 2005), and improve search effectiveness, mainly by providing more accessible and shared vocabulary created by the users (Noruzi, 2006). In this regard, it was interesting to explore librarians' opinions about the prospective advantages of using social tagging systems in academic library catalogue services, and its prospective support to students' information usage.

Results showed that some librarians believed that adding tagging functions would encourage students to use the library more, and considered it as a valuable enhancement to existing catalogue services. Others indicated that tags would bring more attractive features to the library Web environment, commenting that:

*“This will encourage students to use the library, and it will be useful for the students, because we felt that the catalogue is not attractive to the students... so the tags will add to this and be something useful” [L2, GUST].*

This confirms Spiteri's (2005) point of view regarding enhancements that are associated with adding tag functionalities to searching services. It also supports the student's point of view regarding increasing the library usage as discussed earlier (Section 6.2.2). Tagging could have a great impact on changing students' searching behaviour from their current common usage of Google to using the library catalogue, which is of interest to this research.

Moreover, findings show that librarians considered sharing information as a valuable benefit of using tags, as follows: *“I think it is a great idea... the students can take advantage of tagging to access the resources they found and to share them with their*

*friends*” [L8, KU]. This is obviously a popular feature of social tagging systems (Noruzi, 2006; Spiteri, 2005; Golder and Huberman, 2005).

Librarians also found that using tags would be a manageable way to collect resources for a particular subject. In relation to that they saw this as helpful for identifying resources to a specific class or group; this would also serve as an updated reading list which would be beneficial for current and future students following the same subject. For example, one of the librarians suggested that teachers could add tags to some useful resources to inform students about new resources or possibly recommend searching using a specific tag to discover relevant information for their coursework:

*“What we think is very useful for tagging is identifying the materials that they found that they think will be useful for their group when thinking about the reading list and saying to students coming after them, look we found this, this is maybe useful for module A, B, C and tag it with that so other students can search for those tags”* [L11, UoS].

This was also suggested by the students as mentioned earlier (Section 6.4.5.3), which is a valuable way of using tags in academic environment.

In addition, the outcome of this research shows that librarians believed that to get a high benefit from using a social tagging system, users need to be active particularly on adding tags, commenting that: *“I think it will be a useful service, especially if the tagging keeps active and many users use it”* [L6, KU]. The student findings also include comments about the effect on others of using tags; for example, that they would be more encouraged to use tags when other students also added tags to resources. In practice, users’ contribution and participation are central in Web2.0 applications; social tagging cannot be excluded from this.

Librarians also showed their acceptance of allowing students to create tags using their favoured language that in turn would aid increasing access points to resources:

*“If the opportunity is there to let the students to add keywords to the library items, that will be very useful and I believe it will bring additional access to information and will assist the students to find information easily”* [L2, GUST].

This supports the student's point of view when considering tags as a good way to increase access points to information resources. In addition, results show that librarians accept as true that it is expected to have different language preferences with bilingual students. Thus students should be encouraged to use both languages (Arabic and English) when tagging information resources. By this a wider group of students would be reachable: *"I think the Arabic language should be considered in the tagging functionalities to reach all the users with different language skills"* [L6, KU].

In terms of multilingual tags and their possible support, a related study by Vuorikari et al. (2007) evaluated the description of items with both multilingual tags and thesaurus terms by teacher evaluation. Their results showed that multilingual tags got as high a score as the thesaurus in describing items, and half of the teachers found these tags useful for retrieval purposes.

In this research many students showed positive perceptions on having tags in both the Arabic and English languages (Section 6.4.4.4.3). Correspondingly, librarians also showed that they were generally interested to discover the actual practice of using social tagging in more than one language: *"In language terms it could be helpful... it will be very interesting to see how students use it"* [L11, UoS]. Particularly, they considered having tags in both languages would be both convenient and supportive:

*"For bilinguals having both languages will be useful, because they have different preferences. Maybe someone familiar with one term in Arabic and another familiar with the same term but in English... having them both there will be something useful... they can relate to the terms, they might find the term and its meaning in the other language, this will be helpful"* [L2, GUST].

### **6.5.3.3 Implementing social tagging systems**

Ballard and Blaine (2011) indicated that tags were considered as one of the Web2.0 or social network features that were commonly offered in the next generation catalogue. UoS library recently implemented a brand-new LMS that supports some existing online services such as Delicious. The system offers a range of new useful

features to users, such as *“the bookmarking service and the ability to add stuff to e-shelf to create their own little areas within the catalogue for the useful things that they find”* [L9, UoS]. Tags were one of the newly-added features offered in the UoS library catalogue; however, the implementation was fairly limited. Thus there is a lot to explore about using tags; as shown by one of the librarians: *“I think there is a lot of potential in tagging that we really have not explored yet”* [L9, UoS]. Primarily, the basic functions offered include an essential word cloud, and allowing users to add tags to resources and reviews.

In practice they decided to provide tagging functionality together with functions offered within the newly-added LMS. In other words, they seemed not to have a clear plan for social tagging implementation, yet they considered it as good way to test the utility of tags. As mentioned by one of the librarians:

*“The library added tags function to the library system because it was easy for us to do. We knew there was a lot of interest in social media and tagging and exploiting all these tools available, so initially we just made it available, to see what would happen. It’s kind of experimenting how people will use the tagging system, and more effort to promote the system will be done in the future”* [L9, UoS].

Librarians perceived that the most considered benefit of using tags is to share resources that the users collected, as mentioned by one of the librarians: *“The ability to tag materials and share what they collected, and that’s what we liked about the product really”* [L9, UoS]. Sharing resources is a key advantage of using tags as previous studies showed (Noruzi, 2006; Spiteri, 2005; Golder and Huberman, 2005). Yet other benefits can result from such functionalities as will be discussed later in this chapter (Section 6.6).

In addition, it was interesting to discover that the UoS library wanted to develop tagging services in the future. They stated that: *“If there is any Web2.0 and tagging functionalities on the road map, yes we want to implement it”* [L10, UoS]. Especially significant was that they recorded a good rate of use of the newly-provided functions, which encouraged them to do more developments in the future.

Results also revealed that librarians from KU and the GUST are open to looking at implementing social tagging systems within their library catalogue services in the future. However, they highlighted the need to have a full understanding of the potential advantage of using social tagging to be convinced of its utility for their library users, as one of them commented: *“Actually, if the tagging would be something helpful to our users and to the development of the library, we will look at it in the future”* [L7, KU]. This is what this research seeks to provide; recommendations will be presented later in Chapter 7.

#### **6.5.3.4 Challenges of using social tagging systems**

This research also seeks to discover librarians’ perceptions about the possible challenges related to implementing new features to the library catalogue services like social tagging systems. Results show that although librarians believed that enhancing the library catalogue with new technologies functions like social tagging was beneficial, yet they considered some issues that may be encountered.

The most important concern discovered was related to technical support that could influence applying social tagging functions to the catalogue services. Nevertheless it seems that each library has its own contextual concerns; for instance, librarians from KU highlighted the problem of the technical updates procedures that normally delays the library services improvements. While librarians from UoS showed that improving or modifying the newly-added functions including ‘tagging functions’, is completely dependent on the LMS; it regularly updates the functions based on the library’s needs and suggestions. So overall, the technical support and improvements are mostly limited by different circumstances.

An additional key problem underlined by some librarians was related to the issue of trust with students’ online contributions; this was mostly affected by cultural matters. For example, the GUST library decided to control the library’s Facebook account by blocking the comments option; this was because they were worried about the inappropriate comments that might be written by their users, saying that:

*“We controlled the features of letting the students comment, so their comment has been blocked. We don’t want to have any issues, we don’t*

*know what students' comments could lead to if we keep them open*" [L1, GUST].

Some librarians from KU also indicated that the library should monitor students' tags just make sure that everything was under control, saying: *"Maybe the students tag the items in a wrong way. This is an issue, so some kind of control would be necessary to take a high benefits from tags"* [L2, GUST]. Here libraries show their fear of delivering uncontrolled features, which are normally associated with Web2.0 technological tools that enable users' contribution and participation. This fear may affect libraries' decisions on adding social tagging. In the tagging literature this issue is generally associated with tag ambiguity that includes problems, such as polysemy, homonymy, synonymy, and plurals (Golder and Huberman, 2005) as discussed in Chapter 2.

One way that might help to reduce or overcome the fear of having inappropriate tags is by offering tags suggestion normally within the tag add form, which can play an effective role in increasing the number of suitable tags. This is in addition to providing basic 'tagging literacy' instruction, which would also help to educate the students and librarians on how to create valuable tags and get the maximum benefit from using social tagging functionalities.

Some librarians, as well as the students (Section 6.4.5.2 and 6.5.3.3), have highlighted this point, which emphasises the role of tagging training which can make using social tagging more effective. Most of the librarians specified that they are able to deliver the necessary training to their staff: *"The staff will be fine with this kind of technology... they can be trained and deal with it appropriately"* [L2, GUST]. This provides great encouragement to facilitate running the necessary training.

The training can always be associated with promoting new functionalities, such as social tagging systems. For example, librarians from UoS revealed that they are working on fostering the recently-added tags functions via delivering online tutorials and during IL sessions; this is considered effective especially as they can reach a good number of students. One librarian commented that:

*"We see thousands of students in the beginning of the semesters in the IL tutorials... so it's quite a significant number and we do have online*

*tutorials as well... so here we will promote the use of tags more*” [L11, UoS].

Similarly librarians from the other universities also showed that they are keen to promote social tagging as one of the possible additional features in the future by providing the necessary tutorials and during the teaching sessions. As one librarian commented: *“We usually promote our new services to the users, by telling them in the workshops, brochures, newsletter, posters, and emails”* [L6, KU].

Yet, librarians highlighted communication issues with their students who often ignored checking their emails, saying: *“It’s not easy to reach all the students especially as many students ignore their emails, and the students now are not visiting the library”* [L8, KU]. This seems to be a common pattern of behaviour by the students, especially as they also mentioned that point during the interviews as presented earlier.

On the other hand, almost all the librarians believed that using social media tools (e.g. Facebook, Twitter, Instagram) was an effective way to reach a wider range of students; these tools were also considered handy by many students. As one librarian commented: *“We usually advertise our new services...using the social media tools that used more often by the students like Twitter, Facebook, Instagram”* [L8, KU]. Previous studies also observed that students are nowadays more likely to be connected and familiar with the technological applications and tools (Vie, 2008). Educators need to encourage students to think critically about the tools that they are familiar with (e.g. online social networking sites, podcasts, and Blogs) and to use them for academic purposes (Vie, 2008).

#### **6.5.4 Summary**

This section gives an understanding of the librarians’ point of view regarding students’ library usage, where most of the librarians are aware that library catalogue services lack usage from the students and that many students tend to refer to Google instead of searching the library. Librarians also believed that teachers can have an important role in encouraging the students to use the library. In addition, they show their awareness of the effect of students’ language skills on searching, particularly in identifying correct search terms. In contrast, other librarians generally disregarded

the issues as they assume that students should have an acceptable skills level especially as it is required to enter the university. Despite that libraries show some initiatives to support students' language skills (e.g. spell checker).

Results about library catalogue developments and librarians' familiarity with social tagging systems showed that some librarians had experience of using social tagging for social and academic purposes. In addition, librarians were generally interested in using social networking applications, and were accepting social tagging as one of their future functionalities in the catalogue services. Believing that it would help students to share, and manage information, and seeing that using tags in multiple languages was beneficial and being interested to explore it in practice. Yet they showed some challenges of using social tagging regarding the issue of trusting students' tags in describing resources, where some suggested applying tag monitoring. Other challenges were mostly connected with technical support and development. Furthermore, librarians highlighted the importance of getting a full understanding of tags' benefits, and providing clear instructions and training to users on how to use social tagging and create useful tags for them and for others - tagging literacy.

#### **6.6 e) What is the potential usefulness of social tagging to support student information skills in academic libraries?**

This research question was designed *to explore the possible benefits of social tagging functions in supporting students' information practices*. This mainly takes place in the data interpretation phase of the research as explained in the methodology design (Chapter 3, Figure 3.2), essentially by integrating data from librarian and student perceptions.

The discussion will present findings about IL skills gained from exploring librarian and student perceptions that help increase our understanding about current IL learning awareness and practices. This in turn feeds into the discussion, reviewing and modifying the proposed framework of social tagging and IL presented earlier (Chapter 4, Section 4.4) to produce a final version of the framework.

### **6.6.1 Information literacy skills**

IL skills training may vary from one library to another. However, the majority of the librarians interviewed in this research showed that the main purpose of providing such training was to equip students with the skills needed to conduct an effective search session largely by using the library searching services:

*“The IL skills trainings aimed to teach the students how to use and get the most benefit from the library items and services... the IL session helps them to understand and be better in how to retrieve information”*  
[L5, GUST].

This generally matches what the basic models of IL recommend; for example, it can line up with the American Library Association (ALA) (2000) IL standards and with SCONUL (2011) in stressing the importance of learning how to find and use information.

#### **6.6.1.1 Information skills awareness**

On the other hand, many students in this research revealed their lack of IL, saying that they never joined the library information training sessions, even if they had been aware of them. This attitude may also have resulted in their belief that they have the necessary skills that they learned before which discouraged them from learning additional skills: *“I heard about some searching skills workshop from the library but I never attend them. I don’t think they will give me the information or the skills that I want”* [P31, KU].

This is a very important point showing why they lack the understanding of learning IL benefits. This may also be affected by their lack of using the library catalogue services (Section 6.2.1 and 6.4.2) and by their regularly referring to Google to discover information, as one of the students mentioned: *“I think I know how to search, because I can find what I want when I search Google”* [P15, KU]. In relation to this, Adikata and Anwar (2006) also showed that librarians were not satisfied with students’ information literacy levels. Al-muomen (2009) also observed the lack of KU students’ IL skills and recommended the need for further enhancements to improve their skills.

A number of students showed their awareness of learning the skills indicating that they had attended the IL sessions run by their libraries and found them beneficial; for example: *“They gave us in the beginning of the year... the sessions were good to learn the basics and then you can learn by yourself”* [P46, UoS]. In this regard librarians showed that the content of the learning materials mostly contained searching tips; for example showing the students how to use synonyms in their queries. In addition, librarians indicated that they focused on encouraging the students to use the new services and features through the IL sessions. This is where promoting social tagging functions could fit in, as a librarian from UoS stated: *“In the session the library gives an introduction and instructions about the new library services, so they would promote the use of tagging in the library catalogue in these sessions”* [L9, UoS]. This is also associated with the basic meaning of IL skills, where the information literate “understands how digital technologies are providing collaborative tools to create and share information” (Martin, 2013:19).

#### ***6.6.1.2 Information literacy learning resources***

Results show that different kinds of teaching resources were employed to educate the students; yet based on librarians’ responses providing online materials appears to be a central tool. In addition, librarians also showed that this was always supported by the printed learning resources which are typically accessible at the library helpdesk and in other places in the library. These materials are regularly updated to line up with all changes happening in the library services.

In contrast, students commented during the interviews that online materials considered suitable for them had been divided into two types. The library website learning materials (e.g. online tutorials, documents) were considered helpful for some students; however, many of them showed that they were not aware of all training materials available on their library websites. This aligned with observations from some scholars regarding the usefulness of different tools available online to communicate with students and provide them with searching skills instructions (Luo, 2010; Godwin, 2009, 2007). On the other hand, some indicated that they refer to general online learning materials (e.g. websites, videos), which was normally driven from their personal efforts to educate themselves by searching for learning materials available online, saying that: *“I did a lot of learning on my own to be better in*

*searching*” [P46, UoS]. This is also a valuable activity to conduct which reflects the lifelong learning concept normally associated with IL.

In addition, results from students’ interviews showed that the intention to educate themselves seemed to increase in the final years of their study. This was where they were normally required to work on a research project that required searching for relevant references. As one of the students indicated: *“But for next year I think I would need to know more about searching, because I will start do my dissertation”* [P45, UoS]. This was also highlighted by some of the librarians. This also confirms the important role that teachers can play in increasing the library usage as discussed earlier (Section 6.4.2).

Furthermore, librarians also specified that they support students’ IL by the help provided by the references librarian and the helpdesk librarians, who are ready to assist the students with any queries: *“The librarian in the help desk are always prepared to help students... so we do our best to help students”* [L6, KU]. This type of support was considered as useful by several students where they commonly referred to the library staff in the helpdesk if they needed any assistance with finding information.

### **6.6.1.3 Training sessions**

According to most librarians’ responses, training sessions were normally arranged to be delivered to first year students to assist them gain the basic skills required to achieve their information needs, plus other advanced sessions offered at different levels. The sessions were commonly organized based on faculty requests or in co-operation with different departments. For example, librarians from UoS indicated that they arranged with different departments to run workshops within the curriculum, saying that: *“The session planned with the department to be as part of the curriculum, beside the other session running in the university libraries”* [L9, UoS]. This was considered an effective way to ensure the attendance of the students to learn the IL necessary to get the benefit of the features offered in the library catalogue. This is especially important as students tended to show unwillingness to attend the public IL sessions provided by their libraries; this was mostly because they were not compulsory and so they tended to disregard the sessions. This aligned with

Lowe and Eisenberg's (2009) indications about implementing IL instruction in the curriculum.

Librarians also demonstrated that the training sessions are normally run by a well-trained member of staff qualified to teach the students. In addition, librarians from the Kuwaiti universities specified that they mainly teach the sessions in English especially because they want to match the services on their websites which are mostly offered in English and which are particularly related to searching databases. However, they indicated that they expected to find variation in students' language skills because some subjects of study were taught in both Arabic and English. They sometimes switched between the two languages when teaching IL, which was mostly influenced by the main language of their studies, and their English language proficiency, as follows:

*“For the students it depends on the teacher and the subject of study we choose either Arabic or English, or sometimes both languages... some students who are not that good in English prefer Arabic, but they have to learn and use English because most of the subject in the college in English... we prefer to use English but if necessary we use Arabic” [L4, KU].*

It was also interesting to discover that some students were satisfied when they learned the skills from their teachers. This again stressed the important role of the teachers in encouraging students to use the library as one student commented:

*“One of our teachers gave us good tips on how to search the library to find relevant resources...knowing those tips was really helpful... I might get lost if I didn't follow my teacher's search tips before using the online library resources. It's important to learn how to search” [P8, GUST].*

Lastly, some students indicated that they consider the support of their friends and peers as a good source of learning IL. Generally, it is always useful to offer a variety of training courses on IL. This would help in improving students' IL and in turn improve their learning and output (Alharbi and Middleton, 2011).

### **6.6.2 Social tagging and information literacy**

Findings discussed in the previous sections highlight various aspects that aid our understanding of social tagging system functionalities, and possibly support facilitating resource discovery for bilingual students when using the academic library catalogue. The findings covered aspects including: bilingual students and librarians' perceptions about library catalogue usage; overall searching behaviour; influencing factors regarding search and tag language preferences; IL skills and training; as well as views regarding implementing social tagging functions into library catalogue services.

In spite of the challenges that could be associated with using tagging in academic libraries, particularly in relation to the technical support and trusting users' terminologies and description when adding tags (tag ambiguity), the findings of this research generally indicate that libraries and students wish to have functions like social tagging in their academic library catalogue. This has been perceived as useful in increasing their engagement with the searching system and making it more attractive. Furthermore, there is the possible support of tags in discovering information in varying languages for students with different language skills (Arabic and English), particularly because tags reflect users' own language and description. This would seem to support the addition of tagging functions. Yet it would be valuable to bring social tagging functionalities more into the actual academic searching activities in a way that fit and support students' IL practices.

The changes happening in technology have an obvious influence in changing the way people interact with information, and this affects IL skills practices. On the other hand, the newly-available technological tools bring useful opportunities that can assist IL skills practices which should not be disregarded. Selfe and Hawisher (2004) suggested that instructors should not ignore the massive networked environments accessible these days used by the students to communicate. Vie (2008:21) specified that "reframing literacy in [the] light of participatory spaces like social networking sites will be key to harnessing the potential of these sites for composition pedagogies appropriate for the 21st century", as discussed previously (Chapter 2, Section 2.2.2.2).

### 6.6.3 Evaluating the framework of social tagging and information literacy

The following section will present further investigation of the views of students and librarians in relation to the initial conceptual framework of social tagging system functions and IL that has been proposed earlier (Chapter 4, Section 4.4). This will help in linking students' and librarians' perceptions into the explored relationship between the main categories of tagging functions: *posting*, *searching*, *browsing*, *managing* and *sharing* that been developed from this research (detailed of each category presented in Chapter 3, Section 3.6.2.2); and SCONUL seven pillars of IL skills: *identify*, *scope*, *plan*, *gather*, *evaluate*, *manage* and *present* (SCONUL, 2011); see details of each pillar in (Appendix 5).

Before discussing the explored relations between SCONUL seven pillars of IL and social tagging functions categories, it is valuable to present librarians' views regarding the links presented in the initial framework between social tagging functions and IL skills (Chapter 4, Section 4.4).

The overall observation showed that the librarians' were positive about the relations between the categories of social tagging functions and the SCONUL seven pillars of IL. As one of the librarians pointed out, using social tagging would help encourage students to use the library: *"I think the links are generally reasonable... there might be overlaps, but it can help to bring better practice, or encourage students to use the library"* [L6, KU]. This is also aligned with the students' perception shown earlier (Chapter 5, Section 5.2.6) which indicated that adding tagging might increase their usage of the catalogue services: *"I think tags will make the search easier, and when you make the search easier you will encourage people to use the library... I think tagging will add value to the library"* [P7, KU].

The findings also highlight that social tagging functions would be beneficial in supporting personal information management, as one of the librarians indicated that using tags *"may be more connected to the personal use of information"* [L6, KU]. This has also been aligned with results regards the tags assigned by the students during the ITE, which were considered useful for students' personal retrieval and information organization (Chapter 5, Section 5.2.5). In addition, this was also confirmed in Vuorikari (2009) study which indicated that tags appeared to be useful

in helping users to find resources, particularly with tags that were categorised as self-organisation tags.

Generally, social tagging can be considered as a supportive tool in provision of library catalogue services and facilitate using and discovering information. However, it would be interesting to see the actual use of social tagging and how the students might use tags and their related functions, especially when students have other alternatives to use outside the university:

*“I think it’s potentially very useful... It’s hard to predict what students will adopt, it will be a question whether they want to be doing that sort of thing somewhere else as well as whether they are already doing it” [L11, UoS].*

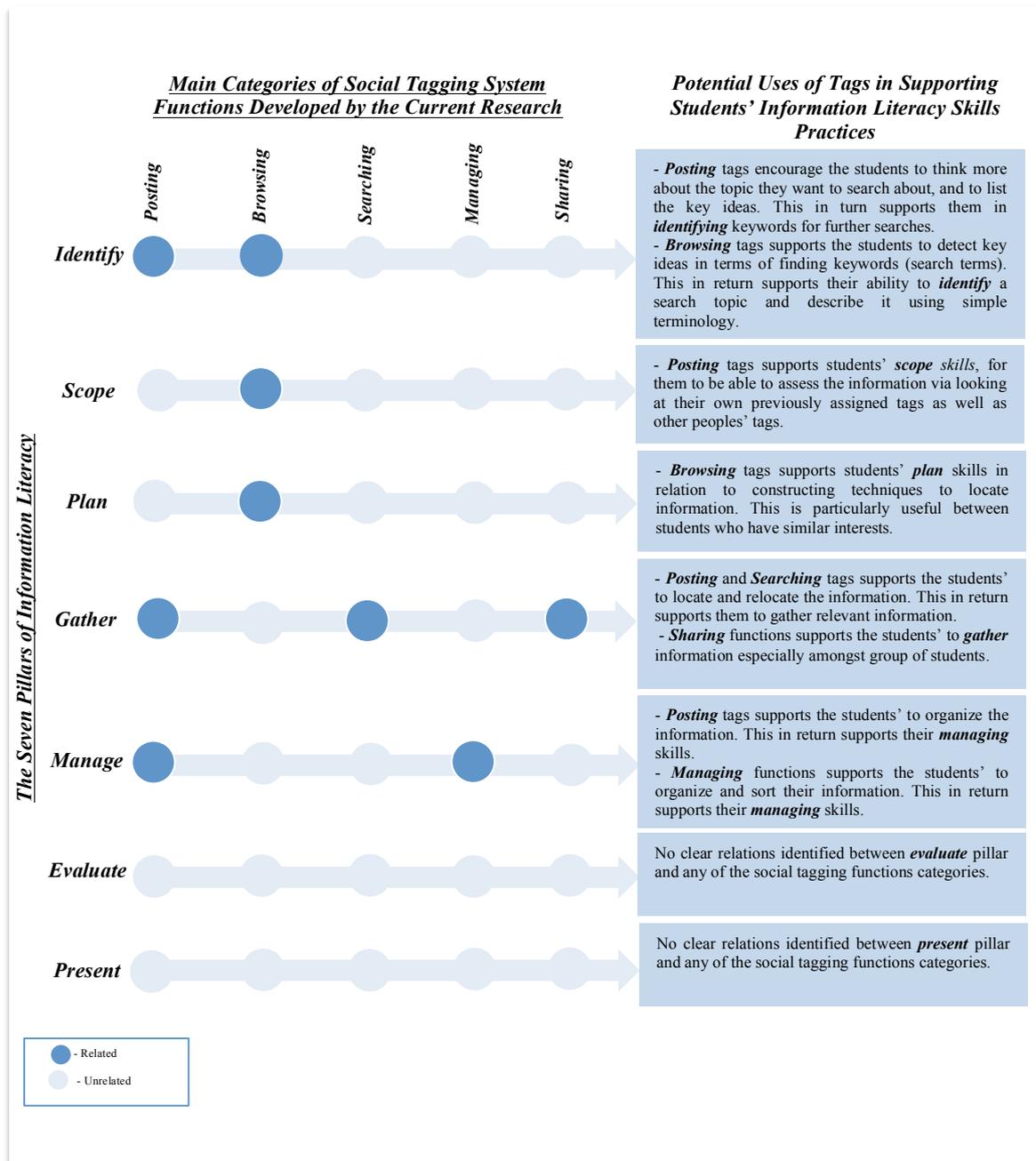
The above presented positive perceptions on the prospective support of using social tagging to the development of IL skills. To further evaluate the framework some changes were conducted over the initial framework to produce a revised version; details will be presented in the following section.

#### ***6.6.3.1 Proposing the revised framework of social tagging and information literacy***

The revised framework will assist in understanding the benefits of social tagging in supporting development of the students’ IL skills in academic libraries by determining the underlying benefit of the use of tags and the tag-related functions. This can support students in managing, sharing and retrieving information while using the academic library catalogue services. In order to add more explanation, the following section will map the participants’ perceptions to the SCONUL seven pillars of IL in relation to the five main categories of social tagging functions.

Figure 6.4 presents the revised framework of social tagging functions and IL to illustrate the prospective benefit of using social tagging functions includes *posting, searching, browsing, managing* and *searching* in supporting the seven pillars of IL skills includes *identify, scope, plan, gather, evaluate, manage* and *present*.

Figure 6.4 The Revised Framework of Social Tagging and the Information Literacy



The following presents details of the considered relations between the SCONUL seven pillars of information literacy and the categories of social tagging functions.

- *Identify pillar*: relations have been found between *identify pillar* that refers to the ability “to identify a personal need for information” (SCONUL, 2011:5) and two categories of the social tagging which are *browsing* and *posting functions*. In this research the browsing functions refers to “the ability to reorient the view by clicking on tags or user names, called pivot browsing, [which] provides a lightweight

mechanism to navigate the aggregated bookmark collection” (Smith, 2008:173); more details of this category of social tagging is presented earlier (Chapter 3, Section 3.6.2.2).

By browsing through tags; students will be able to detect key ideas that can result in supporting them in finding keywords (search terms). This was expressed in one of the students’ responses stating that looking at tags “*would be useful to discover synonyms that can help me to identify keywords to search for more information*” [P28, KU]. This could in return help in identifying the students’ personal information needs, mainly the ones in related to the ability to identify a search topic and describe it using simple terminology (SCONUL, 2011).

A relation was also found between *identify pillar* and the *posting functions*. The category of *posting functions* refer to the process of adding tags to describe the resource that usually completed by using several functions as presented earlier (Chapter 3, Section 3.6.2.2). Results show that this process can indirectly supports students the students’ abilities to “manage time effectively to complete a search” (SCONUL, 2011:5). As one of the students stated that:

*“I think it can help a lot. When I read something I can tag it with words that describe the key issued discussed in it so when I came later I will go directly to what I found useful and not spend time again on identifying the main ideas”* [P16, KU].

Furthermore, the students added that the process of posting suitable tags to describe the resources could encourage them to think more about the topic they want to search about, and list the key ideas. In addition the process will also support in identifying keywords for further searches, as the expressed in one of the students’ comments: “*I think it is also useful to add tags for the topics I found useful and might need in the future or to search for them again*” [P2, KU]. This point has also been confirmed by Tam et al. (2009) which indicated that students prefer tag clouds because it draws their attention to certain words that they did not think of before, and those words are in reality valuable and related to their search.

- *Scope pillar*: an indirect relation has been recognized between *scope pillar* that refers to the ability to assess information (SCONUL, 2011), and the *browsing*

*functions category*. By browsing previously posted tags that reflect the students' own thoughts, or browsing other peoples' tags. Students can be supported in assessing relevant information when using the library catalogue. In this regard the use of social tagging is considered as one of the technological tools that could help in supporting students' scope skills in terms of the "ability to use new tools as they become available" to assess information (SCONUL, 2011:6).

- *Plan pillar*: a relation has been recognized between the *plan pillar*, which refers to the ability to "construct strategies for locating information" (SCONUL, 2011:7) and the *browsing functions*. In IR, browsing is seen as a process of "searching information by following and pursuing hypertext<sup>23</sup> structures" (Peters, 2009:289). Browsing tags in a social tagging system is about moving through an information space by choosing a reference point to browse (Gupta et al., 2010). Thus, using browsing functions can support students in locating information via navigating through their own tags and the tags of others. This is particularly useful for students who have similar interests or students in the same class or course, as indicated by one of the participants: "*I can look at mine and my friends' tags to find resources*" [P13, KU]. This can clearly reflect skills in the plan pillar in relation to selecting searching tools that could support students in constructing techniques to locate information.

- *Gather pillar*: several relations have been found between the *gather pillar* that refers to the ability to "locate and access the information and data" (SCONUL, 2011); and three of the social tagging categories which are the *searching, posting, and sharing* functions. Searching functions refer to the process of searching tags with other descriptions (e.g. title, URL, etc.) or by limiting the search to tags (searchable tags) only, as presented earlier (Chapter 3, Section 3.6.2.2). Although not all of the participants in this research have experienced the use of searching functions during the ITE, a small number of them recognized the usefulness of searching tags. This suggests a relation between searching tags and gather skills. In this regards some of the students' commented that "*searching for tags is also useful, especially if I can search for two or more tags together to find information*" [P4, KU]. In addition, librarians also stressed the importance of the searching functions as "*a very*

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<sup>23</sup> Hypertext refers to navigation.

*important aspect of the system that should be considered when using social tagging*” [L6, KU].

The results also suggest a relation between the *gather pillar* and *posting functions*. When students find relevant information about a certain topic that they intend to use; they collect and organise materials under one tag (or category). By doing so they relocate the relevant information that can be seen as supporting gather skills in relation to the ability of using “appropriate techniques to collect” information (SCONUL, 2011:8). For example, students stated that they would group different resources which share similar concepts under one tag, so they can visit the tag later on to find the information, as one of the students commented “*I can group the relevant articles under one tag*” [P29, GUST]. A previous study by Click and Petit (2010) has also suggested similar findings when exploring ways of using a social networking website (Delicious) to support IL, indicating that an article can be tagged with “*ILLR article*” where the tags can be accessed through various tagging functions (e.g. browsed) making retrieval simpler and so facilitating discovery for individuals and groups of students.

Additionally, opinions about using the module name as a tag for relevant information would be beneficial in supporting students in a specific group or class. This was shown in research outcomes related to both the students and the librarians. A student commented that “*It will be a good idea if tags were assigned to each module ... where I can click on the module name and find all the tags and resource assigned to a particular subject*” [P31, KU]. This was also confirmed by one of the librarians stating that:

*“If people tag using the module code then that’s a marvelous way of pulling together everything, without having to think about keywords ... so I would certainly say, if you would find something for coursework tag it with the module name”* [L11, UoS].

As a result, the relation between the *gather pillar* and *posting functions* may help to offer an updated reading list in the library system. Furthermore, a final relation has been found between the *gather pillar* and another social tagging category: *sharing functions*. The tools of sharing functions include share tagged items/bookmarks with others group of users, recommendations, find similar users and connecting with other

social networking services; as presented earlier (Chapter 3, Section 3.6.2.2). The use of sharing functions can help to engage the community with sharing information and using digital technologies that “provide collaborative tools to create and share information” (SCONUL, 2011:8).

The result of participants’ perceptions showed that sharing functions are perceived as highly valuable. Many students have shown their willingness to set their tags as ‘public’ mainly because they want to support group work and the exchange of knowledge with others. This was expressed in students’ opinions and the following are examples of them. The first student highlighted the benefit related to sharing information amongst groups of students by saying: *“It will also be useful for the group’s coursework to share resources... sharing will be much easier”* [P23, GUST]. While the second student pointed out one useful aspect of sharing functions in relation to contacting other people who share the same interest by looking at each other’s’ tags and the collected resources: *“I can contact and know people based on my own library’s tags and other libraries, both socially and educationally”* [P18, GUST].

This was also confirmed again by the librarians who observe sharing as a valuable benefit of using social tagging systems. They stressed that sharing functions support group work in collecting useful information and exchange knowledge, it also supports finding relevant information. A good example of the benefit of sharing functions is presented below:

*“I would say it’s useful if you are doing group work, or if you are in a large class and you are struggling to find things, or if you were asked to look beyond the reading list and find topics of interest and want to share with others... I think sharing will be an interesting thing that people will look at”* [L10, UoS].

- *Manage pillar*: the results suggest relations between the *manage pillar* that refers to the ability to “organise information professionally” (SCONUL, 2011:10); and two categories of social tagging functions: *posting and managing functions*. In relation to posting functions, results show that organizing information is one of the important motives behind the use of social tagging. This in return can support manage skills in terms of the importance of organizing and sharing information and using appropriate

techniques to manage data (SCONUL, 2011). Students suggested several situations where tags could be useful in organizing their information and its uses, mainly when searching the library catalogue and finding relevant items. Students said that they would add tags to useful information with the name of their coursework (e.g. assignments and projects), or class name. As the following comments state:

*“Let’s say I am writing down a piece of information, and I want to refer to an article that I remember I read before. Instead of searching again for the article online or on the files that I saved which will take time and effort, I can simply tag the information I found useful to the name of the project so I can find the information easily when I go back to the tags”* [P35, GUST].

*“I also can use them [tags] to organize my ideas related to each coursework ... I can write the tag with the name of the assignment, which will make it easier for me to find information”* [P8, GUST].

A relation also emerged between the *manage pillar* and the social tagging *managing functions*. The category of managing functions refer to the basic tag management activities that allow changes to tags to be made, such as editing, deleting and saving tags, as presented earlier (Chapter 3, Section 3.6.2.2). The use of managing functions can offer assistance to users in deleting, editing and grouping previously added tags. This would assist students in developing their manage skills in relation to organizing information using appropriate management techniques (SCONUL, 2011).

Despite the advantages of managing tags, the results of this research demonstrate that most of students are unfamiliar with social tagging systems. The managing functions are more effective with long-term users which the participants in this research lack. This can be shown to be the case not only with students, but also with librarians. Recognizing the benefits of managing functions needs to a long term use of the social tagging system.

- *Evaluate and present pillar*: the *evaluate pillar* refers to the ability to “review the research process and compare and evaluate information and data” (SCONUL, 2011:9). The *present pillar* refers to the ability to “apply the knowledge gained” to present the result of the research (SCONUL, 2011:11). The results show that there

are no clear relations between the evaluate and present pillars to any of the social tagging function categories identified in this research.

In addition to the revised framework of social tagging and information literacy (Figure 6.4), it is important that library instructors think about ways to make students use and benefit from social tagging in academic libraries. Hence, providing guidelines around tagging literacy would introduce the students to essential social tagging functions offered by the library catalogue. In addition, this would help guide on how to get the best out of using tagging whilst looking for information. The following are some points that could be covered when instructing the students:

- Students need to be familiar with the functionalities of social tagging to get the best benefit from the functions that the system offers (Chapter 5, Section 5.2.6.3).
- Students need to create understandable and simple tags to provide better use of tags as an individual and amongst groups (e.g. when sharing information), as well as to support future retrieval (finding/ re-finding information) (Chapter 5, Section 5.2.5.2).
- Students need to create tags in multiple languages to benefit others in accessing and finding information (Chapter 5, Section 5.2.5.4.3).
- Students need to tag similar topics with the same tag to make it easier to recognise and classify relevant information (Chapter 5, Section 5.2.6.2).
- Students need to keep in mind that others can also benefit from the tags they assign when discovering, sharing and identifying information (Chapter 5, Section 5.2.6.2).

#### **6.6.4 Summary**

This section discussed findings related to IL skills where many students showed their lack of IL skills awareness. They appeared uninterested in attending the sessions provided by their libraries mostly because they felt that they do not need to learn new skills. This seemed to affect their usage negatively, as they commonly referred to using Google to find information, due to its simplicity, and would only use basic search services provided by the library to locate the resources required for their coursework. Some students perceived using the library catalogue as complicated or difficult to use; the system was also felt to have outdated features.

On the other hand, the results regarding the investigation of using social tagging in an academic library catalogue to support IL skills for academic purposes are interesting. These show that some functions appear to be more beneficial than others, while some overlap across the social tagging functions in supporting the generic skills of IL from SCONUL; this is mostly because the nature of IL skills practice is often closely linked (SCONUL, 2011).

However, the relations between tagging and IL are considered useful as a support tool for students' information use and practices (Figure 6.4), especially as it can match the technological developments in IL, including social media and digital literacy. For example, IFLA (2014) specified that the technological applications available in the information platform can empower individuals with the knowledge of the functions that can aid lifelong learning in terms of assisting people to reach their goals.

Furthermore, as mentioned in Chapter 2, Martin (2013) suggests guidelines for teaching and promoting IL in higher education, which have been established based on models that used the original SCONUL Seven Pillars. The guidelines identify the importance of 'expanding participation' which reflects the technological change in the information landscape from factors, such as social media. They also reflect increases in the roles and responsibilities of individuals in terms of engaging people in the information process. Accordingly, Martin recommends that students be required to learn not only how to use and to find information, but also how to be creators and collaborators in the information process (Martin, 2013). Moeller et al. (2011) also highlighted the need for users to have a critical understanding of 'media texts', suggesting useful ways of using different kinds of content which can be "managed and organized, perhaps using a formal indexing system or tags determined by individuals" (Moeller et al., 2011:5).

Teaching students IL skills can be associated with different learning processes. Yet, using technological functions becomes more important, especially as it opens up great opportunities that support different information activities. Hepworth (2000:25) indicated that learning how to use information tools, such as "technology, systems and sources to access, organize and distribute data, information and knowledge", was one of the main areas of learning IL.

To summarize, we can indicate that the relations shown in the proposed framework bring social tagging functionalities closer to students' IL practices. This can be viewed as a novel way of using such feature in academic libraries. This would bring useful ways of encouraging students to use the library, as well as supporting their IL in terms of finding, organizing, and sharing information.

## **6.7 Conclusion**

Chapter 6 discussed various aspects of investigation and discovery in this research that came from revisiting the sub-research questions; this was considered helpful in mapping the findings under each question in relation to the related studies when applicable. Chapter 7 that follows will provide the research conclusion that will summarize all the findings by highlighting the key findings of each sub-research question, the research contribution including recommendations for implementing social tagging systems in library catalogues, the research limitations, and directions for future research.

## Chapter 7: Conclusions

### 7.1 Introduction

Chapter 7 summarises the research work conducted and what we have achieved. As presented in Chapter 1, the aim of the research was *to investigate social tagging functions in facilitating information discovery and use for bilingual (Arabic/English) students in academic libraries*. The main research question was: *Can social tagging functionalities support information discovery and use in academic libraries, particularly for bilingual (Arabic/ English) students?*

To address this main question, five sub-research questions were identified. These questions were considered appropriate in gaining different perspectives on the research question and gathering a richer body of data. The sub-research questions were:

- a) *How do bilingual students use online library catalogue services and existing social tagging systems?*
- b) *What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?*
- c) *How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?*
- d) *How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?*
- e) *What is the potential usefulness of social tagging to support student' information skills in academic libraries?*

Within the research process, a literature review was conducted (Chapter 2) that helped with understanding current research carried out within areas related to the main research question. This was also useful in planning the research methodology where a mixed-methods research approach was used (see Chapter 3). The research

design was based on several phases where each of the sub-research questions were addressed using a particular method of data collection.

Table 7.1 presents an overview of the research showing the sub-research questions and objectives and how they were addressed in this work, including the data analysis methods used, and the main outcomes. Phase One of the research (preparation study) focused on studying the context of the research aiming to explore the possible uses of social tagging systems in academic libraries. This helped to address the first sub-research question (*a*), and the second sub-research question (*b*).

Phase Two of the research (main study) focused on gaining an in-depth understanding of the tagging behaviour of students, along with the perceptions of librarians and students on using social tagging in the academic library. This helped to address the third (*c*) and the fourth (*d*) sub-research questions. The final phase focused on interpreting the findings of the prior phases and helped to address the fifth sub-research question (*e*) aiming to bring social tagging functionalities to academic library practices. Details of phase one findings were presented in Chapter 4, followed by details of phase two findings in Chapter 5. Chapter 6 then discussed the findings in light of the related work and research questions.

A summary of the findings discussed in the previous chapter will now be presented. Then the research contributions, including recommendations for implementing social tagging systems in academic library catalogue services, will be presented; finally, the research limitations and possible directions for future research will be addressed.

Table 7.1 an Overall Picture of the Research

	Sub-research questions and Objectives	Methodology	Main Outcomes
<p><b>Phase One: Preparation Study</b></p> <p><b>Aim:</b> to survey bilingual students' perceptions on using social tagging systems in academic library catalogue services, as well as exploring the social tagging functionalities of the existing system.</p>	<p><i>a) How do bilingual students use online library catalogue services and existing social tagging systems?</i></p> <p>-To survey students' use and perceptions of the online library catalogue services and existing social tagging systems, as well as their language preferences with regard to searching and tagging.</p>	<p>-Questionnaire (QUAN).                      -Descriptive and co-relation analysis (SPSS).                      -Participants = 241 bilingual students.</p>	<p>-Perceptions from bilingual students about:                      -Online library searching services (e.g. satisfaction, usage, difficulties).                      -Searching and language preferences.                      -The current and the prospective usage of social tagging system tools (e.g. familiarity with the concept of social tagging and tagging functions, perceptions about having social tagging functions in an academic library and potential usage).</p>
	<p><i>b) What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?</i></p> <p>-To analyse and compare the functionalities offered by the existing social tagging systems, and their support for users with varying language skills, and to explore the possible benefits of social tagging functions in supporting students' information practices.</p>	<p>-Comparative analysis (QUAN).                      -Manual quantitative analysis.                      -11 social tagging systems were explored.</p>	<p>-Social tagging function categories, including: posting, searching, browsing, managing and sharing.                      -Proposed conceptual framework of social tagging and information literacy (IL).</p>
<p><b>Summary of Phase One Outcomes</b></p> <p><i>The outcomes of phase one provide better understanding of social tagging functions and its possible use mainly by proposing a conceptual framework of social tagging and IL, and understanding the positive perceptions of the students regarding having social tagging in their academic library catalogue which motivated further studies. The findings also support designing phase two of the research in terms of selecting suitable social tagging systems for the tagging task in the ITE.</i></p>			

<p><b>Phase Two: Main Study</b></p> <p><b>Aim:</b> To investigate students tagging behaviour and librarians' and students' perception on using social tagging in the academic library.</p>	<p><i>c) How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?</i></p>	<p>-Interactive tagging experiment (ITE), -Mixed Methods approaches. -Participants = 46 bilingual students.</p>	<p>Bilingual students' tagging behaviour, focusing on the factors influencing their tagging process.</p>
	<p>-To study students' tagging behaviour, particularly to discover the influencing factors of students' tags when tagging in different languages, as well as to explore students' views about their usage of the library catalogue services and the use of social tagging in their academic library catalogue services.</p>	<p>-Pre- and post-task questionnaire. -Descriptive and co-relation analysis (SPSS).</p>	<p>Demographic, tagging task experience (e.g. performance, satisfaction, future use, importance, tag language preferences, tagging influences factors).</p>
		<p>-Post-task semi-structured interviews. -Thematic analysis.</p>	<p>In-depth understanding of students' perceptions of the prospective usefulness of social tagging systems in academic library catalogues, as well as their tag language preferences. Further exploration of aspects of students' library catalogue usage and IL.</p>
		<p>-Tagging task. -Manual tag analysis.</p>	<p>Collection of actual tags from students that support tag analysis (e.g. tag categorisations, tag language, the influences factors).</p>
	<p><i>d) How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?</i></p>	<p>-Semi-structured interviews with librarians (QUAL). -Thematic analysis. -Participants = 11 librarians.</p>	<p>Perceptions about using social tagging systems in academic libraries including their familiarity with the system, potential advantages and challenges of implementing social tagging systems in library catalogue.</p>
	<p>-To explore librarians' perceptions about students' library usage, as well as their views about using social tagging in academic libraries.</p>		

<b>Data Interpretation:</b>	<i>e) What is the potential usefulness of social tagging to support student information skills in academic libraries?</i>	Evaluate the proposed framework of social tagging and IL based on students' and librarians' perceptions.	Proposed final version of the conceptual framework of social tagging and Information Literacy (IL).
<b>Aim:</b> to bring social tagging functionalities to academic library practices	-To explore the possible benefits of social tagging functions in supporting students information practices.		

## 7.2 Summary of the findings

This research found interesting aspects of the use of social tagging systems principally from the students' point of view, but also the view of librarians. Participants were from three universities, including the University of Sheffield (UoS) in the UK and two universities in Kuwait: Kuwait University (KU) and The Gulf University for Science and Technology (GUST). The following sections will revisit each sub-research question and highlight key findings.

### 7.2.1 a) How do bilingual students use online library catalogue services and existing social tagging systems?

This research question has been addressed in phase one of the research, which aimed *to survey students' use and perceptions of the online library catalogue services and existing social tagging systems, as well as their language preferences with regard to searching and tagging*. In order to answer this research question a questionnaire was designed and analysed quantitatively using SPSS. In total 241 bilingual students participated from the three universities from the UK and Kuwait.

Results showed that only 25% of the students use the library on a regular basis. Students also appeared to lack searching skills, where many of them showed that they searched mostly by title to locate books for their coursework. Additionally, only 38.6% of the students indicated that they were satisfied with catalogue search results. In contrast, some of them (32.8%) showed difficulties when searching the online library catalogue. They commented that the library catalogue is out of date, and has poor functionalities; however, it was noted that most of the negative responses were from KU students.

Despite the fact that all the students participating in this research were native Arabic speakers and the majority of them had studied in Arabic schools, the majority rated themselves as good in searching in both the Arabic and English languages. However, most of them had a preference to search in English. This appears to be influenced by their domain of study where the teaching had mostly been in English. However, some students indicated their preference to search in Arabic rather than in English, even if they studied in English. In addition, many students showed their interest in having cross-lingual (CL) functions in their library catalogue services. This seems to be connected to their weakness in expressing their information needs in appropriate search terms.

Results also show that most of the students were not familiar with the concept of social tagging, even though they used tagging functions when visiting social networking services. In addition, the majority of the students showed their agreement to having social tagging in their library catalogue services. Results indicated that ‘search personal tags’ and ‘create new tags for useful items’ would be the highest preferred functions. Results also showed that the majority of the students wanted to tag using both the Arabic and English languages. This suggests further investigation about adding tagging functionalities to the academic library catalogue services should be conducted.

#### **7.2.2 b) What functionalities do social tagging systems offer that can aid the development of academic library catalogues and to what extent do they support users in different languages?**

This research question has been addressed in phase one of the research, which aimed *to analyse and compare the functionalities offered by the existing social tagging systems, and their support for users with varying language skills, and to explore the possible benefits of social tagging functions in supporting students’ information practices*. A quantitative comparative analysis was used to examine social tagging functionalities of 11 existing systems, including social bookmarking and library 2.0/museum services. Findings identified five main categories of tag functions offered by the examined systems: *Posting, Searching, Browsing, Managing and Sharing* (Chapter 3, Section 3.6.2.2).

Results show that social bookmarking services generally provide richer tagging functions compared to library2.0/musum services. Results also indicated that browsing functionalities were the most popular function across all the examined systems, which were mainly offered as tag clouds or simply as a list of tags. Searching was also a commonly-offered function; however, it varies from system to system, especially in the features related to searching personal tags. Managing was identified as another common function that reflects editing, deleting and grouping tags. In addition, results show that although functions which enable sharing are an essential element in social tagging systems, they appear to vary across different systems. However, all systems allow users to share information by the use of tags as well as allowing users to create groups to share tagged resources.

In relation to the systems support offered to users with different languages, results show that popular tags in WorldCat and Connotea have tags in languages other than English (e.g. French). Some social tagging systems, such as Folk, WorldCat, and Goodreads, offer page translation to other languages. Steve tagger allows users to specify the tag language, while LibraryThing offers the facility to explore groups of users by language, including Arabic. However, systems in general lack functions that support users from different language backgrounds.

Furthermore, based on the main categories of social tagging functions, an initial framework emerged (Chapter 4, Figure 4.11) that matched the tagging functions with the seven pillars of IL adopted from SCONUL (2011). The proposed framework may benefit IL practice in the academic context.

### **7.2.3 c) How would students interact with social tagging systems when dealing with Arabic and English information resources, and how would they perceive the use of social tagging within the academic library?**

This research question has been addressed in phase two of the research that aimed *to study students' tagging behaviour, particularly to discover the influencing factors of students' tags when tagging in different languages, as well as to explore students' views about their usage of the library catalogue services and the use of social tagging in their academic library catalogue services*. To address this question a mixed methods approach was taken that included pre- and post-task questionnaires, tagging tasks, and post-task interviews. In total 46 bilingual students from the three

universities participated. The data were analysed qualitatively and quantitatively and then triangulated to present a complete result that includes a number of aspects:

- *Library catalogue services*: results confirm previous results (questionnaire in phase one) in relation to the lack of students' usage of their library catalogue services, as well as suggestions for further improvements to the catalogue functions. Furthermore, students' views were varied about the catalogue usefulness: GUST and UoS students give positive responses; while KU students showed negative impressions of the usefulness of their library services.

In contrast, students generally perceived advanced search as useful to narrowing down the results, yet they were concerned about the need to enter exact search terms to discover relevant information. This appears to be connected to their perceptions regarding the success in finding information, which seems to be highly associated to the situation where they already know the title of the book. Many students stated that finding resources (e.g. books, e-resources) for their coursework (e.g. assignments, presentations) was the main motivation for using the library catalogue. In addition, they saw that their teachers could play an important role in encouraging them to use the library.

Results also indicate that students were largely not aware of the services provided by their libraries. This seems highly connected to their commonly searching Google to find information instead of searching the library. This emphasizes the need for more development to the library catalogue services to meet students' needs and expectations. This is especially the case as some of the students indicated that searching the library catalogue was complicated, and others had the impression of unnecessarily having to use the library.

- *Language and searching*: results indicate that, even though many students had an English language certificate and were mainly being taught in English, they still specified that their language skills affected them when searching not just for English information but also for Arabic. Results also show that students' language skills seem to be influenced by their educational background, and the main taught language in their subject area that in turn affected their searching success.

- *Students' tagging behaviour*: results highlight several aspects, summarized as follows:

*Tagging process description* results show that many students indicated that it is essential to get an overview of the tagged items in order to understand the topic being discussed in the article, mostly by quickly scanning the article. Furthermore, they specified that they wanted their tags to be simple, easy to remember, understandable for future use, descriptive and reflect the main topic of the article, as well as to be searchable terms. These are very interesting facets that show positive understanding of tag usefulness. Additionally, some students considered creating more tags, or multiple words per tags, as beneficial in giving a better description of the tagged items for themselves and others.

In addition, although the majority of students were introduced to social tagging systems for the first time, most of them felt confident with their own tags. They showed that they added meaningful tags that gave a useful representation of the articles and reflected their own descriptions of information, which would facilitate re-finding the information later. However, some students underlined that their language skills have a negative effect on their confidence with their own tags, which were mostly connected with their English writing skills that made it difficult for them to express their thoughts.

- *General tag examination and the influences factors*: some influencing factors on bilingual students' tagging processes were discovered. The full text of the article appears to be a major influencing factor in adding tags that includes headings (e.g. title and sub-headings), followed by the abstract of the article. Familiarity with the topic discussed in the article also appeared to be a central influencing factor identified by many students.

In addition, *tag categories* were conducted using content-related tags categorization from the Tag-to-Text Category Model (Hecker et al., 2007). Results indicate that the majority of students' tags fell under '*tags not occurring in the full text*' of the articles. This is interesting as it shows that even though students have been influenced by factors of the articles being tagged, yet in practice they provide tags that can be considered valuable in increasing access points to information (Farooq et al., 2007; Hecker, 2007).

The second category was *'tags found in the full text'*; these tags can be useful in enriching the traditional metadata description of information resources that are limited to bibliographic information to retrieve information. This was followed by *'tags occurring in the abstract'* that can be partially beneficial depending on the type of the searchable information used in the catalogue to retrieve information. The rest of the tags occurred in the title and in keywords, which have less value in increasing access but can be useful for personal information organization and retrieval.

*-Tag language examination and influences factors:* results found that students generally add tags identical to the main language of the article. However, a notable number of students assigned tags in both Arabic and English. Results also suggest that the main learning language highly affects students' choice of tag language. It was also interesting to discover that some students decided to add English tags to Arabic articles. In contrast few students assigned Arabic or mixed language tags to English articles. This confirms previous results found from the questionnaire in phase one in relation to their choices of the tag language.

Additionally, outcomes show that with Arabic articles students assigned tags using English characters to describe Arabic words/terms (e.g. daleel, 3ilmelnafs); most of these tags were found in the full text. The majority of those students were from an English-based education environment (GUST and UoS); they commented that they were used to using the English language and English keyboards. These tags can be treated as ambiguous tags; yet it is still worth highlighting since it reflects the actual tagging behaviour of bilingual students.

Results also discovered some *factors influencing tag language choices*; showing the language of the item being tagged as the key influence on students' tag language choice. Students considered this easier; where it can support their future search terms, which commonly matched the language of the information they wanted to find. Students' own language preferences were also considered as an important influence; for example, many students commented that they felt comfortable using the English language even though Arabic is their mother tongue. Prior and current education stages of the students were also considered as a key influence on the tag language choices. Some students, however, indicated that their language abilities

influenced them when choosing the language of the tags. For instance, some students lacked expression in Arabic so they decided to write in English, and vice versa.

Lastly, results concerning *tags in mixed languages (Arabic/English)* show that students generally appeared to prefer matching the tag language to the language of the information itself. However, other groups of students were more flexible in accepting tags in mixed languages, seeing that this would be more beneficial. Results also demonstrate that almost all of the students accepted showing tags in mixed languages (tag clouds or lists), particularly because they can understand both languages (Arabic /English). Yet, some suggested having the option to split the languages when visualising the tags to avoid confusion. Overall, having mixed languages in social tagging systems seemed useful for many students in providing a better picture of the information being tagged especially because the majority can understand both languages.

- *Overview of social tagging perception and prospective use*: results show that the majority of students indicated that social tagging systems were easy to use and simple. Furthermore, results about '*tagging motivation*' show that the highest motive appears to be future retrieval, followed by task organization, then sharing information. Opinion expression and social signalling were also considered useful by some students, while the lowest motives were self-representation and attract attention.

#### **7.2.4 d) How do librarians perceive the use of social tagging systems for developing an academic library online catalogue service, and how could this support students when using the library catalogue?**

This research question was designed *to explore librarians' perceptions about students' library usage, as well as their views about using social tagging in academic libraries*. This question has been addressed in phase two of the research, by conducting a semi-structured interview with 11 librarians from the three universities under investigation; thematically qualitative analysis was employed. Results discovered several aspect summaries as follows:

- *Students' library catalogue usage*: results show that librarians were aware many students infrequently use the library catalogue, but commonly use Google to find

information. This confirmed students' responses on using Google to find information. Librarians also pointed out that this issue might connect to other factors like the role of their teacher in encouraging students to use the library and their lack information skills.

Outcomes also highlight that some librarians perceived that a lot of students have difficulties in identifying the right search terms when using the library catalogue, which is connected to their lack of appropriate language skills (e.g. limited vocabulary). On the other hand, some librarians specified that students should have an acceptable level of English language skills since it is an essential requirement to enter the university, so they generally presumed that students had no problems with their language skills.

Although there were differences in librarians' opinions, they showed some initiatives in supporting students' language skills. For instance, the GUST library added keywords in another language for some books to make them more accessible. A spelling checker was offered in UoS library catalogue to overcome the variation and spelling mistakes that may occur in students' search terms. Also the language on the webpage interface can be changed in all the universities.

- *Library catalogue services development*: results show that there is a general interest in using technological tools, mainly in enriching their services with social media applications. Librarians also indicated that they seek to meet their users' needs and desires by gaining a better understanding of their requirements.

Results demonstrate that the responsible unit for the technical improvement and maintenance differ from one library to another, where each university had its own situation, which was generally affected by the size of the library. Overall, it appears that implementing new functionalities highly depends on the company that delivers the Library Management System (LMS), where a library chooses the functions they want to offer within the catalogue services. Results also show that all libraries recently added federated search options, and a Google Scholar shortcut, which was one of the recently-added features in the GUST library services; they also started to use Twitter to update users with new functions.

- *Social tagging systems familiarity*: results indicate that most of the librarians were familiar with social tagging systems offered in social networking websites like 'Facebook', 'Twitter' or 'Blogs'. This shows promise for the potential usage of tags in library catalogues. Librarians perceived that students are commonly familiar with the new technological tools, which would facilitate their prospective usage.

- *The potential social tagging systems advantages*: results show that some librarians considered implementing tagging functions as a valuable enhancement to the catalogue services, bringing more attractive features and encouraging students to use the library more. They also thought that sharing and managing information through tags and the related functions would be valuable. Students can identify resources for a specific class or group, which would be helpful for current and future students following the same subject.

In addition, librarians considered that allowing students to add tags in their preferred language would be helpful in increasing access points to information. Librarians also showed their interest in discovering the actual practice of having tags in more than one language. They also indicated that users need to be active particularly in adding tags, to get a high benefit from using a social tagging system. Students mentioned a similar view that when other students add tags they would be encouraged to use the system more.

- *Implementing social tagging system*: results show that despite the fact that tags were recently added in the UoS library catalogue, librarians showed their interest in developing and discovering more benefits of using its functionalities, especially since the implementation was fairly limited. It was also interesting to discover that librarians from KU and the GUST were keen to look at implementing social tagging systems; however, they specified that a detailed understanding of the potential benefits is essential for their implementation.

- *Challenges of using social tagging systems*: outcomes show that some issues may be encountered when implementing new technologies functions such as social tagging. The technical-related issues were one of the important challenges, particularly when it comes to updating the functions, yet results show that each library has its own contextual situation. The trust in students providing correct tags was another important challenge, which is mainly associated with Web2.0

applications that normally involve online participation and contributions such as social tagging. Accordingly some librarians suggested tag monitoring to overcome any misleading or incorrect tags.

Furthermore, results emphasized the important role of tag training or '*tag literacy*' for both the students and the staff that can help in bringing more effective tag practices. Training can commonly be connected with promoting new services or functions, which can be via delivering online tutorials and during IL sessions. In relation to that, librarians indicated that they sometimes faced difficulties in communicating with the students, and perceived emails as an ineffective way since they noticed that students usually ignored checking their emails. However, they considered using social media applications as an effective way to reach the students (e.g. Facebook, Twitter, Instagram).

#### **7.2.5 e) What is the potential usefulness of social tagging to support student' information skills in academic libraries?**

This research question was designed *to explore the possible benefits of social tagging functions in supporting students information practices*. Primarily this takes place in the data interpretation phase which was achieved by integrating data from librarians' and students' perceptions. Results cover several aspects summarised as follows:

- *IL skills*: results show that the training sessions mostly seek to equip the students with the necessary skills to complete an effective search largely by using library search services, which generally aligns with the basic models of IL (e.g. SCOUNL and ANCIL). Despite this, results showed students' lack of IL, where they never learned IL skills from the training sessions provided by their libraries. This was mostly affected by their belief that they knew how to search for information, which discouraged them from learning additional skills. Yet, some students seemed to be aware of the benefits of learning IL skills, showing that they attended the training sessions and found them useful.

- *IL learning sources*: results indicate that providing online materials is a key tool, which is usually supported by printed learning resources. In contrast, only some students indicated that they were aware of the library website's online learning materials. Other groups of students showed that they usually referred to general

online learning materials, which mainly came from a personal effort to educate themselves. Generally, students' intention to learn IL skills seems to increase in the final years of their study, which was highly connected to their producing research assignments.

- *IL training sessions*: results show that librarians usually arranged to deliver IL training sessions to first year students, to teach them the basic searching skills. In addition others sessions were delivered in different levels and some were arranged based upon faculty members' requests or positioned as part of the curriculum. Librarians also indicated that the sessions were normally provided by trained library staff. Furthermore, librarians from KU specified that they mainly teach in English to match most of the database services that are mostly offered in English. Yet because they noticed the variation with students' language skills, they sometimes switched between the two languages when teaching IL.

- *Social tagging and IL*: results discovered interesting relations between the main categories of social tagging functions that had been established from the comparative analysis in phase one (Chapter 6, Section 6.6.3) and the IL skills practices. The results help in evaluating the proposed framework of social tagging and IL, as well as providing the revised version of the framework.

### **7.3 Research contributions**

This research conducted user-centred studies aimed at investigating social tagging functions in facilitating information discovery and use in academic libraries focusing on bilingual (Arabic/English) students. A mixed-methods approach was undertaken that applied multiple data collection methods and analysis (qualitative and quantitative). The research makes a contribution to several areas that can be of value for *scholars*, *stakeholders* and *academic library leaders*; the major contribution can be summarized as follows:

- This research provides closer examination of the common functionalities offered by existing social tagging systems, where it develops five main categories of social tagging function including *Posting*, *Searching*, *Browsing*, *Managing*, and *Sharing* functions. The categories can help other researchers studying social tagging systems as well as libraries and institutions using social tagging. The

categories essentially seek to capture and identify the functionalities that support users when using tagging systems; detailed descriptions of the categories are presented in Chapter 3 (Section 3.6.2.2); details of the findings are presented in Chapter 4 (Section 4.3). The examination mainly took a user perspective by applying ‘comparative analysis’ which was considered as an effective method to gather the information needed.

- This research suggests a novel way of using social tagging systems in academic libraries to enhance IL skills instruction. It does this by proposing *a conceptual framework of social tagging functions and IL skills* that underlines the relations between the five main categories of social tagging functions mentioned above and its possible support to students’ IL practices adopted from the SCOUNL seven pillars of IL (SCOUNL, 2011). The initial work of the framework has been published and presented (Abdulhadi et al., 2013) and further examined and validated qualitatively based on students’ and librarians’ perceptions (Chapter 6, Section 6.6.4)
- The experimental study of users’ tagging behaviour involves quantitative and qualitative methods and designing a tagging task where a simulated work task situation (Borlund, 2003) and a stimulated recall approach were used and considered effective. The outcome brings greater understanding of students’ potential tagging behaviour especially regarding the cognitive aspect of the students’ tagging process and the influencing factors in general and in choosing tag language (Chapter 5, Section 5.2.5; Chapter 6, Section 6.4.4). This would be practically interesting for scholar in the field.
- The research also proposed *a descriptive model of bilingual (Arabic/English) students’ tagging behaviour* that emerged from the research findings (Chapter 6, Section 6.4.6). This illustrates the interaction between the main elements of the tagging process including users, resources, and tags. The model also demonstrates factors that may influence the creation of tags, including: cognitive, text/content, and tag language choices influences; it also describes students’ tagging experiences showing tag motivation and the advantages and possible uses

of tags. The model can be valuable for scholars as well as librarians in enriching their understanding of students' tagging behaviour.

Other contributions also considered of value were identified as follows:

- This research contributes to Library and Information Science (LIS), principally to the academic library development research area. It helps expand previous studies about using Web2.0 technologies in the library catalogue by providing a better understanding of social tagging as one of the emerging technologies to support information practice (e.g. IL skills) in an academic context. This in turn aids in filling the shortage found in the literature especially since previous studies, for example Click and Petit (2010); Godwin (2007, 2009), considered using Web2.0 technologies (e.g. social tagging) in the academic context as valuable for further exploration.
- This research also contributes in the area of multilingual and cross-lingual information retrieval (CLIR) and discovery in general; basically because all participants were bilingual students (Arabic/ English speakers). Language was thus a key element of the thesis investigation, including the exploration of students' language preferences in tagging and searching and the impact of their language skills on searching in general.
- Overall, this research enriches our knowledge of bilingual students' search behaviour; capturing aspects in relation to their library catalogue services usage. Findings show that bilinguals exhibit similar behaviour to other students in considering Google as a main source to find information as highlighted in the literature (e.g. University College London, 2008; Branch, 2003; OCLC, 2002). Furthermore, this research pointed out that bilingual students showed a shortage in learning IL skills which seems to be connected to their lack of using searching services offered by their libraries; details were discussed in Chapter 6 (Sections 6.4.2 and 6.6.1).
- This research supports previous observations (Chapter 2, Section 2.3.1.1 and 2.4.2.1) on the effects of language skills on searching behaviour, where bilingual students showed that their language skills affected them when searching for

information. Yet not only when searching in English but also in their native language (Arabic). This is interesting as it stresses the importance of academic libraries offering services to support overcoming the language barriers (Chapter 4, Section 4.2.1.3; Chapter 5, Sections 5.2.3 and 5.3.2.2).

- The research also aids the previous work on multilingual/bilingual social tagging by conducting an experimental study of the potential tagging behaviour of bilingual students when tagging in the Arabic and English languages for academic purposes. This is supported by increasing the existing studies that concentrated on Arabic tags and mostly limited to a few prior studies (El Hussein and Nakata, 2010a, 2010b; El Hussein, 2012).
- This research is also believed to be unique in involving participants from three universities located in Kuwait and the UK. As far as the researcher could determine, there are no previous studies undertaken in Kuwaiti universities (KU and GUST) particularly investigating social tagging systems. Further, having two types of participants (librarians and students) gives more depth of exploration on using social tagging functions in academic libraries and allows some comparisons to be made which is significant (Chapter 6, Section 6.5). Studying social tagging in non-Western settings is a mostly ignored area of study particularly in relation to academic libraries.
- Overall, this research is valuable for academic library leaders and stakeholders in increasing their knowledge about implementing social tagging as one of the Web2.0 technological tools to develop the library catalogue functionalities. The research also increases our awareness of bilingual students' perceptions of having social tagging functions in academic libraries, as well as gaining an understanding about their potential usage and favourite tagging functions.

The following section provides detailed practical recommendations for implementing social tagging systems in academic libraries.

### **7.3.1 Recommendation for implementing a social tagging system in academic library catalogue services**

Based on the findings of this research some recommendations can be made to support academic libraries in implementing social tagging in their catalogue services. This covers both practical and design implications as presented in the following sections.

#### ***7.3.1.1 Design implications***

As discussed in Chapter 2, libraries can either design their own tagging functionalities (e.g. Penntags - the University of Pennsylvania), use existing social tagging functions (e.g. LibraryThing, Delicious), or select tagging functions offered by the LMS (e.g. tags functions used in UoS library catalogue). This way of implementation can be useful, yet it is largely limited in its functions to what the system providers can offer.

However, this research discovered some interesting facets that could support academic libraries when implementing social tagging systems; either when designing a specific social tagging system or when using an existing one. Especially that “system functionality seems to play a role for users’ tagging behaviour” (Hecker et al. 2007: 1). A number of points can be summarised as follows:

- *Tag rights*: which is about who can tag? In general three main types of taggers can be suggested for academic libraries, including students, librarians, and faculty members or teachers. All of them can be allowed to add tags to information resources. Students’ tags can be useful personally and to groups to facilitate access and resource discovery; while librarians’ and teachers’ tags might be considered useful to recommend as resources for specific groups of students’ or classes; e.g. adding tag information to the library catalogue (i.e. to form a reading list).

- *Tagged resources*: this considers the type of resource that could be tagged. Libraries might allow adding tags to all the library collection (electronic and non-electronic resources), which would be beneficial, or might specify it for some resources only.

- *Tag language*: this is about the language of the tags. In libraries that use resources in different languages and/or service students with different language skills, allowing

users to add tags in different languages could be useful. Especially that the majority of the participants in this research consider using mixed language tags as beneficial.

- *Tags adding tool*: this considers how the users can add tags; possibly by a toolbar button/bookmarklets, or by a Web add form; more details about both features can be found in Chapter 4 (Section 4.3). Users might also allow specifying the language of the tags or the resource language during the process of adding tags, which would be a useful option to make it easier to find the correct information resources in the future.

Providing suggested tags can also be valuable to increase the proportion of useful (descriptive) tags, which can be pre-defined by the library staff. This is especially the case since users tend to add tags similar to the tags displayed in the system and copy the quality of tags as well (Sen et al., 2006), and can overcome misleading tags that might occur.

- *Tag visualisation*: this is about displaying tags as a tag cloud, tag list, or providing both. Also where to display it; is it on the main searching page (e.g. popular tags), on the results page (e.g. tags associated with each resource, related tags), the user account page (e.g. my tags), etc. Users might also be allowed to split the tags by language based on their user preferences.

- *Tag sharing*: this considers some specifications for tag sharing; for example, allowing users to keep their tags public, private, or share them with groups.

- *Searching tags*: this considers the functionalities associated with searching tags, including searching personal tags, searching related tags, providing advance searching of tags (e.g. filtering, combining tags), etc.

- *Managing tags*: this is mostly connected to providing options to edit, delete or rename tags, as well as creating tag grouping or bundles.

### **7.3.1.2 Practical implications**

As the success of social tagging systems is highly affected by user participation, some practical facets should be considered to encourage user participation and engagement with the functions. A number of points can be summarised as follows:

-*Tagging literacy*: this reflects delivering clear instructions and tutorials to users on how to create tags using the social tagging system provided in the library. This is to

make them aware and familiar with all the functions and how to get the maximum benefit from using tags to support them when using the library catalogue. This can be as part of the IL sessions, where the proposed framework of social tagging functions and IL skills (Chapter 6, Figure 6.4) can be useful in describing the possible practical tagging activities.

- *Promoting tags*: advertising social tagging functions is important especially as many students stress this point, showing that it is important to introduce them to new features via the library website, social media (e.g. Twitter), as well as through their teachers.

#### **7.4 Research limitations**

The research is limited to a specific context where it explored students and librarians from three universities only; including KU and GUST in Kuwait and UoS in UK. The research was also restricted to investigate bilingual students with Arabic-English language skills.

Another limitation of this research is connected to the tagging task design in the ITE that employed a simulated task situation using an existing social tagging system (Delicious). Although an interesting aspect was discovered about students' tagging behaviour, yet it should be acknowledged that the tagging situation was only a simulation.

Furthermore, although applying mixed-methods was effective in conveying a more complete picture of the research investigation, due the research time limits it was difficult to employ further analytical techniques. For example, the research failed to explore comparisons between some factors (e.g. students' fields of studies, gender, and year of study). This was affected by limited time in gathering the data, and the process of data collection, which was time-consuming especially with the ITE, which made it hard to control the type of participants. Despite these limitations, the proposed framework of social tagging functionalities and IL skills is original in linking tagging activities to students' IL skills practices. However, the framework was mainly conceptual based on librarians' and students' perceptions. Thus, it would be valuable to conduct further practical examination to confirm the framework's usefulness.

## **7.5 Directions of further research**

Designing further studies related to the area of using social tagging systems in academic libraries would be interesting and directions for further work include:

- Involving participants (students, and librarians) from different universities in different countries. This would enable comparison of the findings to the current research and give more understanding of the utility of the use of social tagging systems in an academic library catalogue; especially as each context can have specific implications.
- Conducting a long-term study to explore students' tagging behaviour for a specific class or group of students adding tags in more than one language to library information resources would be valuable. More interesting still would be to pilot and design a social tagging system reflecting the findings of this research. This would also enable further analytical tag approaches to be employed.
- Designing a practical study to further evaluate the proposed framework of social tagging functionalities and IL skills would be interesting to confirm the relations between tagging functions.

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## Appendixes

### Appendix 1: Conference paper “Can social tagging assist information literacy practices in academic libraries?”

#### Can Social Tagging Assist Information Literacy Practices in Academic Libraries?

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**Abstract.** This paper explores the relationship between Information Literacy (IL) and the features of Social Tagging Systems (STS). We identify which of the underlying functionalities of STS can assist the IL skills of users with respect to retrieving, managing and sharing information in academic libraries. The study develops a conceptual framework that combines STS functions with IL skills, adapted from SCONUL's Seven Pillars. A mixed-methods approach was used, employing questionnaires and semi-structured interviews. Forty-six students, from Kuwait and the UK, participated in the study. The findings indicate that 76% of the students perceive STS functions as helpful and important with regard to library catalogue usage. The findings confirm a clear relationship between STS and IL and suggest that STS should be considered for the future development of academic library services.

**Keywords:** Social tagging, information literacy, academic libraries.

#### 1 Introduction

The popularity of Web 2.0 technologies has changed the way in which people interact with information on the web. This has encouraged academic libraries to add new technological functions to their catalogue services, bringing exciting and challenging opportunities to libraries related to the development of their services [1]. Information Literacy (IL) instruction and practices should be aligned with emerging technologies to build more information literate communities. Hence, investigating the relationship between new social technologies and IL is a valuable research avenue [2], particularly since the new social tools open up alternative ways to reach the end users. This could effectively assist the skills required to be information literate in terms of how individuals “gather, use, manage, and create information and data” [3].

This paper addresses an area of research that has not been previously explored: the relationship between information literacy and Social Tagging Systems (STS). The aim is to investigate the value of STS as a means of supporting IL skill development in academic libraries. The objectives of this paper are: (1) to discover the underlying benefits of STS features that can assist users with retrieving, managing and sharing information; (2) to explore the views of students on how they would assign tags to describe information resources, and how using other tag-related functions might assist their IL practices; and (3) to develop a conceptual framework that encapsulates STS functions and IL skills, adapted from SCONUL's Seven Pillars of IL [3].

## 2 Related Work

Social tagging allows users to describe information resources by freely assigning keywords or 'tags' to them [4]. Employing users' tags through various functions can provide flexible ways of using information. This has produced new methods to support users with finding, collecting, storing, organizing and sharing information [5]. Studies show that tags can reflect the vocabulary of users when they describe resources, provide direct feedback on a cluster of tags attached to the same resource, and help users to find unexpected information through browsing tags [6]. Tags can also support users in achieving goals, such as personal information retrieval, sharing information and attracting others, as well as acting as a search aid [7]. Different motivations can encourage people to use STS, including future retrieval, contribution and sharing, attracting attention, self-presentation, opinion expression, task organization, and social signaling [8].

Students often use tags, not for research or information organization, but for social and communication purposes [9]. However, educators could benefit from their familiarity with the use of tagging for learning purposes [9] by creating a system that meets their needs in particular. Because tags can offer opportunities to reflect on their beliefs, the skills they have, and their interests, they can be used as a tool for building their awareness of how to gather, use, manage and create information [3]. Overall, tagging tools provide a valuable combination of personal tagging, resulting in more sufficient social navigation [10]. It is clear that STS may be run in parallel in a library setting to enhance library services, as a way of supporting students' IL skills practice when using the library catalogue.

## 3 Proposed Conceptual Framework

Based on the results of our research, we developed a conceptual framework (Figure 1) that links the features of STS to IL [12], to demonstrate the possible practical support of tagging functionalities to IL skills. The STS features are categorized into: (1) *posting*, which is the process of adding tags to describe the resource; (2) *searching*, which is the ability to search tags with other descriptions (e.g. title, URL, etc.) or limit a search to tags only; (3) *browsing*, which is "the ability to re-orient the view by clicking on tags or user names, to navigate the aggregated bookmark collection" [11]; (4) *managing*, which refers to the basic tag management functions, such as editing and saving tags; and (5) *sharing*, which refers to the ability to share tagged items with others, create groups of users and resources, and import/export items. These categories emerged from a comparative analysis of the features of six social bookmarking sites (Delicious, CiteULike, Diigo, Connotea, Folkd, and Jumpago), and five Library/Museum 2.0 tagging services (WorldCat, Pennings, LibraryThing, Goodreads, and Steve Tagger). The functions of the STS categories were linked more closely to the library setting, employing the core model of SCONUL's (Society of College, National and University Librarians) Seven Pillars of IL. This consists of seven

<sup>1</sup> Connotea website (no longer available).

information activities: identify, scope, plan, gather, evaluate, manage and present. These can be used to analyze, to other frameworks and are "adopted by librarians and teachers around the world as a means of helping them to deliver information skills to their learners" [4].

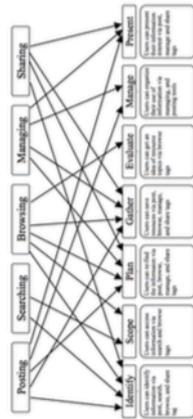


Fig. 1 Relationships between the functionalities of social tagging systems and IL.

## 4 Methodology

A convenience sampling approach was used to reach participants in this study, who were university students (undergraduates and postgraduates), bilingual in Arabic and English. Participants were from three universities, two in Kuwait (Kuwait University and the Gulf University for Science and Technology) and one in the UK (University of Sheffield). The participants also took part in an interactive tagging experiment to expose them to a current social tagging system (Delicious), in which they had to complete the following tagging task: add at least five tags to six Arabic and English academic articles using Delicious. Participants who agreed to take part in the study were provided with an information sheet and consent form before the data collection process began and ethical approval was gained from the University of Sheffield.

A mixed-methods approach was used that included a questionnaire and semi-structured interviews. The questionnaire was used to provide quantitative or numeric descriptions of the perceived use of the STS features [13], whereas the interviews were used to explore their views and opinions in-depth. Combining both methods provides a more effective means of gathering data and can improve the quality of the research [14]. The questionnaire contained closed-class questions, some of which used a 1-5 point Likert scale as well as open-class questions. The questionnaire was divided into a pre-task section to collect demographic data (e.g. age, gender, year of study, major) and a post-task section to gather information about social tagging systems (e.g. ease of use, tagging motivation, usefulness, future use). Follow-up semi-

well as share resources between individuals. "Let's say I take a module that my friends had already completed. I will go and check their tags to find the relevant information" (P9). "I can contact and know people based at my own library and other libraries, both socially and educationally" (P18). These views support identification, planning, gathering, and presenting skills.

Overall, the students' opinions show that adding social tagging functionalities to the library catalogue would be valuable and could support their use of information, particularly because they are easy to use, and can save them time when searching for information. Further, a number of students stated that tagging would encourage them to use the library catalogue more often to find information, instead of searching the web for it.

## 6 Discussion and Conclusions

To assess the utility of social tagging in supporting IL for academic purposes, we investigated the views of students, using both qualitative and quantitative methods. The results confirm the relationship between STS and IL skills (see Figure 1). Generally, the results show that some functions appear to be more beneficial than others, while some overlap across the STS functions in supporting the generic skills of IL from SCONUL [3], obviously, because the nature of IL skills practice is often closely linked [3].

In the developed framework, *posting* was linked to identifying, planning, gathering, managing and presenting IL skills. The links were confirmed by the views of students who saw tags as helpful for organizing, saving, and re-finding information. *Searching* functions were linked to identification and scope skills. The students perceived tags as a useful additional tool for discovering information or re-locating previously found resources by searching previously saved tags. Earlier studies also identified searchable tags as a popular feature [8]. Yet, the benefit was not fully recognized by the participants, mostly because they were not actually using social tagging on a regular basis. *Browsing* functions were linked to supporting identification, scope, gathering, evaluation, and managing skills. Based on the views of students, public tags were perceived as useful in providing an overview of the resource topic more quickly, and helped to identify possible keywords that aid the search for more relevant information, while browsing previously saved tags was also found to be a useful shortcut for the history of information searched. This is supported by previous studies, which found them a very effective and core function of STS [15], although other studies show that personal retrieval is equally effective [8]. *Managing* functions were linked to gathering, managing, and planning skills, since the students found tagging functions helpful in organizing information. *Sharing* functions were seen to assist gathering, planning, identification, and presenting skills. These were highly acknowledged by all of the students, who stated that they could share useful information with each other either as individuals or groups, which was also found to be an important feature of tagging in earlier studies [8].

Providing a conceptual framework that relates STS functions to an existing IL framework will help to ensure that the functions introduced into library systems are able to assist the underlying IL skills of students. This support will help people to become more information literate in an ever-changing information environment. Social tagging should be one of the emerging technologies that academic libraries consider as part of their future services, especially since 57% of the students showed an interest in using tagging features when using the library catalogue. Instructions on how to use tags might be introduced to students within IL skills sessions, or via online tutorials for better tags use to support different information activities. We plan to carry out future studies to investigate how users use tags to describe resources in different languages and evaluate their usefulness as a discovery tool.

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# Appendix 3: Conference poster “Collaborative social tagging and information literacy”



The University of Sheffield  
Information School

## Social Tagging and Information Literacy

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### Introduction

In order to build information literate communities in the Web 2.0 world, it is important to gain a better understanding of the strengths and weaknesses, functionality and usage of these emerging tools and applications. This poster presents the findings of an investigation into social tagging and information literacy (IL) to illustrate how social tagging can aid and benefit IL development and practice.

### What is Social Tagging System?

Social Tagging Systems allow users to freely associate keywords, “tags” to describe resources, user interaction with the system and also exposes tags previously entered by themselves and others. The entire activity of users’ categorization of resources in terms of tags is shared by a community.

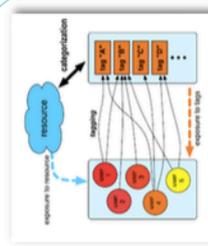


Figure 1: Tagging System (Cattuto, et al.: 2007)

### Why People Tag?

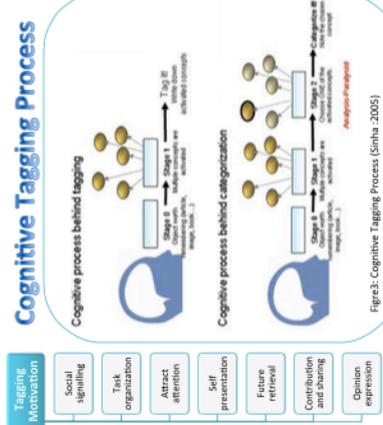


Figure 2: User Tagging Motivation (Gupta et al.: 2010)

### Cognitive Tagging Process

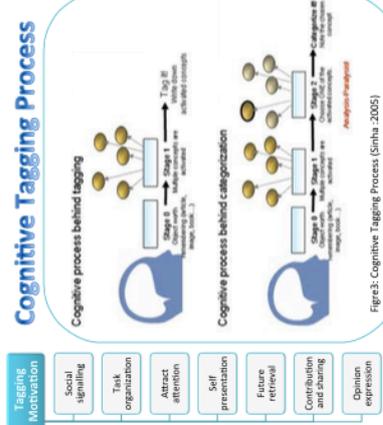


Figure 3: Cognitive Tagging Process (Sinha: 2005)

### Screenshots of Tagging System

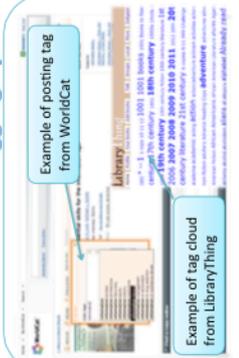


Figure 4: Screenshots of Tagging Systems

### Information Literacy and Social Tagging

Web 2.0 tools give unprecedented opportunities for learners to engage with different types of information resources. These tools are reliant on the power of people’s creativity, collaboration and participation in an interactive web environment all of which are familiar activities for today’s learners. Social tagging systems tools provide an excellent way of collecting, storing, organizing, finding, and sharing online information resources.

In the Web 2.0 world, users can take advantage of social tagging systems to improve their digital IL.

Social tagging strengths can be identified:

- Tags are up to date and represents current activity.
- Tags reflect user language, and represent user understanding of the content.
- Tags can increase sharing, helping people who share an interest.
- Tags can bring better searching experience, encouraging users to interact with the system.
- Tags increase access points to information resources.

### Methodology

A comparative analysis of the functionalities provided by social tagging systems was carried out across a range of social tagging services includes:

- 1) Bookmarking services
  - \* Delicious
  - \* CiteULike
  - \* JumpTags
  - \* Diigo
  - \* Folkd
- 2) Library 2.0/ museum sites with social tagging functionalities
  - \* WorldCat
  - \* Goodreads
  - \* Penntags
  - \* Steve tagger
  - \* LibraryThing

All of the selected social bookmarking services were English websites, free and mainly dealing with URLs or links to bookmarks. We compared these tagging features with the SCONUL Seven Pillars model of IL to examine potential synergies between them (Figure 5).

### Conclusion

This investigation helps in understanding the practical use of social tagging tools. Various activities can be performed using posting, searching, browsing, managing and sharing functionalities. These can support information literacy and by relating social tagging with the IL seven pillars helps to see how in practice tagging can be used to support the processes of identify, scope, plan, gather, evaluate, manage, and present. This support will help people become more information literate in a Web2.0 world.

Online services, such as CiteULike and Comotea, provide freely-accessible social tagging tools that are accessible by anyone. Libraries can employ these tools via implementing tagging services (e.g. LibraryThing for libraries), creating an account in social bookmarking services (e.g. Delicious), or building their own systems (e.g. PennTags). These initiatives bring opportunities for libraries to develop interactive services and simultaneously practice IL.

Social tagging tools helps in improving the connection with the new generation in the digital age, however; tagging literacy should consider to develop best practice of IL using social tagging tools.

### References:

Cattuto, C. et al. (2007). “Collaborative tagging and semantic dynamics”. #495 (October 2007), pp. 1465-1468. [http://www.springer.com/10.1007/978-3-540-74643-1\\_164](http://www.springer.com/10.1007/978-3-540-74643-1_164) [Accessed February 28, 2021].

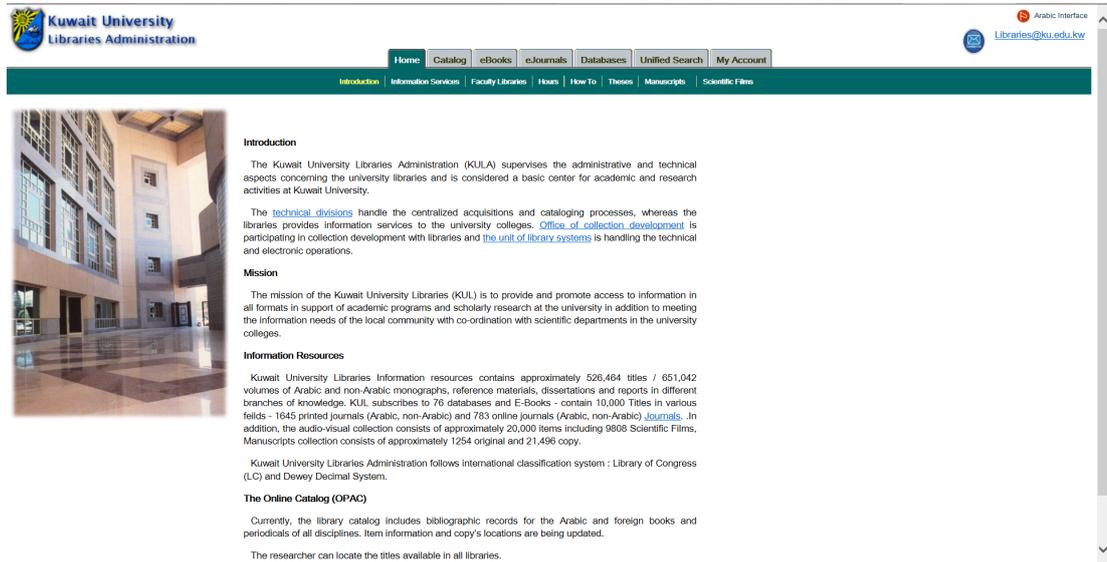
Gupta, M. et al. (2010). “An overview of social tagging and applications”. In Social network data analysis, London: Springer, p. 290.

Sinha, S. (2005). “Tagging: people-powered metadata for the social web”. New Riders.

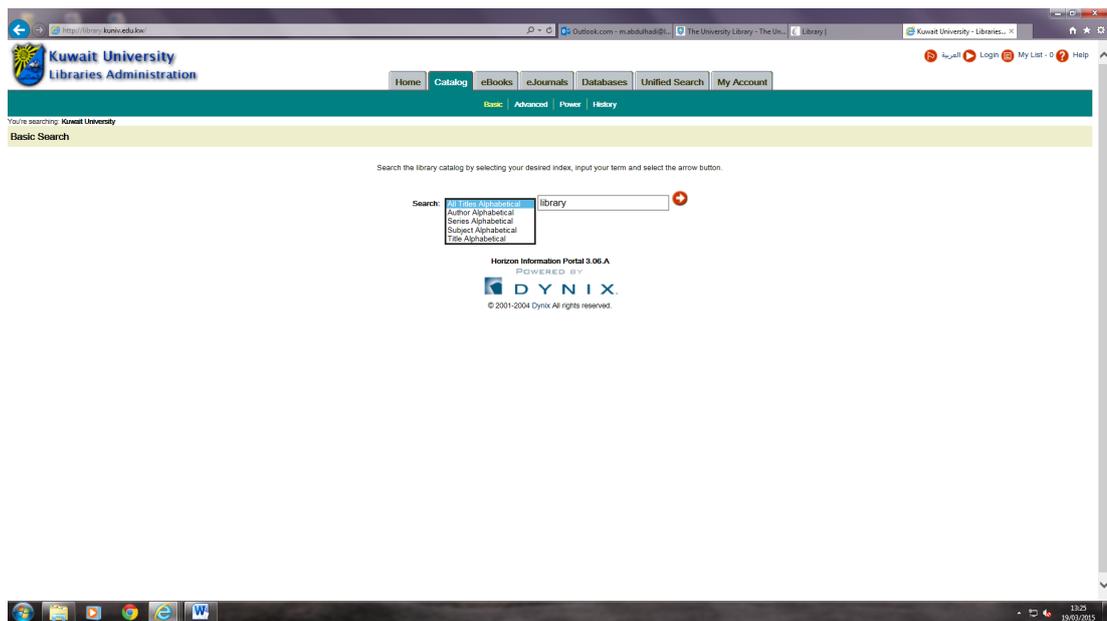
Sinha, S. (2005). A cognitive analysis of tagging [Online] Available at: <http://emmsintha.com/2005/09/27/a-cognitive-analysis-of-tagging/> [Accessed March 7, 2012].

## Appendix 4: Screenshots of libraries' catalogue webpages

- Examples of KU library catalogue webpages  
(<http://catalog.library.kuniv.edu.kw/>)



The screenshot shows the homepage of the Kuwait University Libraries Administration. The header includes the university logo and navigation tabs for Home, Catalog, eBooks, eJournals, Databases, Unified Search, and My Account. A secondary navigation bar lists Introduction, Information Services, Faculty Libraries, Hours, How To, Theses, Manuscripts, and Scientific Films. The main content area features a large photograph of a modern library building on the left. To the right, there are sections for Introduction, Mission, and Information Resources, each with descriptive text. The Introduction section states that the KULA supervises administrative and technical aspects of university libraries. The Mission section describes the goal of providing access to information for academic programs and research. The Information Resources section lists the collection sizes, including approximately 526,464 titles, 651,042 volumes of monographs, 76 databases, 10,000 E-Books, 1645 printed journals, and 783 online journals.



The screenshot shows the search interface of the Kuwait University Libraries Administration. The browser address bar displays the URL <http://www.kuniv.edu.kw>. The page header is identical to the homepage. Below the navigation tabs, there are links for Basic, Advanced, Power, and History. The main search area is titled "Basic Search" and contains a search box with the text "library" entered. A dropdown menu is open, showing search options: All Fields (selected), Author Alphabetical, Series Alphabetical, Subject Alphabetical, and Title Alphabetical. Below the search box, it says "Horizon Information Portal 3.06.A" and "POWERED BY DYNIX". The footer of the page shows the date and time: 13:25 18/03/2015.

The screenshot shows the Kuwait University Libraries Administration website. The search bar contains the word "library" and the results are displayed in a table with columns for Title, Author, and Pub date.

Title	Author	Pub date
1. Library 2.0 and beyond : innovative technologies and tomorrow's user /	Courtney, Nancy.	2007.
2. Library 2.0 initiatives in academic libraries /	Cohen, Laura B.	2007.
3. Library acquisition policies and procedures /		c1977.
4. Library administration /	Lock, Reginald Northwood.	1965.
5. The library administrator's automation handbook /	Boss, Richard W.	1997.
6. Library and archival security		
7. Library and book trade almanac	R.R. Bowker Company.	c1961-
8. Library and information center management /	Stewart, Robert D.	1998.
9. Library and information center management /	Stewart, Robert D.	2002.
10. Library and information center management /	Stewart, Robert D.	1993.

Below the table, there is a pagination control: "Select (a. 1,2,5-10) 1-10" and a "Search" button. At the bottom, it says "Horizon Information Portal 3.06 A POWERED BY DYNIX © 2001-2004 Dynix All rights reserved."

- Examples of GUST library catalogue webpages (<https://amrlibrary.gust.edu.kw/>)

The screenshot shows the website for the A. M. AL-REFAI LIBRARY at Gulf University (GUST). The page features a navigation menu with links for HOME, CATALOG, #RESOURCES, LIBGUIDES, ABOUT US, and REMOTE ACCESS. Below the navigation is a search bar with a "Search" button and radio buttons for "Keyword", "Title", and "Author". There are also sections for "QUICK LINKS", "INFORMATION FOR" (Faculty and Instructors, Students, Staff, Alumni, Community Users), "RESEARCH HELP" (Cabel's Directories, Citing and Referencing, Current Awareness, Web of Science, Research Companion, Scopus), and "OTHER RESOURCES" (Institutional Repository, Open Access Resources, Forms, User Guides, Online Tutorials). The page also includes a "Library Virtual Tour" and "LIBRARY NEWS & EVENTS" section.

**A. M. AL-REFAI LIBRARY**

Library Catalog Find It Fast! I Need Material Knowledge Portal Reserve Desk My Account Contact Us

Go Back Help Limit Search New Search Next Krupt Permalink Logout

**Search Results**

Words or Phrases "library" search found 3460 titles.

Pages: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

- Keep  
 Family Knowledge Journals [Electronic resource]  
 Kemble, Fanny, 1809-1893.  
 PH2398 .A4 A25 2000 EB  
 2000  
[electronic resource link](#)
- Keep  
 Cannibals all! [Electronic resource] : or, slaves without masters  
 Fitzhugh, George, 1806-1881.  
 E449 .P55 1960 EB  
 1960  
[electronic resource link](#)
- Keep  
  
 I, robot : short stories  
 Asimov, Isaac, 1902-  
 F27 .A85 I76 2000  
 2000
- Keep  
  
 The turn of the screw  
 James, Henry, 1842-1914.  
 F27 .J38 T8 2002  
 2002
- Keep  
  
 Value proposition design : how to create products and services customers want  
 Osterwalder, Alexander.  
 HF5415 .S .O83 2014  
 2014  
 1 reserve copy available at GUST Library.

**Continue search in:**  
 Google

**You Found Titles in Categories:**

- Africa
- American Literature
- Asia
- Balkan Peninsula
- Children's Literature
- Commerce
- East Asia, African, Oceania
- Economic History
- Family, Marriage, Women
- France
- General Medicine
- General Technology
- General World History
- Germanic Literature
- History: America and United States
- Internal Medicine
- Library Science and Information Resources
- Library History and Collections
- Mathematics, Computer Science
- Motor Vehicle, Aeronautics, Astronautics
- Oceania, Australia, New Zealand
- Philosophy (General)
- Physics
- Pol. Sci. & Public Admin.: America Outside the U.S.
- Religion
- Roma (Gypsies)
- Russia and former Soviet Republics

**A. M. AL-REFAI LIBRARY**

HOME CATALOG eRESOURCES LIBGUIDES ABOUT US REMOTE ACCESS

**A. M. AL-REFAI LIBRARY**

Admin Sign In

**LibGuides : a one-stop access for all your learning, teaching, and research needs**

All Guides Search: [ ] All Guides Search

**Subjects & Librarians**

- Accounting
- Anthropology
- Art & Architecture
- Biological Sciences
- Business & Management
- Career Guidance
- Chemical Sciences
- Citing and Referencing
- Computer Science
- Criminology & Criminal Justice
- Current Awareness
- Economics
- Education
- Finance
- Foreign Languages
- General Information Resources
- History
- Humanities
- Islamic Banking and Finance
- Islamic Studies
- Journals and Mass

**Welcome to A. M. Al Refai Library LibGuides**

LibGuides is an easy to use Content Management System. The A. M. Al Refai Librarians use it to share information by creating guides on topics, subjects, and processes in support of the GUST academic learning environment.

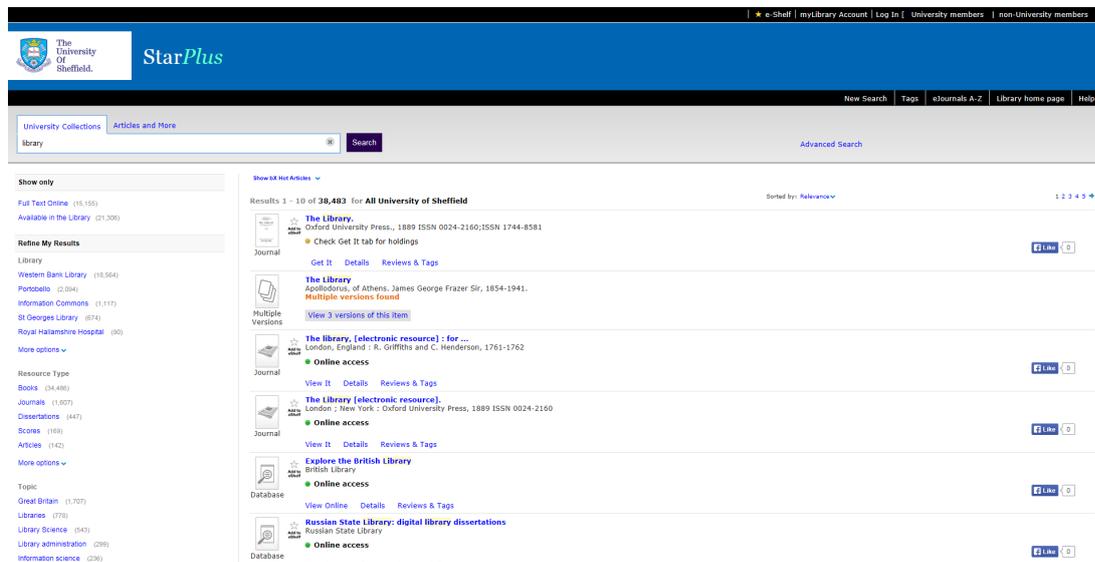
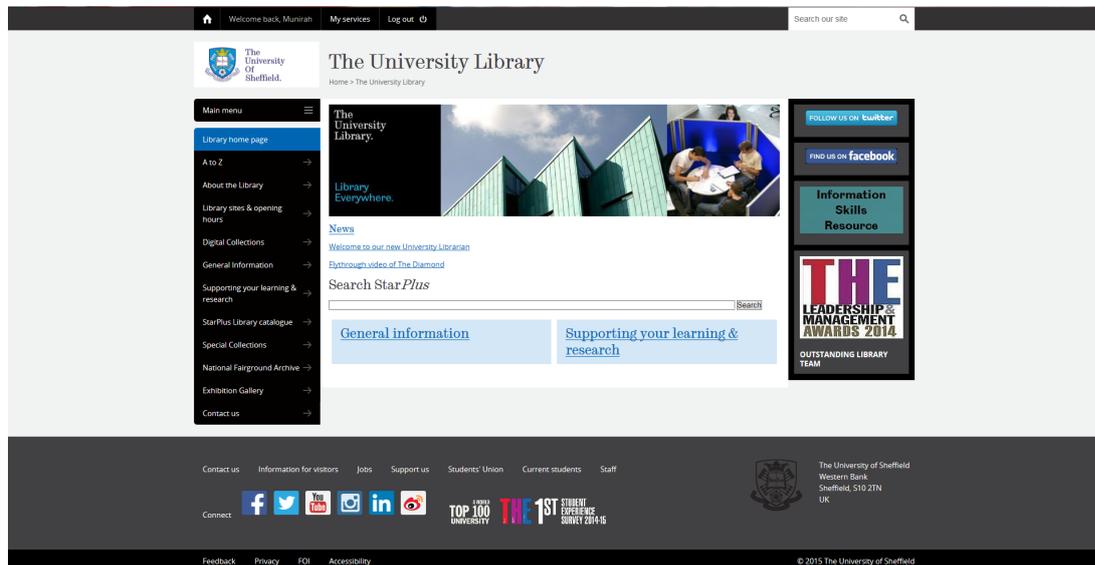
**Library Photo Gallery**



**New Arrivals @ Your Library**

- A Survivor's Guide to R. Kurt**  
Call Number: GA 276 .A5 .F63 2015  
ISBN: 1483348730  
Publication Date: 2015
- Auditing & assurance services**  
Timothy  
Call Number: HF 6927 .L69 2015  
ISBN: 0077862341  
Publication Date: 2015
- Designing and Managing a Research Project**  
Michael J. P. David S. W.  
Call Number: HD 30.4 .P55 2015

- Examples of UoS library catalogue webpages  
(<http://www.sheffield.ac.uk/library>)



## Appendix 5: Descriptions of the core model of SCONUL's seven pillars of information literacy (SCONUL, 2011)

Pillars	Understands	Is able to
IDENTIFY:	<ul style="list-style-type: none"> <li>-That new information and data is constantly being produced and that there is always more to learn</li> <li>-That being information literate involves developing a learning habit so new information is being actively sought all the time</li> <li>-That ideas and opportunities are created by investigating/seeking information</li> <li>-The scale of the world of published and unpublished information and data</li> </ul>	<ul style="list-style-type: none"> <li>-Identify a lack of knowledge in a subject area</li> <li>-Identify a search topic / question and define it using simple terminology</li> <li>-Articulate current knowledge on a topic</li> <li>-Recognise a need for information and data to achieve a specific end and define limits to the information need</li> <li>-Use background information to underpin the search</li> <li>-Take personal responsibility for an information search</li> <li>-Manage time effectively to complete a search</li> </ul>
SCOPE:	<ul style="list-style-type: none"> <li>-What types of information are available</li> <li>-The characteristics of the different types of information source available to them and how they may be affected by the format (digital, print)</li> <li>-The publication process in terms of why individuals publish and the currency of information</li> <li>-Issues of accessibility</li> <li>-What services are available to help and how to access them</li> </ul>	<ul style="list-style-type: none"> <li>-“Know what you don't know” to identify any information gaps</li> <li>-Identify which types of information will best meet the need</li> <li>-Identify the available search tools, such as general and subject specific resources at different levels</li> <li>-Identify different formats in which information may be provided</li> <li>-Demonstrate the ability to use new tools as they become available</li> </ul>
PLAN:	<ul style="list-style-type: none"> <li>-The range of searching techniques available for finding information.</li> <li>-The differences between search tools, recognising advantages and limitations</li> <li>-Why complex search strategies can make a difference to the breadth and depth of information found</li> <li>-The need to develop approaches to searching such that new tools are sought for each new question (not relying always on most familiar resources)</li> <li>-The need to revise keywords and adapt search strategies according to the resources available and / or results found</li> <li>-The value of controlled vocabularies and taxonomies in searching</li> </ul>	<ul style="list-style-type: none"> <li>-Scope their search question clearly and in appropriate language</li> <li>-Define a search strategy by using appropriate keywords and concepts, defining and setting limits</li> <li>-Select the most appropriate search tools</li> <li>-Identify controlled vocabularies and taxonomies to aid in searching if appropriate</li> <li>-Identify appropriate search techniques to use as necessary</li> <li>-Identify specialist search tools appropriate to each individual information need</li> </ul>
GATHER:	<ul style="list-style-type: none"> <li>-How information and data is organised, digitally and in print sources</li> <li>-How libraries provide access to resources</li> <li>-How digital technologies are providing collaborative tools to create and share information</li> <li>-The issues involved in collecting new data</li> <li>-The different elements of a citation and how this describes an information resource</li> <li>-The use of abstracts</li> <li>-The need to keep up to date with new information</li> <li>-The difference between free and paid for resources</li> <li>-The risks involved in operating in a virtual world</li> <li>-The importance of appraising and evaluating search results</li> </ul>	<ul style="list-style-type: none"> <li>-Use a range of retrieval tools and resources effectively</li> <li>-Construct complex searches appropriate to different digital and print resources</li> <li>-Access full text information, both print and digital, read and download online material and data</li> <li>-Use appropriate techniques to collect new data</li> <li>-Keep up to date with new information</li> <li>-Engage with their community to share information</li> <li>-Identify when the information need has not been met</li> <li>-Use online and printed help and can find personal, expert help</li> </ul>
EVALUATE:	<ul style="list-style-type: none"> <li>-The information and data landscape of their learning/research context</li> <li>-Issues of quality, accuracy, relevance, bias, reputation and credibility relating to information and data sources</li> <li>-How information is evaluated and published, to help inform personal evaluation process</li> <li>-The importance of consistency in data collection</li> <li>-The importance of citation in their learning/research context</li> </ul>	<ul style="list-style-type: none"> <li>-Distinguish between different information resources and the information they provide</li> <li>-Choose suitable material on their search topic, using appropriate criteria</li> <li>-Assess the quality, accuracy, relevance, bias, reputation and credibility of the information resources found</li> <li>-Assess the credibility of the data gathered</li> <li>-Read critically, identifying key points and arguments</li> <li>-Relate the information found to the original search strategy</li> <li>-Critically appraise and evaluate their own findings and those of others</li> <li>-Know when to stop</li> </ul>
MANAGE:	<ul style="list-style-type: none"> <li>-Their responsibility to be honest in all aspects of information handling and dissemination (e.g. copyright, plagiarism and intellectual property issues)</li> <li>-The need to adopt appropriate data handling methods</li> <li>-The role they play in helping others in information seeking and management</li> <li>-The need to keep systematic records</li> <li>-The importance of storing and sharing information and data ethically</li> <li>-The role of professionals, such as data managers and librarians, who can advise, assist and support with all aspects of information management</li> </ul>	<ul style="list-style-type: none"> <li>-Use bibliographical software if appropriate to manage information</li> <li>-Cite printed and electronic sources using suitable referencing styles</li> <li>-Create appropriately formatted bibliographies</li> <li>-Demonstrate awareness of issues relating to the rights of others including ethics, data protection, copyright, plagiarism and any other intellectual property issues</li> <li>-Meet standards of conduct for academic integrity</li> <li>-Use appropriate data management software and techniques to manage data</li> </ul>
PRESENT:	<ul style="list-style-type: none"> <li>-The difference between summarising and synthesising</li> <li>-That different forms of writing/ presentation style can be used to present</li> </ul>	<ul style="list-style-type: none"> <li>-Use the information and data found to address the original question</li> <li>-Summarise documents and reports verbally and in writing</li> </ul>

	<p>information to different communities</p> <ul style="list-style-type: none"> <li>-That data can be presented in different ways</li> <li>-Their personal responsibility to store and share information and data</li> <li>-Their personal responsibility to disseminate information &amp; knowledge</li> <li>-How their work will be evaluated</li> <li>-The processes of publication</li> <li>-The concept of attribution</li> <li>-That individuals can take an active part in the creation of information through traditional publishing and digital technologies (e.g. blogs, wikis)</li> </ul>	<ul style="list-style-type: none"> <li>-Incorporate new information into the context of existing knowledge</li> <li>-Analyse and present data appropriately</li> <li>-Synthesise and appraise new and complex information from different sources</li> <li>-Communicate effectively using appropriate writing styles in a variety of formats</li> <li>-Communicate effectively verbally</li> <li>-Select appropriate publications and dissemination outlets in which to publish if appropriate</li> <li>-Develop a personal profile in the community using appropriate personal networks and digital technologies (e.g. discussion lists, social networking sites, blogs, etc.)</li> </ul>
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## **Appendix 6: Phase one, ethics approval letter**

Letter of Approval

Date: 19<sup>th</sup> December 2012

TO: Munirah Abdulhadi

The Information School Research Ethics Panel has examined the following application:

Title: An investigation into the use of social tagging for bilingual users of academic libraries

Submitted by: Munirah Abdulhadi

And found the proposed research involving human participants to be in accordance with the University of Sheffield's policies and procedures, which include the University's '*Financial Regulations*', '*Good Research Practice Standards*' and the '*Ethics Policy Governing Research Involving Human Participants, Personal Data and Human Tissue*' (Ethics Policy).

This letter is the official record of ethics approval by the School, and should accompany any formal requests for evidence of research ethics approval.

Effective Date: 19<sup>th</sup> December 2012



Dr Angela Lin

Research Ethics Coordinator

## **Appendix 7: Phase one, questionnaire information sheet**

1. *Research Project Title:* An investigation into the use of social tagging for bilingual users of academic libraries

### *2. Invitation*

You are being invited to take part in this research project; however, you should read the following information in order to understand why this project is being carried out and what will be expected from it. Take some time to read this information sheet carefully.

### *3. What is the project's purpose?*

This study is part of an ongoing PhD research project entitled "Towards enriching metadata descriptions with tags in a bilingual academic library context". The project aims to produce a better understanding of users' perspectives regarding the use of social tagging systems in an academic library context and some aspects of developing additional studies to achieve the main research aim. Little is known about the needs of users in a bilingual academic library context, for native Arabic speakers dealing with information resources in English, Arabic or both languages.

Two main objectives have been identified, as follows:

To find out if university students face any difficulties when searching online library systems.

To survey university students' perceptions and use of existing social tagging systems.

### *4. Why have I been chosen?*

In order to achieve the project's aims and objectives, university students who speak Arabic and English, are required; you have been chosen to be asked to take part because you fit this profile.

### *5. Do I have to take part?*

Taking part in this research is entirely voluntary. If you decide to take part, you will be provided with an information page and asked to tick a box saying "Next", before starting the questionnaire; however, you can exit the questionnaire at any point you wish to.

### *6. What will happen to me if I take part?*

If you agree to take part in this research, you will be invited to complete an online questionnaire, divided into four main sections: personal information, online library searching, searching and user language preferences, and perceptions of social tagging. The survey should take 15-20 minutes to complete.

At the end of the questionnaire you will be asked if you wish to participate in further research activities relating to the same project. This is entirely optional but, if you agree, you will be asked to provide your contact details for future communication.

*7. What are the possible disadvantages and risks of taking part?*

There are no risks involved in taking part in this study. If there is any information that you do not want to provide, you are completely free to decline to give it.

*8. What are the possible benefits of taking part?*

By taking part in this study, it is hoped that we can use your input to improve our understanding of information access for Arabic-English speaking readers.

*9. What if something goes wrong?*

If anything goes wrong, please contact the researcher via this email address (mabdulhadi1@sheffield.ac.uk). Your complaint will be dealt with respectfully, and we will respond appropriately and as soon as possible. However, if you feel that your complaint has not been dealt with appropriately, then you can email the research supervisor via this email address (p.d.clough@sheffield.ac.uk). In addition, if you wish to complain about any other serious problems that may arise during or following your participation in the research, you can contact the University's 'Registrar and Secretary'.

*10. Will my taking part in this project be kept confidential?*

All of the information that we collect from you and through the questionnaires will be kept strictly confidential, and you will not be identifiable in any reports or publications.

*11. What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?*

To achieve the research objectives, we need to obtain some information from you regarding your use of online library search services, your language preferences for searching, and your use and perceptions regarding social tagging. Collecting this information from you is a fundamental part of the research.

*12. What will happen to the results of the research project?*

The results will be used to inform further studies in this research area. Results may be published based on the data collected.

*13. Who is organising and funding the research?*

This research is funded by the Kuwait cultural office.

*14. Who has ethically reviewed the project?*

This project has been ethically approved through the Information School ethics review procedure.

For any further information please contact:

Munirah Abdulhadi

Information school - Research student

Email: mabdulhadi1@sheffield.ac.uk

Telephone:-----

Supervisor:

Dr. Paul Clough (Senior Lecturer)

Information School

Tel: +44 (0)114 2222664

University of Sheffield

Fax: +44 (0)114 2780300

Regent Court

Email: p.d.clough@sheffield.ac.uk

Sheffield S1 4DP

Web: <http://ir.shef.ac.uk/cloughie/>

## Appendix 8: Phase one, questionnaire participant consent form

<b>Title of Research Project:</b>		
Towards enriching metadata descriptions with tags in a bilingual academic library context		
<b>Name of Researcher:</b> Munirah Abdulhadi.		
<b>Participant Identification Number for this project:</b>	<b>Please initial box</b>	
1. I confirm that I have read and understand the information sheet/letter (delete as applicable) dated <i>[insert date]</i> explaining the above research project and I have had the opportunity to ask questions about the project.		<input type="checkbox"/>
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline. <i>Insert contact number here of lead researcher/member of research team (as appropriate).</i>		<input type="checkbox"/>
3. I understand that my responses will be kept strictly confidential ( <u>only if true</u> ). I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.		<input type="checkbox"/>
4. I agree for the data collected from me to be used in future research		<input type="checkbox"/>
5. I agree to take part in the above research project.		<input type="checkbox"/>
_____	_____	_____
Name of Participant	Date	Signature
<i>(or legal representative)</i>		

\_\_\_\_\_  
Name of person taking consent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

*(if different from lead researcher)*

*To be signed and dated in presence of the participant*

\_\_\_\_\_  
Lead Researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

*To be signed and dated in presence of the participant*

Copies:

*Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the letter/pre-written script/information sheet and any other written information provided to the participants. A copy of the signed and dated consent form should be placed in the project's main record (e.g. a site file), which must be kept in a secure location.*

## Appendix 9: Phase one, the Arabic copy of the questionnaire

إستبيان

المقدمة:

يهدف الاستبيان إلى فهم اللغة المفضلة لدى المستخدم ما بين اللغة العربية أو الإنجليزية عند البحث عبر الانترنت. بالإضافة إلى مدى استخدامهم لانظمة الوسم (التصنيف) الاجتماعي- Social tagging systems كالتالي تستخدم في بعض مواقع الشبكات الاجتماعية - Social networking ، حيث سيساعدنا ذلك في تطوير و استحداث المزيد من الدراسات في هذا المجال. اجابتك لهذا الاستبيان ستفيدنا في فهم احتياجات و تفضيلات مستخدمي انظمة البحث في المواقع الالكترونية للمكتبات الجامعية. الاستبيان مقسم كالتالي: المقدمة، البحث بانظمة الموقع الالكتروني للمكتبة الجامعية ، اللغة المفضلة للبحث و استخدام انظمة الوسم (التصنيف) الاجتماعي.

يستغرق استكمال هذا الاستبيان من 10 إلى 20 دقيقة ، سيتم التعامل بشكل سري مع إجاباتكم.

نشكر لكم حسن تعاونكم معنا.

• يرجى التكرم بالاجابة على الاسئلة التالية وذلك بوضع علامة (✓) في الخانة المخصصة (□).

القسم الاول: المعلومات الشخصية	
1- هل أنت؟	<input type="checkbox"/> ذكر <input type="checkbox"/> أنثى
2- في أي نوع من المدارس درست؟	<input type="checkbox"/> مدرسة عربية <input type="checkbox"/> مدرسة إنجليزية <input type="checkbox"/> مدرسة ثنائية اللغة (عربي وإنجليزي) <input type="checkbox"/> أخرى .....
3- أنت في أي سنة دراسية حالياً؟	<input type="checkbox"/> سنة أولى <input type="checkbox"/> سنة ثانية <input type="checkbox"/> سنة ثالثة <input type="checkbox"/> أخرى .....
4- ما هو مجال تخصصك؟	.....

القسم الثاني: البحث بانظمة الموقع الالكتروني للمكتبة الجامعية						
1- ما هو معدل استخدامك لخدمات البحث التي يقدمها الموقع الالكتروني للمكتبة الجامعية (على سبيل المثال، البحث في قواعد البيانات والمصادر المعلومات الالكتروني).						
<input type="checkbox"/> مطلقاً <input type="checkbox"/> نادرًا <input type="checkbox"/> أحيانًا <input type="checkbox"/> غالبًا <input type="checkbox"/> دائمًا						
2- ما مدى استخدامك للخيارات المتاحة للبحث عبر الموقع الالكتروني للمكتبة الجامعية؟						
	مطلقاً	نادرًا	أحيانًا	غالبًا	دائمًا	لا أعرف
العنوان	<input type="checkbox"/>					
المؤلف	<input type="checkbox"/>					
كلمات المفتاحية	<input type="checkbox"/>					
السلسلة	<input type="checkbox"/>					
ردمك	<input type="checkbox"/>					

3- عادة ما أكون راضيًا عن نتائج بحثي عند استخدام أنظمة البحث المتاحة عبر موقع المكتبة الإلكتروني؟  
 أرفض بشدة  لا أوافق  لا أوافق ولا أرفض  أوافق  أوافق بشدة  
 لماذا/ أذكر السبب : .....

4- أجد أنه من الصعب الحصول على المعلومات المراد الحصول عليها خلال أنظمة البحث المتاحة عبر موقع المكتبة الإلكتروني؟  
 أرفض بشدة  لا أوافق  لا أوافق ولا أرفض  أوافق  أوافق بشدة  
 لماذا/ أذكر السبب : .....

القسم الثالث: اللغة والبحث

1- هل تحمل شهادة لغة إنجليزية معتمدة؟ (مثل TOEFL ، IELTS أو اختبار مستوى اللغة الانجليزية للجامعة)  
 نعم  لا  لا أعلم  
 إذا كانت اجابتك نعم، يرجى ذكر نوع الشهادة و النتيجة.  
 .....

2- يرجى تقييم مستواك في البحث عن مواد في كل من اللغة العربية والإنجليزية

اللغة	ضعيف جدًا	ضعيف	جيد	جيد جدًا	ممتاز
العربية	<input type="checkbox"/>				
الإنجليزية	<input type="checkbox"/>				

3- أجد أن امكانية كتابة استفسار في خاتمة البحث بلغتي المفضلة لتحديد العواد المكتوبة بلغه أخرى جيد.(مثال: كتابة كلمة" تاريخ" في خاتمة البحث للحصول على نتائج بحث باللغة الانجليزية عن "HISTORY")  
 أرفض بشدة  لا أوافق  لا أوافق ولا أرفض  أوافق  أوافق بشدة

4- يمكنني أن أجد ما أبحث عنه بشكل أفضل عندما أقوم بالبحث باللغة :  
 العربية  الإنجليزية  كلتا اللغتين  لا أعرف

5- لماذا اخترت هذه اللغة؟  
 (يمكنك اختيار أكثر من إجابة في حال رغبت في ذلك)  
 لأنها لغة المادة التي أقوم بدراستها  
 شائيًا ما أجد الكثير من المعلومات في هذه اللغة  
 المعلومات المهمة الخاصة بمجالتي في هذه اللغة  
 أخرى.....

### تابع القسم الرابع: أنظمة الوسم الاجتماعي - Social tagging systems

قبل أن تقوم بإكمال الأسئلة التالية، من الجدير أن تعلم أن "الوسم (التصنيف) الاجتماعي-social tagging" هو نظام يسمح للمستخدمين بتصنيف المعلومات والعثور عليها مستقبلاً من خلال إضافة كلمات بلغه المستخدم "وسوم"، التي تقوم بوصف محتويات أي مادة (كتب، مقالات، مواقع الكترونية، صور، الخ). هذه الأنظمة متاحة في بعض مواقع الشبكات الاجتماعية social networking مثل Flickr، Citeulike، و Delicious.

بالإضافة للوسوم (تصنيفات) -tags إلى خدمات البحث الإلكترونيه بموقع المكتبه، يمكنك:

- إضافة كلمات وصفية "وسم-tag" إلى مصادر المعلومات بالمكتبة.
- البحث عن الوسم-tags التي قمت أنت أو الآخرين بإضافتها إلى مختلف المصادر المعلومات المتاحة بالمكتبة.
- تنظيم و تصنيف الوسم-tags بغرض الاستخدام المستقبلي.
- تصفح وعرض الوسم-tags التي قمت أنت أو الآخرين بإضافتها عادة باستخدام "tag cloud"، من خلال الضغط على الكلمة التي تريد البحث عنها. الصورة أدناه هي مثال لـ "tag cloud".

art australia baby beach birthday blue bw california cameraphone canada  
 canon cat chicago china christmas city dog england europe family flower  
 flowers food france friends fun germany halloween holiday india italy japan  
 london me music nature new newyork night nikon nyc paris park  
 party people portrait sanfrancisco sky snow spain summer sunset taiwan tokyo  
 travel trip usa vacation water wedding winter

2- يرجى تقييم مستوى إستخدامك لمواقع الشبكات الإجتماعية (على سبيل المثال، Facebook، Flickr، YouTube، Librarything و Citeulike).

□ مطلقاً □ نادراً □ أحياناً □ غالباً □ دائماً

إذا كنت من مستخدمي مواقع الشبكات الاجتماعيه، يرجى الاجابه على سؤال رقم 3، وإذا لم تستخدمهم من قبل انتقل مباشرة الى السؤال رقم 4

3- عندما تقوم بزيارة أحد مواقع الشبكات الإجتماعية، ما مدى تكرار إستخدامك لها يلي

لا أعرف	دائماً	غالباً	أحياناً	نادراً	مطلقاً	
<input type="checkbox"/>	إضافة وسم(تصنيف)- tag إلى المواد التي تراها مفيدة					
<input type="checkbox"/>	البحث عن وسم(تصنيف)- tag الخاصة بك					
<input type="checkbox"/>	البحث عن وسم(تصنيف)- tag الخاصة بالآخرين					
<input type="checkbox"/>	تصفح او عرض وسم(تصنيف)- tag					
<input type="checkbox"/>	إستخدام وسم(تصنيف)- tag لتنظيم مواد مفضلة لديك					

4-بالإضافة الى خدمات البحث الحالية التي يوفرها الموقع الالكتروني للمكتبة، أود أن:						
لا أعرف	أوافق بشدة	أوافق	لا أوافق ولا أرفض	أرفض	أرفض بشدة	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	اضيف وسم(تصنيف)- tag إلى المواد التي تراها مفيدة
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ابحث عن وسم(تصنيف)- tag الخاصة بك
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ابحث عن وسم(تصنيف)- tag الخاصة بالآخرين
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	انصفح او عرض وسم(تصنيف)- tag
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	استخدم وسم(تصنيف)- tag لتخليم مواد مفضلة لديك
5-بالنسبة للمواد باللغة العربية، أفضل استخدام وسم(تصنيف)- tag باللغة:						
<input type="checkbox"/> العربية <input type="checkbox"/> الإنجليزية <input type="checkbox"/> مزيج من اللغتين						
6-بالنسبة للمواد باللغة الإنجليزية، أفضل استخدام وسم(تصنيف)- tag باللغة:						
<input type="checkbox"/> العربية <input type="checkbox"/> الإنجليزية <input type="checkbox"/> مزيج من اللغتين						
7-أجد أن إضافة أدوات الوسم (تصنيف) الإجتماعي- social tagging للمساعدة في إضفاء المزيد من النفع لنظام البحث بموقع المكتبة الالكتروني جيدة.						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	أوافق بشدة      لا أوافق      لا أوافق ولا أرفض      أوافق      أوافق بشدة

إنتهى الإستبيان.....

إذا كنت ترغب في المشاركة في المزيد من أنشطة البحث المتعلقة بنفس المشروع، يرجى تقديم تفاصيل الاتصال الخاصة بك في الفراغات التالية.

الاسم:
البريد الالكتروني:
رقم الهاتف:

نشكر لكم حسن تعاونكم.

## Appendix 10: Phase one, the English copy of the questionnaire

### Social Tagging System

#### 1. Information page

Thank you for taking time to answer this questionnaire.

The questionnaire seeks to understand peoples preferences regarding their search language and use of tagging systems, which will help us in developing and improving further studies in this area. Your feedback will help in gaining a better understanding of users' needs and preferences.

The questionnaire is divided into four main sections: personal information, online library searching, searching and language preferences, and social tagging perceptions. It should take between 10 and 15 minutes to complete.

Your answers will be treated confidentially.

If you decide to take part in this study, please click "Next", by doing that you are giving your consent to participate in this study.

#### 2. Personal information

**1. Are you?**

Male  Female

**2. In what kind of school did you study at?**

Arabic school  English school  Bilingual school(Arabic and English)

Other (please specify)

**3. Currently, you are in which year of study:**

Year 1 undergraduate student  Year 2 undergraduate student  Year 3 undergraduate student

Other (please specify)

**4. What is your subject area?**

#### 3. Online library searching

**1. How often do you use the search services provided by the online library system (e.g. searching electronic resources and databases).**

Never Rarely Sometimes Often Always

## Social Tagging System

### 2. Which search option do you use most commonly when using search services provided by the online library system?

	Never	Rarely	Sometimes	Often	Always	Don't Know
Title	<input type="radio"/>					
Author	<input type="radio"/>					
Keyword	<input type="radio"/>					
Series	<input type="radio"/>					
ISBN	<input type="radio"/>					

### 3. I am usually satisfied with my online library search results.

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Why?

### 4. I find searching for relevant information using the search services provided by the library online system difficult.

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Why?

## 4. Searching and language preferences

### 1. Do you have an approved English language qualification? (e.g. TOEFL, IELTS)

Yes
  No
  Don't Know

If Yes, please write your language qualification and score?

### 2. Please rate your level in searching for materials in

	Very Poor	Poor	Good	Very good	Excellent
Arabic	<input type="radio"/>				
English	<input type="radio"/>				

### 3. I would find it useful to be able to type a query in my preferred language to locate materials written in other languages.

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 4. I can best find what I am looking for when I search in :

Arabic
  English
  Both languages
  Don't Know

## Social Tagging System

### 5. Following on from the previous question, why do you choose that language?

(you can choose more than one answer if you wish)

- It's the language of the subject I am studying
- I often find more information in that language
- The important information in my field is in that language
- Other (please specify)

### 5. Social tagging perceptions

#### 1. Do you know what "Social Tagging" is?

- Yes                       No                       Don't Know

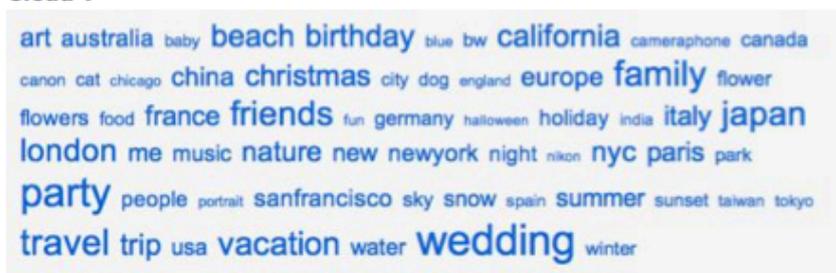
### 6. Social tagging perceptions

## Social Tagging System

Before you complete the following questions, it's worth knowing that "Social Tagging" is a system that allows users to collectively classify and find information through the use of manually assigned keywords "tags", which describe the contents of any item. Examples systems includes social networking websites like Flickr,Citeulike, and Delicious.

By adding social tagging to online library services you could:

- Add your own labels to items in the library.
- Search for items using the tags you or others have assigned.
- Organize items for future use.
- Browse and view tags other people assigned to items using a "tag cloud", usually by clicking on the word that you want to look at.The image below is an example of a "tag cloud".



1. Please rate your level of usage with the social networking websites (e.g. YouTube, Flickr, Facebook, Delicious,Librarything and Citeulike).

Never       Rarely       Sometimes       Often       Always

2. When you visit a social networking website, how often do use the following:

	Never	Rarely	Sometimes	Often	Always	Don't Know
Add tags to items you find useful.	<input type="radio"/>					
Search your tags.	<input type="radio"/>					
Search other people tags.	<input type="radio"/>					
Browse/View a tag cloud.	<input type="radio"/>					
Use tags to organize your favourite items.	<input type="radio"/>					

## Social Tagging System

**3. In addition to the current search service provided by the online library features, I would like to:**

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Don't know
Add tags to items you find useful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search your tags.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search other people tags.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Browse/View tag cloud.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use tags to organize your favourite items.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**4. For Arabic materials I would prefer to use tags in**

Arabic                       English                       A combination of both languages

**5. For English materials I would prefer to use tags in**

Arabic                       English                       A combination of both languages

**6. Adding social tagging tools to help the online library searching would be useful (e.g. the ability add, search and browse tags).**

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
-	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 7. The End

Thank you for your participation in this study.

**1. If you wish to participate in further research activities relating to the same project, please provide your contact details in the following boxes.**

Name

Email

Telephone number

## **Appendix 11: Phase two, ethics approval letter**

Letter of Approval

Date: 10<sup>th</sup> January 2013

TO: Munirah Abdulhadi

The Information School Research Ethics Panel has examined the following application:

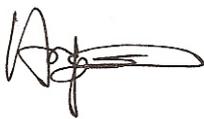
Title: An investigation into the use of social tagging for bilingual users of academic libraries

Submitted by: Munirah Abdulhadi

And found the proposed research involving human participants to be in accordance with the University of Sheffield's policies and procedures, which include the University's '*Financial Regulations*', '*Good Research Practice Standards*' and the '*Ethics Policy Governing Research Involving Human Participants, Personal Data and Human Tissue*' (Ethics Policy).

This letter is the official record of ethics approval by the School, and should accompany any formal requests for evidence of research ethics approval.

Effective Date: 10<sup>th</sup> January 2013



Dr Angela Lin

Research Ethics Coordinator

## Appendix 12: Phase two, information sheet and consent

<b>The University of Sheffield. Information School</b>	An investigation into the use of social tagging for bilingual users of academic libraries
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### Researchers

Munirah Abdulhadi -PhD student  
The University of Sheffield- ISchool

Email: [mabdulhadi1@sheffield.ac.uk](mailto:mabdulhadi1@sheffield.ac.uk).

### Purpose of the research

The research purpose is to investigate bilingual students' tagging behaviour, and particularly to address the following objectives; first, to identify the factors that influence bilingual students when tagging in different languages; and, second, to determine the possible use of students' tags to support information access and use in the academic library context. The study also wants to investigate the librarians' opinions about developing the library services by adding social tagging functionalities. The findings of this study will bring a better understanding of the expected use of social tagging systems by students with different language skills. Further recommendations regarding social tagging features will be made with regard to developing academic libraries services.

### Who will be participating?

We are inviting bilingual undergraduate students who speak both Arabic and English to participate in this research from the University of Sheffield and two universities in Kuwait: the Gulf University for Science and Technology (GUST), and Kuwait University (KU). For the librarians' interviews, the participants will be invited from the same universities identified previously.

### What will you be asked to do?

Students who agree to participate, will be asked to create an account on the online bookmarking service 'Delicious' ([www.delicious.com](http://www.delicious.com)), following simple steps (full instructions will be provided), in order to create tags for given information resources. Then, we will ask you to complete a brief questionnaire. After that, we will conduct a short interview about your experience and opinions regarding using a social tagging system in an academic library. The whole process will take no longer than 90 minutes. For the librarians' interviews, the participants will just need to attend the interview. The interview will take no more than 60 minutes. All participants are free to take part or refuse.

### What are the potential risks associated with participating?

No potential risks have been identified.

### What data will we collect?

From the students, we will collect the tags that you assigned during the tagging task; observation will also be used to capture general information about your interaction with the social tagging system. A short questionnaire will be used to collect some personal information (e.g. gender, year of study), and other

details regarding your experience of using social tagging. Further, audio recorded will use while conducting the interview, which focuses on obtaining in depth information about your experience and opinions of using social tagging.

From the librarians, we will collect some personal information (gender, job position, years of experience, etc.) and information about the library development plans regarding the use of the new technologies, particularly social tagging functions.

#### **What will we do with the data?**

The collected data will be analyzing for inclusion in my PhD research. After that point, the data will be destroyed.

#### **Will my participation be confidential?**

The data will be collected, analysed and accessed only by the researcher and will be used only for the purpose of this research. The data will be stored on a University of Sheffield computer and not accessed by anyone else but the researcher. No personal information will be used, as we are anonymising the data and coding the computer files with a random number. No identifying information will be retained.

#### **What will happen to the results of the research project?**

The data will not be retained for use beyond the scope of the PhD thesis or re-used. The data will only be used for this study (An investigation into the use of social tagging for bilingual users of academic libraries) which will be publicly available after final submission, and the publication that arise as a result of this study i.e. academic journal papers, and conference papers and presentations. You will be provided with the contact details of the Primary Investigator and Supervisor for updates to the project progress or with any further questions.

I confirm that I have read and understand the description of the research project, and that I have had an opportunity to ask questions about the project.

I understand that my participation is voluntary and that I am free to withdraw at any time without any negative consequences.

I understand that I may decline to answer any particular question or questions, or to do any of the activities. If I stop participating at all time, all of my data will be purged.

I understand that my responses will be kept strictly confidential, that my name or identity will not be linked to any research materials, and that I will not be identified or identifiable in any report or reports that result from the research.

I give permission for the research team members to have access to my anonymised responses.

I agree to take part in the research project as described above.

\_\_\_\_\_  
Participant Name (Please print)

\_\_\_\_\_  
Participant Signature

\_\_\_\_\_  
Researcher Name (Please print)

\_\_\_\_\_  
Researcher Signature

\_\_\_\_\_  
Date

**Note: If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, please contact Dr. Angela Lin, Research Ethics Coordinator, Information School, The University of Sheffield ([ischool\\_ethics@sheffield.ac.uk](mailto:ischool_ethics@sheffield.ac.uk)), or to the University Registrar and Secretary.**

## Appendix 13: Phase two, instruction document of the interactive tagging experiment

### About Social Tagging:

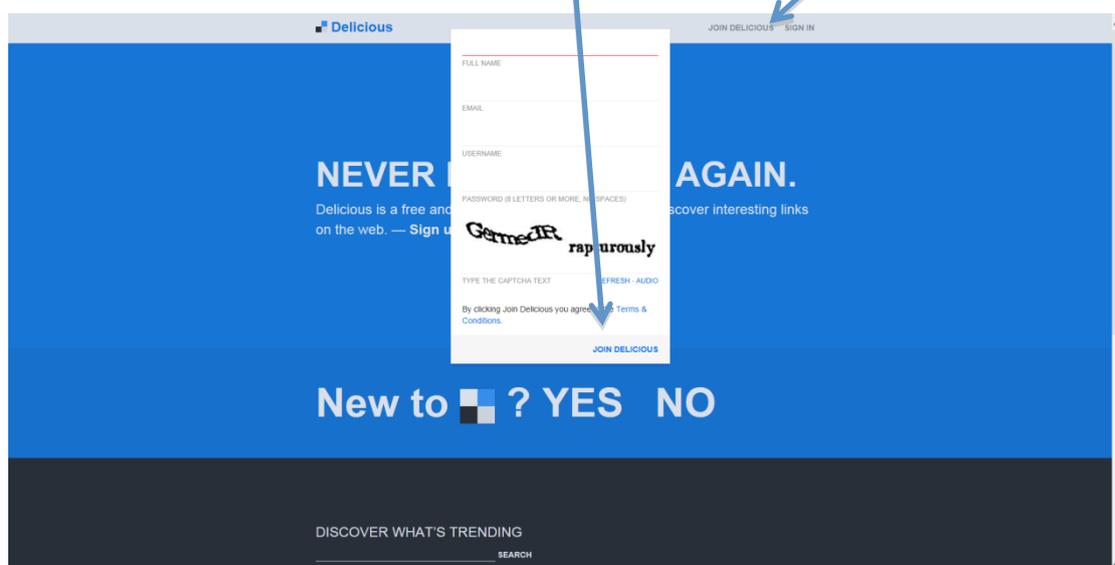
"Social Tagging" is a system that allows users to collectively classify and find information through the use of manually assigned keywords "tags", which describe the contents of any item. An example social tagging system is 'Delicious', where you can:

- Add your own labels "tags" to items you find useful.
- Search for items using the tags you or others have assigned.
- Manage items for future use.
- Share items with others.
- Browse and view tags other people assigned to items.
- Delicious tutorial: What is delicious?  
<http://www.youtube.com/watch?v=RHyCWwtgCTE>

### Instructions:

#### First: Register with 'Delicious'

1. Visit <https://delicious.com> and click on "Join Delicious".
2. Please complete all the fields and click on "Sign up for Delicious".



## Second: Tagging task

(Please read the following scenario before starting the task)

“Assume that you search the library catalogue to find information for your coursework. In your search result you found some good articles that you want to use them. Describe the articles with appropriate tags, so that you can allocate them later using the tags that you assigned. Keep in mind that your tags can help you and others in searching, browsing, managing and sharing information using social tagging functionalities”.

Please follow the instructions below:

1. Now go to the Web browser.
2. Take a look on the articles provided.
3. Select **3 Arabic and 3 English articles of your choice to tag** them using your “Delicious” account (you can find a table with all the titles in the instructions document).
4. When you choose an article, open in it and go through the content.
5. Then click on **add to Delicious** to add tags.



المؤلفات المنشورة

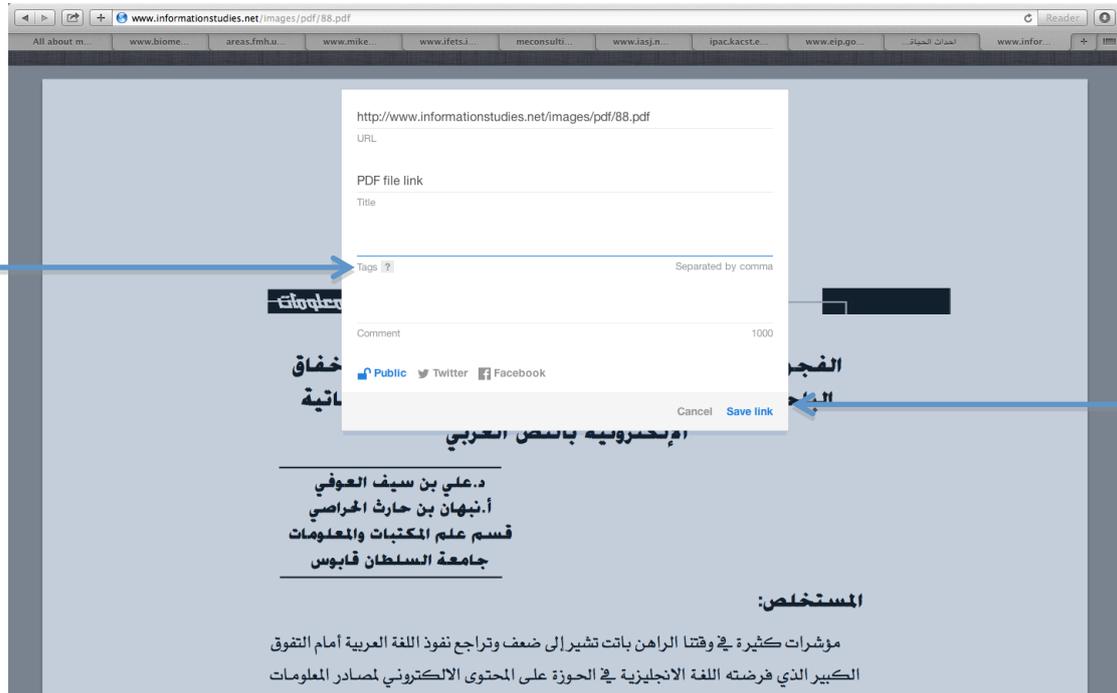
**الفجوة الرقمية اللغوية: دراسة العوامل المؤدية إلى إخفاق الباحثين والأكاديميين العرب في تعزيز الأرصدة المعلوماتية الإلكترونية بالنص العربي**

د.علي بن سيف العوفي  
أ.نبهان بن حارث الحراسي  
قسم علم المكتبات والمعلومات  
جامعة السلطان قابوس

**المستخلص:**

مؤشرات كثيرة في وقتنا الراهن باتت تشير إلى ضعف وتراجع نفوذ اللغة العربية أمام التقوق الكبير الذي فرضته اللغة الانجليزية في الحوزة على المحتوى الالكتروني لمصادر المعلومات

6. Add at least 5 tags in the tag space, you can use single words, phrases (Arabic, English or both languages) or numbers. Then click Save link.



6. Please do the same to all the articles you chose.

## 7. English and Arabic articles:

NO.	English Articles
1.	<b>Title: All about me: Disclosure in online social networking profiles: The case of FACEBOOK .</b> Nosko, A., Wood, E., & Molema, S. (2010). All about me: Disclosure in online social networking profiles: The case of FACEBOOK. <i>Computers in Human Behavior</i> , 26(3), 406-418.
2.	<b>Title: Computer literacy and attitudes towards e-learning among first year medical students.</b> Link, Thomas M., and Richard Marz. "Computer literacy and attitudes towards e-learning among first year medical students." <i>BMC medical education</i> , 6(1) (2006): 34.
3.	<b>Title: Youth sport programs: an avenue to foster positive youth development.</b> Fraser-Thomas, J. L., Cote, J., & Deakin, J. (2005). Youth sport programs: An avenue to foster positive youth development. <i>Physical Education &amp; Sport Pedagogy</i> , 10(1), 19-40.
4.	<b>Title: The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment.</b> Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: the indirect role of parental expectations and the home environment. <i>Journal of Family Psychology</i> , 19(2), 294.
5.	<b>Title: Social Software for Life-long Learning.</b> Klamma, R., Chatti, M. A., Duval, E., Hummel, H., Hvannberg, E. T., Kravcik, M., & Scott, P. (2007). Social software for life-long learning.
6.	<b>Title: Small tourism business networks and destination development.</b> Tinsley, R., & Lynch, P. (2001). Small tourism business networks and destination development. <i>International Journal of Hospitality Management</i> , 20(4), 367-378.
NO.	Arabic Articles
1.	<b>العنوان: الفجوة الرقمية اللغوية : دراسة العوامل المؤدية إلى إخفاق الباحثين و الأكاديميين العرب في تعزيز الأرصدة المعلوماتية الإلكترونية بالنص العربي.</b> علي بن سيف العوفي، و نبهان بن حارث الحراسي. (2010). الفجوة الرقمية اللغوية: دراسة العوامل المؤدية إلى إخفاق الباحثين و الأكاديميين العرب في تعزيز الأرصدة المعلوماتية الإلكترونية بالنص العربي. دراسات المعلومات، ع 8 ، مايو.
2.	<b>العنوان: قياس العلاقة مابين العولمة و الثقافة التنظيمية ( بحث حالة في منظمة تعليمية</b> سندس رضويي خوين، (2009). قياس العلاقة مابين العولمة و الثقافة التنظيمية (بحث حالة في منطقة تعليمية). مجلة الإدارة والاقتصاد، ع 27 ، 91 125.
3.	<b>العنوان: دراسة تحليلية لتقييم تأثير المتطلبات الهندسية الغير محددة على جودة الأداء في تطوير البرمجيات: دروس مستفادة للعالم العربي</b> اياد بن يوسف الدعيجي، (2000). دراسة تحليلية لتقييم تأثير المتطلبات الهندسية الغير محددة على جودة الأداء في تطوير البرمجيات: دروس مستفادة للعالم العربي. 1 22.
4.	<b>العنوان: السياسة النقدية في مصر: تحديات الحاضر و أولويات المستقبل.</b> المركز المصري للدراسات الاقتصادية، (2001). السياسة النقدية في مصر/ تحديات الحاضر و أولويات المستقبل. آراء في السياسة الاقتصادية، يوليو 1. 6.
5.	<b>العنوان: دراسة في تطبيق أدوات وتقنيات إدارة الجودة الشاملة</b> هدس. باني و ب. ج. دابل، (1997). دراسة في تطبيق أدوات وتقنيات إدارة الجودة الشاملة. مجلة الجودة الشاملة، مج 9(3)، 183 189.
6.	<b>العنوان: أحداث الحياة والضغط النفسية ودورها في الإصابة بالأورام السرطانية: دراسة ميدانية.</b> مصطفى مفتاح الشقمانى، و محمد أحمد الفقي، (2006). أحداث الحياة و الضغوط النفسية ودورها في الإصابة بالأورام السرطانية. المؤتمر السادس للأورام السرطانية. جامعه 6 أكتوبر، ليبيا. 248 231.

## Appendix 14: Phase two, questionnaire of interactive tagging experiment- English version

### TAGGING TASK- English

#### Pre-task: Personal and background Information

Thank you for taking time to participate in this study, please answer the following questions. Your answers will be treated confidentially.

**\*1. What is your gender?**

Male       Female       Other       Prefer not to say

**\*2. Please state your age:**

Prefer not to say

Age:

**\*3. In your high school, What was the main language used in teaching?**

Arabic language       English language       Bilingual languages (Arabic and English)

Other (please specify)

**\*4. Do you have an approved English language qualification? (Example: TOEFL, IELTS)**

Yes       No       Don't Know

If yes, please state your level (e.g.score)

**\*5. Currently, which university are you studying at?**

Kuwait University       Gulf University for Science and Technology       University of Sheffield

**\*6. Currently, in which year of study are you?**

Year 1 undergraduate student       Year 2 undergraduate student       Year 3 undergraduate student       Year 4 undergraduate student       Postgraduate student

Other (please specify)

**\*7. Please state your current degree title:**

**\*8. What language is your degree being taught in?**

Arabic       English       Both Languages

## TAGGING TASK- English

**\*9. How often do you use your online library services (e.g. searching electronic resources and databases).**

- Never  Once a week  
 Less than once a month  Two or three times a week  
 Once a month  Daily  
 Once every two weeks

Please specify, Why?

**\*10. What do you use the library catalogue and dataset services for?**

**\*11. How useful do you find the library catalogue and databases services?**

Not at all useful      2      3      4      Extremely useful

Please specify, Why?

**12. When I search the library catalogue, my language skills (Arabic or English) affect finding relevant information.**

Not at all      2      3      4      Extremely

If you think your language skills effect your search process, please say why?

**\*13. How often do you use social bookmarking websites? (e.g. LibraryThing, Delicious, CitUlike, Connotea).**

- Never  Once a week  
 Less than once a month  Two or three times a week  
 Once a month  Daily  
 Once every two weeks

## TAGGING TASK- English

**14. If yes, have you ever used social tagging features of these websites?**

Yes

No

Don't Know

If yes, what do you use it for?

### Post-task: Social Tagging System

Please ensure that you complete the tagging task before starting to answer the questionnaire.

**\*15. Please state your 'Delicious' username.**

**\*16. How would you describe your experience of using a social tagging system**

**"Delicious" ?**

Very difficult	2	3	4	Very easy
<input type="radio"/>				

**17. Which language(s) did you use when tagging an article?**

	Arabic tags	English tags	Both Arabic and English tags
For Arabic Article	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For English Article	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**18. If you did tag any Arabic articles in English, please specify why?**

**19. If you did tag any English articles in Arabic, please specify why?**

**20. If you did use Arabic and English to tag articles, please specify why?**

## TAGGING TASK- English

### \*21. Apart from language, what else informed your choice of words for tagging?

You can choose more than answer.

- |  |  |
|--|--|
| <input type="checkbox"/> Bibliographic information of the article. | <input type="checkbox"/> Topic of the article.                   |
| <input type="checkbox"/> Abstract of the article.                  | <input type="checkbox"/> Suggested tags generated by the system. |
| <input type="checkbox"/> Content of the article.                   |  |
| <input type="checkbox"/> Other (please specify)                    |  |

### \*22. When you tagged an article, what influenced you to chose Arabic, English or both languages?

You can choose more than answer.

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> The language of the item being tagged | <input type="checkbox"/> Your language preferences | <input type="checkbox"/> Your language ability |
| <input type="checkbox"/> Other (please specify)                |  |  |

### \*23. What would motivate you to use social tagging?

You can choose more than answer.

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Future retrieval       | <input type="checkbox"/> Self-presentation  | <input type="checkbox"/> Social signaling |
| <input type="checkbox"/> Sharing                | <input type="checkbox"/> Opinion expression |   |
| <input type="checkbox"/> Attract attention      | <input type="checkbox"/> Task organization  |   |
| <input type="checkbox"/> Other (please specify) |   |   |

### \*24. A social tagging system would be helpful to me when I use the library catalogue (e.g. when searching for books and articles)

Strongly disagree	2	3	4	Strongly agree
<input type="radio"/>				

### 25. How likely would you use social tagging system in the future?

Never use	2	3	4	Always use
<input type="radio"/>				

### \*26. Would you recommend the use of social tagging in the library catalogue to others?

Don't recommend	2	3	4	Highly recommend
<input type="radio"/>				

## TAGGING TASK- English

**27. How important to you is social tagging as a feature in a library catalogue?**

Not important                      2                      3                      4                      Very important

### Thank you

Thank you for participating in this study

**28. Thank you for participating in this study.**

**If you wish to participate in the further studies, please provide your contact details in the following boxes.**

Name

Email

Telephone number

Appendix 15: Phase two, questionnaire of interactive tagging experiment-  
Arabic version

**Tagging task- Arabic**

قبل التمرين التجريبي: البيانات الشخصية والتعليمية

شكرا لمشاركتك في هذه الدراسة، يرجى التكرم بالإجابة على الأسئلة التالية سيتم التعامل بشكل سري مع إجاباتكم

**\*1. هل أنت**

أفضل إن لا أجوب  أخرى  انتي  ذكر

**\*2. ما هو عمرك**

أفضل إن لا أجوب

العمر

**\*3. ما اللغة الاساسيه التي كانت تستخدم للتدريس في مدرستك الثانوية ؟**

اللغة الانجليزية  اللغة العربية  اللغتين العربيه و الانجليزية

Other (please specify)

**\*4. هل تحمل شهادة لغة إنجليزية معتمدة؟**

مثال

**TOEFL· IELTS**

لا أعلم  لا  نعم

إذا كنت إجابتك نعم، يرجى ذكر نوع الشهادة و النتيجة

**\*5. أنت من اي جامعه؟**

جامعة شيفلد  جامعة الكويت  جامعة الخليج العلوم والتكنولوجيا

**\*6. أنت في أي سنه دراسية حاليا؟**

دراسات عليا  سنه رابعة  سنه ثلثة  سنه ثلثيه  سنه أولى

أخرى

**\*7. أذكر مسمى شهادتك العلميه التي تدرسها؟**

**\*8. ما اللغة التي تدرس بها شهادتك العلميه؟**

كلا اللغتين  العربية  الإنجليزية

## Tagging task- Arabic

9. ما مدى استخدامك لخدمات الفهرس الالكتروني وقواعد البيانات الخاصة بالمكتبة؟

- مطلقاً  
 أقل من مرة بالشهر  
 مرة بالشهر  
 مرة كل اسبوعين  
 مرة بالاسبوع  
 مرتين الى ثلاث مرات بالاسبوع  
 يومياً

لماذا؟

10. ماهي استخداماتك لخدمات الفهرس الالكتروني وقواعد البيانات الخاصة بالمكتبة؟

11. الي اي مدى تجد خدمات الفهرس الالكتروني وقواعد البيانات الخاصة بالمكتبة مفيدة؟

غير مفيد الى حد بعيد      1      2      3      4      مفيد جداً

يرجى ذكر الاسباب

12. عندما ابحث في فهرس المكتبة الالكتروني، مهاراتي اللغوية - العربية او الانجليزية - تؤثر في حصولي على المعلومات

المترادف

مطلقاً      1      2      3      4      دائماً

لماذا كنت تعتقد ان مهارتك اللغوية تؤثر. يرجى ذكر الاسباب

13. ما مدى استخدامك لمواقع المفضلات الاجتماعية مثل LibraryThing, Delicious, CitUlike, Connotea ؟

- مطلقاً       أقل من مرة بالشهر  
 مرة بالشهر       مرة كل اسبوعين  
 مرة بالاسبوع       مرتين الى ثلاث مرات بالاسبوع  
 يومياً

14. اذا اجبت بنعم، هل سبق واستخدمت المفضلات الاجتماعية Social Tagging لهذه المواقع

- لا       نعم

لماذا اجبت بنعم، لماذا كنت تستخدمها؟

## Tagging task- Arabic

بعد التمرين التجريبي: المفضلات الاجتماعية

\*15. يرجى ذكر اسمك المستخدم في "delicious"

\*16. Social tagging system كيف تصف تجربتك باستخدام نظام المفضلات الاجتماعية

"delicious"

صعب جدا	1	2	3	4	سهل جدا
<input type="radio"/>					

17. ما اللغة التي استخدمتها لوصف المقالات

	اللغة العربية	اللغة الانجليزية	كلا اللغتين العربية و الانجليزية
المقالات العربية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
المقالات الانجليزية	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. إذا استخدمت اللغة الانجليزية لوصف مقاله عربية، يرجى ذكر الاسباب؟

19. إذا استخدمت اللغة العربية لوصف مقاله انجليزية، يرجى ذكر الاسباب؟

20. إذا استخدمت اللغتين العربية والانجليزية لوصف احدى المقالات، يرجى ذكر الاسباب؟

\*21. بعيدا عن اختيار اللغة، ماذا اثر عليك عند وصف المقالات؟

يمكنك ان تختار اكثر من اجابه

- |  |   |
|--|---|
| <input type="checkbox"/> البيانات البيوجرافية للمقال | <input type="checkbox"/> موضوع المقال                                 |
| <input type="checkbox"/> ملخص المقال                 | <input type="checkbox"/> التوصيات المقترحة من النظام (suggested tags) |
| <input type="checkbox"/> محتوى المقال                |   |
| <input type="checkbox"/> أخرى                        |   |

\*22. عندما تصف المقال، ماذا اثر عليك باختيار لغة الوصف العربية، الانجليزي، او كلا اللغتين؟

يمكنك اختيار اكثر من اجابه.

- |                                     |                                      |  |
|-------------------------------------|--------------------------------------|--|
| <input type="checkbox"/> لغة المقال | <input type="checkbox"/> مستوى العوي | <input type="checkbox"/> اللغة المفضلة لدي |
| <input type="checkbox"/> أخرى       |                                      |  |

## Tagging task- Arabic

\*23. ماذا قد يحفزك لإستخدام المفضلات الإجتماعية Social Tagging؟

يمكنك اختيار أكثر من إجابة

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> لتسهيل الحصول على المعلومات بالمستقبل | <input type="checkbox"/> لتعبير عن نفسي | <input type="checkbox"/> للمشاركة الإجتماعية |
| <input type="checkbox"/> للمشاركة بالمعلومات                   | <input type="checkbox"/> لتعبير عن رأي  |  |
| <input type="checkbox"/> لتتبع الاتجاه                         | <input type="checkbox"/> لتنظيم المهام  |  |

أخرى

\*24. المفضلات الإجتماعية Social Tagging ستكون مفيدة لي عند استخدام الفهرس الإلكتروني للمكتبة؟

مثل البحث عن الكتب و المقالات

لاوافق بشدة	1	2	3	4	وافق بشدة
<input type="radio"/>					

25. هل ستستخدم المفضلات الإجتماعية Social Tagging بالمستقبل؟

لا استخدم	1	2	3	4	استخدام مستمر
<input type="radio"/>					

\*26. هل ستوصي باستخدام المفضلات الإجتماعية Social Tagging لزملائك الذين بحاجة الي

استخدام الفهرس الإلكتروني للمكتبة؟

لا توصي باستخدامه	1	2	3	4	اوصي باستخدامه و بشدة
<input type="radio"/>					

27. ما مدى أهمية المفضلات الإجتماعية كخدمه ضمن خدمات الفهرس الإلكتروني للمكتبة؟

غير مهمة	1	2	3	4	مهمة جدا
<input type="radio"/>					

## انتهى الاستبيان

شكرا لمشاركته بهذه الدراسة

إذا كنت ترغب في المشاركة في المزيد من أنشطة البحث المتعلقة بنفس المشروع، يرجى تقديم تفاصيل الإتصال الخاصة بك.

28. في الفراغات التالية

الاسم	<input type="text"/>
البريد الإلكتروني	<input type="text"/>
رقم الهاتف	<input type="text"/>

## Appendix 16: Phase two, researcher data collection form

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Name: \_\_\_\_\_

Delicious username: \_\_\_\_\_

Information sheet & consent:

Instructions & tagging task:

**Notes:**

**\*Arabic Articles**

Article No.	
Article	
Notes	
Article No.	
Article	
Notes	
Article No.	
Article	
Notes	

**\*English Articles**

Article No.	
Article	
Notes	
Article No.	
Article	
Notes	
Article No.	
Article	
Notes	

## Appendix 17: Phase two, post-task semi-structured interview

During the interview, I would like to ask you some questions about your experience of using social tagging system “Delicious”, and other questions about using the library online catalogue services.

### First: Tagging task:

**Before we began, please select one Arabic and one English article to look at the tags you just assigned during the conversation.**

1. Can you tell me about the article and the tags you assigned?
  - For example, can we look at this tag (...) why did you add this tag, what were your thoughts when deciding to choose this/ these tags?
2. How confidence you are with these tags?
3. How would these tags help you in using information?
4. To what extend your familiarity with the topic affect your tags? How?
5. When you tag an article what inform you to choose Arabic or English tags?
  - In some articles you use both languages, do you think this will be useful for you, and for others?
6. What do you think about having tags in mixed languages? Would you add tags in both languages? When would you prefer to add them?

### Second: Library use and information skills:

7. Tell me about library catalogue? What do you think about it?
8. How often do you use? and why?
9. What do you do if you what to search the library catalogue?
  - Do you have any plans, or steps to follow?
  - What plan do you follow in retrieving information/articles when searching for information?
10. In your opinion, how do the current library catalogue services help you in using information (e.g. finding, retrieving, searching, browsing, managing, sharing)?
11. How important do you think the social tagging as a feature for the library catalogue?
12. Do you have any comments related to the discussions?

### Notes:

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## Appendix 18: Phase two, the code-book of post-task semi-structured interviews

The code-book provides a hierarchical categorization of the qualitative themes and codes driven by the research goal, questions and the data. That aimed to investigate participants' experience and opinions regard using a social tagging system in an academic library.

### 1. Students' Social Tagging Behaviour:

**1.1 Tagging Process Descriptions:** Participants' explanation of the cognitive tagging process when creating tags to information resources.

1.1.1 Start Action (e.g. overview)

1.1.2 Thinking (e.g. descriptive tags, searchable tags)

1.1.3 Assigning ( e.g. multiple words)

**1.2 Confidence with Own Tags:** participants' explanation of the usefulness of their tags in describing information, so when they use them in the future they can recall the specific piece of information which helped them use tags effectively.

**1.3 Tags Creation Influences:** the participants' explanations of the effect of the full text in selecting/ choosing their tags.

1.3.1 Full Text: the effect of the article element in creating tags

1.3.1.1 Headings: Title/ headings (e.g. title and sub-headings)

1.3.1.2 Topic of the Article

1.3.1.3 Abstract

1.3.1.4 Keywords

1.3.2 **Topic Familiarity:** The effect of the participants' familiarity with the topics related to selecting/creating tags.

1.3.3 **The Language:** the effect of language on creating tags

1.3.3.1 The language of the article.

1.3.3.2 Language of the prospective search terms.

**1.4 Social Tagging Motivation:** adapted from tagging motivations from Gupta et al. (2011)

1.4.1 Future Retrieval

1.4.2 Task Organization

1.4.3 Sharing information

1.4.4 Opinion Expression

1.4.5 Social Signaling

1.4.6 Attract Attention

**1.5 Occasions for making tags private:** the reasons occasions behind the participants' preferences for keeping their tags private and not sharing them with others.

**1.6 Tag Language Preferences:**

1.6.1 **Rationale of Using English Language:** aspects of the participants' views on English language preferences.

1.6.1.1 Comfortable

1.6.1.2 Education: The effect of the subject of study on the choice of tag language. It also can be effected by their qualification and the level of the language skills.

**1.7 Multilingual Tag Visualization Acceptance:** Aspects of the participants' views on displaying a mixture of languages on tag visualization/cloud or lists (Separate tags preferences).

**1.8 Assigning Mix language tags:** Participants agreement and explanations of the occasions that might chosen to assign tags in both Arabic and English languages to an information resources.

- 1.9 Potential Benefits of Multilingual Tags:** participants' views on the possible advantages of assigning tags in different languages to information resources. (e.g. support understanding , Findings, Sharing information).
2. **General perception about social tagging:** The important and the possible use of tagging functions in the future.
- 2.1 Future Use**
- 2.2 Social tagging Importance**
3. **Library Catalogue services:**
- 3.1 Usages:**
- 3.1.1 Motives/Rationale of Using the Catalogue:** aspects of the participants' explication of the reasons behind their usage of the library catalogue services.
- 3.1.2 Type of Resources:** Types of resources and services: this code describes aspects of the participants' usages of the library resources and services.
- 3.1.3 Type of Services:**
- 3.2 Features:**
- 3.2.1 Strengths:** Aspects of the library catalog service's strengths.
- 3.2.2 Weaknesses:** Aspects of the library catalogues' weaknesses.
4. **Information Literacy Skills:**
- 4.1 IL Learning Awareness:** statements about the participants' awareness of the benefits of IL skills.
- 4.2 Sources of Learning IL skills:**
- 4.2.1 Online Materials:** learning IL skills from the learning materials available on the web. 3.2.6 Self- learning.
- 4.2.1.1 Library online materials: learning IL skills from the learning materials provided on the library website.
- 4.2.1.2 General online materials:
- 4.2.2 Teachers/ library staff:** Librarians and teachers: this code describes leaning and getting directions or guidance about using information (IL skills) from the librarians and teachers' help.
- 4.2.3 Information Literacy Sessions:** the attendance at IL sessions at the university.
- 4.2.4 Friends and peers:** leaning IL by exchanging information with friends and classmates.
- 4.2.5 Never learned:** students never attend IL learning sessions.
- 4.3 Searching Strategy:** Aspects of the participants' searching strategies for finding information.
5. **Social Tagging and Information Literacy (The Framework)**
- 5.1 Social tagging Functions:** (the following codes are adapted from the comparative analysis study of the social tagging functions).
- 5.1.1 Posting:** the process of adding tags to describe the information resource, which requires a certain amount of descriptive information about the resource, such as the title, description and tags, and the participants' views about the possible usefulness of this process.
- 5.1.2 Searching:** the participants' views about the possible usefulness of tags in searching for information includes: general search, personal search, advanced search (e.g. Boolean logic).
- 5.1.3 Browsing:** the participants' views about the possible usefulness of tags in browsing personal tags, related tags, and others' bookmark lists by username, either as a tag cloud or tag list.
- 5.1.4 Sharing:** the participants' views about the possible usefulness of tags for sharing tagged items/bookmarks with others, groups of users, and finding similar users.
- 5.1.5 Managing:** the participants' views about the possible usefulness of tag management functions that allow basic changes to be made, such as editing,

deleting and saving tags, follow/watch tags, tag grouping/bundles, Import library/bookmarks, and export library/bookmarks. And also describes creating tags for managing purposes (e.g. class name)

**5.2 Information Literacy (IL):** (the following codes are adapted from the seven pillars of information literacy).

**5.2.1 Identify:** the participants' views of the usefulness of social tagging functions in finding relevant resources.

**5.2.2 Scope:** the participants' views of the usefulness of social tagging as tools for supporting finding the available information resources.

**5.2.3 Plan:** the participants' views of the usefulness of using social tagging functions in terms of support constructing strategies for locating information and data.

**5.2.4 Gather:** the participants' views of the usefulness of using social tagging functions for collecting relevant information resources.

**5.2.5 Evaluate:** the participants' views of the usefulness of using social tagging functions to gain an overview of the resource topic that supports the evaluation skills.

**5.2.6 Manage:** the participants' views of the usefulness of using social tagging functions for managing and sorting the useful information resources.

**5.2.7 Present:** the participants' views on the usefulness of using social tagging functions in showing their interest on the research topics and resources.



5. How does the library support students' language skills? Do you offer any services?
6. In related to social tagging: As tags deal with free-text or users comfortable language, Do you think tags would help students to access information?
7. In which language do the library deliver their services (library websites, training sessions)?
8. Does the subject of study affect the language of the services?

#### **4) Social tagging function and IL skills**

9. How does the current library catalogue service help the students in practicing IL skills?
  - I developed a framework that match social tagging system functions with IL seven pillar, I would like to show the framework. Please look at it and tell me what do you think.
- Related Questions:
10. Do you think adding more tag-related functions would be valuable in supporting users when using the library catalogue?  
(e.g. browse personal tag and others tags, "profiles", manage the tags, share them with others in the university).
  - Closing questions about using social Tagging:
11. What can the library offer to help the library staff and students to deal with social tagging?  
(Instructions, training, tutorials).
12. Do you think the library staff and users can deal with social tagging? OR Can the library offer services to educate their staff and users?
13. In your opinion, how important is social tagging system to library catalogue?
14. In your opinion, how could tagging facilitate using (searching, browsing, re-finding, etc.) information?

## Appendix 20: Phase two, the code-book of librarian interviews

This codebook provides a hierarchical categorization of the qualitative themes and codes driven by the research goal, interviews question and the data. The aim of the interview is to investigate aspects about, the development of library catalogue services on Web2.0 technological tools, focusing on adding social tagging functionalities (e.g. advantages, challenges). As well as exploring aspects about the barriers of students language skills on using the library; and aspects about arranging Information Literacy (IL) sessions as one of the library services.

### 1. Library catalogue development:

- 1.1 **Strategy:** library strategy, interest, and challenges (e.g. technical support and issues) in developing the library catalogue services.
- 1.2 **Goals:** library intentions in taking action into the new development enhancements add to the catalogue online services.
- 1.3 **Motives/rational:**
  - 1.3.1 Support functions (e.g. access, support finding information).
  - 1.3.2 Support learning and teaching.
  - 1.3.3 Support research.
  - 1.3.4 Technological interests.
  - 1.3.5 Achieve user needs and preferences.
- 1.4 **Procedures:**
  - 1.4.1 Timing/Scheduling.
  - 1.4.2 Permissions/ Responsibilities.
  - 1.4.3 Technical matters.
- 1.5 **Improvements:**
  - 1.5.1 **Current improvement:** the newly added technological functions to the library catalogue services (e.g. federated search, e-shelf, social media tools).
  - 1.5.2 **Future improvement:** library future interest in adding new technological tools.
- 1.6 **Procedures:** the improvement procedures, responsibilities and requirement in implementing new functions to the library catalogue services.

### 2. Library catalogue usage:

- 2.1 **General aspect about students' usages:** views about a general aspect on students' searching behavior and the influences on their usages of the library catalogue service.
- 2.2 **Student's English proficient:** thoughts and experience about the impact of student's language level on using the library services on general and more specifically on finding relevant information.

### 3. Library services:

- 3.1 **Students' English language support:** current and future library initiatives in supporting users English language skills for better use of the library services (e.g. changing interface language, or increase the subject access, academic writing support lessons).
- 3.2 **IL training:**
  - 3.2.1 **Purpose**
  - 3.2.2 **Content:** searching skills, library services tutorials, service updates
  - 3.2.3 **Sessions arrangements:** trimming, attendance.
  - 3.2.4 **Teaching:** tools/materials, teaching languages, teachers' requirement/qualification.

### 4. Social tagging system:

- 4.1 **Facets about tagging behaviors:**
  - 4.1.1 Previous social tagging experience:
    - 4.1.1.1 Social tagging system types:
      - 4.1.1.1.1 Library /Academic (e.g. databases)
      - 4.1.1.1.2 Social Networking (e.g. Blogs, Twitter, Facebook)

- 4.1.1.2 Social tagging functions usages; such as searching, saving, grouping materials.
- 4.1.1.3 Social tagging usefulness; such as accessibility; fast, easy, simple, personal management.
- 4.1.2 **General overview about social tagging:** general perception about social tagging system based on their experience and knowledge; is it useful, good, not good etc.
- 4.1.3 **No experience**
- 4.1.4 **Perceptions about students' social tagging usages:**
  - 4.1.4.1 Current usages: positive/negative
  - 4.1.4.2 Prospective usages: positive/negative
- 4.2 Potential Advantages of Social Tagging:**
  - 4.2.1 **Future retrieval:** possible use of tags in re-finds relevant information resources.
  - 4.2.2 **Additional access:** possible use of tags to provide additional access to information resources (e.g. using users comfortable language "Arabic/English tags").
  - 4.2.3 **Managing and saving:** possible use of tags to sort/manage and save found resources that could support personal organization.
  - 4.2.4 **Knowledge/information Sharing:** possible advantages of using tags that could support knowledge/information sharing, includes learning from peers, group work, and from the followings year students studying the same subject.
  - 4.2.5 **Resource recommendation:** possible ways of recommending information resources by assigning tags to them.
  - 4.2.6 **Engagement/ Attracting Users:** views about the possible influence of social tagging functionalities in attracting or engaging users to library catalogue services.
  - 4.2.7 **Multilingual tags:** opinions about the possible advantage of the use of tags in different languages, particularly (Arabic/English) in facilitating the use of information (e.g. support understanding, support findings, support sharing information).
- 4.3 Social Tagging Implementations:**
  - 4.3.1 **Challenges:** the possible issues that could face the use of social tagging in academic library such as technical issues, and practical issues (e.g. collection size, misleading tags, extensive work)
  - 4.3.2 **Tag monitoring:** thoughts about controlling users' tags, and any other a raised issue include misleading tags.
  - 4.3.3 **Taggers permissions:** the tagging permissions include kinds of users and resources such as, resources types and taggers types (e.g. librarians, faculty members, students).
  - 4.3.4 **Training/ instructions:** aspects about the important and needs of providing instructions and training to library users include tagging skills session.
- 5. Social tagging and IL framework assessment:** librarians' views about the developed framework that matches social tagging functions with the seven pillars of IL, and the possible ideas about the potential support of social tagging functions in practicing IL skills.
  - 5.1.1 Posting
  - 5.1.2 Searching
  - 5.1.3 Browsing
  - 5.1.4 Sharing
  - 5.1.5 Managin

## Appendix 21: Tag distribution of the Arabic articles: classes of tags

Arabic Articles											
Article no.1	Count	Article no.2	Count	Article no.3	Count	Article no.4	Count	Article no.5	Count	Article no.6	Count
1. بحث البحث باحثين	4	العولمة ال عولمة عولمة	9	تطوير البرمجيات تطوير برمجيات	6	مصر	14	Quality control quality control	3	الضغوطات النفسية الضغوط النفسية	10
2. التواصل	2	الثقافة التنظيمية الشفافية التشغيلية الثقافة التنظيمية ثقافة تنظيمية	3	البرمجيات	5	الاقتصاد	9	اداره الجودة ادارة جودة	3	علم النفس	7
3. الانترنت	2	بحث	3	الهندسيه الهندسة الهندسه	5	Egypt	6	جوده المنتج	3	Cancer cancer	6
4. البيئه الالكترونيه	2	ابعاد العولمة	2	جودة الاداء	4	الاقتصاد المصري	6	قطاع الخدمات	3	احداث الحياه احداث الحياه	6
5. Arabic language arabic language	2	الثقافه	2	المتطلبات الهندسيه	4	السياسة التقنيه	6	جوده العمليات جودة ال عمليات	2	الأورام السرطانيه اورام سرطانيه اورام سرطانية السرطان السرطانيه	6
6. العولمة ال عولمة	2	السلوك التنظيمي	2	requirements uncertainty	2	السياسه	5	quality improvement	2	السرطان	6
7. الفجوه الرقمية الفجوة الرقمية	2	بحث حاله بحث حالة	2	Engineering equipment	2	Economy	4	ادوات وتقنيات	2	دراسه	4
8. اللغة العربيه اللغه العربيه اللغة العربية	2	تعليم	2	Development	2	Politic	4	الجوده	2	Stress	3
9. ---		متغيرات e-motif3yfe	2	العالم العربي العالم العربي العلم العربي	2	الاسعار	4	دراسه ميدانيه	2	الامراض	3

10.	---	---	انواع البرمجيات	2	ادارة السياسه التقديه	2	مشاريع	2	الحياه	2
11.	---	---	تطوير	2	الاسعار النسبيه	2	مقاييس الجوده	2	اورام الأورام	2
12.	---	---	تقييم	2	السياسه التقديه في مصر	2	---	---	مشكلات الدراسه مشكله الدراسه	2
13.	---	---	جودة المنتج	2	تحديات	2	---	---	احداث الحياه والسرطان	2
14.	---	---	Culture	2	تضخم الاسعار	2	---	---	Effects	2
15.	---	---	Globalization Globalisation	2	صدمات الاسعار	2	---	---	Negative	2
16.	---	---	دراسه	2	---	---	---	---	ضغوطات	2
17.	---	---	مشاريع	2	---	---	---	---	---	---
18.	---	---	المتطلبات	2	---	---	---	---	---	---

## Appendix 22: Tag distribution of the English articles: classes of tags

English Articles											
Article no.1	Coun	Article no.2	Cou	Article no.3	Count	Article no.4	Coun	Article no.5	Count	Article no.6	Count
Facebook facebook	22	E-learning e learning e-learning	9	adolescence	7	Education education	13	social software	8	Networks Networking networking network	17
Social network social network social networks social networking	13	Medical students medical students	8	youth development Youth development	7	Parent education parent educations Parental education	12	Life long learning Life-long learning life-long learner	5	Tourism tourism	15
Computer computer computers	6	Computer literacy computer	7	Youth youth	5	Home environment Home	9	Informal learning	3	Business business	12
Internet internet	6	Online education online education	7	Youth development programs youth development programs	4	child achievement Childachievement children's achievement	8	social networking social networks	3	Destination development destination development Destination_development	9
Online online	5	Learning	6	Caring caring	4	Income income	6	Blogs blogs	2	Development	7
Personal information	4	Computer computer	5	Program program	4	Parents parents	5	Education	2	Small business small business	5
Online communication	4	Student student	3	Program evaluation	3	Family income	5	Learning networks learning networks	2	Destination	4
Social communication social communication	4	Education	3	Competence competence	3	Parental expectations parental	4	Life long life-long	2	Hospitality hospitality	4
Privacy privacy	4	Literacy	2	policy	3	Socioeconomic status socioeconomic status	3	Online learning	2	Tourist destination tourist destinations tourists destination	3
disclosure	3	Online online	2	Program activities program activities	3	Influence of parents	3	Software	2	Small tourism small tourism	3

Communication	3	Own personal computer own personal computer	2	Confidence program evaluation	3	Influence influence	3	Software application	2	small tourism business small tourism businesses	3
Facebook article facebook article	2	Social software	2	Development Develop	3	Expectations expectations	3	Technology	2	Social networks	3
Friends	2	Vienna	2	program evaluation Program evaluation	3	Children children	3			Business research	2
Human behaviour	2			Evaluation evaluation	2	Behavior Behaviors	3			Complex system complex system	2
Identify theft	2			Risk	2	Academic achievement academic achievement academic achievements	3			definition of network and networking definitions of networks and networking	2
Learning	2			teenager	2	Socioeconomic socio-economic	2	---		Management	2
Networking	2			activities activity	2	Family family	2			Research	2
Security	2					achievement achievements	2	---		Rural locations	2
								---		Small	2
		---						---		tourism business	2
		---		---				---		Location	2

## Appendix 23: Full list of the tag categories analysis

<u>Article number</u>	<u>Identical to full text</u>				<u>Not occurring in full text</u>
	<u>In the title</u>	<u>In abstract</u>	<u>In full text</u>	<u>Same as keyword</u>	
<b>Article no.1</b>	Facebook Social network Online Disclosure Networking Online social Network Case of facebook Computers Computers in human behaviour Disclosure in online networking profiles Human behaviour Networking profiles Online social networking Profiles Social networking	Facebook Social network Online Personal information Disclosure Networking Age and gender Information Networking profiles Networks studies	Facebook Internet Online Online communication Privacy Disclosure Communication Friends Networking Security Identity theft Online social network Social network Explore Groups Information Personal profiles Poke Profiles Proved Relationship Safety Security Sites Studies Technology Threats Threat	Facebook Internet Online Social communication Privacy Communication	Computer Facebook article Human behaviour (in journal name) Identify theft Learning Disclosure of Personal information Information sensitivity Quantative data Birthday Electronic profile Elsevier Facebook case Facebook and relationships Facebook article Facebook communication Facebook info Facebook privacy Facebook safety Facebook thefts Facts about facebook General discussion Info Information from user Internet issues Learning Online communication Online networks Online popularity Online relationships Personal information Personal networks Personal security online Personal web-page business Privacy in the information age Programming Ramification References Risks of technology Robot Smart Social communication Social media Social methods Social network affects Social networking theft identity Social networks and personal Social software Software Solving problems Suggested Websites&online مراجع

<u>Article number</u>	<u>Identical to full text</u>				<u>Not occurring in full text</u>
	<u>In the title</u>	<u>In abstract</u>	<u>In full text</u>	<u>Same as keyword</u>	
<b>Article no.2</b>	E-learning Medical students Computer literacy Learning Computer Student Literacy Education Medical	E-learning Learning Computer Student Online Vienna Available Vienna	E-learning Medical students Computer literacy Learning Computer Student Education Literacy Online Own personal Vienna Available Educational Information Issue Learning Networks Own personal computer Subject Types of computer use		Online education Social software Attitude towards learning Attitudes Blogs Challenge to our education system Created the personal learning Depend Health study Internet access Learning networks Literacy Medical students Medical students and e learning Medical students and computer literacy Medical system Medical system own personal Needs of computer Online education Networks Online education Personalize and adaptation Social software Studies on blog Technology Testing the initial problem for learner world wide web Vienna

<u>Article number</u>	<b>Identical to full text</b>				<u>Not occurring in full text</u>
	<u>In the title</u>	<u>In abstract</u>	<u>In full text</u>	<u>Same as keyword</u>	
<b>Article no.3</b>	Youth development Youth Program Development Positive Program Sport Youth Youth development	Youth development Youth Caring Program Competence Policy Risk Development After school Behaviour Caring Competence confidence importance of sport outcome parents policy positive program risk sport supportive child-adult relationship youth youth development	Adolescence Youth development Youth Caring Program Competence Policy Risk Teenager Development Achievements Activities Activity Adolescence After school Aid Author Behavior Benefits Build Character Competence Confidence Development Develop Issues Outcome Parents Policies Policy Positive Positive youth development Problems Program Review Risk Society Sport Sport programming model Teenager Youth Youth development Definition Youth programs	Program	Program evaluation Program activities Confidence program Evaluation Adorabi American society Confidence program evaluation Dangerous developmentally appropriate designs Effect in positive development Effects Encouraging youth Evaluation Goals Mapping the elements of youth development Mentorring Negative outcome from sports Positive effects on youth Positive outcomes from sports Prevention Program activities Program activities improve youth talents Program evaluation Program goals Program goals youth development Programs for youth Reality youth program Risk prevention policy Self-discovery The actual working characteristics The element of youth Unrealistic expectation Useful Youth's program Youth development evaluation Youth development program Youth development, Effectiveness Youth sports program

Article number	Identical to full text				Not occurring in full text
	In the title	In abstract	In full text	Same as keyword	
Article no.4	Education Parent education Child achievement Income Family income Parental expectations Influence of parent Influence Expectations Family Achievement Environment Family Home Income Indirect role Influence Influence of parent education Parental Parental expectations Socioeconomic The influence	Education Parent education Income Parents Socioeconomic status Children Behavior Socioeconomic Achievement Academic achievement Income Influence Parent education and education Socioeconomic Socioeconomic status	Education Parent education Income Parents Socioeconomic status Influence of parents Influence Expectations Children Behavior Socioeconomic Family Achievement Academic achievement Parental influence Article Behavior Children's achievement Education, Environment Environment and learning Family Family income Home Home environment Income Influence Influence of race Method Pamela Davis-Kean Parent education and income Parental Parental expectations Parents Studies Study The influence		Home achievement Academic achievements Income and achievements Parental styles education Quantative data Academic achievements Applied statistics Behaving Benefits Childachievement Children (sampling) Children achievement Descriptive (in methodology) Education Parenteducation Education parents Education system Effects on child achievement Family psychology Gender and race in relation to education Home achievement How do parent income affect child Income achievements Income and family education Income on achievement Incomes Indirect relationship Influence of parents Influence on behavior Influence Influence on behavior Influence parents Investigative studies Journal of family Journal of family psychology Models of families Parent education effect Parent educations Parent interactions UOM الأسره التربيه الحالة المعيشية تربية الابناء دخل الوالدين parental education Parents behavior Parents beliefs and behaviours Parents characteristics Parents children Parents education Parents expectation about children Parents role Patents &children Race effect Socioeconomic facts Socio-economic influence Statistic about parent and chilled education University of Michigan

<u>Article number</u>	Identical to full text				<u>Not occurring in full text</u>
	<u>In the title</u>	<u>In abstract</u>	<u>In full text</u>	<u>Same as keyword</u>	
<b>Article no.5</b>	Social software Life long learning Life long Software Learning software	Social software Life long learning Informal learning Life long Software Technology Learning Research Social software	Social software Life long learning Blogs Education Learning networks Life long Online learning Software Technology Learning Life-long learner Lifelong learning Network Non-formal learning Online learning network Social Social network Software Software application Web 2.0 Wikipedia	Social software Life long learning Blogs Learning networks Life long Software Learning Social software	Software application Blog webs Life learning Logs Long life New ways of learning Pen European Personalization and learning Research Review of European initiatives Social, Software, Traditional and new web Virtual learning

Article number	Identical to full text				Not occurring in full text
	In the title	In abstract	In full text	Same as keyword	
Article no.6	<p>Networks Tourism Business Destination development Development Destination Small tourism Small tourism business Small Tourism business Business tourism</p>	<p>Networks Tourism Business Destination development Development Destination Networking Small tourism Small tourism business Location Research Small Tourism business Business Theories tourism</p>	<p>Networks Tourism Business Destination development Development Small business Destination Networking Small tourism Small tourism Small tourism business Social networks Complex system Location Research Rural locations Small Tourism business Tourist destination Behaviour Business Communities Complex systems Definition of networks and networking Definitions of networks and networking Destination Develop Development Framework Introduction Location Network Network and networking Networking Research Rural location Rural tourism Small business Social network The tourist destination Tourism Tourist Tourist destination Travel West coast of Scotland</p>	<p>Networks Tourism Business Destination development Development Destination Small tourism Small tourism business Small Tourism business Business</p>	<p>Hospitality Business research Management Tourism business Advertisement Business development Business research Hospitality Differences between cultures Economics business Field study Group network Hospitality management Local community development Make research Management Networking of small business tourism networks and the small firm- a research framework networks for tourism online pergamon quality versus quantity research fame small firm network small tourism firm and networking social relationship and tourism business social relationships society and tourism tourism and networks tourism power</p>

The End....