Scholars' research related Personal Information Management:

An investigation of PAAET, Kuwait

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Abstract

Personal Information Management (PIM) refers to the way people collect, organize and retrieve different forms of information including traditional printed and electronic content, such as books, papers, documents, email and bookmarks. Studies have shown that individuals struggle in their PIM practices to manage the diverse and voluminous information they accumulate. Within their research, scholars specifically, are not only information seekers, they are information keepers and managers as well. This research investigated the PIM practices of scholars in the Public Authority for Applied Education and Training (PAAET), a Higher Education institution in Kuwait. The study explored the factors that shape how scholars manage their personal information collections (PICs) within the research process. This was achieved by answering four research questions: How are scholars' research-related PICs created? What are the main characteristics of research related PICs? How are they used? What are the factors that shape them?

The study employed a naturalistic qualitative design methodology. Three series of interviews were conducted with librarians and faculty members to identify a focus for the main study in an exploratory stage of the research. The main body of data investigated scholarly PIM practice of 17 scholars from Education and Health disciplines (College of Nursing and Health Science College) and focussing specifically on their research-related PICs. The data collected was interviews and photographs of scholars' collections, in addition to observation via tours of their working spaces within the interviews. The data was analysed using thematic analysis.

The study found that scholars' research-related information collections (PICs) are huge, diverse, hybrid, and fragmented. Scholars' personal space of information contained a massive quantity of information related to their research that is stored in different places at different stages of the research. It chiefly consists of four types of information: sources of literature, research data, published research and administrative paperwork. It is fragmented in different locations physically and electronically. A model linking the size, diversity, hybridity and fragmentation of the collections to immediate and underlying factors was developed, explaining how the two layers of factors shaped the research-related PICs. The immediate factors affect the collections directly and were identified as: The need for research, Time pressure, Workspace, Technology opportunity, Support services and Self-positioning & Self-presentation. Those which affected the collections indirectly, the underlying factors, were: Age, Gender,

Nationality, Seniority, Discipline, Foreign language, and Educational background. The study offers several contributions one of which is defining the specific nature of the research-related PICs of scholars and providing a model that explains the relationships between factors shaping their features. The research-related PIC is a special type of collection and thus needs special attention in handling such sizable, diverse, hybrid and fragmented material. By its findings, the study informed several stakeholders including scholars themselves, librarians, institutions, policy makers, PIM system vendors and software developers. Practical implications drawn out for each stakeholder can help scholars to be more efficient in creating, organizing and curating their research-related PICs, which will have positive effects in terms of time pressure and re-finding stored material.

Publications

In the course of completion this thesis, its contents have been down on for publication and presentation in a conference by the author:

Mashael Al-Omar and Andrew Cox (2013), *Finders, keepers, losers seekers: A study of academics' research-related personal information collections* [paper presentation given at the 15th HCI International "Conference on Human-Computer Interaction" Springer, HCI (13) 2013: 169-176. (Appendix 22).

Dedication

This thesis is lovingly dedicated:

To the heart always prayed for me; My Mother… *Taibah Almutawah*.

To the source of true Courage; the soul of My Father… *Yacoub Al-Omar*.

To the source of patience; the soul of My Grandmother... *Sarah Al-mutawah*

To the source of motivation and encouragement My Husband… *Bader Al-Asiri.*

To my secret source of power, My lovely children:

Abdullah… for his wise understanding.

Taibah… for her extreme responsibility.

Yaqoob… for handling the hard time with sense of humour.

Aisha… the precious gift from Allah to add smile and pleasure.

To those who were always there for me providing love and endless support;

My Family specially *Reem, Meshal & Maisam*.

To the lovely nieces who stood for me *Nouf & Moudi.*

To all those who believed in me, and prayed for my prosperity in education; relatives and friends for their support and contact.

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Chapter 1 – Introduction

1.1 Background

Personal Information Management (PIM) is an umbrella term that describes *"the method and procedures, by which we handle, categorize and retrieve information on a day-to-day basis"* (Lansdale 1988: 55); it is about collecting, storing, and organizing different types of information. As such, PIM is something done by *"millions of users many times a day"* (Whittaker et al, 2000b: 80). Nearly everyone will have encountered personal information management procedures in their everyday life while trying to organize the information they have decided to keep (Jones and Teevan, 2007). PIM activities are carried out, both at work and at home (Barreau and Nardi, 1995). Jones (2010) suggests that PIM is important not only to organize and retrieve information items which have been stored to meet future needs, but it is also important because the value of information is increasing. Humans need information to make decisions, to live easier lives and to successfully complete complicated tasks.

Accordingly, studying and understanding PIM issues including people's behaviours and perspectives have been the subject of many studies (Jones, 2007; Kaye et al., 2006; Bergman, 2013; Otopah and Dadzie, 2013). Since scholars are involved in teaching, research, administration, supervision and other tasks in their daily work, then they are likely to engage in quite complicated PIM processes. Due to the nature of scholarly work, scholars appear to collect, store and hence *"worry about valuable earlier work that they still store"* (Kroll and Forsman, 2010: 10) which makes them engage in PIM practices. Surprisingly, only a few studies have been carried out to examine the PIM of researchers. A few studies have been conducted which have considered academics' personal information practice, such as Kaye et al. (2006), who investigated scholars' personal information offices and their personal information collections (PICs).

Research as a form of human inquiry is how scholars within their discipline attempt to explain the nature of reality, update knowledge, solve problems, and understand the world (Babbie, 2007). For instance, social scientists have shown *"two distinct motivations: understanding and application"* in their research (Babbie, 2007: 25). In some cases scholars engage in pure research in order to *"gain knowledge for knowledge's sake"* while being inspired by their discipline, while in other cases they

want to see their findings applied to practical problems in their society (Babbie, 2007: 25). Within their research, scholars are found to compete (Becher and Trowler, 2001). This kind of competition between scholars to produce quality work requires them to be seekers as well as keepers of information collected (Palmer and Cragin, 2008) in order to assure the availability of information once needed and at the time needed. Their commitment to producing scholarly work requires them to search for and discover information, which is to be used in their information practices. Thus, *"Discovering, Annotating, Comparing, Referring, Sampling, Illustrating, and Representing"* (Unsworth, 2000: 1) have been identified as scholarly primitive activities. Scholarly primitives are the *"basic functions to scholarly activities that are common"* that are carried out by scholars "across disciplines" (Palmer et al., 2009: 7) such as *"searching, collecting, reading, writing and collaborating"* (Palmer et al., 2009: 9). As a result of searching, scholars usually collect and build piles of information related to their research in their work space (Meho and Tibbo, 2003). Over time, the collected information will accumulate and hence need organizing and managing (Kaye et al., 2006). With the recent deluge of information enabled by the development of information technology, scholars have been found to become keepers of more and more information both physically and electronically; these are referred to as personal collections. A personal collection can take a variety of forms, but within the research process and for scholarly work it is a collection that is either found by scholars, such as books, published works and web pages, or controlled and sometimes owned by scholars, such as emails and electronic files on a computer's hard drive (Jones, 2008).

In order that information discovered in the past, and stored for the purpose of reuse in the future as well as for other reasons (Kaye et al., 2006), can be re-found when needed, scholars are engaged in collecting and storing most of the information in a large collection (Jones and Teevan, 2007; Jones, 2006; Whittaker, 2011). Collected and accumulated information requires managing over time (Jones, 2004). The information collected by scholars can be scattered in different forms and locations, a phenomenon known as *"information fragmentation"* (Jones and Teevan, 2007: 31). Fragmentation can create various management problems when scholars conduct their research while trying to retrieve information which was stored in different locations in different formats (Bergman et al., 2006). Scholars as a result may spend most of their day trying to re-find or retrieve stored information (Jones and Teevan, 2007). The optimum use of information may thus be affected by re-finding activities which are also affected by

human memory issues, such as forgetting where to find information which might be caused by fragmented information (Jones and Teevan, 2007).

As a result of the emergence of such problems, it can be seen that further work in the field of personal information management of scholars is necessary. This is not a new area (Bruce et al., 2011), but the behaviour of scholars and the tools used have changed over time due to many factors (Case, 2007). In particular, in the digital age, the way scholars behave towards seeking information and managing personal information has changed. Thus this study is necessary because we need to know how, in the light of the rapid technological changes, personal information management has changed. In fact, there have been relatively few studies on scholars' personal information management and little previous research has looked at found literature resources and scholars' own research data at the same time (Kaye et al., 2006; Jones and Tevan, 2007; Kroll & Forman, 2010). Understanding how scholars manage their personal information collections is important both for scholars and also for those who support scholars, such as information professionals including librarians.

1.2 Research aim and questions

The main aim of this study is to explore the factors that shape how scholars manage their Personal Information Collection (PIC) within the research process.

In order for this to achieve its aim it follows a naturalistic qualitative research design. The approach taken was to conduct interviews with scholars themselves to answer research questions that were developed from an exploratory study, and in the light of the literature. The location of the study was the Public Authority for Applied Education and Training, Kuwait. The research questions to be answered by this study were:

Q1: How are scholars' research-related PICs created?

Q2: What are the main characteristics of research-related PICs?

Q3: How are they used?

Q4: What are the factors that shape them?

1.3 Context of the study

1.3.1 Introduction

This section provides a basic background to the context of the study. It provides, first, general information about Kuwait including geographical location, population, language, religion, and economy. It then provides a more specific section about education, focusing on higher education in Kuwait, both private and public. Finally it ends with a section that gives detailed information about the Public Authority for Applied Education and Training (PAAET), a Higher Education institution in Kuwait at which the study was conducted.

1.3.2 Geographical location

The State of Kuwait is one of the Middle East countries, a member of the Gulf Cooperation Council (GCC), which is similar to the European Union. Kuwait shares common features with the other GCC countries such as language, religion, heritage and traditions. It is situated in south-western Asia and located on the north-western coast of the Arabian Gulf. To the north it is bounded by Iraq and by the Arabian Gulf to the east, while it is bounded by the Kingdom of Saudi Arabia from the south (Figure 1-1). Kuwait is a small country that occupies 17,818 square Kilometres (200 Kilometres north to south and 170 Kilometres east to west) (Central Intelligence Agency, 2013). The capital is Kuwait City, located in the centre of Kuwait and on the shoreline of the Persian Gulf coast (Figure 1-1). The country has six regions, namely: Al Ahmadi, Al Farwania, Al Asimah, Al Jahra, Hawalli and Mubarak Al Kabeer. Each of these is divided into districts.

Figure 1-1: Map of Kuwait (Source: Wikipedia, 2013)

1.3.3 Population

The population of Kuwait is 3,065,850 in total including 1,089,969 (35.5%) Kuwaitis and 1,975,881 (64.5%) non-Kuwaitis, according to the census of 2011 (Kuwait Ministry of Planning, 2011).

1.3.4 Language and Religion

The official language spoken in Kuwait is Arabic, although English can be considered as a second language due to its widespread use. English is spoken by most people as well as being taught widely in schools and universities. In addition, the use of the English language is common in the business world, specifically in the commercial, industrial and private sectors.

Most of the population (85%) in Kuwait are Muslim as Islam is the official religion of the country. A small number of citizens in Kuwait (15%) belong to other religions;

these include Protestant or Catholic Christians, Hindus, Parsi and other religions (Wilks, 2006).

1.3.5 Economy

Before the discovery of the "veritable sea of oil … beneath its sand" (Klaum, 1980: 1), Kuwait's economy was based on fishing, agriculture, and trade (Klaum, 1980). After 1930, when oil was discovered, Kuwait became one of the wealthiest countries in the world (Peck, 2004). Because of high oil prices, the Kuwaiti economy has grown. Kuwait has an oil-rich economy and the "reported 99 billion barrels of reserves would, if they were really there in the ground, make up about 10% of the world's reported oil reserves" (King, 2006). Currently, Kuwait exports crude oil to other countries in Asia and to the western European market. On the other hand, Kuwait imports refined products from industrial countries such as the United Kingdom, the United States of America, other countries in Western Europe and Japan (Peck, 2004).

1.3.6 Education

1.3.6.1 General background

Development of the State of Kuwait in terms of organizational, educational, financial and social performance is promoted by the education system maintained by the government. The education system has shown rapid development from the establishment of the first school in Kuwait in 1911, known as Al-Mubarakiya, to the present. While education started in Kuwait with just one school, currently education follows an expanded system that is bigger and includes more schools. This expanded system was first implemented in 1956 and follows four distinct education stages: kindergarten, primary, intermediate, and secondary (Al-Sahel, 2005; Al-Ajmi, 2009a). Education in Kuwait is a right of all citizens, and was made compulsory for children from the ages of six to 14 in 1965. It offers free from kindergarten to university level. The Constitution of Kuwait, 1962 Article 40, states that:

> *"Education is a right for all citizens to be provided by the State in accordance with the law and in keeping with the general system and ethics. Education is compulsory and free of charge in its primary stages, according to the law"* (Tschentscher, 2004).

Higher education has also developed greatly since October 1966, when Kuwait University, the first Kuwaiti Higher education institution, was established. It is considered the main public higher education institute including four colleges, namely: Science, Arts, Education, and a Women's college (Peck, 2004). Currently Kuwait University provides a wider range of disciplines through undergraduate and postgraduate programmes in 13 colleges (Al-Ajmi 2009b). Furthermore, higher education has now expanded with the inclusion of several privately-established universities such as the American University of Kuwait, the Arab Open University, the Gulf University for Science and Technology and the Australian University.

1.3.6.2 Public Authority for Applied Education and Training (PAAET)

The Public Authority for Applied Education and Training (PAAET) was established in 1982 with the main objective to " supply the labour market with a national, technically skilled work force in the numbers that could meet the development needs of the country" (UNEVOC Network, 2012). It was to do so by providing more variety of programmes through: *"two categories of training programmes: regularly scheduled, open-registration programmes while the other category is special courses, which are developed at client request"* (UNEVOC Network, 2012). PAAET programmes include: Basic Education; Business Studies; Health Science; Nursing; and Technological Studies Each provides full-time (four years Bachelor and two years Diploma colleges) programmes (Al-Mubailesh, 2006). In addition, there are seven further institutes that provide technology and applied courses, namely: Electricity and Water; Telecommunications and Navigation; Industrial Training; Nursing; Constructional Training; institute of Tourisim and beuty and fashion; and Vocational Training (Al-Ajmi, 2009c). PAAET was established as a small gathering of a few departments from the Ministry of Education and recently in April 2012 it was announced that in future it is to be known as the Jaber University of Applied Science (Al-Daihani, 2013). This growing institution has over 39,000 students, 2,082 faculty members and 1,141 other staff (UNEVOC Network, 2012).

1.3.6.2.1 Sector of Academic support services: Libraries and technology deanship

The Deanship of libraries and technology is one of the support services sources which provide resources including teaching and research supporting materials through PAAET libraries. The Deanship also provides audio-visual materials and other teaching

supporting tools that are needed by the colleges. The Deanship includes four departments: collection development; periodicals; cataloguing and classification; and interlibrary loans.

1.3.6.2.2 Sector of applied education and research: research department

The research department is one of several departments and colleges located under the sector of applied education and training. The department provides support for research and researchers across the whole of PAAET by either awarding grants or managing contracts, with the aim to achieve scientific creativity. It is responsible for research projects and approval from the proposal stage upwards. It provides guidelines for researchers through its website, allowing researchers to apply for approval for a research project, and click through from short titles to full text about current published research.

1.4 The significance of the study

This study is of value since an investigation of scholars' PIM practices can draw out significant findings for the field of library and information studies in three critical areas, namely: scholarly information practice, information needs, and personal information management. Scholarly practice has several complex stages that need to be further investigated in order to understand the ways scholars manage their PICs in real-life settings, hence helping to increase researchers' productivity. When such understanding is gained, it can potentially enrich the field with new theoretical ideas, such as identifying a wider range of factors which affect PICs and whether different factors are more critical at different points in the process. Such a theoretical model would need to shift from a static picture to a more dynamic model of a cycle, with different factors feeding into the cycle at different points, for different reasons. Studies of PIM can offer empirical findings in relation to the scholars' ways of managing their personal information collections, and library support that can be offered to them as a primary output of the research. Their engagement in research, in addition to the other critical tasks they must carry out, means that scholars need support and assistance from librarians, IT support and other professional staff, such as research department staff. The nature of such services can be informed by studies such as this. Also, the study draws out other significant findings that could be useful for educational institutions, managers and policy makers in providing services to scholars to support their scholarly work as a secondary output of the research.

Furthermore, this research investigates three critically important areas for Library and Information Science (LIS) and finds relations and interactions between these areas. These areas are: information needs; information practice; and personal information management (PIM) of scholars. Information needs are what can be seen as a driver of information seeking (Case, 2012). According to Case, there are four activities, namely: *"seeking answers", "reduce uncertainty", "sense making" and "motivation"* (2012: 85) that are reasons for people seeking information. The information practice of scholars is important since it addresses these activities (Palmer et al., 2009), which can be described as *"a complicated mix of mundane and seemingly idiosyncratic tasks that result in a range of immediate and long-term outcomes"* (Case, 2012: 3). Case emphasized the importance of such studies of information practice, where *"socio-cognitive processes... can advance our understanding and are even more challenging"* (Case, 2912:3). Personal information management (PIM) studies can help in understanding people's practices and hence overcome PIM problems. The overlap and connections between the three areas under investigation will help the researcher to develop a deeper understanding of the ways scholars approach personal information management in their daily work.

1.5 Personal motives

One inspiration for the study was my experience as an information specialist working in several positions in information centres and specifically worked closely with researchers as the last step in my career before getting the scholarship from PAAET to study for a PhD. Working as the head of the economic and financial information centre in the Central Bank of Kuwait (CBK), in particular gave me an interest in exploring and understanding researchers' needs and how best to provide support to them through understanding their requirements, behaviour and their best practices within the process of conducting research.

Being a PhD student was one of the motives that encouraged me to undertake this research study. This carried the risk of bias, but strategies were employed in the study to avoid it as far as possible, such as by deploying a number of methods of collecting data. In addition, to overcome the possibility of bias from my own experiences, specific data analysis and interpretation methods were used to identify the participants' experiences rather than the researcher's by making sure the methods used reflected their views.

However, being a researcher myself helped me understand the scholar's PIM practice of research-related PICs.

Knowing that research is in need of specialist support was important, as attention is often given more to teaching rather than to research. It was thus necessary to establish whether researchers worked independently or needed specialist support when undertaking research. Whether they worked independently or not, were they satisfied with the current changes due to the digital age, as information is now easier to find and in larger amounts; how has the digital age affected the practices of individuals and challenged the service providers in changing their roles to meet the new needs of the users? Assuming that scholars worked independently, were they in practice undertaking the role of being their own librarian? What did they do during their research process? How did they build and manage their collections? Did they use them effectively; or, in other words, achieve the announced aim of storing their collections? These questions motivated the researcher to understand the scholars' practices and hence investigate their PICs within their research projects, together with the factors shaping them.

1.6 Layout of the thesis

This section of the introductory chapter presents an overview of the thesis and emphasizes how each of the chapters contributes to the overall research aim. Detailed contributions of the study are provided in the conclusion (Section 7.3).

Chapter 2 Literature review

Chapter two provides a review of the literature relevant to the research, emphasizing the importance of scholar's PICs and their PIM practice. The first section maps the wider literature on PIM and positions the current research. This is followed by a section reviewing basic concepts around information needs and information-seeking behaviour and identifying some of the factors that shape scholars' information-seeking behaviour and information practices. The chapter then identifies the PIM activities as a basic introduction to PIM concepts, and is followed by a section defining the problems of PIM and suggesting some solutions. It then concentrates on scholars as the main focus of the study by reviewing some of the studies on scholars' information practices that lead to collecting and building PICs.

Chapter 3 Research design and methodology

Chapter three discusses the research design and methods adopted in the current study in order to answer the research questions. The chapter starts with a general description of the philosophical assumptions, including the ontological and epistemological assumptions, which shaped the research. A naturalistic qualitative method was applied in the study for reasons which will be explained. Then follows a discussion of the data collection methods employed in the current study. It provided description of the interviews of the three exploratory studies. In addition, explanations of the qualitative multi-methods used within the main studies were provided and they are (interviews, photography, and observation via tours). This is followed by explanation of the ethics procedure for conducting the research. At the end of the chapter, a description of the strategies used to ensure the quality of the research is given.

Chapter 4 Three phase exploratory study

Chapter four presents the exploratory study of the research where several series of interviews were conducted that were preliminary and exploratory in nature. These interviews were conducted to help the researcher narrow the research focus and create a basic understanding of the context under investigation. The exploratory stage contributed by informing the main research questions for the study.

Chapter 5 Main study: Findings chapter

In Chapter five, the findings of the main study are presented, explaining how scholars find and manage information for the purposes of research and describing what those collections look like in scholars' work spaces. Furthermore, the chapter will explore a range of factors, both immediate and underlying, that shape how scholars manage their personal information collections within their research processes. The chapter will also relate those factors to the features of the collections, in a model that summarises the effects of those factors.

Chapter 6 Discussion chapter

Chapter six restates the findings and contextualises them within previous studies on PIM. It takes several issues for discussion by introducing the main concepts found in the current study and examining the factors that shaped the features of the collections in more depth. It compares the approach and findings of this study to those of the one main previous empirical study of a similar context, by Kaye et al. (2006), and then relates them to the wider field of literature which is more broadly related to PICs and PIM.

Then, based on the discussion, a number of factors are listed that were identified in the current study but were not found in previous ones. Finally, a comparison is made between components of Wilson's (1999) Model of Information-Seeking Behaviour and the complementary elements of the model proposed in this study.

Chapter 7 Conclusion

Chapter seven concludes the thesis, presents a summary of the research and explains the contribution to knowledge. It also presents the research limitations and finally provides suggestions for future research.

1.7 Definitions of key terms

Information needs

There is no universally agreed definition of the term but from the perspective of Taylor (1968) who was one of the first researchers to use the term, 'information needs' can be seen as a personal, psychological, sometimes inexpressible, vague and unconscious condition. Taylor (1968) identified four different levels of information needs that individuals go through before they make formal encounters with an information system or seek the services of information professionals.

Information practice

The term 'information practice' was introduced as an alternative to the term 'information behaviour'. This was proposed by Savolainen (2007) who stated that *"Information behaviour is currently the dominating umbrella concept, while information practice stands as a critical alternative"* (2007:109). He added that the terms mainly referred to the ways in which individuals 'deal with information.' The major difference is that, while information behaviour emphasizes the interacting or dealing with information, which is mainly understood to be triggered by needs and motives, information practice emphasizes the stability and habitualization of activities affected and shaped by social and cultural factors.

Scholarly information practice

Palmer (2009) summarized that scholars are following certain activities in order to *"find, access, assess sources of information"*; they furthermore *"network with others in their field, and actively disseminate their work"*, which is known as scholarly information

practice. This summary was built on Unsworth's (2000) primitives notion who used the term 'primitives' to refer to different types of activities that scholars practice including: learning, interpreting, comparing, referring, sampling, illustrating and representing. He suggested examples from the humanities and computing projects but stated that the activities should be seen as relatively discrete in nature.

Research lifecycle

In the literature, there are a wide range of models that seek to describe the research lifecycle and what the possible stages are that a scholar needs to go through to complete a research study (Eynden et al., 2009; JISC, 2010). Generally speaking, a 'research lifecycle' is a set of stages, each one requiring the researcher to address different activities to be accomplished. Once all the stages and the related activities are finished the research cycle will be complete; however, at the same time it might also inspire the beginning of another research lifecycle. It is also important to recognize that the lifecycle itself may not be a linear process, since often stages of the lifecycle do not necessarily take place one after the other, in the same order every time. For instance, reviewing the literature may occur several times during research, and may also run alongside other activities, such as processing research data. Thus the lifecycle model itself needs to be flexible enough to recognise the complexity of the process of PIC creation and content curation.

Personal Information Collections (PICs)

According to Jones (2004), creating PICs is not an accidental or occasional event but is something which happens every day as a result of daily interaction with information; it happens once a person accesses any type of information source. In that sense, PICs are a set of collections which include various sources and types of information in different forms. This information was collected by an individual and stored in a personal space to be used to fulfil a current or future information need.

Personal Information Management (PIM)

Lansdale defined Personal Information Management as *"the methods and procedures by which we handle, categorize and retrieve information on a day-to-day basis"*. It is the process of a person in a space applying certain actions of *"input-storage-output"* (1988: 55).

Chapter 2 – Literature review

2.1 Introduction

Chapter 2 provides a review of interdisciplinary literature that is related to scholars' PIM practices. The lack of a specific focus on PIM in academia has required attention when selecting the topics in this chapter. Accordingly, as the main concern is to understand issues related to scholars' behaviour and practices in relation to PIM, the literature will be presented primarily in relation to these concepts. Although there is considerable PIM literature, which is often concerned with tools and computers, such literature is not directly relevant to the focus of this study. Therefore, the significance of the literature review in this study comes from the fact that only a few previous studies have focused on issues related directly to the Personal Information Management (PIM) of scholars. Most of the existing literature does not provide an adequate discussion of the concept but rather provides general PIM frameworks (Jones and Teevan, 2007). Some PIM studies concentrate on software development (Bordman and Susse, 2004; Peters, 2001), while others focus on how people organize their personal information, such as Henderson (2004) and Jones et al (2005). Furthermore, some PIM studies focus on the use of Email in organizing personal information (Whittaker and Sidner, 1996). Most studies therefore can be categorised broadly in relation to Cognitive studies, Human/computer interaction, or productivity (Figure 2-1).
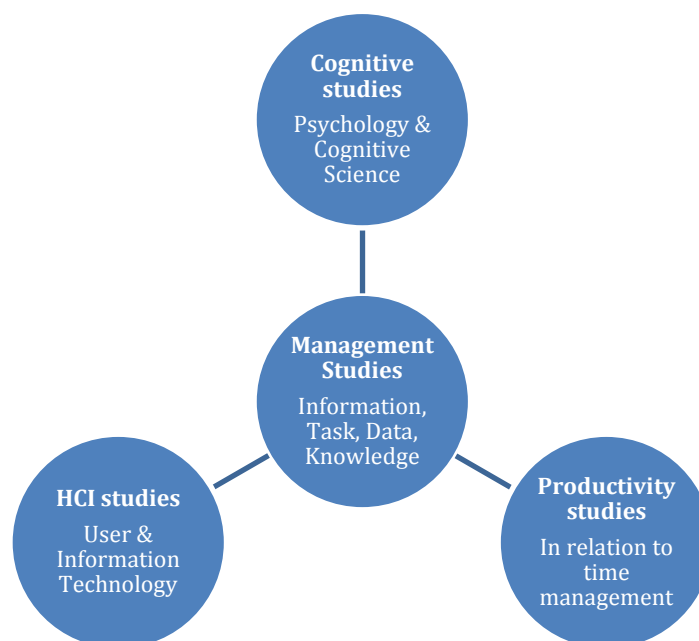
Figure 2-1: Categorising PIM studies

PIM studies are found as parts of other fields with a diverse focus. For instance, it relates to knowledge management, human computer interaction, information retrieval, and cognitive psychology within the broad umbrella of information studies, rather than considering it as an independent topic.

Reviewing the literature helps in answering the following questions:

- What is the position of the current research in a wider context?

- How can we better understand information needs in relation to PIM?

- What are the current concerns related to PIM, as presented in the literature?

- What types of activities do scholars undertake within their information practice?

- What is the future of PIM?

Accordingly, different forms of information sources were consulted, including Sheffield University physical and virtual libraries. In addition, a considerable number of electronic resources, namely Emerald, LISA, Web Knowledge, Scopus, Library Literature, Information Science and the Internet, were searched to obtain the information required. The researcher also used printed sources such as books and PhD theses which were either accessed via the University of Sheffield libraries or bought from commercial sources. The search for relevant resources was carried out using certain terms related to the topic like 'Scholars', 'Academics', 'Faculty members', and 'Researchers' to find work related to scholars' 'information needs', or the 'information practices' of 'scholars Personal Information Management' (PIM) and 'Personal Information Collections' (PICs). A complex and systematic search strategy was applied to gain more relevant information resources to the topic of PIM and its related concepts, by either direct searching or chaining via secondary references. Boolean searching was used, in order to ensure searches were precise.

Finally, the chapter was structured with respect to the fact that the scholar's PIM as a concept is related to many other fields, such as information needs, information-seeking behaviour and information practice. Accordingly, as this subject has been studied from different perspectives, it seemed beneficial to start this chapter by mapping existing PIM research.

2.2 The map of PIM research

Mapping how PIM as a topic has been studied and the type of methodological approaches used to answer questions related to PIM is important because it will allow the researcher to locate the current study in the wider field of research. Mapping the research which has been carried out previously on PIM will help the researcher to achieve the following aims:

- Identify how to structure this chapter;

- Identify the possible methodological approaches to answer the research questions;

- Position this research in relation to previous work in the wider field, as far as is possible.
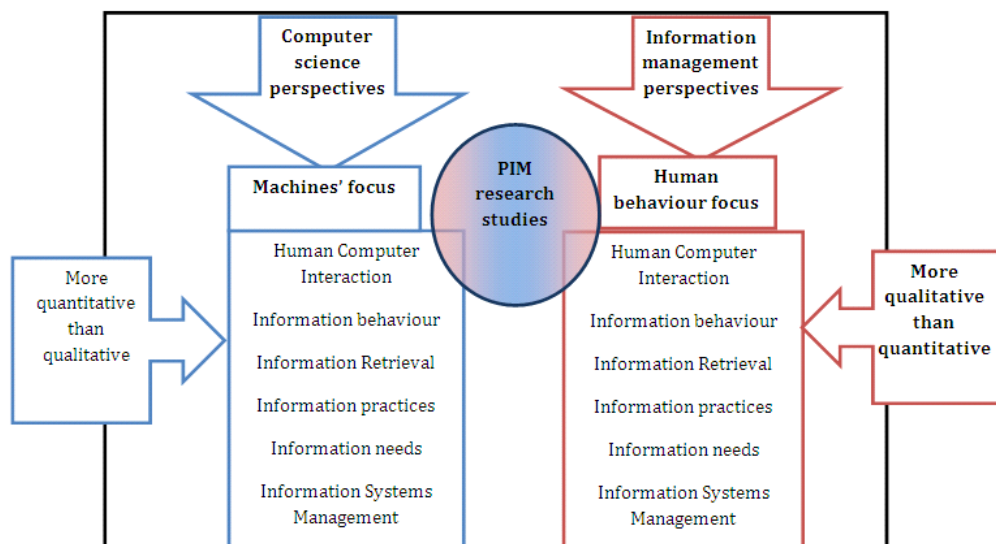
Figure 2-2: Locating PIM within related research

According to the map shown in figure 2-2 above, PIM can be seen to reflect either Computer Science scholar's perspectives, as studies to develop and evaluate PIM tools, or to reflect an Information Management perspective, which investigates how people manage their personal information. From the perspective of Computer Science, PIM focuses mainly on the use of technology to manage personal collections. From this perspective, issues related to information systems and management tools, including PIM tools, will be developed and evaluated. Many studies have been carried out (Bergman, et al., 2003; Aula et al., 2005; Elsweiler and Ruthven, 2007; EPSRC, 2007; and Whittaker, 2011) with the aim to evaluate PIM tools. But at the same time, some

research studies, such as Helvoort (2012), and Otopah and Dadzie (2013), were carried out to examine issues related to Information Behaviour and Information Practices but from the perspectives of Computer Science. The same issues have also been dealt with in many studies, such as (Jones, 2006, 2007, 2012) but the main focus has tended to be on PIM tools rather than focusing on understanding people's behaviours and practices within PIM.

Therefore, the current research can be located in the information management area on the map, as it will provide a deeper understanding and fuller description of scholar's PICs and their related practices. The decision was made with respect to the fact that the focus of this research will be scholars' PIM practices in Kuwaiti universities, rather than examining PIM tools.

This chapter starts by discussing issues related to Information Needs and Information-Seeking Behaviour concepts. Following this, PIM issues including PIM activities and problems with PIM in relation to personal information collections, are dealt with. Finally issues related to scholars' Information Practices are discussed. The chapter concludes by reviewing the most critical issues found in the literature.

2.3 Information needs and information-seeking behaviour

According to Jones (2008), information contributes to humans' daily lives in their given roles: "*for example, as parent, employee, friend, or community member*" (2008: 453). People require information to complete tasks and meet needs they have responsibility for. They use information to make decisions, to learn and gain better mastery of the world, and to meet various needs. In practice, every day, all the time that we are awake, we search for information to ensure that our day will pass smoothly. People usually seek a variety of information sources and store it in order to find it again once needed, which is considered as an "*Ideal PIM*" (Jones, 2008: 453). The information collected for different everyday life tasks is known as 'personal information collections'. Pollard (1938) stated that "*Information is a source of learning. But unless it is organized, processed, and available to the right people in a format for decision making, it is a burden, not a benefit.*" (1938: 12). In this sense, people seek mainly the information they need for decision-making, as well as to accomplish certain tasks, which in many case are "*work-related*" (Jones, 2008: 453). As time passes, personal collections of different types from various information sources are accumulated (Jones and Teevan, 2007; Kaye et al, 2006; Jones, 2008). According to Whittaker (2011), the problem of

keeping lots of information is that "*The more we keep, the more management effort is required*", and hence exploitation of kept information is questioned and challenged Whittaker, 2011: 13). In the sections below issues related to information needs, information behaviour and PICs will be discussed.

2.3.1 Information needs: development and concepts

Information needs first appeared in the literature in the early 1920s Case (2012). Information needs was considered as a main demand or as a secondary demand (Case, 2012). Case (2012) reviewed four types of scholars information needs as: to seek answers; to reduce uncertainty; to make sense of something; or just for motivation (Case, 2012: 72). In spite of the different visions of understanding information needs as a concept, and its meanings, there is some agreement that the concept of 'information needs' would not be understood without understanding issues related to information-seeking behaviour, because the concept of information needs has been mainly seen from the perspective of its role in information seeking and information use (Taylor, 1986; Bruce, 2005). It has been argued that that information need is responsible for motivating information-seeking behaviour, with the assumption that people only seek the information they need to fulfil either a current or a future task (Bruce, 2005).

From the perspective of Taylor (1962), information need is a personal, psychological, sometimes inexpressible, vague and unconscious condition. Furthermore, he was able to identify four different levels of information needs that individuals go through before they make formal encounters with an information system or the services of information professionals. These levels are:

- *"The visceral need, which is the actual, but unexpressed, need for information;*

- *The conscious need, which is the conscious, within-brain description of the need;*

- *The formalized need, which is the formal statement of the question; and*

- *The compromised need, which is the question as presented to the information system"* (1962: 392).

His work paved the way for other researchers, such as Belkin (1976), and Kuhlthau (1990), to deeply understand the motivations or triggers for information seeking and information-seeking behaviour. In the section below, the researcher will discuss issues related to information-seeking behaviour and its related theory in more depth.

2.3.2 Information-seeking behaviour

According to Marchionini (1997) and Wilson (1999) people ask questions because of certain needs, in some cases to solve a problem, which makes the seeking of information a problem-oriented task. From another perspective, seeking information can be seen as related to a defined purpose, to solve a particular problem, which is sometimes the case with scholars conducting research. For instance, life science scholars sometimes collaborate to share their information within each other's research groups (Nicholas et al., 2008) to make the best use of it. The study found that researchers in different groups showed diverse *"formal and informal"* ways to discover, collect, process and share information (Nicholas et al., 2008: 32). Information-seeking paradigms have investigated why scholars seek information. The reasons found include: to reduce uncertainty of a subject area; to make sense of a subject; to solve a problem; or for motivational purposes. The main paradigms for information-seeking in the literature are discussed below.

The *"uncertainty"* (Case, 2007: 50) about a situation creates an *"inner motivational state"* (Grunig, 1989: 209) in persons, leading them to take a serious step to find information; and such an incidence creates what is known as a "need".

Any search process might begin with a feeling of uncertainty and is "often *accompanied by feelings of anxiety*" which stimulates users to either continue working or to stop (Case, 2007: 74). In other words, within the information searching process, the initial stage is *"characterized by vague thoughts, anxious feelings and exploratory actions"* (Kuhlthau, 1993: 352). To face that feeling, uncertainty must be reduced, through seeking information in one way or another. Kuhlthau's research was based on uncertainty reduction as outlined above. According to her further stages of the information searching process will show more *"clear thoughts, confident feelings, and documentary action"* (Kuhlthau, 1993: 352).

In terms of information-seeking behaviour models, the literature provides a considerable number, including Dervin's Sense-Making theory (1983), Ellis's behavioural model of information seeking strategy (1983) and Kuhlthau's model of the stages of information seeking behaviour. Nevertheless, the most commonly cited model is Wilson's information behaviour model (1980; 1999). In the first version of his model he combines different areas, including information use, information transfer, and information exchange and information users. He claims that adding these areas can be

considered as an alternative to a focus simply on "information needs". In his model Wilson emphasizes the role of users (the person who needs, seeks and uses information) and at the same time he indicates that, in information-seeking behaviour, other individuals may be involved through information transfer and information exchange. He points to the lack of research in the area of information use and information transfer.
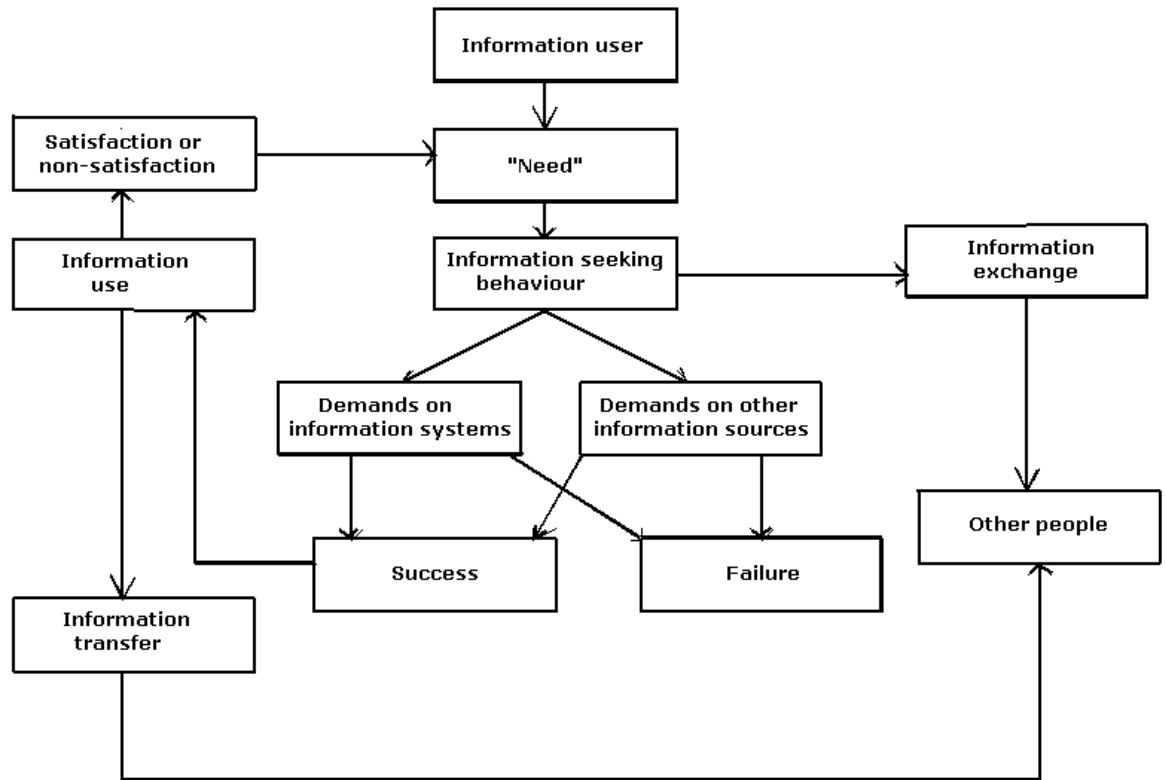
Figure 2-3: Wilson's Model of information behaviour (source: Wilson, 1999)

In 1999, Wilson further developed his 1981 model, stressing two main issues: 1) Information needs to be layered, as more complicated needs always arise out of more basic needs, such as physiological, cognitive, and affective (emotional) needs. 2) Seekers of information in their journey to meet their needs will face many contextual barriers, such as personal, social or role related, and/or economic and environmental/situational barriers. "*In fact, the barriers, particularly, those at the level of the person, may act to prevent the initial emergence of a coping strategy, or may intervene between the acquisition of information and its use.*" (Wilson, 1999: 2). He added that intervening variables can also be related to information source characteristics (such as access, credibility and communication channels) or demographic factors (like age and gender) (Wilson, 1999).
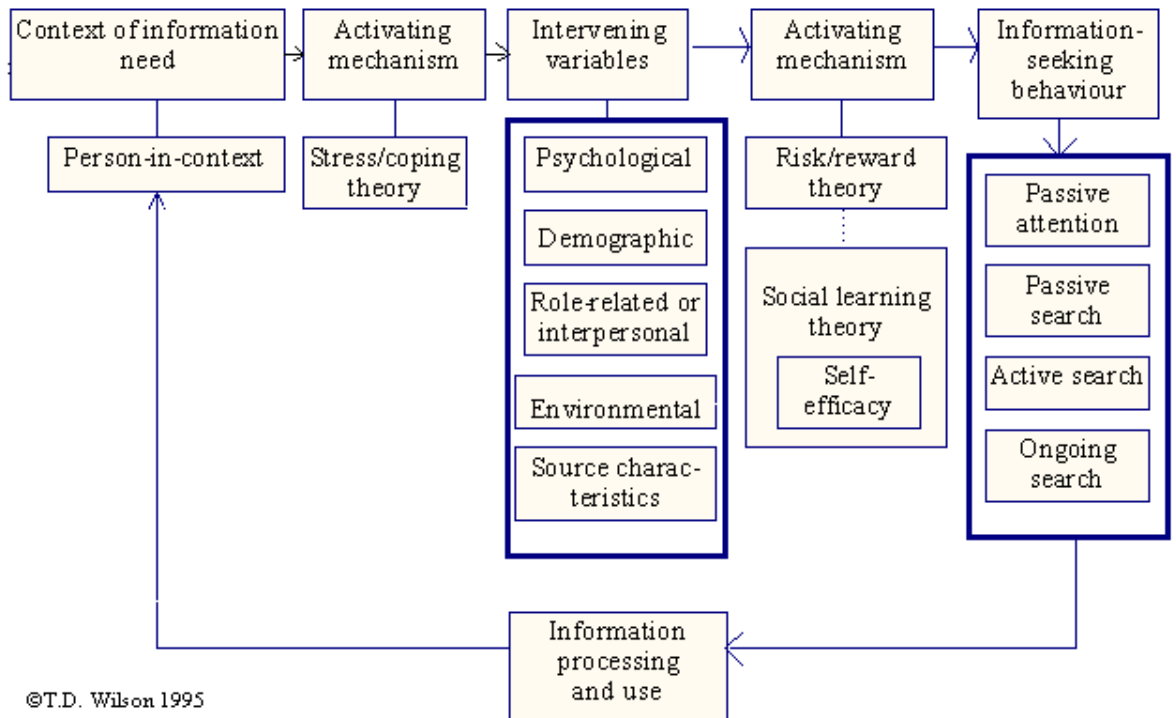
Figure 2-4: Wilson's 1996 model of information behaviour (source: Wilson, 1999)

Accordingly, Wilson (1999) stressed that in order to '*solve a problem*' a user tends to seek information either from formal or informal sources or services. Case (2007) added that the steps of a problem-oriented seeking process are usually linear, with one step following another (Case, 2007). Whether it is problem oriented or not, a *'searching process'* can be carried out in order to find some information to fulfil a user's need. As Ellis proposed, in an information retrieval model users tend to follow certain steps in order to locate information related to certain tasks (Ellis, 1989). The steps in the proposed model are: "*starting, chaining, browsing, differentiating, monitoring, and extracting*" (Ellis, 1989: 237). As Carol Kuhlthau's model of uncertainty showed, people tend to seek information because of certain feelings that make them uncertain about a situation or a phenomenon (Kuhlthau, 2004). This anxiety about feeling uncertain leads to '*motivation'* (Case, 2007).

The traditional information-seeking models did not consider *"the notion of serendipity"*, which is a different experience in the process of encountering information, as mentioned in the literature of the art and humanities, social science and science fields (Foster and Ford, 2003: 321). Discovering information by good fortune was found to have frequently been experienced by researchers in inter-disciplinary research (Foster and Ford, 2003). Recently, it has been claimed that serendipity can be controlled to maximise its benefits (Foster and Ford, 2003). An argument for achieving planned

serendipity was based on the technological developments of mobile devices and enhanced social networks (Eagle, 2004; McBirnie, 2008). On the other hand, the massive amount of digital information available for researchers today may lead to scholars feeling daunted by it. Serendipity in that case may lead to less organized resources that have no clear categories and hence no hierarchy to follow (Cooper and Prager, 2000).

2.3.3 Factors influencing scholars' information-seeking behaviour

According to Case (2007), information-seeking behaviour can be investigated within several categories. These include: roles, such as consumer, patient and student; demographic groups, such as age, gender, and ethnographic background; occupation categories, such as scientists and engineers, social scientists, humanities and healthcare; and contextual roles. These are all variables that play a critical role in user studies (Case, 2007). Because this research investigates scholars working in different academic fields, disciplinary differences as a factor will be reviewed with special emphasis on the field under investigation.

2.3.3.1 Disciplinary differences

User studies and the investigation of whether scholars behave in the same way in different academic disciplines shows that there are certain factors that influence user behaviour. Among scholars it was found that they were not a "uniform group" but differed across different disciplines (Sparks and House, 2005). It was found that the field of work affects scholars' behaviour (Tenopir et al., 2003). In the same study, it was also found that medical academics read more than scientists and engineers. In addition, use of electronic resources was not the same in different disciplines (Friedlander, 2002). Researchers have been investigating scholars' behaviour for a long time, in order to try to understand the similarities and differences between scholars' behaviour within the same or different fields. For the period 1940-1970, investigations of scientists and some engineers were the focus of information-seeking behaviour studies, followed by social scientists and humanities scholars (Case, 2007). Scientists were the main focus of the research on information-seeking behaviour and therefore it *can be said to be the study of scientist's information seeking behaviour"* (Wilson, 1984: 199). Science, as a *"structured and controlled"* field produced *"intellectual novelty through competition for reputation"*; yet, scientists deal with relatively *"high levels of uncertainty"* (Whitley, 2000: 81). In order for scientists to be rewarded, they are more reliant on their

colleagues within specialized groups presenting work for a defined audience (Whitley, 2000), which is reflected in their ways of seeking and sharing information. When compared, it was found that the behaviour of research engineers and scientists in seeking information was almost the same, although the nature of the information was different (Ellis and Haugan, 1997). It was also found that eight main factors influenced their information behaviour, which did not differ from the previously-found characteristics of scholars in other fields. The eight characteristics were: *"surveying, chaining, monitoring, browsing, distinguishing, filtering, extracting, and ending"* (Ellis and Haugan, 1997: 384). In another study, a comparison between scientists' and social scientists' behaviour was made. It was found that there were no important differences between the information-seeking behaviour of the two sets of scholars; only minor differences were found in their *"awareness levels of facilities, the extent of usage of sources, and the research stages at which a strategy may be employed "* (Ellis et al., 1993: 356). Furthermore, scientists found their literature mostly in journals (Case, 2007) due to the nature of their field and the currency of most journal articles, when compared to other scholars in different fields, such as in the humanities or social sciences.

On the other hand, when compared to scientists, humanities scholars were not found to behave in the same way when conducting their research. Furthermore, within the same discipline (as in humanities) there were some differences due to the nature of each research topic and each researcher (Lönnqvist, 2007). Lönnqvist also found that *"humanistic research often does not proceed in linear stages"* (2007: 175); it instead involves chaotic patterns without definite sequences (Ellis et al., 1993). Chu's (1999) investigation of the humanities found that the stages of conducting scholarly work can be shown as six stages: *"generating idea, preparing, elaborating, analysing, and writing & disseminating"* (Chu, 1999: 271). There are less process stages in humanities scholarly work than in scientists' work, which requires more steps (Case, 2007). Stone (1982) found that humanities scholars were more likely to work alone, with some well-established methods of informal communication. This could be due to the nature of the discipline, researchers not working with assistant researchers, or a lack of trust. Humanities researchers generally know what they want, and prefer to learn through the searching process (Stone, 1982). They were also found to need to browse, which *"provides a means of serendipitous interaction with the materials of research"* (Stone, 1982: 259). Humanities scholars were also found to prefer books, unlike scientists, who depended more on journals (Case, 2007). For example, Case (1986) carried out a study

involving 36 professors in a major private university who were each interviewed twice during a five month period. The main aim from the study was to examine the ways they organized their files. Case carried out certain measurements in the professors' offices, such as the length of space taken up by books, journals and other printed material on shelves; the number of filing drawers maintained; and the number of stacks of printed material on surfaces within the office. Case was able to identify different ways in which such research could be used to develop superior information products and services and provide a better understanding of the process of scholarship.

Another study was carried out by Palmer and Neumann (2002) to examine the practices and experiences of humanities scholars in terms of their interactions with information. They found that complicated collections of interrelated activities, information, and intellectual communities were formed through the practices of interdisciplinary humanities scholars.

2.3.3.2 Embracing technology

Technology as a factor was investigated by many studies over time to find out how it affected the scholars' practice. Rimmer et al. (2005) investigated technology used by humanities scholars in its basic and early form, such as emails and the use of the Web and electronic resources (Rimmer et al., 2006). The flood of information and technological development has forced users to behave in a different way. For instance, they browse e-books by looking at some of the pages (Estelle and Milloy, 2009); they were found not to spend long, using basic search tools, and tending to view quickly some of the pages found (Nicholas et al., 2008; Wong et al., 2009). They were found to have lost trust in libraries, and to trust search engines; they also searched library portals and specialized databases (Connaway et al., 2010). More recently, researchers have started to use more digital content to find information, and to visit libraries less often than they did before (Connaway et al., 2010), although for some scholars it was still preferable to read a book in print rather than an electronic format (Rimmer et al., 2006).

2.4 Personal information management: definitions and concepts

According to Lansdale, (1988) PIM can be seen as *"the methods and procedures by which we handle, categorize and retrieve information on a day-to-day basis"*. It is the process of a person in a space applying certain actions of *"input-storage-output"* (1988: 55). He added that, in this sense, PIM can be either a method of categorizing or of

retrieving information on a daily basis (Lansdale, 1988). Bellotti et al. (2002) agreed that PIM involves ordering information in categories to make it easier to retrieve when needed; or it can appear when carrying out certain activities grouped together to find, re-find, and keep information for future reference (Teevan et al., 2006). Alternatively it can be seen as a system developed by individuals for their own use in the work environment. It must be a method created by a person for acquiring, organizing, storing, and maintaining information, in a way that assures retrieving whenever needed (Jones and Teevan, 2007). According to Indratmo and Vassileva (2008), PIM includes varied sub-areas, such as file management, web bookmark organization, and email management. So, in that sense, it can be conceived as a person's activities that involve storing personal information items including, documents, email, Web favourites, tasks, and contacts, in personal spaces such as mobile devices, personal computers, or personal online spaces in order to retrieve them later, when needed.

So in daily life, people carry out certain tasks which require them to acquire, organize, maintain, retrieve, use, and control their personal information, such as documents in printed or digital form, web pages, emails, etc. PIM is easy to find, since all persons have at least one basic example of it, but it is harder to define *"in ways that preserve focus on the essential challenges of PIM"* (Jones and Teevan, 2007: 13). Personal information management was defined in terms of activities by Teevan as the *"user's activities when they acquire, organize, retrieve, and process information in their own spaces"* (Teevan et al., 2006: 68). These activities are required to be carried out by a person to complete tasks, either work or non-work related (Jones and Teevan, 2007). These activities, which are now known as personal information management tasks, have been performed by people for a long time, although the term itself was not recognized before 1980 (Jones, 2007). Earlier, a more comprehensive definition was given by Barreau, in terms of systems, but it seems that he is basically describing the same process. Stating that PIM is *"an information system developed by or created for an individual for personal use in a work environment",* Barreau said that it includes *"a person's methods and rules for acquiring the information which becomes part of the system"*; and that it involves a *"mechanism for organizing, and sorting the information"* which must then follow certain *"rules and procedures for maintaining the system"* created. It also involves the *"mechanism of retrieval and procedures for producing the various outputs required"* (Barreau, 1995: 327). In its ancient form, personal information management was engaged with oral human memory to help in managing

personal information (Jones et al., 2008). Nowadays, many tools have been developed that can be used to help people manage their personal information. Previously, personal information was known by the phrase "personal documentation", which does not represent all types and forms of information (Smith and Jean, 2000). Today, PIM is considered as multi-disciplinary, since it involves cognitive psychology, human-computer interaction, database management, information retrieval, and library and information science (Jones and Teevan, 2007). Personal information management involves some activities that can be grouped into three main categories, as listed by (Jones and Teevan):

- *"Finding/ re-finding activities;*

- *Keeping activities;*

- *Meta-level activities."* (2007: 13).

Therefore, PIM activities can be related to, and interact with, each other while establishing information collections, and people can use and maintain them while mapping between "Need" and "Information" (Jones and Teevan, 2007).

In reality, information is not always available at the right time and place, as and when required. Thus finding information that is scattered in different places and held in different formats requires certain management activities and certain tools (Jones, 2004); therefore, locating information when needed, as an initial stage, could be easier than re-finding it. What makes it challenging is not how to find information, but rather the issue is how to *"keep found things found"* (Jones et al., 2001) in order to use them in the future through good personal information management or PIM (Lansdale, 1988). For the purpose of this research, an exposure to the literature is necessary to understand the main concepts of the practice, problems, tools and peoples' behaviour within PIM.

Within PIM there are different perspectives. The two main ones are consumption (Jones and Teevan, 2007) and curation (Whittaker, 2011). Furthermore, Keeping Found Things Found (KFTF) (Bruce et al., 2004) is another focus of researchers in terms of ways of managing web-based information. In a study by Whittaker (2011), a distinction between the two approaches to PIM characterization was presented. If people are engaged in seeking, finding, using and discarding information, this is characterised as a consumer approach. If they keep, manage, and exploit information, this is known as information curation, where they manage their personal information. Steve Whittaker (2011) argues

that people usually keep personal information, which makes the consumption model of Jones and Teevan (2007) incomplete. People usually spend time *"preserving and managing personal materials for future exploitation",* whether in archives or files or as bookmarks (Whittaker, 2011: 5). Unlike consumption (Jones and Teevan, 2007), the *"Curation lifecycle involves future oriented activities"* in its three stages that people tend to follow, which are known as keeping, managing, and exploiting (Whittaker, 2011: 9). The activities proposed by Jones and Teevan (2007) start at an earlier stage than those proposed by Whittaker (2011), since they begin by finding/re-finding information before starting to keep it. The consumption model also did not include the exploitation stage after the management stage. On the other hand, people spend their lives *"Keeping found things found"* (Jones, 2008: 4), which is based mainly on two activities: keeping and re-finding. PIM, whether planned or not planned, should involve the seeking of information as well as the curation of it. It then should involve the merging of the activities involved in the two perspectives, namely consumption and curation. The reasoning behind this argument is that PIM will in some cases involve planning from the beginning of the task, as in the case of pre-planned development of personal information collections.

From the review of the literature, it appears that scholars adopt different ways to manage their personal information collections (section 2.3.4.1). These include discarding after use, which falls under the consumption model; keeping and maintaining, which follows the curation model; and keeping found things found, which applies mostly to web-based resources. In order to understand the factors that shape scholars' behaviour in approaching any of the above-mentioned approaches, the aims of this research were set to find out more about these issues and the related practices of scholars by constructing and conducting interviews.

2.4.1   Personal information collections (PICs): an overview

The literature in the field has addressed the issue that PIC is not a new term, as it was used earlier by Bush (1945), who introduced the term while he was describing the development of a 'mechanized private file and library'. The library was not much more than a personal space in which to store all his books, records, and communications, as an enlarged intimate supplement to his memory, to be accessed as needed (Bush 1945: section 6). Other terms, such as personal information environment, were used by

Malone (1983) and Kwasnik (1991), and information space was used by McKnight (2000) as an alternative term to PICs.

Later, PIC was introduced by Bovey (1996) who understood the activity from the perspective of information-seeking behaviour. At the same time, he insisted that information needs were the main motivation for seeking information and that then they found information will be built up in personal collections to be used later for different purposes. He argued that people prefer to seek information from external sources of information to build up their collections, and then seek information from the internal (personal) sources they have already built up. It is generally assumed that the user resorts to searching external sources when he or she has established that the information needed is not more immediately at hand. This preference has been implicitly acknowledged for some time.

Bates (2002) used the metaphor *farming* to describe the feeling of individuals during the process of creating a subset of the information world in a personal information collection. He stated that people *farm* information motivated by the fact that they want to reduce the pain of seeking the information, and the process of creating a PIC is similar to the farming process because people *tend* the collection by organizing its materials for later use.

Jones (2004) stressed that building a PIC is not an accidental or occasional event but that such events happen in everyday life, as a result of daily interaction with information; they happen once a person accesses any type of information channel or source. He added that, whenever an individual locates, encounters or is given an information source or channel, they face the fact that they needs to make one of the following decisions:

- *"Keep it; I will need it in the future;*

- *Dismiss the information;*

- *Leave the information where it is;*

- *Keep it, as it seems useful but not know when I will need it;*

- *Delete it, as it is not useful and not likely to be at any time in the future"* (2004: 43).

According to these options, the personal space of the information collection will be built mainly on personal evaluation of the need for the information and the possible need for it in the future.

Information will be kept because it has been thought to be needed, and organized in a way that makes it easily accessible to meet immediate as well as possible future information needs. It will be stored in a way that allows a person to find this information again in the place where it was originally located or encountered. On the other hand, information will be ignored, or be discarded, if there is no foreseen future need for it. In addition, information will be left where it was when a person decides that he or she will find it again whenever needed. According to Bruce (2005), PIC is the space which people will first turn to when they need information to complete a task or satisfy an interest.

> *"It is a collection of information sources and channels that we as individuals have acquired, cultivated, and organized over time and in response to a range of stimuli. The personal information collection is an organic and dynamic personal construct that we take with us into, and out of, the various information events that frame our daily working and personal lives"* (2005:1).

In this interpretation, kept information can be any possible source of information or it can be any type of material: (soft) electronic, (hard) printed, audio visual, or tools and facilities.

2.4.2   PIM activities

PIM is seen as essential to the learning process (Bergman et al., 2007) and people regularly perform it. It also involves a wide range of activities (Jones, 2008). In the section below, the researcher will discuss the set of activities and actions which have been named in the literature as PIM activities.

2.4.2.1 Seeking and finding

Seeking any source of information for the purpose of satisfying a goal is a step taken by persons as a result of a need (Jones and Teevan, 2007). As a result of a need, scholars will be purposive seekers of libraries, databases, the Internet, etc. (Wilson, 2000). Information seeking and finding are two phrases used interchangeably, since seeking *"includes all activities directed towards accessing information to meet an information*

need"; but within PIM, finding is the preferred and most used activity (Jones and Teevan, 2007: 24). The need for information is always the motivation for seeking and finding it in a multistep process that might consume much of our time every day (Jones et al., 2008). As Wilson (2000) explained, the relation between the information seeking and the need is that the information seeking is the consequential step of a need for information to accomplish a goal or a task. As a supplement to Wilson's (2000) definition, Jones et al., (2008) defined the finding activities as:

> *"Information finding is an ongoing, minute by minute interaction with a large and growing PSI involving not only the needed information but also the information, organizing constructs, and tools support that are encountered and used along the way to this needed information and then back again to the situation promoting the need for this information. Needed information is found following path through PSI. Found information and the process of finding extend and further integrate the PSI"* (2008: 82).

2.4.2.2 Keeping

The argument about the keeping activities was raised by many scholars such as Boardman and Sasse (2004); Bruce (2005); and Jones (2008). While Boardman and Sasse (2004) mentioned that people keep information because they need it "to do their work", "to be reminded of their commitments", "to share with others", or "just in case they need them later" , Bruce (2005) and Jones (2008) noted the retention of information for later access and use and named it 'keeping'. In addition, Jones et al. (2004) stated that people keep information that plays a significant role in their personal daily lives; there is thus always the need to take charge of information that is deemed useful. In their study, Jones et al. (2004) observed e-mailing to self; e-mailing to others; printing out the web page; saving the web page as a file; making a bookmark or favourite; writing it down on paper and others as some of the keeping methods that are employed by web users.

Accordingly, reviewing the literature allowed the researcher to identify Bruce (2005) as the most well-known author who discussed issues and key activities of PIM. According to Bruce (2005), individuals keep information when they consider that it will be useful at a future time. Jones (2008) agreed with Bruce's perspective that keeping involves the assessment of the usefulness of an information item before deciding to retain it or not. Mansourian (2008) also stated that writing in printed notebooks, typing in electronic

documents and recording on tape are keeping activities. Thomson (2009) and Barreau (2009) saw that using different places, such as file folders, shelves, cabinets, drawers and tables to keep paper-based documents, were issues that should be considered when speaking about keeping.

To sum up, in the digital age, with the wealth of information now available, people organize their information after finding it to ensure re-finding it when it is needed in the future. Once the decision to keep an item has been taken, certain strategies for organizing information can be used by information users. As finding was described as a multistep process, so keeping it is also a multistep process, as well as being "multifaceted", due to the decisions that need to be taken in order to keep the information (Jones et al., 2008). Information relevancy to a certain task or project and interest in keeping are factors influencing the keeping decision. In addition, keeping information for future use means that an individual needs to learn how to organize it in such a way that it can be found again when needed. Jones et al. (2004) stated that keeping for future use involved many activities. In the section below, the researcher discusses the different activities that involve keeping in more depth.

2.4.2.3 Managing/ organizational techniques

According to Boardman (2004), organising action includes many other actions such as placing, renaming, moving, creating folders, labelling and classifying information items in such a manner as would assure their retrieval. According to Teevan et al. (2006), people organize their personal information because they want to support unexpected browsing, boost their confidence and also gain satisfaction for having put their things in order. Many different strategies for organizing have been observed.

For example, when information is kept in a personal space, it can be kept in non-organized piles that have no structure (Malone, 1983); in files in a variety of filing systems (narrower and deeper); and colour-coded and tagged with labels to make them more organized (Civan et al., 2008; Henderson, 2009). Once it has been decided to keep information, certain organizational techniques need to be applied in an effort to manage the personal information. The information organization techniques can follow one of five approaches: hierarchical, flat, linear, spatial, and network (Indratmo and Vassileva, 2008: 2). This chapter will now discuss pilers vs. filers and annotation using the classification system of Indratmo and Vassileva (2008) in order to include all the possibilities that scholars might follow in organizing their personal information

collections. In addition, it has been found that they reflect two main approaches that scholars depend on in their information practice.

2.4.2.3.1 Piles vs. files

Some people will have their information in piles which are not titled or do not fall into certain criteria or organizational structures, whereas others prefer filing them. "*Pilers*" and "*filers*", when compared in a study, discovered that filers tend to collect information and keep it, but use it less than pilers do (Whittaker and Hirschberg, 2001: 165). It was also found that pilers use information piles as a tool to help them remember to do certain tasks (Indratmo and Vassileva, 2008). A study carried out by Chang and Ko (2008) in order to examine the PIM behaviour of university students, observed the use of post-building and pre-building organizational strategies. They found that students created folders which contained many files without any sub-folders to group them into sub-categories; thus they tended to become piles instead of files.

2.4.2.3.2 Annotating

Annotation is an approach that readers such as scholars use to categorize or summarize their information by commenting or even drawing up guidelines for a document (Robert, 2006). One of its simplest definitions is what Desmontils et al define it as *"an annotation is graphical or textual information attached to a document and often placed within this document"* (2006: 1). By this means, annotation is used to explain, evaluate, and interpret a document by a user without modifying or changing its original content, in order to arrange and order the information (Robert, 2006). Bélanger (2010) argued in a study to investigate the *"creation, use and organization of annotation in a digital humanities research cycle"* that the gap between physical and digital reading practices has made personal information collection a complex phenomenon. The argument about the two different forms, digital and printed, occurs because each has different lifecycle implications, since any one of them may be discarded before the others (Bélanger, 2010: 1). The model of annotation proposed by Robert, whom he named *"AMIE-PIM",* provides choices for storing information from different sources in addition to choices for evaluating personal information and personal interests (2006: 2). For small collections, annotation could be used by some users, but problems will arise when the collection becomes bigger.

2.4.2.3.3   Hierarchical

Hierarchical organization is organizing information items in a "*tree structure*" that can be applied to files, for example (Indratmo and Vassileva, 2008: 2). The hierarchical organizing structure, as discussed in several studies, such as (Malone, 1983; Indratmo and Vassileva, 2008; Henderson, 2009), showed a more structured pattern into files and sub-files. Files which have titles and are organized in units (Patrick, 2010) can be structured either vertically or horizontally (Perry, 1995) in order to facilitate the re-finding process. Although the hierarchical structure of files is organized and people are familiar with it, it is difficult to apply to scholars' work, which usually involves un-structured and dynamic tasks resulting in the existence of the information in a scattered, and hence fragmented, way.

2.4.2.3.4   Flat

This is a recently introduced structure for grouping information and assigning tags to it in a flexible way to organize the items (Indratmo and Vassileva, 2008; Henderson, 2009; Merrill and Martin, 2011). A flat system such as tagging can provide flexible as well as multiple ways for grouping and re-grouping items. Keywords assigned to each piece of information given the opportunity for a document to belong to multi-subjects under different categories. Tagging was recently applied to web-based systems and required Web 2.0 applications (Merrill and Martin, 2011), such as "Flickr", for sharing photographs, and "citeulike" for articles (Indratmo and Vassileva, 2008). Tagging is a *"social and lightweight information retrieval system"* that enables sharing among people (Indratmo and Vassileva, 2008: 4).

2.4.2.3.5   Linear

Information items can be organized in a list-based system known as "linear" and in logical ways such as alphabetical or chronological ordering (Indratmo and Vassileva, 2008). The linear- based organizational technique has the disadvantage of not being able to show two dimensions at the same time, such as either alphabetical or chronological.

2.4.2.3.6   Spatial

Other methods such as spatial approaches can be used to organize items in different places (Merrill and Martin, 2011) and as a helping tool to organize personal information. Organizing information can be carried out in a range of locations, as people do in

everyday life, either in their homes or their offices (Indratmo and Vassileva, 2008). For instance, people keep books and articles that are used daily in a special space, just as they do when they keep shortcuts to files, folders and programs on their desktop in the digital world (Indratmo and Vassileva, 2008). Spatial arrangements are easily scanned and easy to remember by users (Malone, 1983).

2.4.2.3.7   Network

Information items can be linked to one another without considering their type and location, as in the World Wide Web. Network systems provide a flexible method that allows different types of information to be linked together, in the form of documents, emails, etc. However, navigation through such a collection might be not as successful as required (Indratmo and Vassileva, 2008). The key feature of accessing networked information is that it enables "*easy information sharing and transparent access of information*" (Indratmo and Vassileva, 2008: 8).

All the strategies and tools mentioned above can be suitable for certain settings but not for others, depending on several factors such as the format and type of material, working practices, and the type of people. Indratmo and Vassileva (2008) suggested that the improvement of certain existing structures is better than replacing them with another. Any person can be engaged with many tasks to complete, and usually has to acquire information or create it. People will usually tend to keep most of their information and store it because they think they will need it in the future.

2.4.2.4 Re-finding

Searching for an information source or channel from one's own personal information space is termed re-finding. Various authors have identified a different range of strategies that can be adopted when re-finding personal information.

According to Jones et al., (2008) finding and re-finding activities will vary, depending on whether the information to be found has been seen before or not, and whether it has been controlled by use or not, as summarized in Table (2.1). Therefore, re-finding is "*the process of finding information that has been seen before*" (Jones and Teevan, 2007:24). Finding and re-finding are two activities carried out by information seekers within their seeking process. There is a relationship between keeping and re-finding, as re-finding is a consequent step of deciding to keep information of future value to the users (Jones and Teevan, 2007). Re-finding involves a different process to finding from

the beginning, as the information needed this time has been experienced previously by the user and kept as part of their personal information collections within their personal space of information.

Table 2-1: Finding according to where targeted information is and whether the person is trying to find it again (Source: Jones, 2008: 83).

The information is	Controlled by us	Not controlled by us
Seen before by us	A	B
Not seen before by us	D	C

Teevan et al. (2004) named a two-stage iterative approach to re-finding as orienteering or following a *"series of small steps"* and teleporting, which means that *"When a person attempts to teleport, they try to jump directly to their information target"* (2004: 417). According to Boardman and Sasse (2004), navigation and searching are other ways of re-finding information from one's personal space of information. According to Elsweiler and Ruthven (2007), people perform three main types of re-finding tasks: lookup tasks, item tasks and multi-item tasks. Lookup tasks involve looking for a specific piece of information from within a resource, such as finding a specific email sent by a specific sender from within an email. Item tasks involve looking for a particular item to share with someone else or when the entire contents are needed to complete the task. Multi-item tasks involve finding and searching for more than one item and often require an individual to process or collate information in order to meet the task.

2.4.2.5 Exploiting

As Whittaker (2011) proposed in the curation model of PIM, the "*keeping decision and management activity will have been futile*" if kept information is not exploited (Whittaker, 2011:9). Information kept and managed and hence exploited, either by "*Navigation*" or "*Searching*", will reflect successful re-finding activities (Whittaker, 2011: 9). Figure 2.3 shows a successfully exploited PIM lifecycle, based on the Curation model.
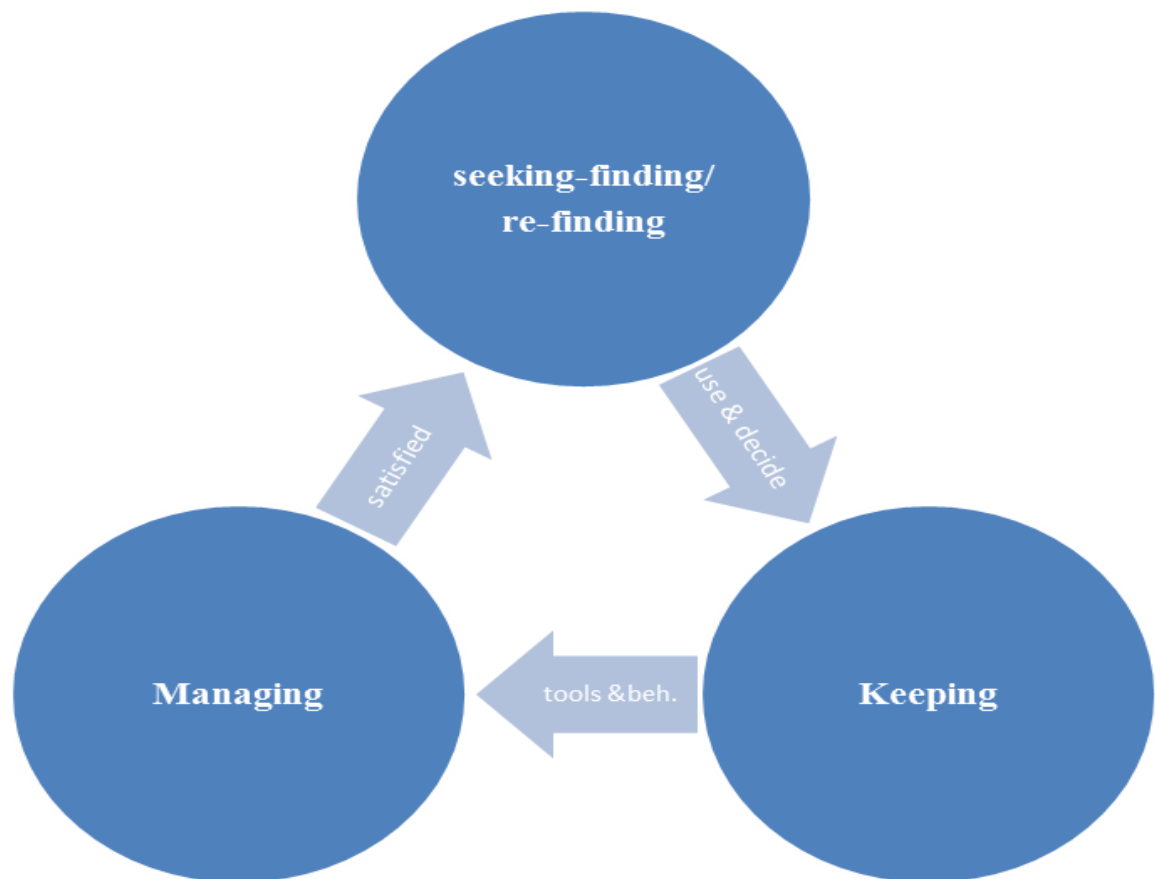
Figure 2-5: Based on the Curation model (Whittaker, 2011), successfully exploited Personal Information Management lifecycle

2.4.3 What is the problem with PIM?

2.4.3.1 Massive storage and information fragmentation

People are engaged in collecting information objects to make them ready to use in the future rather than just accessing them, in the process consuming much storage capacity (Kaye et al., 2006). Because they always want the collection to be ready for use, they tend to store most of what they collect, which requires managing over time (Jones, 2004). In addition, the scatter of information in different forms and locations is a major problem faced by people when trying to manage information; this is known as information fragmentation (Jones and Teevan, 2007). In all PIM activities, fragmentation can create different problems when a person working on a single project stores and retrieves information in multiple locations and in different formats (Bergman et al., 2006). A decision on where to find and re-find information may well be affected by scattered devices, places, and applications. Sometimes, people spend most of their day looking for specific information. As part of human behaviour, people may then forget where to search for the information or where it was kept. Such actions may affect

the use of the information if the finding and re-finding process takes longer than expected. Forgetting where to find information is caused, at least partly, by fragmented information (Jones and Teevan, 2007). As part of the process of PIM, organizing and maintaining are activities which must be carried out often. If a person is working in different places, using multiple devices and storing information in different formats, then the challenge and effort of organizing and maintaining it will increase. It is not just traditional information that has long been fragmented in different locations, as even electronic information can be fragmented by using different devices and applications (Jones and Teevan, 2007). Within a single personal computer, information related to a certain project can be found in three different locations related to the type of document concerned. A document file, for example, can be found in "my document" filing hierarchies; an email can be found in a mailbox hierarchy; and a favourite website can be found in a browser hierarchy (Bergman et al., 2006). Examples of project fragmentation were discussed by (Bergman et al., 2006) and Figure 2.4 below represents the fragmentation.
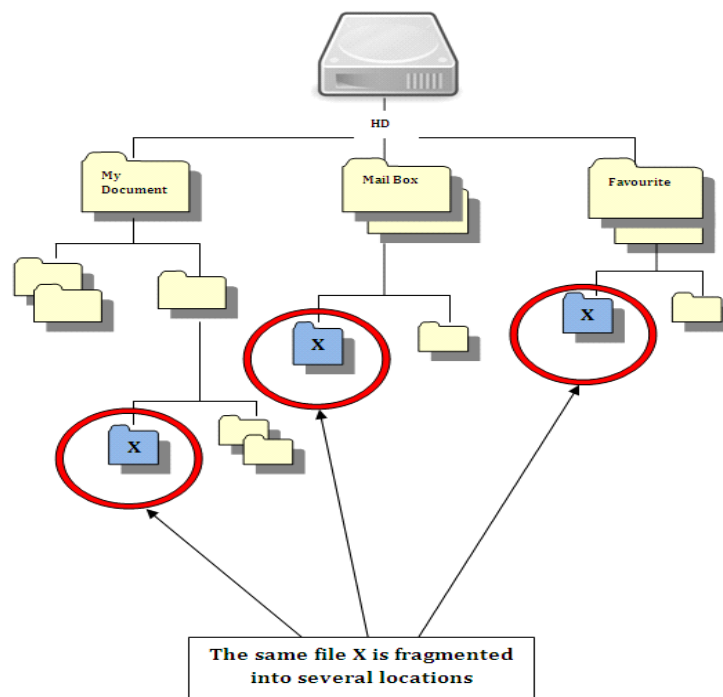
Figure 2-6: Example of the project fragmentation problem: X file fragmented into separate collections (Adapted from Bergman et al., 2006: 271)

2.4.3.2 Unifying personal information

Unifying personal information to avoid the fragmentation problem and hence help in personal information management is a challenging task (Karger and Jones, 2006). The

technical challenges demand many solutions that make it even more complicated for a person to unify their personal information. An example is the different ways of referencing used by the same person. A study by Karger and Jones (2006) concluded that better unification techniques that allow better grouping, annotation and linking of information could help improve personal information management. Jones (2008) argued that the separation of items (information fragmentation) can sometimes be a good thing for organizing, such as when we have a personal email address and another for work. His argument was that separation can help by dividing the vast amount of personal information stored on computers, making it easier for that person to control.

2.4.3.3 Curation

In their personal information space, people are engaged in preserving their personal information. The preservation and curation behaviour are the way people manage their personal material over time for future exploitation. People tend to keep huge amounts of information in their personal information space, in the form of paper archives, email archives, personal files stored on hard drives, digital photographs, and bookmarks. For instance, (Whittaker and Hirschberg, 2001) found in a study of paper archives that, on average, researchers had 62 kg of paper, which is equivalent to a pile of telephone directories 30 m high. Furthermore, people keep information passively in a way that makes it very hard to find in the future (Whittaker, 2011). In order to assure the use of the stored personal information, curation (or active preservation) is required (Whittaker, 2011).

2.4.4   Solutions for personal information management and librarian support

The complexity of PIM is due to the diversity of people's behaviours in relation to their information practice and fields (Jones et al., 2001), and the forms of documents used. Each person prefers a certain way to arrange their computers and develop certain strategies, tools and applications (Jones, 2007). Some prefer folders and labels, whereas others prefer tagging (Civan et al., 2008). A study by (Civan et al., 2008) identified the factors that lead professionals to keep piles of information in their personal space of information as:

1. *"The mechanical difficulty of creating labelled files, folders or binders.*

2. *The cognitive difficulty of creating appropriate categories and deciding how to classify information in a way that will be easily retrievable.*

3. *The desire to be reminded of tasks to be done.*

4. *The desire to have frequently used information easily accessible."* (2008: 111)

Therefore, *"electronic office systems"* might be appropriate to overcome the problems faced by organizing information and remind users of relevant tasks (Civan et al., 2008: 112).

In particular, scholars need to know how to manage their personal information and librarians might provide support to overcome the problems of PIM. One of the librarian's clear aims is to provide such support:

> *"As librarians, it is our prime professional obligation to identify and, as far as is feasible and practical, to eliminate or decrease all barriers between information and the user"* (Haag, 1984: 218)

Recently, the role of librarians has changed, due to the flood of electronic information and the networking facilities available to scholars; therefore librarians need to understand exactly what scholars need to manage their personal information collection (Woodsworth, 1989). A study argued that librarians fail to support scholars because they assume that scholars manage their personal information collections in the same way as librarians do (Smith and Jean, 2000). Librarians could also support scholars by training them in how to use the available facilities of social citation software, such as Mendeley (Taraborelli, 2008).

2.5 The scholar's PIM practice

Scholars are engaged in activities within their daily work to complete different types of *"physical as well as intellectual activities"* within their research, in a complicated mix of ordinary and apparently personal targets to produce again either current or future benefits (Palmer et al., 2009: 3). Such activities are related to the goals. Such information practice requires time and effort to achieve throughout the day. Scholars compete to gain reputation in their work (Becher and Trowler, 2001) in order to achieve their goals and develop their careers in a different way than others (Wanner et al., 1981). Due to the nature of their work and their goals, they seek information resources in the best ways available and use possible tools to assist their work and push their research forward. Among scholars, there are differences in competencies as information practice varies *"among disciplines"* and *"communities of scholars"* (Palmer et al., 2009: 165).

Their engagement and competencies in their practice lead them to be continuous seekers for information related to their practice. Scholars are usually seekers, collectors of information, and hence keepers, due to the nature of their work. Certainly conducting research is one of the tasks that require scholars to seek, collect and store information, which therefore requires managing over time.

For the purposes of this research, there will be a concentration on searching, collecting and organizing information as part of scholars' information practice activities and primitives (Palmer et al., 2009), since they are mostly related to Personal Information Management (PIM). Searching for specific data to be used in the research process is not an easy task. Finding and locating information relevant to a topic and trying to use it in a way that represents useful outcomes is the challenging process that any scholar would face in academic life. Conducting research is an ongoing process during any academic career that requires certain activities such as intensive searching, collecting, reading, data collecting, data analyzing, writing, citing, collaborating, referencing, communicating, etc. (Ellis et al., 1993; Ellis and Haugan, 1997; Foster, 2004; Palmer et al., 2009).

2.5.1   What are the scholar's activities and primitives?

In the literature there are user studies that emphasize the information practice of scholars by describing the characteristics of scholars' work by listing the *"basic functions common to scholarly activities across disciplines"* (Palmer, 2009: 14), known as scholarly primitives (Unsworth, 2000; Becher and Trowler, 2001; Foster, 2004; Case, 2007; Palmer et al., 2009). Although both Unsworth and the University of Minnesota libraries have used the word "*scholarly primitives*", each of them have described them differently. Unsworth listed seven characteristics of scholarly primitives in the humanities as: *"Discovering, Annotating, Comparing, Referring, Sampling, Illustrating, and Representing"* (2000: 1). The University of Minnesota libraries, in a final report of a multi-dimensional framework for academic support, provided another list of primitives to describe the activities of scholars within their research process thus: "*discover, gather, create, and share"* (2006: 82). In general scholars tend to discover, gather, create and share within their research process by following certain steps. For instance, when they *discover,* they find related information resources, either by structured procedures or by serendipity, to use in their research. They also *gather* the material by building from a variety of materials used within a research process, such as

"*books, articles, electronic resources, film, sound recording, artefacts, data sets, ephemera, maps, and more*" (2006: 39), which were acquired and stored physically or electronically by certain methods in their working places. Material gathered by scholars can be organized through strategies such as *"shelves, storage closets, basements, hard drives, and CDs"*. *Create* is the act of analysing the gathered information by means of reading, annotating and then writing; after writing, scholarly work can be shared collaboratively. Sharing the created work can be achieved by any means of dissemination, such as teaching, participating in a conference and publishing.

In addition, Palmer et al., (2009) described scholars' activities and related primitives in a general way that can happen in any discipline and through various stages of research (Table 2.2). Such primitives of scholarly activities involve scholars approaching PIM tools in a variety of ways within their research process which forms part of their academic life. Some of the known information-seeking models in library and information studies describe the scholarly characteristics used in these models. The very well known model described by Ellis was based on qualitative analysis used six characteristics of social scientists: *"starting, chaining, browsing, differentiating, monitoring and extracting"* (Ellis, 1989: 238). The activities that Meho and Tibbo described were basically the same as Ellis' list (1989) but with additions: *"starting, chaining, browsing, monitoring, accessing, differentiating, extracting, verifying, networking, and information managing"* (Meho and Tibbo, 2003: 578). Palmer and Cragin (2008) and Palmer et al. (2009) used Ellis et al. (1993); Foster (2004); Kuhlthau (1991); and Meho and Tibbo (2003) to derive a framework of scholarly information activities and primitives, and argued that they can happen at any stage of the research process and not just at the beginning. Palmer et al. (2009) summarized possible activities and primitives that scholars might encounter within their work, as shown in Table 2. 2 The analysis of activities and primitives by Palmer et al. (2009) of each of the scholarly activities is more comprehensive and, as part of the research overview, it includes PIM activities within the scholarly practice.

Table 2-2: Five core scholarly activities and their primitives (Source: Palmer et al., 2009: 9)

Activiti	Searching	Collecting	Reading	Writing	Collaborating	Cross-cutting
Primitives	Direct Searching	Gathering	Scanning	Assembling	Coordinating	Monitoring
	Chaining	Organizing	Assessing	Co-Authoring	Networking	Note taking
	Browsing		Rereading	Disseminating	Consulting	Translating
	Probing					Data Practices
	Accessing					

Scholarly work involves scholars in certain primitives related to their activities of searching, collecting, reading, and writing as it happens in their research process, and might involve collaborating and communicating while disseminating their work and exchanging resources. Scholarly work, as with other work, needs organizing and managing to assure production quality. Therefore, personal information management is applied in one way or another to such activities. For the purposes of this research and to answer the research questions, some of the activities and primitives as mentioned above will be covered in this literature review. Searching, as a step within finding and re-finding personal information; collecting, as means of building and managing personal information collections; and collaborating, will be discussed below.

2.5.1.1 Searching

"*Discovering*" as defined by (The University of Minnesota libraries, 2006:82; Unsworth, 2000: 1) or "starting" as defined by Ellis (1989), or simply searching for information, is regarded as the initial step for conducting any research. It involves scholars making an initial decision on where to find the needed information and what the best way to approach it might be. Searching can be done in single or multiple steps and is usually not as simple as it looks; it is also something that happens continuously (Palmer et al., 2009). User studies have shown a variety of ways that scholars search for information resources. For instance, a study by De Rosa (2005) showed that, even in a developed digitized world, users use other library resources besides search engines. A study of Research Information Networks (2006) that investigated the post-doctoral researchers'

use of different sources for searching discovered that they mostly use search engines, library portals, and library catalogues. The findings of this research also showed that the researchers considered search as an important part of the research process, and tended to manage the resources to avoid redundancy. Searching could be direct searching, chaining, browsing, probing, and accessing, as presented by Palmer et al., (2009) and summarized in Table 2.2.

When a researcher knows the keywords or names of authors, titles, etc. of an article within a topic, *direct searching* is mostly carried out using databases or online catalogues and the Internet (Foster, 2004).

When scholars *"depend on bibliographic references found in scholarly books, journal papers and web sites to identify to consult or read"* (Palmer et al., 2009: 11) they are chaining. *Chaining* is very well-known and most scholars are familiar with using it as part of their searching technique (Ileperuma, 2002; Westbrook, 2003). When scholars are not familiar with exact names or keywords to do a direct search, *chaining* is the other way to search for resources (Palmer et al., 2009). Scholars in the economics field (Vakkari and Talja, 2006), and engineering (Westbrook, 2003), were found to be practicing chaining by chasing the references and footnotes as a technique to search for resources. This kind of searching is more likely to be of use for digital material (Bates, 2007).

Browsing is the other activity that scholars mostly encounter in their daily work. Bates states that: *"scholars have argued that frequent browsing is often the only way to locate information and resources that cannot be readily described by index terms"* (2007: 1). Information relevant to tasks can often be discovered by browsing. A study investigated researchers' behaviour in locating information resources and found that scholars browse search engines, library portals, and databases as their main discovery sources; it also appeared that social science scholars used a wider range of resources than other scholars (Research Information Network, 2006). A deep log analysis study investigated virtual scholars' use of scholarly journals and found that science users browse journals to *"keep up to date"*; while social science scholars use it for *"exploratory"* purposes (Nicholas et al., 2008: 10). Scholars not only browse electronic information resources, as Borgman et al. (2005) found that library shelves are also usually browsed. Compared to direct searching and chaining, browsing is a non-planned technique that scholars tend

to use in a continuous pattern, which is a general and open-ended process to discover resources by chance.

2.5.1.2 Collecting and organizing

While scholars are engaged in their research tasks they will keep locating information relevant to their work. Journals collected personally are used by scholars within their research (Kuruppu and Gruber, 2006). Scholars in interdisciplinary fields face more stress in developing their collections and hence manage them more actively (Spanner, 2001). Some scholars feel that their collections are more reliable since they have evaluated them personally before collection, and are thus more respected by other colleagues, while some tend to have their own archives (University of Minnesota Libraries, 2006). Scholars may keep electronic or printed versions or they might keep both. Hemminger et al. (2007) in a survey showed that scholars prefer to keep both printed and electronic versions for future use. Scholars not only keep published scholarly work, but also keep data collected and processed for the purposes of their research (Borgman et al., 2005). When scholars gather a personal collection, piles of information will grow. Piles of collections then need organizing in order to assure access in the future. Jones and Teevan state that organizing requires deciding a "scheme" for organizing, and a person must decide:

> *"(1) How should items in this collection be named?*
>
> *(2) What set of properties make sense for and help to distinguish the items in this collection?*
>
> *(3) How should items within this collection be grouped? Into piles or folders?"* (2007: 39)

Further details about collecting and organizing will be found in the Personal Information Management section below.

2.5.1.3 Collaborating and communicating

Scholars share their collections within their fields; this sharing could be within the same institute or more widely, by means of collaboration. Sonnenwald defined collaboration as:

"interaction taking place within a social context among two or more scientists that facilitates the sharing of meaning and completion of tasks with respect to a mutually shared, super ordinate goal" (2007: 645)

To achieve collaboration, scholars co-ordinate, network and consult with each other (Palmer et al., 2009). Scholars tend to collaborate to minimize uncertainty and to try to achieve novelty (Whitley, 2000). In other words, "*innovation in collaborative work*" and technology have an impact on "*research production*" (Palmer et al., 2009: 27). Joint work and co-authoring require a definition of the roles of participants in the early stages of research (Sonnenwald, 2007). To achieve successful collaboration, scholars need to communicate with each other. The latest technology facilitates communication by a variety of tools that allow people to connect through networks, either locally or more widely (Palmer et al., 2009). Collaboration is better achieved when scholars are networking and communicating with their colleagues. Scholars usually seek advice and consult their colleagues while attempting to achieve certain goals, such as conducting research. Historians and humanities scholars found consulting a good source of inspiration (Case, 1991), as well as scholars in the humanities and social science (Brown, 2002).

In addition, a survey carried out in co-operation between Ithaka S+R, Jisc and Research Libraries UK (RLUK) in (2012) in order to understand UK higher education academics᾽ attitudes towards research and practices, and concluded thus:

1. There are noticeable differences between academics among the disciplines. For example, medical and veterinary academics, compared to their colleagues in other disciplines, are heavier users of e-resources when starting their research, but lighter users of other sources, such as web searches.

2. Unlike other disciplines, medical and veterinary professionals enjoy using e-resources more, but not E-books, as they prefer to use hard copy for more in-depth reading.

3. The free accessibility to e-resources encourages academics to utilize e-resources provided by libraries because libraries provide a free gateway to access important papers and books to support both teaching and research.

4. Most of the studied samples admitted that they are motivated mainly by their personal interests to pursue research, but at the same time funding and the possibility for publication are issues which should be considered.

5. Four out of five respondents agreed that it was vital to them that their own research was accessible to other academics in their own sub-discipline or field of research.

6. The academics' choices about the research are prioritized by their audiences, not by the journal or the place of publication.

7. The majority of academics rely on the academic library to gain information resources to complete their research.

8. Academics value conferences because they keep the academics engaged with their communities and they offer access to new scholarship.

From another perceptive, Caesar (2013) in his most recent paper, discussing issues related to how the faculty members' offices were organized, argues that, although faculty members' offices are based on, and owned by, the academic institutions they are employed by, the fact is that the offices are the professional and private space of the academics who spend most of their time building up collections there, which they use to distribute knowledge and advocate for learners. Therefore, it must be respected as a private space and the academics given the absolute right to run them in the way that suits them.

2.6 Summary

In this section the concept of scholarly information practices was reviewed in terms of the activities involved. More emphasis on searching, collecting and organizing, collaborating and communicating, was applied for their relation to personal information management and the focus of this study. Within their practice, scholars collect and organize their personal information for future use. Scholars tend to keep information collected for a specific research project either when they are certain about its need in future, or even when there is just a possibility of future need. Accordingly, as a result of this practice, scholars build collections of personal information. More discussion about personal information collections is provided in the following section.

2.7 The future of PIM

The future of PIM is seen to be controlled by individuals' ability to manage their personal information because personal collections are sources of knowledge which humans build during their lifetime. From the perspective of Jones (2012), people's ability to manage information is related to the ways they think about information. Information will be able to be managed if it is seen as a tangible thing. In that sense, different actions can be applied on the items of information. Accordingly, the development of technology also influences the future of PIM. Every day technology comes up with new tools which claim to be an effective way to manage information, as well as knowledge. In addition, the personal space of information is no longer the desk, but can be the personal computers, laptops or mobile devices (Jones, 2012).

The emergence of cloud storage seems likely to have a significant influence of the development of the concept of PIM (Yuan et.al, 2013, Gemmell et. al, 2006; Gremmell et al., 2003). Armbrust (2009) states that information clouds usually include both applications provided as services via the Internet and the hardware and software in the data centres that offer such service. He adds that in the last 5 years information clouds applications and enterprises have been used increasingly to become popular among IT business' firms as well as educational organizations. He referred to its advantages as it facilitates the organization and accessibility to academic publications. Jefferson (2006) argued that new emergence of information clouds allows knowledge workers to do more information sharing and better communication. Malcolm (2009) suggests that using information clouds is useful because it provides users with advance level of reliability and security and at the same time it saves the cost and the time required to access and share information. Ryan et.al (2010) suggested that in the last couple of years information clouds have become more powerful to store more than textual information. This new development did not just manifest in the change in people style or processes but allow them find and share valuable and significant information.

Jones (2013) indicated that as a result of high development of cloud storage of information and other related applications and palmtops, traditional computers devices and laptops are being replaced with more handy, easy to access, secure and powerful applications. Such applications facilitate sharing, organizing and accessing information from anywhere – for nearly – everything. So, using the cloud based personal information management platform interconnects individuals together to better manage

and share their information and collections. It allows users the use of collection of tools running in the cloud to enhance their accessibility and use of information, and at the same time it may reduce fragmentation of PIM.

Services that meet the need of a life time of accumulated personal storage such as the "MtLifeBits" platform have emerged. This service enables the scanning of papers to add to an SQL based platform as a personal digital store (Gemmel et al., 2006). Kleek et al (2012) state that, alongside the great benefit people gained from information clouds, new applications, which allow for the storage and organisation of vast amounts of personal information, with easy access are emerging. Critically for the topic of this thesis using such applications simplifies tasks of information organisation and potentially reduces information fragmentation and disorganization (Figure 2-7). Despite the apparent advantages of using information clouds in the context of PIM, several issues were recorded by a number of scholars, mostly related to security and privacy, in the context of Research Data Management (RDM) (Cox and Pinfield, 2013; Tsang, 2014).

For example, Cox and Pinfield (2013) argue that using cloud based applications in university settings to manage research data can be questionable, due to possible security and privacy risks, considering the nature of the sensitive personal data which needs to be stored. There is a need for an institutional infrastructure to support Research data management (RDM) that manages data across its whole lifecycle which involves many critical actions, such as security, legal issues, storage and sharing. These issues are complex because they vary from subject to subject and generate some diverse concerns and challenges as well as opening up opportunities (Tsang, 2014). Ball (2013) described the experience of a Jisc project undertaken by three academic schools at Sussex University, practicing RDM. The university aimed to understand the current practice of RDM and the requirements to enhance the role of the library in supporting effective storage of research data by researchers.

Evaluating the results, Ball (2013) stated that one of the problems related to RDM was a lack of the required skills. In addition, the use of RDM generated the need to develop new roles, which required new strategic vision and a new library staffing structure. From another perspective, Ball (2013) saw that the use of RDM empowered library control over university-wide initiatives and enhanced staff confidence in leading future

actions. These developments point to an increased role of libraries in storing and sharing research data.

According to Auckland (2012), the future of PIM is also related to services provided by academic institutions and academic libraries, which should work more closely with scholars to understand their needs. Academic institutions should help researchers to access more sources of funding to be able to meet their needs for research. In addition, according to Caesar (2012), academic institutions should set their organizational structure and culture in a way that motivates academics to create their personal collections because such collections are a great source of knowledge for future research. In addition, Auckland (2012) stresses that academic library should communicate with researchers in order to develop their information management skills and provide them with the required support and training.

2.8 Conclusion

To sum up, building PICs seems to be controlled by the decision about the extent to which the stored information will be needed in either the short- or long-term. It is based on the person's ability to anticipate the value of the information to meet their future needs. Collected information will be stored in their personal space to be reviewed and used by the person who created the space to meet their future information needs. He or she will personalize the space to meet their tastes, skills and needs. In this vein, information-seeking behaviour will be controlled by the information needs of the individual. From this perspective, the researcher found that discussing issues related to information needs will be more relevant to discussing issues related to information-seeking behaviour. In addition, PIM is more than performing a set of actions to organise information which might be needed in the future. It is a way of thinking about information and how collected information can be useful to humans' lives in the present and in the future. PIM should be seen as a fundamental area which should be examined more in research because the future needs PIM as more demands are placed on the need for organized and easy-to-access information are being made every day. Libraries, professionals, academic institutions and PIM researchers are all invited to work together to support the future of PIM.

Chapter 3 – Methodology

3.1 Introduction

Chapter one provided an overview of this research and chapter two provided the theoretical bases and a discussion of the literature reviewed regarding PIM issues such as carrying out activities to find, keep and refined material for future reference (Teevan et al., 2006). In addition, Fuller definitions for PIM were provided (section 2.3.4). Chapter three now considers different potential methodological approaches to answering the research questions, and explains the choices made presented in the literature and explains the choices made in this research.

The chapter starts with a literature review in order to create a theoretical understanding. Following this, issues related to research philosophies, research approaches and research strategy will be discussed. In the research strategy section, the focus will be on qualitative approaches generally, and more specifically on those used to undertake PIM research. In addition, considerable attention will be paid to the concept of naturalistic inquiry because it is the main approach used for this study. Following this, issues related to data collection methods, including sampling issues, data analysis techniques and processes, and ethical considerations will be discussed. Finally, a description of the research design and the write up of this study will be presented. Beginning with the main body of the chapter, it seems significant to mention that this research is conceived as an Exploratory-Qualitative study, therefore, the focus will be on discussing issues related to qualitative research and not those related to quantitative research. In addition, this chapter was structured in the light of the Onion Research Model proposed by Saunders et al. (2006), while the main approach of this study was developed following the approach of Naumer and Fisher (2007).

3.2 The creation of theoretical understanding: the literature review

It has been agreed by many scholars such as Hart (1998), Pickard (2007), and Bryman et al. (2008) that reviewing the related literature on a studied topic is a significant part of research. Tackling this task helps researchers understand the theoretical issues relevant to the subject area, which will strengthen their ability to justify the selection of the research methodology as well as build up their understanding and awareness to theoretical concepts that have been applied in the field and knowing about empirical

results of relevant previous studies, which in turn will influence their ability to understand the research problem.

For the purpose of this research, it was a challenge to decide from where the reading journey should start because the focus of the research was not yet clear. In order to handle this challenge, a broad literature review to understand the scope of the field and to read every piece of information felt to be relevant to the topic was undertaken. Once initial questions for this study were formulated, the decision was made to complete an exploratory study to find an appropriate focus: to examine the issues presented and where the problems originated.

Once the researcher felt confident with the knowledge gained from re-reviewing the literature, the research questions were formulated to meet the concerns that emerged from the exploratory study and the gap found in the literature. In other words, once the gap in the existing literature was identified, the research questions were designed with respect to that gap. More discussion about the journey of this research and how the questions of the research were answered will be covered later in the section (3. 6).

Accordingly, to undertake the literature review set out in chapter two, information was collected from different sources, including the Sheffield University electronic resources gateway, University of Sheffield libraries (Information Common and St. George's library), and personal information channels, including friends and commercial libraries. Different keywords were used to search for information, namely *"information practice"*, *"information behaviour"*, *"research cycle"*, *"scholars' research behaviour"*, *"information finding"*, *"information seeking"*, *"personal information management"*, and *"personal collection"*.

Reviewing the literature enhanced the researcher's knowledge of issues related to information management, information practices and methodology. The decision to utilize the qualitative strategy in the process of data collection and analysis was made in the light of reviewing the literature of the studied topic as well as the methodology literature. Creswell (2009) pointed out that the literature review is used in qualitative research in three places, in a manner consistent with the methodological assumptions; these places are: firstly, in the initial phase of research; secondly, to review the literature as a separate chapter; and thirdly, at the end of the research to compare the findings with other studies.

For this research, the literature was used in all these three places in the thesis as follows: firstly, it was used in the introduction chapter to identify the gap which the research aimed to cover, and to review previous studies on PIM in all related issues to justify the need for this kind of study in the studied context; secondly, the literature was used in the literature review chapter to present the theoretical concepts of the research, the plan and strategies used, and the obstacles and features of it in relation to the academic context; and finally, the literature is used in the discussion chapter to compare the current study's research findings with the results of previous peer studies.

3.3 Research models

The commonly used research models are the research onion generated by Saunders et al., (2007) and the nested model generated by Kaglioglou et al., (1998). The nested model encompasses three elements to establish the research methodology, including the research philosophy, research approach and research technique. The research onion includes six steps: research philosophy; research approaches; research strategies; research choices; data collection methods; and timescale (see figures 3.1 and 3.2).
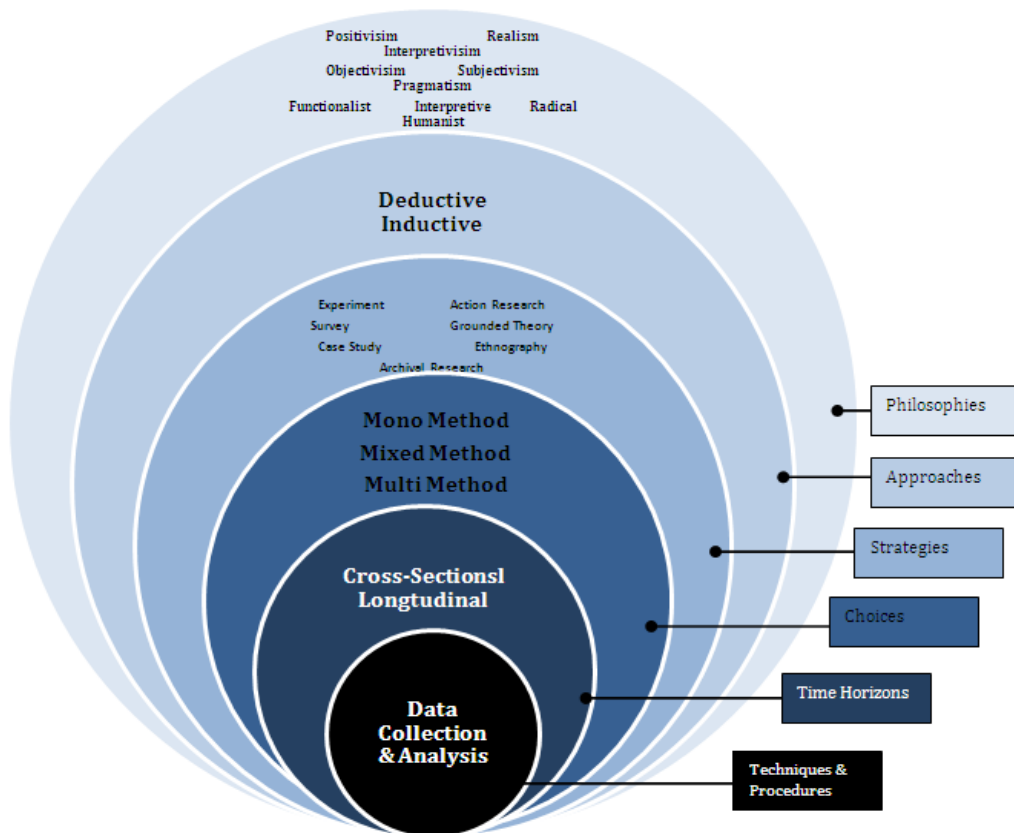
Figure 3-1: Research Onion (Adapted: Saunders et al., 2007)

Figure 3-2: Nested model (Adapted from: Kaglioglou et al., 1998)

The reality is that both models provided a sensible guide to be followed but the decision was made to adopt the one that was felt to be more applicable to the study. In addition, the onion model is a systemic model that provides the researcher with clear guidelines and familiarization with the up-coming stages which will increase the control over the research processes.

3.4 Research philosophies: Epistemology and Ontology

Any social research is based on assumptions about two fundamental philosophical issues in relation to knowledge: Ontology and Epistemology. Ontology is the "*philosophy of 'being' and reflects the nature of the researcher's view of the world, or in other words "what can we know?"* (Crotty, 1998: 10). Epistemology on the other hand, *"is the theory of knowledge or how do we come to know?"* (Bernard, 2000: 8). What is accepted as knowledge in a particular discipline is known as the epistemological issue. It is the basic assumption about what we can know about reality. The nature of social entities, on the other hand, is the ontological issue (Bryman et al., 2008). A valid research study and an appropriate research method are underpinned by the assumptions about the two areas, either explicitly or implicitly.

Positivist researchers are those who formally adhere to a foundationalist ontology while developing models which are predictive and are based on evidence that is directly observable; for example, experiments, surveys, and field studies (Newman and Benz, 1998). Interpretive research is anti-foundational; the assumption of an ontological positivist is that the researcher and reality are separate, quite unlike the approach of the interpretivist in which the researcher and reality are inseparable (Weber, 2004).

However, according to the epistemologically positivist assumption, objective reality exists but is unknown to the researcher, although such knowledge of the real world can be gained by the researcher (Weber, 2004).

In contrast, Walsham (1993) states that:

> *"Interpretive methods of research start from the position that our knowledge of reality, including the domain of human action, is a social construction by human actors and that this applies equally to researchers. Thus there is no objective reality which can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist science."* (1993: 5)

So, it can be understood from Walsham's words that, while interpretivists believe that the reality is relative and multiple, as human perspectives are varied and multiple, positivists see the reality as capable of being captured in facts and numbers, in ways which can always be replicated by others.

In this research there is a need to involve scholars in examining their experiences with PIM in the context of PAAET. This study requires an in-depth examination of a relatively small sample of participants in order to develop an understanding of the factors that shapes the interaction between scholars and information. Hence, the interpretivist epistemological position will be adopted to gain an in-depth understanding of social reality through the study of people's interpretations of and attitudes to the social world, as an outcome of the participants' interaction within a studied context.

3.5 Research approach

According to Bryman (2008) research requires the researcher to utilize theory because theory influences the design of the research project. This is true whether the researcher uses the quantitative or qualitative approach. According to Saunders et al (2009) a quantitative approach requires starting with theory (questions, hypothesis); they then become increasingly predictive as they start collecting evidence, relying more on the deductive approach. On the other hand, a qualitative approach proposes the inductive approach. Researchers in this case tend to be more interpretive, beginning with the evidence and then building up a theory based on it (Gorman & Clayton, 2008). Bryman suggests that *"the process of induction involves drawing generalizable inferences out of observations"* (2008:11). The inductive approach is flexible and permits the research to change as it progresses" (Bryman, 2008). In addition, the researcher in the inductive

approach works with qualitative data and a small sample of people are investigated as they interact with the phenomenon. Therefore, the theory in this case emerges from the data. In other words, researchers start their research by collecting the data using a variety of methods, such as interviews, and analysing that data to formulate the theory (Saunders et al., 2003).

As the aim of this study is to investigate the interactions between scholars and the phenomenon of PIM in the real world, a qualitative inductive approach was adopted. According to Trochim, (2006a) this is a bottom-up approach because researchers move from a particular focus to a more general focus. He adds that inductive researchers use specific observations to examine patterns and consistencies, in order to formulate tentative results.

3.6 Research strategy

Bryman (2008) stated that research strategy refers to general approaches used by a researcher to complete a social research study. A definition of research strategy commonly referred to is provided by Punch (2005), who defined it as *"a set of ideas by which the study intends to proceed in order to answer the research questions"* (2005: 36). It has been mentioned earlier that this research is considered to be an exploratory qualitative study, so the focus will be only on discussing issues related to qualitative research.

3.6.1 Qualitative research approaches

Denscombe (2010) named only five different types of qualitative research approaches; ethnography; action research; case study; phenomenology; grounded theory; and naturalistic enquiry. However, a small number of other approaches were also identified as qualitative research. In order to cover some selected theories, common issues related to them will be summarized in the following sections.

3.6.1.1 Phenomenology

The phenomenological development approach was introduced for the first time by Husserl in 1900-01, who saw that pure phenomenology seeks to describe rather than explain, and to start from a perspective free from hypotheses or preconception. It was seen by Moran (2000) as an uncommon, radically new way of doing research, stating that phenomenology:

"Is best understood as a radical, anti-traditional style of philosophising, which emphasises the attempt to get to the truth of matters, to describe phenomena, in the broadest sense as whatever appears in the manner in which it appears, that is as it manifests itself to consciousness, to the experience". (2000: 4)

According to Moran it can be understood that phenomenology is simply the approach that focuses on understanding how people interact with the phenomenon. In other words, the main purpose of the phenomenological approach is to *"illuminate the specific, to identify phenomena through how they are perceived by the actors in a situation"* (Lester, 1999:1). The phenomenological approach is usually used for bringing to light people's perspectives about a specific phenomenon. The most common data collection methods used to collect data are observation and semi-structured, in-depth or dialogue based interviews. This approach has seldom been used in the field of PIM. For example, one such study carried out by Peters (2001) was found, a study which aimed to investigate personal information management and archiving, with the objective of designing software tools to assist the process. In order to complete that research and to learn more about how people store and retrieve all types of information, Peters (2001) conducted in-depth, phenomenological interviews using purposeful samples. Although phenomenology has the potential to answer research questions that are posed in this study, it would be complex and challenging to conduct such an approach in the current study successfully.

3.6.1.2 The Grounded Theory (GT) approach

The most interesting fact about Grounded Theory (GT) is that it can be adopted as a strategy to handle the entire research process while at the same time and in other research studies, it can be used just as an approach to form the data collection method, namely interviews. According to Dey (1999), there are *"probably as many versions of grounded theory as there were grounded theorists"* (1999: 2). These words indicate that there is no single, agreed definition of GT. Glaser and Strauss (1967) saw GT as *"the discovery of theory from data systematically obtained from social research"* (1967: 2). It allows a researcher to examine precise issues of what is going on in the studied context. In this case, the researcher can provide suggestions through developing a theory. From the perspective of Crooks (2001), GT is an approach which can be used to explore complex social relationships and behaviours in groups studied. It is mainly useful when only a little is known about the contextual factors that affect people's lives.

Disagreements between the founding theorists were identified in the 1980s, leading to the emergence of two different schools of GT. According to Melia (1996), there was no evidence as to whether these two approaches are just expressing a similar idea in different ways, or whether they were different. According to McGhee et al. (2007), GT has a number of specific features, as follows:

1. An "iterative" study design which involves cycles of real-time data collection and analysis, where analysis informs the next cycle of data collection (2007: 335).

2. Theoretical (purposive) sampling. The samples should be selected purposively and the focus will be on those which can contribute various points about the studied issue. So, the sample will be determined at the outset because the selection will be made with respect to the progress of the research. The samples will be chosen because of their ability to confirm or challenge an emerging theory.

3. A system of analysis. According to Morgan (1998) the main bases of the data analysis process in GT is constant comparison. So, once an issue of interest is identified in the data, the researcher should compare it with other examples to identify the similarities and differences. Thus the new theoretical bases which will emerge during the analysis will be continually refined through comparison with "fresh" examples from the ongoing data collection, which ensures the richness that is common in grounded theory analysis.

Birk and Mills, (2011) stated that one reason for the existence of more than one approach to grounded theory might be that it was one of the first attempts to develop a systematic method for analysing qualitative data. In that sense, GT seemed to be more about an approach to analysing data rather than an approach to carrying out a research study. Reviewing the literature allowed the researcher to name two main types of GT:

1. The first one is GT as a holistic approach which requires the implementation of the full range of grounded theory events, including theoretical sampling, with the aim of producing a theory grounded in data. According to Pidgeon and Henwood (1997), full grounded theory is only applicable to a full research project and is unlikely to be used, even when a grounded theory method is claimed.

2. The other type is grounded theory-lite, which allows a researcher to use the grounded theory techniques to develop the concepts and the categories. (Pidgeon and Henwood, 1997). From the research reviewed, it is found that this type could be the most common form of GT. It was noticeable that overlaps between the use of GT and thematic analysis (TA) were also identified. It is important to stress that, although the process of analysis in GT allows the creation of categories and concepts, this does not make GT an approach for analysis which can be the case in TA. For example, it is a fact that TA is an approach which follows similar analytic frameworks to GT but the manner in which themes, concepts and categories are epistemologically managed varies considerably between both approaches. More discussion about thematic analysis will be provided later, as it was the main approach employed to analysis the data of this research.

Finally, for the purpose of this research GT has not been used because in the literature there is a lot of discussion and debate about grounded theory procedures and elements, with lots of different competing recommendations for how to perform a grounded theory study. Therefore, it was decided not to employ this method and thus a more systemic approach was selected.

3.6.1.3 Ethnographic methods

This approach is one of the most common qualitative research approaches in social science; it has roots in the field of anthropology, as does most of research examining non-western cultures, as its initial aim was to study exotic and unfamiliar culture. According to Gill & Johnson ethnographic research '*takes place in the natural setting of the everyday activities of the subjects under investigation'* (1991: 124). Therefore, most of the research studies adopting this approach tend to examine cultural issues.

Ethnology has evolved since the classic period (Mead, 2001). From the perspective of Mason (2002) ethnography as a research approach focuses on understanding the diversity of people's cultures in their unique cultural settings. Burns (1994) stated that ethnographers' make meaning of the phenomena around them, according to their interaction with it in their cultural setting. So ethnographers engross themselves in the culture as an active participant and record extensive field notes. In depth interviews in the setting of social dialogue, and diaries, are the most common data collection methods (Mason, 2002). In this research this approach has not be used because the focus was not

on the culture of the scholars but rather on their information practices and information seeking behaviour from the perspective of PIM. There is no doubt that cultural issues and elements can influence scholars' practice but the focus here is on practice rather than culture.

3.6.1.4 Action research

Brydon-Miller et al (2003) stated that action research doesn't have a single academic discipline. It is an approach that has emerged over time from a broad range of fields, such as Education and healthcare. According to McNiff and Whitehead, (2005) action research or, as it is also known community-based study, is an approach which can be used by researchers to examine current practices and to improve conditions of the subjects of the research. Meyer (2006) adds that action research allows researchers to generate solutions to practical obstacles and extend their abilities to involve practitioners in the research, by getting them to engross with research and the subsequent development or implementation activities. Brydon-Miller et al (2003) claimed that John Dewey introduced some aspects of action research, which were clear in both his philosophical work and in his studies and experiments in education. Like any other qualitative approach, action research allows researchers the use of varied qualitative methods to collect their data, including focus-groups and in-depth interviews (McNiff and Whitehead, 2005). For the purpose of this research, action research has not been used because the focus is not on improving the current problematic practice of PIM but rather to understand how scholars practice PIM in their settings, therefore this approach seems to be far from what this study aims to accomplish.

3.6.1.5 Case study

Case study is another qualitative approach which provides research with the required tools to investigate in-depth complicated phenomena in their context (Yin, 2003). There is common agreement in the literature that there are mainly two approaches to guide the process of case study research; one is presented by Stake (1995) and the other provided by Yin (2003). Although both approaches agree that data must be collected carefully from the setting of the case, they disagree on the methods that can be used to collect the data (Pamela and Jack, 2008). According to Stake (1995) *"there is no particular moment what data gathering begins. It begins before there is commitment to do the study: back-grounding, acquaintance with other cases, first impressions"* (1995: 49). Yin (2003) saw that case studies should be used when a researcher is willing to answer

"How" and "Why" questions or where is unable to influence the behaviour of those involved in the case study. A case study approach can be also used to understand contextual conditions or when there is no clear boundary between the phenomenon and context. In this research, case study has not been selected because there was no intention to focus on how and why questions that belong to specific contexts, the focus being rather on understanding the 'how and why' questions which belong to a specific group of people (scholars) who practice their PIM in a specific context. There is a possibility that contextual elements might emerge during the research, but such elements will be part of the findings rather than the focus of the study

3.6.1.6 Naturalistic inquiry approach

The naturalistic inquiry approach focuses on how people behave when they are absorbed in real life experiences in natural settings. According to Naumer and Fisher (2007), this approach can be one of the methodological choices used to approach PIM. Nevertheless, before going any further with the use of this method in the field of PIM, it seemed important to provide a brief outline of the ways researchers use it to approach PIM.

3.6.2   Approaches to PIM

Jones (2007) identified a number of important elements in approaching PIM; these are:

- It is in an infant stage.

- The need for descriptive and perspective studies that can relate and overlap with each other.

  - Descriptive: understanding how people practice PIM, by observation, interviews, and surveys, can be used for exploratory prototyping for supporting tools and techniques.

  - Perspective: understanding efficiency of solutions.

According to Jones' (2007) prototypes are built and evaluated to reach more definite, prescriptive conclusions concerning the support that should be provided. The development and evaluation of prototypes can frequently suggest specific areas of focus for the next round of fieldwork.

Analysing the literature allowed the researcher to identify a number of challenges that might face PIM approaches in general, which are summarized in below:

- o Diversity of people's practice: people encounter unique PIM practices even within common groups who share the same features, such as profession, education and computing platforms. This makes it hard to standardize as what fits for someone might not fit for others.

- o Diversity of tools and applications: multiple forms of information across multiple tools, such as email, electronic documents and printed papers.

- o Over a period of time: moving through an information lifecycle, information migrates from hot, to warm, to cold storage.

3.6.2.1 The use of the Naturalistic Inquiry Approach in PIM research

The Naturalistic Inquiry Approach (NIA) is a qualitative approach that seeks to describe, understand, or interpret daily life experiences and structures based on field observations and interviews. For the purpose of studying PIM, Wilson (2000) stated that NIA is the approach that allows the PIM researcher to understand the experience of people and their behaviours in relation to sources and channels of information, including both active and passive information seeking, and information use. Pettigrew et al. (2001) added that NIA can be used to examine how people need, seek, give, manage and use information in different contexts. In this vein, using this approach allows PIM researchers to approach the studied phenomenon and take a holistic view of experience that focuses on users as constructive and active participants in their daily activities.

Kelly (2006) stated that studying PIM requires that researchers examine the ways people manage their personal information over the course of a day, a month, a year or, a lifetime. Hence, the process of managing information would span several different personal contexts at once. Naumer and Fisher (2007) defined NIA as *"holistic and contextual, concerning itself with the natural setting of the actors - or people of concern - and the context(s) in which they are immersed "* (2007: 76). In order to approach PIM using this approach they suggested the use of different techniques, such as unobtrusive observations, interviews, diaries, text analysis and pictures and video.

In this vein, NIA appeared to be the most suitable approach for carrying out this study because it allows the examination of the scholars' behaviour in terms broader than the

workplace or interaction with specific tools. This approach allows the researcher to study scholars PIM in terms of everyday life behaviour, as it extends the scope of the focus beyond the workplace or academic setting. In order to achieve this strategy an appropriate research design must be followed and this is explained in the following sections.

3.7 Research design

Deciding on the strategy to be followed for a research study is not enough to carry it out; selecting the research design and method are the other two critical decisions that need to be made (Bryman et al., 2008). Research design is the way of making a project out of research questions (Robson, 2002). In other words, the framework for collecting and analyzing data is known as a research design (Bryman et al., 2008). Creswell suggests there are three main issues essential for research design: *"what knowledge claims are made?"*; *"what strategies of inquiry might be used?"* and *"what method of data collecting and analysing will be then employed?"* (2000: 127). In the case of the current study, the nature and purpose of the research led to choosing the research design. A distinction between research nature and type is essential to know whether a research study is designed to measure the relation between variables, or to understand a phenomenon in a specific behaviour social setting. Yates and Yates (2004) classified the purpose behind a social research study as either to develop a new theory, or to test an existing theory. Any social research is thus considered as a process of five stages as defined by (Yates and Yates, 2004): the reason for the research; collecting information and evidence or data; data exploring or analysing; data interpreting and lastly presenting the work. In light of what is mentioned above, Table 3.1 illustrates the design that will be used in this research.

Table 3-1: Critical stages of the research

Research Stage	Description	Method
Reason for research	Understand Why and How scholars manage their research-related PICs?	Qualitative
Collecting Evidence	Data collection	Interviews, Photographs & Observation via tours
Data Exploring	Data analysis	Thematic analysis
Data Interpreting	Linking to the Idea	By discussing the results and findings in the light of the literature reviewed before and after data collection
Work Presenting	Publishing	Work will be presented to the audience in the form of written text.

The research design suits the nature of the evidence and exploration that will help the researcher in interpreting and presenting the work. The research design is based on conducting interviews after reviewing the related literature and completing an exploratory study that shapes the focus of the main study. In the light of the reviewed literature and the findings of the exploratory study, the research questions were refined for the main research stage of interviews (see figure 3-3).
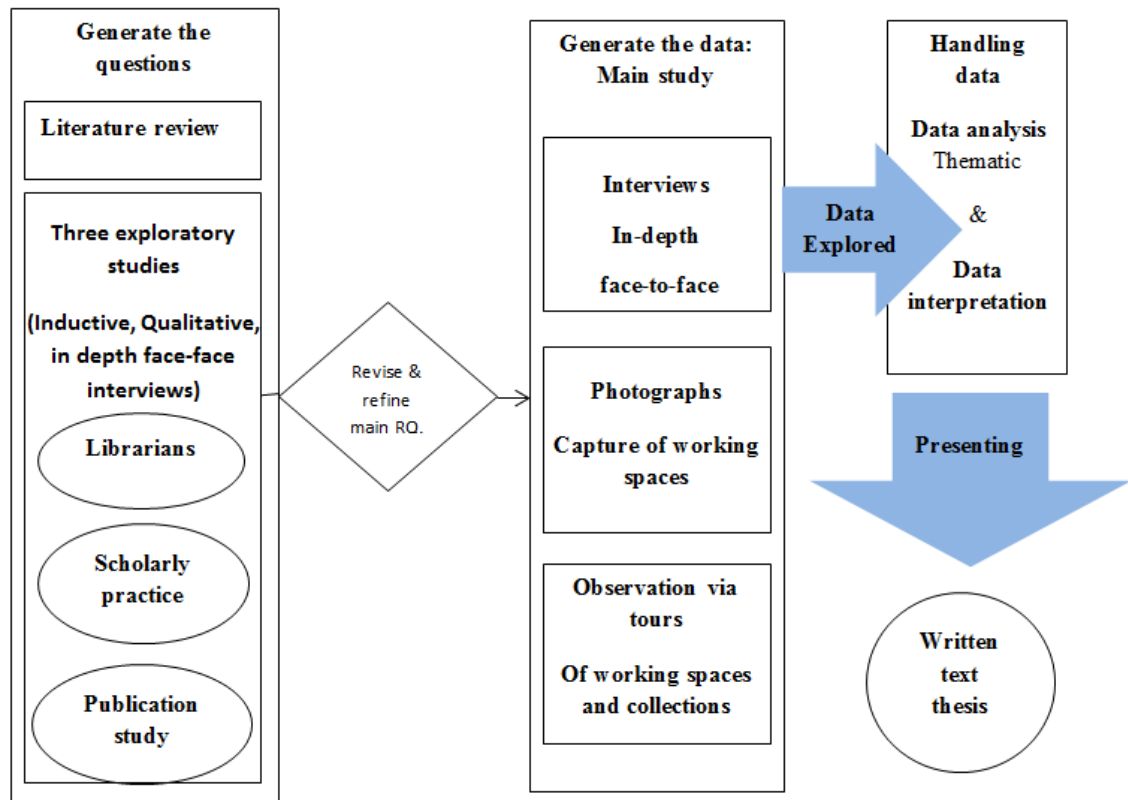
Figure 3-3: Research design

The study followed an inductive path with two critical stages of collecting evidence helping to achieve two different aims. The first stage aimed to generate the research questions and the second one to generate the main data. Both were analysed thematically. Full explanation is provided in the following sections below.

3.7.1 Generate questions

With the vast amount of information that facilitates information for scholars in the information age, there are many options and choices that need investigation. It is important for a researcher to find a gap to fill as well as contribute to the wider context of library and information science LIS. The researcher had to visit the literature and empirical studies while conducting three studies within the exploratory stage in order to generate the research questions. Because of the exploratory nature of the study, and in order to gain deep understanding, all the three studies followed an inductive qualitative approach by interviewing academic scholars. Explanation of how the participants were chosen and why is provided in the following sections below.

3.7.1.1 Literature review

The literature was employed in the current study at several stages in the exploratory phase, the main study and in the discussion at the end of the research. The researcher visited the literature in the beginning to build a basic understanding before collecting evidence. Then the researcher had to revisit the literature several times after conducting each study to compare the findings, consult the theories and hence refine the questions for the following stage. This helped to change the focus of the study gradually within the same initial broad focus, to narrow it and to be clarify what was needed to be done and how.

3.7.1.2 Exploratory study

In order to achieve its aim of generating the questions of the research, the researcher conducted the studies carefully following certain rules to achieve the quality of the qualitative study. The researcher, allowed the themes to emerge from the data which helped in achieving the exploratory nature of the study. In addition the focus of each study changed according to what emerged from the previous study. At the end of the study, it was clear that from the three exploratory studies that the research needed to focus on PIM practice of scholars. Therefore, investigating scholars' research –related PICs deemed to be necessary after the exploratory study. Explanation of the methodology of the three studies is given in the following sections.

3.7.1.2.1   The librarian study

The initial stage of the study involved interviewing librarians. This is the first and only stage involving librarians as the rest concentrated on scholars. The researcher contacted the head of electronic resources department ERD in order to gain familiarity of the department and to be able to select suitable participants to achieve the aim of this study. Three librarians were selected and interviewed in their libraries. Interviews were recorded, written and notes were taken during interviews when needed at the same time. After conducting the interviews with three librarians (see tables 3-2 & 3-3), the researcher analysed the transcribed text thematically.

Although this stage added information of value to the research, the researcher had to rethink and re-evaluate the way of interviewing people in general and in PAAET in particular. The interviews with the librarians revealed that there was dissatisfaction and poor communications between librarians and users. Another finding was that library

professionals tended to change their plans and adopt different information resources to meet their users' needs without studying their users' need in reality. User-needs assessment studies were not used to explore the needs before assigning a budget and change their plans. The library professionals also indicated that the academics are always complaining about the poor resources in the libraries. Although the needed resources are often available they are not using them for certain reasons. Therefore, the researcher turned the attention to the users themselves in order to discover if they are not satisfied and to discover their actual needs that librarians might not be aware of.

Table 3-2: Librarian study participants' summary

Age	Gender	Nationality	Qualifications	Years of Experience
>60	F	Kuwaiti	BSc.	New
>60	F	Kuwaiti	Master	6 Years
>60	M	Kuwaiti	BSc.	8 Years

Table 3-3: Librarian study: summary of libraries

Library	Year established	Number of Librarians	Collections size (English)	Collections size (Arabic)
LIBRANET (Digital Library)	2002	Not stable	All electronic databases	All electronic databases
College of Nursing Library (CON)	2004	3	2,688	1,000
College of Basic Education Library (CBE)	2002	4	3,646	28800

3.7.1.2.2 The scholarly practice study

At this stage, the attention was converted to investigate academics in order to measure their satisfaction and their needs in terms of information resources. This stage is important as it had the role of conversion between two types of sample and links the previous study to the following. This can be understood by how this study was conducted and how it contributed to the research. The sample was selected without following any specific criteria except that they were a staff member within PAAET institute. This was reasonable at this stage since aim of the study is to gain more understanding by comparing the findings to the librarian's study and to narrow the focus later. The interviews of the six selected academics (see table 3.4) were conducted in

their offices and interviews were recorded. After conducting the interviews, the researcher listened to each interview and transcribed it. The transcribed interviews then were analysed thematically.

Table 3-4: Demographic data of Participants in scholarly practice study

Gender	College	Qualifications	Experience	Tasks		
				Teaching	Research	Others
M	Health Science	Environmental Health	16 Years	Yes	Yes	Assis. Deputy
M	Basic Education	Curriculum & Teaching Methods	10 Years	Yes	Yes	Head of Dep. & Social Services
M	Basic Education	Foundation of Education	13 Years	Yes	Yes	Head of Dep.
F	Basic Education	Curriculum & Teaching Methods	10 Years	Yes	Yes	Deputy Manager
M	Basic Education	Library & Information Science	16 Years	Yes	Yes	No
F	Basic Education	Knowledge Management	>1 Year	Yes	Yes	Monitor Ac. Accreditation

3.7.1.2.3   The publication study

3.7.1.2.3.1   Planning for the interviews

Selection of participants

It was not easy to select the participants for this set of interviews; therefore, the researcher had to follow certain steps to achieve this. Firstly, the researcher had a meeting with the head of the   research support department to collect some information regarding the scholars' research careers and their publishing patterns. This meeting enabled the researcher to get an understanding of how the research process was planned and conducted in PAAET. As a result of the meeting, a list of PAAET researchers was obtained. An understanding of the methods and purposes for conducting the research in PAAET was gained from the meeting. At the second of the above-mentioned steps, another meeting was carried out with the Assistant Vice Director, who was responsible for researcher publishing as a committee member. Such a meeting was really useful as a guideline for approaching active researchers. A list of the active researchers was prepared and, from that, the researcher discovered that there were a limited number of active researchers in PAAET publishing peer-reviewed articles frequently, although most carried out research for career development purposes. The researcher had to stop

and revise the three faculties under investigation. It was decided it would be more appropriate to include the College of Technological Studies along with the other three colleges of PAAET, since there had active researchers in that field as well. The researcher then contacted the active researchers either by email or through a personal office visit. Seven faculty members were approached and five out of the seven responded, and hence were interviewed (see table 3-5). The participants suggested a day and time, and the researcher was prepared to be flexible and accept any of the suggested arrangements.

Table 3-5: demographic data of participants in Publications study

Age	Gender	Nationality	Higher Qual.	Place Obtained	Date Obtained	Seniority	College	Dep.	Years of Exp.
53	M	Kuwaiti	PhD	UK	1989	Senior	Basic Edu.	LIS Dep.	29
41	M	Kuwaiti	PhD	UK	2004	Non Senior	Tech. Studies	Engineering	11
43	F	Kuwaiti	PhD	USA	2000	Senior	Basic Edu.	Linguistic	12
45	F	Egyptian	PhD	Egypt	1999	Non Senior	Nursing	Science	25
42	M	Kuwaiti	PhD	Egypt	2010	Non Senior	Basic Edu.	LIS Dep.	9

Time selection

April 2011 was selected for the third set of interviews to avoid rushing the interview process. The researcher allowed the participants to select the time of the interview in order to make the participant feel comfortable and relaxed. Interviews took place in the office of each of the participants and were for not less than an hour. All interviews were recorded using a voice recorder and all participants positively agreed. The researcher made sure that a copy of the articles to be discussed was available to make any appropriate notes during the interview.

Selection of articles

Selection of articles to discuss in the interview was made according to several criteria. A review of the recently published work list did not provide enough information to enable the researcher to select an article or participant. Therefore, the best way in this case was to approach the researchers and have a short chat with them about their publishing of peer-reviewed articles in general. An understanding of how active the researcher was, and the quality of their published work, was gained after the short conversation, during which, both the researcher and the participants agreed on two of their published works to be discussed in the interview. The selection of the published

work was based on the date of publication, whether or not it was peer-reviewed, and the desire of the participant to talk about it, and its contribution to the field. Some articles might be written but not published yet, some were sent for publishing and were not yet agreed to be published, and others were agreed on but not yet published; these were definitely not selected. The articles selected had to be recently published peer-reviewed articles that the participant felt willing to talk about, in order to encourage the participants to talk freely and express themselves about something that they liked to talk about it. The short chat prior to the interview enabled the researcher to get a closer look at the participant's environment and formed an introductory stage which made both the researcher and the participants feel more comfortable and ready to conduct the interview. The researcher found that the participants were very happy to talk about their work, which they were proud of. Participants were encouraged to talk about every step carried out, and hence the researcher has to select the required information from the interview.

Selection of references

The selection of references was the other type of selection that the researcher had to decide on. Prior to the interview the researcher planned to ask certain questions related to some references within each of the selected articles but this was not the best way to encourage the participants talk about their references. In the interviews the participants talked about certain references according to their use in the research based on the methodology, so it soon became obvious that the interviewer should let participants talk about what they wanted to. They tended to concentrate on one or two of the references that they thought were the most important, although it was very clear that all of the references were important to them. The most important thing to know was how they tended to locate such references and for what purposes they were used in the research.

Language

Language was a very important factor that affected the data collected from the interviews. Since the participants were not English native speakers, they were free to talk in their mother language, which was Arabic. At certain points the participants had to speak in English due to the nature of the discipline, where sometimes they found it easier to speak in English. The researcher made it clear that they could use any language, since the interviews are recorded, and a translation can be made after the interviews.

3.7.2 Generate the data: Main study

3.7.2.1 Sampling

Sampling refers to the *"selection of respondents or participants that are needed to be studied"* (Yates and Yates, 2004: 73).The number of people required for the study is determined by the objectives of the research. Sampling is carried out in order to find out facts about certain populations while saving time and money (Bickman et al., 1997). There are various types of sampling that can be followed for both quantitative and qualitative approaches. Random sampling, for instance, can be selected in order to assure independent observations from the same probability distribution, in collecting the quantitative data (Creswell, 2009). Random sampling is not representative of the whole population. On the other hand, purposeful sampling is the selection of individuals who have experienced the phenomenon (Creswell, 2009). This type of sampling is used for qualitative data collection. Patton described this type of sampling as logical and powerful; its purpose is defined as "to select information-rich cases from which one can learn a great deal about issues of central importance to the purpose of the research" (1990: 46).

In the main study, after the exploratory stage, since the focus of the study has been narrowed to research-related PICs, the participants must be selected purposively rather than randomly. In order to answer the research questions, the participants should be chosen according to their research practice. According to Creswell (2007) purposeful sampling is suitable when choosing participants as it allows for a better understanding of the phenomenon. From the pre-research exploratory investigation, an understanding of the types of academics in PAAET was built up and the following types prioritised:

- Academics who are involved in teaching more than research;

- Academics who balance teaching and research but not active researchers;

- Academics who were mostly active researchers were selected for this research.

This last category is the most suitable for the investigation in hand for their involvement in research. This is important in order to achieve a fuller understanding of the stages of research and their way of collecting and keeping the research-related PICs. In addition, this selected sample was expected to reflect on the research questions for their experience in research practice.

In the current research 17 scholars were selected from two disciplines in PAAET, Kuwait, namely Basic Education and Health. The participants were selected according to their research production. Participants for the specific focus of the study had to be active researchers who were involved in conducting research and reflected different seniority levels, as well as including both genders. The researcher had to contact the Research Department in order to get a list of the active researchers in PAAET. Two distinct disciplines were chosen by the researcher, based on the research activity. These two distinct disciplines were chosen in order to measure disciplinary differences, as they reflect different specialisms and are expected to practice in different ways within their research due to different requirements, and different approaches to research. Pre-interview visits were carried out with some of the scholars to familiarize both the researcher and the participants with the interview setting and to create a comfortable contact relationship in order to achieve a relaxed interview environment and motivate the participants to talk and express themselves freely in the actual interview. The pre-interview visit also helped the researcher to introduce the fact that the nature of the data required, such as taking photographs, is a highly sensitive issue to some people. Some scholars preferred to look at the questions via email before the interviews, rather than at the pre-interview meeting. All participants were welcoming and open to discussing their PIM experiences, as well as their PICs.

Table 3-6: Participant's Information

Age Grp.	Gender	Nationality Group	Seniority Group	College	Discipline Group	Edu. BG.	Date Qalif.	Years of exp.
<60	F	Non-K	Non-S	CON	H	Kuwait	1998	9
<60	M	K	Non-S	CON	H	Egypt	1999	12
>60	F	Non-K	Non-S	CON	H	USA	1996	40
<60	M	K	Non-S	CON	H	UK	2005	11
<60	M	K	Non-S	BE	Edu.	Egypt	1996	15
>60	M	K	S	HS	H	USA	1987	35
<60	M	K	S	HS	H	UK	2002	15
<60	M	K	S	BE	E	USA	2006	5
<60	M	K	Non-S	BE	Edu.	UK	2004	12
<60	F	Non-K	Non-S	HS	H	UK	1995	10
<60	M	Non-K	Non-S	HS	H	UK	2003	6
<60	F	K	Non-S	BE	Edu.	UK	2005	6
<60	F	K	Non-S	BE	Edu.	UK	2002	15
<60	F	K	Non-S	HS	H	Kuwait	2004	6
<60	M	Non-K	Non-S	BE	Edu.	USA	1999	20
<60	M	K	S	BE	Edu.	UK	1999	11
<60	F	K	S	BE	E	UK	2006	29

Key: CON: College of Nursing **BE:** College of Basic Education **HS:** College of Health Science

3.7.2.2 Data collection techniques

Parkinson and Drislane, (2011) state that qualitative research allows for the use of different methods to collect the required data, such as participant observation or case studies, which result in a narrative, descriptive account of a setting or practice. Ryan and Bernard (2000) provided a typology of qualitative research (see figure 3.3).
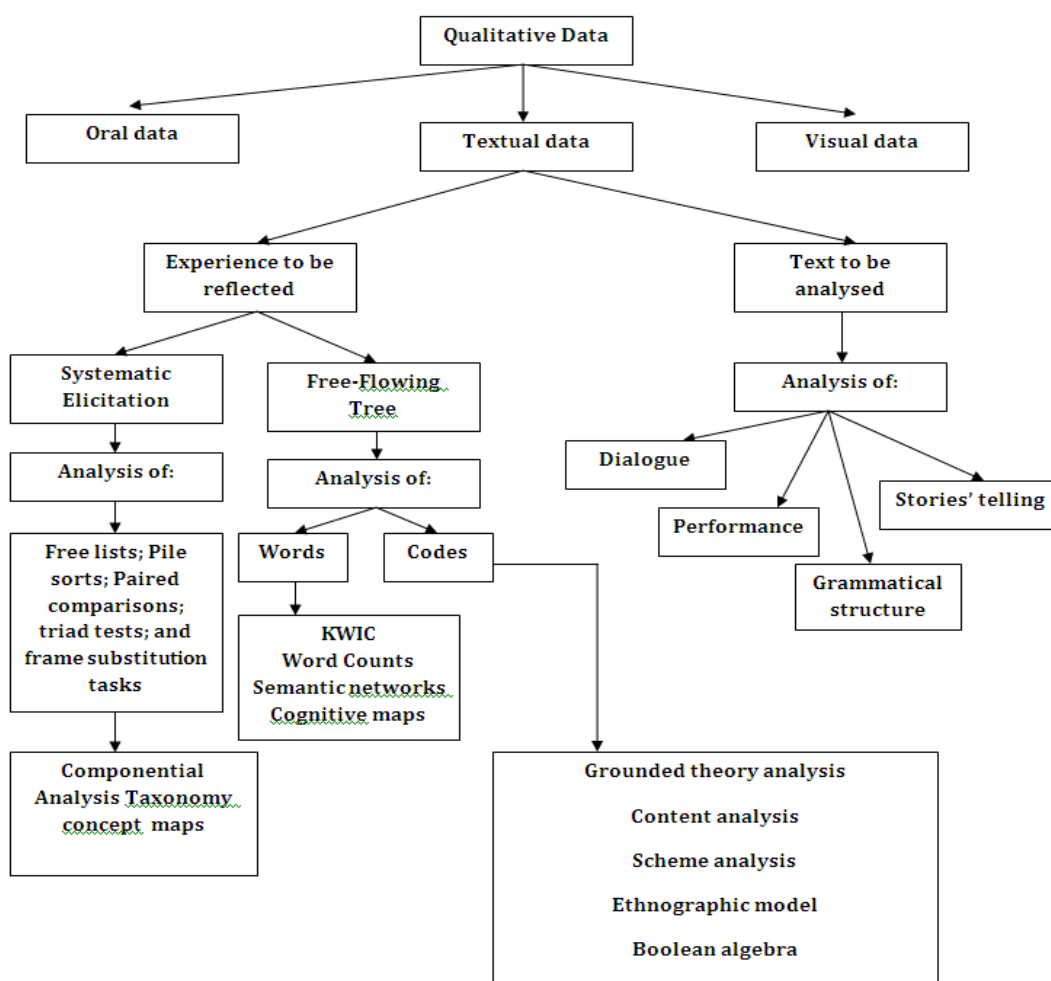
Figure 3-4: Typology of Qualitative Research; Adapted from Ryan and Bernard (2000)

According to Fisher (2007), in PIM research studies the most common data collection methods are:

1. Interviews;

2. Unobtrusive observation;

3. Pictures and videos ;

4. Diaries;

5. Text analysis.

3.7.2.3 Choice of data collection methods in this study

In order to achieve the aim of the current study, three of the methods listed above were used and will be discussed in this section, namely interviews, photography and observation. This section will provide a description of the methods used in this study to collect data. Interviews were used as the main source for collecting data, which in turn led to the other two methods used for enriching data, Photography and Observation, carried out through visiting the participants in their workplaces. A number of issues affected the researcher's choices of the selected methods as follows:

- Usefulness to answering the research questions.

- Time shaped the method selection, as some more methods could have been adopted but would have involved a lot of effort on behalf of the participants, such as creating users' diaries and investigating other working spaces.

- Flexibility in setting the time and date of interviews, in order to allow the participants to feel free and provide the data in a relaxed, friendly setting.

It is important to mention that diaries were considered as a possible option to collect qualitative data but the researcher felt that it required a lot more time than some participants were willing to give; therefore, this approach was not selected in the current study. Textual analysis is another data gathering method used by researchers to "describe and interpret the characteristics of a recorded or visual message" (Frey et.al, 1999:2). The literature identifies four different types of textual analysis, namely 1) rhetorical criticism; 2) content analysis; 3) interaction analysis; and 4) performance studies. Text analysis was also felt to be inappropriate for the current study, as the personal collections of participants might include confidential information which they might be sensitive about sharing. In addition, video was not a practical choice that fitted the culture of Kuwait, as some people might not have accepted being recorded on video for cultural reasons, although it might have been a rich data source. However, recording the interviews together with collecting photographs gave a rich source of data for the current study.

The reason why interviews were chosen as a method was to draw out the attitudes, beliefs and feelings of the individuals. Focus group research does not draw upon the

individual's attitudes, feelings, reactions or beliefs (Gibbs, 1997) because the researcher does not have much control over the interaction and the data produced during the sessions (Morgan, 1998). Therefore, it was not a suitable method for the current research, which involves collecting detailed data that are personally related to the participants. In one-to-one interviewing, where the approach is less formal, there is more interaction. Individuals in focus groups do not necessarily express their own definitive individual views. Focus groups can be biased, as there is no representative sampling involved. It is also clear that focus groups can discourage participation by some participants who are not able to communicate effectively. Also, individuals in focus group discussions may not be willing to always give personal information. One-to-one interviews are more confidential and can be anonymous. In view of this, interviews are a suitable approach in qualitative research. It can be concluded that focus groups *"do not easily tap into individual biographies or the minutia of decision making during intimate moments."* (Kitzinger, 1994). As aptly commented by Kvale (1996), a qualitative research interview seeks to describe the meaning of central themes in the real life world of the subjects. The main task in interviewing is to understand the meaning of what the interviewees say (Kvale, 1996).

3.7.2.3.1   Interviews

This research aims to discover and explore why and how scholars manage their PICs within their research process. In order to answer the questions and to accomplish the aim of the research, the researcher must understand the world of the user. The best way to understand the user's world and life is to talk with them about their experience and use their own words (Kvale, 1996). According to Kvale (1994) the interviewer in qualitative research acts like a miner searching for buried metal, or as a traveller undertaking a qualitative research journey to discover hidden information through conversations with people. The three terms, interviewing, research, and quality, are connected to show that the qualitative research interview is a specific form of conversation through asking open-ended questions. Interviews can provide a richer and more valid basis for social research than dealing with quantitative data, such as numbers and measures (Yates and Yates, 2004). There are several types of interviews a researcher might conduct: structured, semi-structured, open-ended and focus group (Silverman, 2006). Open-ended interviews allow the interviewee the freedom to talk in order to collect rich qualitative data (Silverman, 2006).

Kvale and Brinkmann (2008) listed seven stages of interview inquiry: thermalizing, designing, interviewing, transcribing, analysing, verifying and reporting. Interview questions are very critical and they fall into several types but it is up to the researcher to decide what can be considered valid for the study undertaken (Kvale and Brinkmann, 2008). Interview questions can be "introducing, follow up, probing, specifying, direct, indirect, structuring, silence, and interpreting" (Kvale and Brinkmann, 2009: 73). Interviews require the researcher to have certain skills in order to gain data of the highest quality.

In addition, while interviews for research or evaluation purposes may also promote understanding and change, the emphasis is on intellectual understanding rather than on producing personal change (Kvale, 1996). A qualitative approach will be taken using open-ended questions while interviewing the participants in order to produce a deep understanding when allowing participants to talk freely and describe openly. Patton noted that *"The task for the qualitative evaluator is to provide a framework within which people can respond in a way that represents accurately and thoroughly their point of view about the program"* (1987: 18).

Bias is one of the most critical issues in qualitative research, meaning the presence of prejudice, partiality or favouritism, which has to be avoided while selecting individuals for interview or analysis, and during face-to-face interviews (Kvale and Brinkmann, 2008). Biased questions are questions that encourage participants to respond to the question in a certain way. They may contain biased terminology or are worded in a biased way. Personal bias can be avoided by trying not to gain personal benefit and being solely motivated by the search for empirical truth (Huesemann, 2002). Interviewer bias happens when the responses of the interviews are distorted by reactions to the personality or style of the interviewer or by the use of certain questions. Interviewer bias can be reduced by using fixed words in questions (Berk, 1983). The social nature of the interview may lead to bias in the research findings. An attempt was made to avoid these three major sources of bias from the interviewer, the interviewee or the social situation, in order to assure the quality of the research. For example, the researcher avoided the use of unfamiliar or difficult language; the context and the concerns of the interviewees were respected; and the ethical approval form with respect to the University of Sheffield regulations was used to ensure that all ethical issues which can influence the process of interviews were identified and treated.

In the light of the interviewing standards mentioned above, open-ended interviews with face-to-face contact were conducted. Following Kvale and Brinkman's (2008) suggestions, the open-ended interviews allow flexibility in gaining information, where the interviewee is an active listener (Silverman, 2006). In the section below, the researcher provides the procedures that were followed to complete the interviews used in this research.

3.7.2.3.1.1   Pre-interview preparation

There were several considerations the researcher had to take into account as preparation for the interviews, as follows:

1. Develop an interview guide to remind the researcher to prompt the participants to talk (Appendix 10.

2. The time of the interviews to be chosen by participants in order to assure a suitable time to talk and hence gain enriched data.

3. A recorder ready to record the interviews.

4. A camera to capture the photographs.

5. Notes to be taken before, during and after the interviews.

6. All participants to receive the research information sheet and the consent forms via email before conducting the interviews.

7. A pre-interview visit to some of the participants to be carried out in order to introduce the researcher and create a friendly interview environment.

3.7.2.3.1.2   The process of the interviews

- The setting of interviews, appointments made;

- Introducing the researcher and the project;

- Asking for consent for the researcher to tour the workplace(s) and collect evidence during the interviews;

- The interviews were written, recorded and notes made.

The participants were approached by the researcher either by direct contact or via email

as an initial step, prior to the interview. Familiarizing the participants with the researcher helped create trust for the interviewees, and encouraged them to express themselves freely and talk openly in a conversation-led interview. All interviews were conducted in the work offices of participants, except for one which was done at the home office. This latter case arose because one participant said that she did her research-related tasks at home; therefore, she suggested the interview be held at home as the collection only existed there. The place of interview must contain the research-related PICs. In addition, scholars must be happy with the atmosphere of the interview setting.

The voluntary nature of participation, and that they had the right to withdraw at any time during the interview, was explained to each participant prior to the interview. The researcher also explained the issues of confidentiality and anonymity. At the beginning of each interview, the researcher asked the participants to read the information sheet (Appendix 8) and sign the consent form (Appendix 9). Although the participants received the information sheet and consent form by email before conducting the interviews, the researcher started the interview by explaining that there would be a need for a tour of their working space, and that photographs would be taken as necessary.

All interviews started with open-ended questions to allow the participants to talk about their experience. A question such as "can you talk about your research?" or "how do you conduct your research?" was a good starting point to create such conversations. This kind of question usually led scholars to talk about their research-related PICs; however, when they did not mention it, the researcher had to ask them explicitly by using follow-up questions.

More open questions were asked, such as "can you talk about the research-related information available in this place?" The interview schedule was used to prompt questions as required, without a set order. However, the researcher had to make certain that all questions were covered by the end of the interview. Also, using the interview schedule did not prevent new issues emerging and the researcher was open to listening to and recording everything, while being careful not to spend too much interview time straying from the main focus of the study. Although the same interview guide was used for all interviews, each one was different. In addition, the researcher had to point to some files and piles in the office to motivate the participants to talk about them (for more about the tour of the workplace, see section c.).

During the interviews, the researcher listened carefully, allowing the participants to say more about their experiences in spite of their changing the focus of the conversation sometimes. In this case, the researcher allowed them to talk for a while so as to avoid interruption, as well as allowing the appearance of valuable data when they talked about favourite topics. As for moving from one question to another, the researcher used a conversational manner, rather than treating it as a formal interview. Sometimes the researcher had to repeat the question in a different way when the participants lost the focus and did not understand the meaning of the question. Sometimes the researcher had to use a testing question technique in order to achieve honesty in the participants' answers, as new concepts were introduced by the researcher in order to see the reaction of the participants towards them (Kvale, 1996).

Interviews were recorded in their entirety, photographs were captured and some notes were taken during the tours. At the end of each interview, the researcher attempted to ensure that all the required information had been collected. Then, before thanking the participants, each interview was ended by asking the participants if they wished to add further information that they thought was relevant but which had not appeared during the interviews.

Accordingly, while conducting the interviews, the researcher experienced a few barriers; those obstacles can be summarized as follows:

1. Cancellation of some of the interviews, which required re-arrangement and hence affected the researcher's timescale. This was of specific concern due to the need for the interviews to be conducted in Kuwait within a limited time period of trying to fit with the participant's available time as well as the researcher's, during April, 2011. This meant the researcher had to curtail visits to other locations, such as home offices; multiple campus offices for those who worked in multiple locations; and other shared working spaces, such as laboratories, in PAAET, or data collection areas, such as hospitals (as mentioned by some participants in the health discipline).

2. Sometimes the researcher felt that the participants were trying to give what they perceived to be a "correct answer", although from the beginning it was made clear to them that there was no correct or incorrect response; rather, they should simply say whatever they did as their practice. Some scholars emphasised that they used technology and that their offices were digitally-

based, just to show that they were doing what they believed to be right or correct.

3.7.2.3.2   Photography

The use of photography in qualitative research as a data collection method is not new and has been mentioned by many scholars, such as (Byers, 1964; Caldarola, 1985; Schwartz, 1989; Close, 2007). In this research, in addition to the interviews discussed in (section 3.6.4.1: a.), photographs were taken of the research-related PICs of scholars to enrich the research data and complement any weakness in the interview data (Jones, 2006). Taking photographs is a way of creating a deep and rich understanding of a phenomenon. Photographs were originally taken as a secondary source of data to enrich the interviews. However, it was found that the photographs provided essential evidence to investigate the features of the collections. Participants sometimes tended to say things that appeared the opposite in the photographs. This might reflect their vision of the best practice for research, or that they stated a belief in something while actually doing the opposite. One example is when one of the participants declared that his office was electronically-based and that he depended on saving everything in electronic form. For this participant, the photographs showed exactly the opposite, since the office was organised around hard copy material. From this case, it is apparent that the photographs were a main source of data rather than a supplement to the interview. Within interviews, participants may not reflect the reality of what they do, especially in investigating PICs, as the investigation is in a very personal context. However, capturing photographs of the personal working spaces was not easy to achieve, and specific ethical issues had to be taken into consideration by the researcher. It is worth mentioning that all 17 participants were happy to allow the researcher to take photographs freely with explanations when required.

3.7.2.3.3   Observation via tours and interviews

According to DeWalt and DeWalt (2001), observation is one of the data collection methods used by qualitative researchers. It is a systematic way of noting and recording events, behaviour and objects involved in the studied context. In this literature the action of observation in the context of research is named 'field notes'. During the observation, the researcher must be aware not to be judgmental, as they need only to record what they see.

The researcher used observation in several ways in the current research. Firstly, the researcher observed working spaces before starting the interviews and some notes were taken when needed. Within the interviews a tour of the working space was carried out which involved taking photographs while the participants spoke about their collections and the practice of PIM. Within the tour, the researcher observed and compared what the participants said with what was actually found on the tour as evidence of PIM practice of the research-related PICs. This observation helped the researcher to create more open conversations with the participants. Participants found it interesting to talk about their collections as well as their research achievements when the researcher asked. They were also happy to show the researcher their collections on the tour and some invited the researcher to another location from the working office, such as a home office, a storage room or their own car. The tour was conducted at different points within the interview as issues arose during the conversation. The researcher did not adhere to any specific schedule during the visit and let the participants lead sometimes to make them more comfortable. Open questions were used within the tour while selecting some items from their collections and asking for examples: "What is this file for? Can you explain about the other collections related to this specific research? Where is the rest of the collection that belongs to this research?"

The tour and observation were helpful in creating conversation and prompting the focus of the interviews as well. In addition, it helped investigate the collections and discover the content of files and storage units within the workplaces.

3.7.2.3.4   Summary

In short, the method of data collection used is that the three selected methods (interviews, photography, and observation via tours) worked together and shaped the visit. Instead of just using questions and answer-led interviews, each visit was enriched by the tour and photographs.

In the following (Table 3.1) the researcher concludes the characteristics of the data collection methods:

Table 3-7: Description of Data collection methods

Data collection method	Description
Interviews	In-depth face-to-face interviews. Led by unstructured open-ended questions.
Photography	Rich photographs of: • Personal information collections including traditional print and electronic files. • Personal working spaces including desks, storage units within or outside of the rooms.
Observation via tour and interviews	Observation within the tours conducted discovering: • The personal information collections of scholars. • Storage procedures.

3.7.3 Handling data: Thematic data analysis

Data analysis is the process of making sense of the collected data followed by researcher. For the purpose of this research, the researcher used a thematic analysis approach. This approach was used to code, analyse, verify and present the findings. According Braun and Clarke, thematic analysis is *"a qualitative analytic method for identifying, analysing and reporting patterns (themes) within data"* (2006: 79). It helps in organising and describing the data set in rich detail. However, frequently it goes further than this, and interprets various aspects of the research topic. In addition, Krippendorf (2004), Weber (1990), and Neuendorf (2001) distinguished between exploratory and confirmatory approaches to qualitative data analysis, which are summarized below (table 3.2).

Table 3-8: Summary of Differences between Exploratory and Confirmatory Approaches to Qualitative Data Analysis (Adapted from: Guest.et.al .2011)

Qualitative Data Analysis Approach	Exploratory	Confirmatory
Driven By	Content	Hypothesis
Example	What do 'X' people think about 'Y'?	'X' people think 'Z' about 'Y'
Codes	Driven from data	From Hypotheses
Data	Generated	Use current available data
Type of sample	Purposive usually	Random selected sample
Usage	Commonly used	Less used

As can be seen from the above table, researchers who conduct an exploratory study need to be very precise in reading the collected data. Re-reading the data and searching for the main keywords, trends, themes, or ideas in the data will help outline the structure, before any analysis takes place.

In this research, the researcher selected thematic analysis for a number of reasons, as follows:

- The researcher examines rich experiences in this research which present scholars' daily interactions with information in different settings; it is thus closely related to their personal lifestyle. So using thematic analysis allows the researcher to move beyond counting explicit words or phrases and to focus on identifying and describing both implicit and explicit ideas within the data.

- According to Braun and Clarke (2006) the thematic analysis approach is a flexible approach which is easy to learn and adopt especially by researchers who have a little or no experience with qualitative research. It helps the researcher summarize key features of a large body of data and/or offer a 'thick description' of the data set (Braun and Clarke, 2006). All these criteria were applicable to the

researcher's situation, which drove the selection of thematic analysis as a main approach to complete this study.

The researcher adopted Braun and Clark's steps to undertaking a thematic analysis. The analysis journey began by reading the transcripts carefully and highlighting the statements that were felt might be related to the main aspects of the research. Following this, the researcher coded the transcribed interviews according to a set of themes that corresponded to the interviews' questions. Following this, the researcher organized the codes which emerged into a set of categories considering the relationships between one code and another. With respect to Braun and Clarke's guide (2006), the researcher reviewed the themes that emerged and formulated them as shown in Table (3.3). In Chapter (5), the researcher presented the findings and then later discussed them in Chapter (6).

3.7.3.1 **Anonymity and Code creation**

In both exploratory and main studies participants were anonymous and that was explained to them before they sign the consent forms. Anonymity was an important factor in interviewing the participants. The researcher ensured that respondents' anonymity by creating codes to represent the participants instead of their names. The codes created involved three digits in the study of librarians and scholarly practice study representing the (college, gender, year of experience), while the three digit code for the publication study represented the unique number for each participant representing an initial for the article discussed, college and years of experience. More explanation of the method of generating code in the ethical procedure below (section 3.9, table 3.9).

3.7.3.2 Familiarization with the data

Reading data collected several times should help in the process of familiarization. Reading previous literature and reviewing collected data several times should create an idea of what expected data will come out of the interviews. This starts from reviewing the initial interviews.

The first interview was transcribed before conducting the others. This technique is supported by Silverman, who stated that: *"Data analysis should not only happen after all your data has been safely gathered. If you have an interview or recording or set of field notes go to it. Where appropriate, start transcribing"* (2005: 152). A review of the questions was then based on the first transcript before the rest of the interviews were

conducted. This step helped the researcher to collect data based on first interview evaluation.

After conducting the interviews, the transcription process was carried out while translating the required material. The interviews were mainly Arabic-based, yet most of the participants used the English language for some phrases, while others preferred talking in English. Some non-Kuwaiti scholars' interviews were based on the English language. Therefore, the researcher found it more convenient to translate while transcribing the interviews in order to accurately represent the meanings of their words. Once interviews were transcribed, the transcriptions were read several times. Transcribing is not as easy as simply transferring speech into text, but must also include the participants' reactions in the form of emotions (Kvale, 1995). While listening carefully to each interview, plenty of time was given for transcribing in order to ensure the right meanings of the words were included, as well as considering emotions such as laughing and sighing. These were mentioned in brackets as they appeared while listening to the interviews. Some interviews needed more time and had to be listened to several times because of the difficult speech and pronunciation of some of the words. After transcribing the interviews, repeated reading of the transcript was carried out, which created a holistic understanding of the data and helped the researcher to record the relevant ideas. This prepared the researcher to move from this stage to generating codes. A list of expected ideas was created, based on the familiarization stage.

Several readings during the transcription process and after enhanced the researcher's familiarization with the data and helped in creating understanding of possible outcomes and hence possible codes which were generated (see Section 3.8.2).

3.7.3.3 Generating possible codes

The generation of codes was a multi-step process. The researcher started generating codes from the interviews as they emerged from the data, once the researcher had coded three interviews. The initial set of codes that emerged from the interviews comprised a total of 288 codes (see Appendix 12). The researcher then re-coded the same interviews, bearing in mind the repeated codes issue, in addition to the different codes for the same issue, which appeared in the same set of codes. In other words, codes were refined, revised and, if inadvertently repeated, were deleted. The second set of codes was arrived at by re-coding and was refined to a total of 157 codes (Appendix 13). At this stage an external check of the codes was carried out by the supervisor in order to check the

quality of coding and that the codes represented the correct meaning. Once a stable list of codes was created, all interviews were coded using the same list. Meanwhile, if new codes emerged they were considered as well, standing at 120 codes. While coding, the researcher considered a number of issues, including continuous checking of the codes, reconsidering new codes or deleting some existing ones. In addition, some codes overlapped and the researcher had to check and make a decision on whether to create a separate code or to retain them.

After coding, a manual describing each code was created, including a definition of each code used in the study, to ensure consistency (see Appendix.24).

3.7.3.4 Search for possible themes.

Searching for possible themes was carried out in multiple steps. At this stage, instead of searching for new codes, the researcher started searching for the possible integration of existing codes under certain themes. Themes were developed using the codes that emerged from the empirical data at the first stage. In the second stage theoretical resources based on PIM (Jones and Teevan, 2007; Whittaker, 2011) were then considered for a second set of themes. Meanwhile, regular intensive supervisory meetings took place as they were helpful in considering different possible views. This shaped the understanding of the data while the analysis process progressed. Multiple views were developed to understand the personal information management (PIM) practices of scholars within their research projects to manage their research-related PICs. The idea evolved to categorize the codes together with the list created in the familiarization stage, mainly from the data itself, with basic understanding. PIM-based themes were also used in a second round of thematizing the codes. Two separate lists of codes were created at this stage, one of which was based on codes that emerged from data, and a second list that was led by previous theories of PIM. Comparison between the two procedures took place, where the researcher found that the second one, which was led by theories of PIM, could force some codes under certain themes where they did not belong. Therefore, a decision was taken to follow the emerging themes from the emerging codes in order to achieve quality of the qualitative data and represent the phenomenon under investigation in its real and natural setting without losing some important data and considering those established in previous literature.

3.7.3.5 Reviewing themes

Eight core PIM-related issues appeared (see Appendix1 4), which were as follows: storage, space, practice, time, information technology/tools, strategy, human aspects, and change. It appeared at this stage that they related to scholarly practice, the scholar's collections, and in some way to the factors shaping the practice as well as the collection. In order to achieve coherence in the themes, an effort was made to select aspects from interviews that represented and presented the findings in a sensible, logical and interesting way (Braun and Clarke, 2006).

3.7.3.6 The process of thematizing

Several stages including several possible themes were applied to the data at the supervisory meetings. Where pre-prepared and literature driven themes were possible, researchers concluded that using them will result in losing some of the data by forcing codes to fit under certain themes where they don't show the best reflection. Therefore, several supervisory meetings were helpful in discussing the issue and altering and changing themes around until it stabilized. The developed themes found related finally to three main areas, namely: the research lifecycle, features of the research-related PICs and factors shaping the features of the collections.

3.7.3.7 Data reporting

The data were written and reported as set out in chapter 5, the findings chapter. The chapter was reviewed several times and the structure was changed as necessary to represent the aspects found in the study in a logical way.

3.7.3.8 Photograph analysis

A decision had to be made on how to use the photographs. Marvasti (2004) reported that photographs can be used as data when he noted that the *Journal of the American Society* published many articles which used photographs as a source of data. Furthermore, the naturalistic approached discussed (see Section 3.6.4) supports using photographs as sources of data. Therefore photographs were used in the current research as data together with the interviews.

Photographs then were used as a source of data and were coded in Nvivo in the same way as the interview transcriptions as required. These were presented in the findings

chapter 5 and used as part of the participant quotations of some interviews, or to support the quotations in other cases.

3.8 Ethical issues and considerations

The current study involved a number of ethical considerations, including anonymity, confidentiality, informant consent and privacy, since the researcher was collecting empirical data from human subjects (Patton, 2001). As early as the first year of the study in December 2009, the procedures were carried out by applying to the Ethical Committee of the Information School of the University of Sheffield for ethical approval forms. Ethical approval was granted in January 2010 and was used for the exploratory study. Furthermore, as other issues arose in the project, such as requiring the use of photographs, the ethical forms were updated (see Appendix 8 & 9) before conducting the data collection process.

Ethical procedures were also followed in the Public Authority for Applied Education and Training (PAAET) in Kuwait. The researcher submitted information sheets for the research and applied for ethical approval, as well as submitting a letter to facilitate contact with participants and access to the locations. Prior to each interview, the researcher informed the participant about the purpose of the study through a pre-interview visit, email or telephone contact. This was followed by sending a copy of the information sheet and consent forms (electronic by email or by hand for a printed copy for those who were visited before the interview date).

To achieve trust and confidence between participants and the researcher, issues about the rules and restrictions of confidentiality were made clear. The researcher had to reiterate such issues as necessary and remind participants about them, in order to encourage participants to feel free and allow them to express themselves. This was important because interviews were recorded and specifically in relation to the issue of taking photographs. The researcher kept the empirical data in a secure place that nobody had access to other than the researcher. Furthermore, codes were generated to represent the participants to ensure total anonymity of participants. Examples of how codes were used in the findings chapter (5) are shown in Table (3.4).

Table 3-9: Codes generation

Code	College	Order of interviewee in the college	Order of interviews out of 17
BE1-5-17	BE: Basic education	First from this college	5th interview
HS5-14-17	HS: Health Science	5th participant from this college	14th interview

3.9 Research quality

Qualitative research *"uses [a] naturalistic approach"* which involves researchers observing participants and interacting with them in their own *"territories"* in order to understand a *"phenomenon in a context-specific setting"* (Golafshani, 2003: 600). It is carried out to discover the *"presence or absence of something"*, while quantitative researchers observe the degree of the presence of a phenomenon (Kirk and Miller, 1986: 9). The aim of any qualitative research study is to achieve quality in understanding a situation (Golafshani, 2003). Reliability and validity are used by positivists in quantitative perspectives, but they *"should be re-defined to be used in a naturalistic approach"* (Golafshani, 2003: 597) to provide guidelines for evaluating qualitative research (Seale, 1999). Validity and reliability are not applied to evaluate the quality of qualitative research in a direct way; instead, the trustworthiness (quality) of a qualitative research study can be judged by other criteria, using the term *"rigour"* to test how appropriate the research methodology is*; "credibility"* to test how the meanings of the findings of the research are presented; and *"relevance"* to test utility of findings (Kitto et al., 2008: 243). A qualitative research study can be evaluated by following guidelines that cannot ensure rigour but can assess and enhance it as shown in Table (3.5) (Kitto et al., 2008).

Table 3-10: Criteria for assessing quality (Source: Kitto et al., 2008: 244)

Criteria for assessing qualitative research	The main issues	How addressed by the researcher in this study
Clarification	• What are the aims of the research? • What is the research question?	• Carry out in-depth investigation of the literature review • Examine different topics related to PIM. • Carry out an exploratory study to clarify the focus of the research
Justification	• Why is a qualitative approach the best option to answer this question? • Why was the particular qualitative research design chosen?	• Consult the relevant literature; • Be open to all possible approaches; • Select the approach that answers research questions best
Procedural rigour	• Have the techniques of data collection been clearly documented? • Are the forms of data analysis completely transparent?	• Data was collected in an ethical manner; • Interviews were recorded; • Every piece of speech was transcribed, including expressions such as 'hmm', 'opph' and so one • Emotions such as laughing and pausing were all mentioned in the transcript • Simple and clear language was used to formulate all questions • Data was analysed with respect to theoretical framework
Representativeness	• What sampling techniques have been used to answer the research question? • Do the sampling techniques support conceptual generalizability?	• In the light of the research questions and objectives, the sample were purposely selected (see section 3.6.3) for more information
Interpretation	• Has a more conceptual discussion of the results and linkage to existing theory or new theory been developed to explain the relevance of findings to a targeted audience or discipline? • Have any negative cases been included and discussed?	• The categories emerged from the data collected and coded. There was no interference with the flow of data and the codes were selected or created to reflect the prospections and ideas mentioned by the participants; • All perspectives and conceptions were respected and reflected. Even single cases were coded and included in the emerged categories and respected in the discussion
Reflexivity and evaluative rigour	• Has a clear statement of the effect on the data of the researcher's views and the methods chosen	• Ethical approval was obtained; • Varied research approaches and methodologies were reviewed and the one most able to handle this research

	been included? • Has an explicit evaluation of the relationship between the researcher and those under research, addressing any ethical issues, been discussed? Has ethics approval been obtained from an appropriate institution?	and answer its questions was selected • The data collection methods which allowed the researcher to collect rich, deep and wide perspectives were selected
Transferability	• Has a critical evaluation of the application of findings to other similar contexts been made? • Has the relevance of these findings to current knowledge, policy, and practice or to current research been discussed?	• The findings of this research will generate a model which can be applied in wider contexts in the future

Validation is an interpretive approach to qualitative research. Validation in qualitative research is the assessment of the accuracy of the findings of the research and the measures adopted by the researcher to document the accuracy of the study (Creswell, 2009). McCracken (1988) described the quality of qualitative research as presenting a good quality product similar to a good story that readers will never forget. A rich research description that can convince the reader as well as the researcher himself will lead to high quality research. Silverman (2006) claimed that the value of qualitative research depends on flexibility; a natural live context; the research process and outcomes; and the meaning and causes for the research study. These mean the researcher will attempt to follow certain standards in all research stages in order to achieve research quality. This can be achieved by carefully collecting data using interviews, photography and tours as well as delivering the participants views, and analysing the collected data and producing quality findings that are convincing by evidence. Furthermore, it involves interpreting and delivering those findings in convincing relationships that can be translated into a model. Finally, it involves presenting the contribution of the study in relation to the previous literature and comparing and contrasting various possible explanations that can deliver key ideas to the reader.

3.10   Writing up

In his book *Writing up a qualitative research* Wolcott (2001) suggested two ways to write up a qualitative research study which were either to start with a personal account or by describing how the researcher went about their research. In order to complete the writing up stage of this research, the researcher concentrated on describing the research strategy. Thus the researcher started by putting down all the theoretical and methodological knowledge gained during the research journey, the events experienced and the values discovered.

The writing up process to complete this PhD thesis was not straightforward, bearing in mind that the ideas were in continuous improvement and change. So, wasting time in completing full chapters or large pieces of writing did not seem a wise decision. Nevertheless, at the same time, the researcher was regularly recording knowledge, ideas and thoughts, as well as documenting the main experiences of scholars, to be used later in the final version of this thesis. So this was a linear process, just like fitting together the pieces of a jigsaw puzzle. By the end of the study, all the puzzle pieces will be collected together to create a full picture of this research. It seems important to highlight the main difficulties the researcher went through in the writing up stage. Those difficulties can be summarized as follows:

1. Lack of information resources on the studied topic;

2. The complexity of the studied phenomenon.

The first difficulty was addressed by reviewing as many information resources in the studied topic as possible and in all other relevant topics, such as Information Practices, Information Needs and Seeking behaviour, in addition to Personal Information Management. The second difficulty was addressed by understanding the root of PIM and focusing on the issues and topics related to it, as reflected from the same or similar perspectives to this study's focus, which is "How scholars practice PIM to meet their Information Needs".

3.11   Summary

To sum up, completing a PhD journey is not an easy challenge as it involves making many decisions. One of the most important decisions a researcher should make is related to which research methodology should be selected to master the research and to

answer the research questions in an ethical and academic manner. Regardless of the comprehensive literature written to direct researchers in how to carry out research studies, there are challenges of selecting practical guidelines or models that show a researcher the actual events to be followed. In this research, the researcher adopted the onion model created by Saunders et al. (2007), which is one of the most common research models used in the literature (see section 3.3). The onion model was selected because it could provide the required guide to make fundamental decisions relating to the research methodological philosophies, approaches and strategies. In addition, the onion model was selected because of its systematic nature. With respect to the onion model, different types of philosophies including epistemology and ontology were reviewed. In this research the epistemological position was taken because the research aimed to examine the phenomenon as conceived by the scholars who interacted with it. Following this, issues related to research choices and research strategy were discussed. In this research it was decided to take the position of an interpretivist and qualitative researcher; therefore the discussion focused on the methodological approaches that are identified in the literature as qualitative research, such as phenomenology and GT. Following this, issues related to the naturalistic inquiry approach were presented but the section began by presenting some observations about the usual methods used in studies of PIM, as identified in the literature. Following this, data collection and data analysis issues were presented, paying specific attention to the methods and techniques applied in this study. The figure below (3.5) shows the Onion layers, as followed in this research. Following the onion model simplified the decision-making process with respect to what the research would involve and what the researcher should consider before and during the research activity.
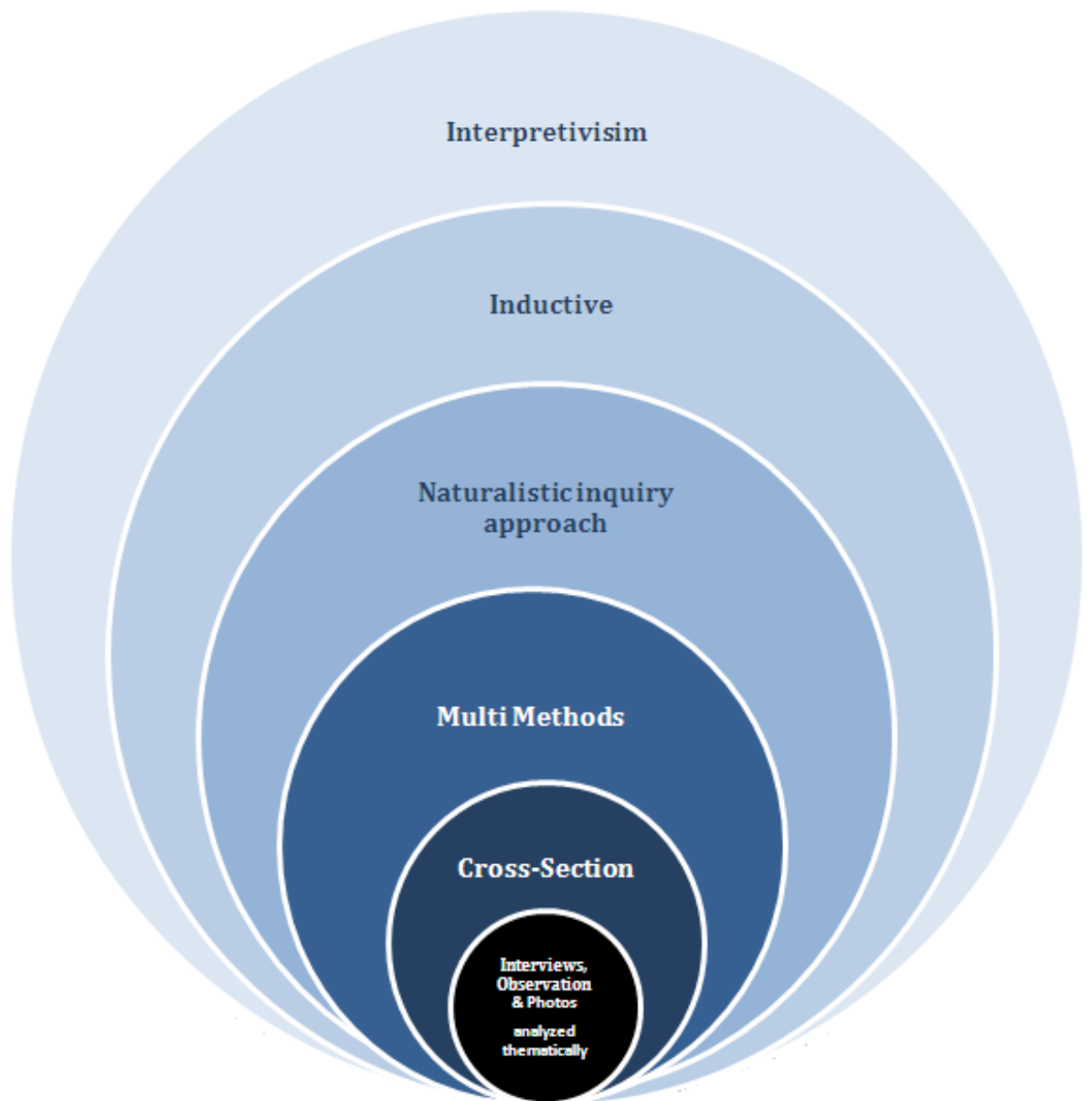
Figure 3-5: The current research position in each layer of the Onion model

Chapter 4 – Three phase exploratory study

4.1 Introduction

The exploratory study consists of three studies namely Library service study (see Section 4.2), Scholarly practice study (see Section 4.3) and Publication study (see Section 4.4). Each of these studies played a considerable role in shaping the others as well as how the main study was evolved based on the understanding and findings of the exploratory study. It was mentioned in the methodology chapter (see Section 3.6) that the study would be carried out with an exploratory approach, appropriate to exploration of an unexamined area. Examining how PAAET university library met scholars' information needs was an initial step that linked to several stages as more questions evolved.

The overall findings of the library service study revealed, that there was poor service, disconnected from users' needs. This fact shifted attention onto the scholars, since librarians made it clear in the first stage of the study that they were aware of the academic's dissatisfaction with the services they provided. In addition, it was discovered that scholars had become more independent. Therefore, investigating the users to see whether they confirmed this perception and to find out how they were meeting their own needs was necessary. It was also useful to listen to the user, rather than hearing what others said about their satisfaction levels. To this end, the researcher conducted two further series of interviews within the exploratory study, interviewing scholars. At each stage there was an emphasis on the fact that scholar's practices were different and much independence was shown in their activities and in their perceptions of the factors that led them to become managers of the collections they had created within their research tasks more than teaching tasks. These three exploratory stages of the study shifted the focus gradually by evolving questions for each stage. At the end of this study the picture remained unclear and further study was deemed to be necessary to discover more about the PIM practices that scholars followed daily within their research process.

This chapter presents the findings and the issues which emerged from carrying out interviews in three different stages in order to determine the shape of the main study. There were 14 participants in this part of the study: three information professionals, six

faculty members who were involved in teaching and research and five other faculty members selected on bases of recently publishing, they all worked in PAAET. The first set of interviews, the librarian study, was conducted with the librarians in January 2010, in order to understand the support they provided to scholars, in terms of providing them with the required information resources to fulfil their information needs. Six scholars were then interviewed in July 2010 in the Scholarly practice study to investigate their ways of finding information and for what purposes. A third series of interviews was then conducted with five other scholars in January 2011, based on their published articles (the publication study) since the focus had moved to research processes at this point. The findings of the whole exploratory study suggested that research questions should be amended to focus more on the activities of PIM and how the scholars built up their PICs due to the significant focus shown on finding and keeping information for research. This indicated that the main participants of this research must be the scholars and their PICs.

4.2 The study of librarians

4.2.1 Introduction

It was important for the researcher to investigate the basics of the services offered to scholars by library professionals in order to understand the type of services offered to scholars and how their needs are met. The first study carried out within the exploratory study carried out by interviewing three selected librarians (see Table 4.1) within PAAET libraries to investigate how they met the scholar's information needs and type of electronic services available for them. The study established a basic idea of and facts about PAAET libraries in terms of establishment, strategies followed needs of electronic resources, budgets, users, communications and library evaluation. Those are explained in this section before drawing a conclusion that links to the next stage (Scholarly practice study). Findings out each individual interview are then summarised.

The digital library resources of the Public Authority for Applied Education and Training (PAAET) in Kuwait were provided by LIBRANET (a support service section in the deanship of libraries & techniques, which provides the digital resources for PAAET users) and managed by the Educational Resources Department (ERD). ERD is a department in the Education and Research Sector of PAAET. The main tasks for ERD are to plan, organize and supply PAAET libraries and media units with up-to-date books, periodicals and audio-visual materials to support the educational process and achieve

maximum competence for education and training activities by satisfying their users. ERD has several sections and units with 80 employees. The ERD organizational structure had been changed in 2009 in order for it to be a more effective structure and serve PAAET libraries in a better way, through a deanship instead of a department. The total budget assigned for ERD was 1,340,101 KD (£ 2,893,959.33) for the year 2010. 35% of that budget is assigned to electronic resources. In (2009-2010), the ERD decided to revise its plan and invite bids from new companies in order to develop and enhance its portal. Faculty members had complained about the poor e-resources provided. The e-resources were provided by LIBRANET in order to help and facilitate the education and research process in PAAET colleges and institutes. Although there are 19 libraries in the PAAET environment, the electronic resources are only promoted and managed by a small section, named LIBRANET.

4.2.2 Facts and aims of PAAET libraries

4.2.2.1 Establishment, size and staff

The libraries of PAAET were only established recently; hence, their experience of delivering electronic resources was limited. A summary of the establishment of each of the three locations investigated is given below.

- LIBRANET is an electronic gateway to a number of databases covering various academic specializations, which enables students and academics to search periodicals and journals for dissertations, thesis and abstracts. LIBRANET was established in 2002 to serve and help the educational and research environment of the PAAET colleges and institutes.

- The library of CON was established in 2007, having a staff of three librarians, including the head librarian who held a Master's degree in library and information science. The other two staff held Bachelor degrees in library and information science in addition to work experience in libraries.

- The college of Basic Education Library Boys is the third of the PAAET libraries observed. In addition, the head librarian was interviewed. It is a highly-rated library with a good reputation. The new building was established in 2002, and aimed to serve all the basic education departments by supporting curriculum material for faculty and students.

4.2.2.2 Strategic vision

It was clear that there was no written electronic collection development policy to be followed. Surprisingly, staff in the LIBRANET section had no idea of what electronic collection development policy means. Other professionals interviewed did know the meaning of electronic development policy, but assumed that LIBRANET or ERD were responsible for it and that it must have been written down by someone, but they had never seen it.

4.2.2.3 E-resources need and perception

LIBRANET was initiated in order to meet PAAET users' needs for electronic resources and to catch up with digital developments in academic libraries. It was created as an electronic gateway to a number of databases covering various academic specializations, which enabled students and academics to search periodicals and journals for dissertations, theses and abstracts.

4.2.2.4 Budget

Since it had only been created in 2009, electronic resources were initially allocated a limited budget, but for the year 2010 this budget was increased markedly. This increase in budget was the result of the perception of the need for developing electronic resources in order to satisfy the needs of the users.

4.2.2.5 Users

LIBRANET is used for teaching and research, mainly by faculty members.

> *"Faculty members mainly, they use it for research and teaching as well. Sometimes they call and tell that they have course they need to search about it for teaching" (BE-M-10).*

Students in some colleges used electronic resources more than other colleges, depending on the curriculum. For instance, students in the college of nursing needed to use electronic resources, especially in their graduation year.

> *"Yes they have a module, they need e-resources, especially the research module where they have to conduct I think 3 researches" (HS-M-16).*

4.2.2.6 Communication

LIBRANET staff usually sent emails to the e-resources users informing them about the databases offered, but still the users were not satisfied. Many users had complained to the top management about the poor service offered. The communication between library staff and users was not as expected.

> "*We usually send them emails, official memos, but they were kind of I don't know, what we present was not delivered in the way we wanted, we were thinking of contacting them personally by visiting each library and each college but when the system was stopped we stopped the plan as well. But I hope in the future the advertising will be bigger than that and the way I'm still not sure what is it? We have to discuss this with the companies*" (BE-M-10).

4.2.2.7 Digital library evaluation tools

There is no specific evaluation process currently employed to evaluate the use of electronic resources. Surveys and questionnaires are the only tools used, but mainly in an unplanned way. Before subscribing to any database, a demonstration version is advertised to all users. A questionnaire procedure then follows to measure the satisfaction of users, after which a decision is made about whether to subscribe to it. Such a procedure is followed to evaluate the future use of each database and to decide whether to continue or stop subscribing to it. This was the plan the researcher decided upon. However, implementing it was not transparent and stages were not followed as assumed. Instead, perceptions were gained regarding the users' complaints in consideration of the next yearly plan, and hence of the future budget.

4.2.3 The three investigated libraries

4.2.3.1 LIBRANET

LIBRANET used to be managed by an information specialist (who held a Masters degree in Library and Information Science from Kuwait University). Due to another job opportunity, she left LIBRANET; it was then managed by an acting manager who might be made permanent. The databases listed in Appendix 5 (total of 56, as collected in 2009) were currently suspended in order to host the new gateway in the near future. New, better developed, selected and organized databases were planned to be available in

the next two to three months. Library professionals showed that they were doing their best to help their users, but unfortunately the users were not satisfied at this time.

LIBRANET provided the following databases, listed in the gateway according to discipline, as shown in (Appendix 5).

4.2.3.2 College Of Nursing Library (CON)

The College of Nursing (CON) was established in 2004 as one of the critical PAAET colleges. It offers Diploma and Bachelor degrees in the field of Nursing. The courses offered by the college are highly developed, and need up-to-date resources. The faculty and students depend on the e-resources for learning and research. Some of the courses offered require electronic material. An interview with the head of the library was carried out. The library was established in 2007 and has a staff of three librarians, including the head librarian, who holds a Master's degree in library and information science. The other two members of staff have Bachelor degrees in library and information science, in addition to work experience in libraries. The library adopts the ERD organizational structure and budget. Training courses in the library field are offered to all staff, but electronic management is only offered to the head librarian. The size of their collection is 2,688 English books, 1,000 Arabic books, 15 periodical subscriptions, 9 databases and one e-journal. All the medical databases listed by LIBRANET are used by CON faculty and students, especially the Ovid Nursing Collection. Due to the e-resources being temporarily suspended, the CON users were really upset and sought to use Kuwait University's e-resources instead. Since they were not satisfied with the current resources they started find other ways such as Kuwait University. The CON library follows ERD management procedures, and therefore the ERD budget. E-resources were usually acquired after attending conferences.

4.2.3.3 College of Basic Education (Boys)

The college of Basic Education Library (Boys) is the third of the PAAET libraries   In addition, the head librarian was interviewed. The new building was opened in 2002, aiming to serve the entire basic education department by supporting the curriculum material for faculty and students. It has a staff of four, including the head librarian. Two of the staff holds bachelor degrees, and one a Diploma and all supporting teaching mainly and the curriculum. No specialised librarians as research support were found in that library, which implies that its main aim was to focus on curriculum more than it do

for research. The staff received sufficient training in electronic resources, but the management of electronic resources was centralized by LIBRANET. The size of the library collection is 28,800 Arabic books, 3,646 English books, 14 English and 24 Arabic subscribed periodicals, as shown in Table 7. The library has adopted the ERD organizational structure and budget. The main users are faculty members and students, including the PAAET staff and external users as well. Users of the library currently mostly seek print resources. There are few PCs available to access the PAAET Online Public Access Catalogue OPAC. The library in general is a traditional library that has no electronic resources plans. This library reflects most PAAET library environments.

The ERD, as the head department of the PAAET libraries, have established and managed the libraries to achieve certain goals, some of which are announced and others are not. Investigation within the interviews discovered a number of facts regarding PAAET libraries, as summarised below.

4.2.4 Conclusion

From the three interviews it can be seen that the ERD had created a separate department responsible for electronic resources in order to promote electronic resources to their users. The other libraries worked in a traditional way and did not allocate a budget for electronic resources; rather ERD included it in the total budget under LIBRANET. It has been noticed that this affected the provision of electronic resources. In CON for example, electronic resources are vital and are included in the curriculum of the modules. On the other hand, in the Basic Education Library no electronic resources were available at the time, but the question as to whether these users needed electronic resources was not being asked. In CON, there were a larger number of complaints about the suspension of the electronic service, but in the basic education college it had no major effect. In the college of nursing, faculty members and students also needed electronic resources on a daily basis. Information professionals claimed that limited electronic resources were available to certain users, but that the users were not using them or even aware of their availability. On the other hand, they stated that users were not satisfied with the electronic resources available, and therefore had planned to change the service providers, bearing in mind that the weaknesses seemed to be in the services provided by the library rather than the providers of the services themselves.

Investigating scholars as the users of the library was deemed to be necessary to understand how scholars operate in the context of an inadequate service. Therefore, as

a natural progression to the investigation, the second set of interviews was set up to find the answers to the following question: "what information practices and behaviour did the scholars perform to meet their information needs?" This question could not be answered without reaching the academics themselves and knowing further how they met their needs and whether or not they were satisfied with the services supporting their academic tasks at that time.

The library service study concluded that library specialists are presenting support to their users. Library specialists were aware of the dissatisfaction of their users, and changing their plans deemed to be necessary. The budget is dedicated for changing the current information resources specifically electronic databases, in order to meet the scholar's needs for daily tasks. At this stage it was clear for the researcher that investigating scholars is important, therefore the next study was conducted.

4.3 Scholarly practice study

4.3.1   Introduction

The main aim of the second set of interviews was to understand the information practices of the scholars and what their information needs were, bearing in mind that the context of the situation revealed by the librarian interviews uncovered in the previous stage. Understanding such issues helped the researcher examine the degree of satisfaction amongst users, since the librarians had indicated that the users were not happy with services provided. Therefore this stage helped the researcher to collect some initial data and from this find a clearer focus for the next stages and hence the main study.

After getting a basic understanding of the services offered by ERD for PAAET users, the researcher investigated the scholars' information needs and use of electronic resources. In this scholarly practice study, six faculty members of PAAET were interviewed; four were males and two were females. Five were from the basic education college and one from the health sciences college (see Chapter 3 Table 3.4). The participants were interviewed in July 2010, at the end of the second semester. Most of them had more than ten years' experience working in PAAET as faculty members, apart from one who had less than one year's experience.

The second set of interviews at the scholarly practice study were conducted as a follow-up data collection stage to build on what was found in the library service study. The six

scholars were selected without any predetermining requirement as to whether they were active researchers or not, but on the basis that they were faculty members in PAAET in two separate colleges, namely Health Science and Basic Education. The findings of the study will be summarised below.

The participants said that they did need e-resources in their daily tasks. E-resources are greatly needed as described by the scholars in tasks such as in teaching, conference related work, committees, meetings and, most importantly, in research. All of the faculty members interviewed were involved in additional tasks, beyond teaching and research. Other tasks included student supervision; having the role of head of department or deputy manager; and academic accreditation monitor. A newly discovered task was the social service duty that some of the faculty were involved with when they were invited to present a talk away from PAAET, such as in schools and other institutes. The non-teaching tasks consume a lot of the faculty member's time, leaving them limited time to undertake research.

In order for faculty members to accomplish their tasks they showed that they followed certain steps when searching for resources. Some followed a random search through the Internet without any set plan:

> *"The step first of all is to search the databases, and internet, searching the library indexes, periodicals the peer reviewed." (*BE-M-16*)*

Whereas others might use a systematic strategy, starting by defining the topic, looking for keywords, searching abstracts and references, and then looking for the full text; each had their own way.

> *"First, define the idea of the search. Second, search the abstracts in PubMed database by keyword search. Then I print all the references and the abstracts in order to read it by fast scanning and select the related articles. After that I tried to find the full text of the articles either by free download or purchase or even seeking the original researcher through their websites" (*BE-F-1*).*

In addition, the findings show that scholars tried to find the resources they needed in other locations, either inside or outside their institutes, involving personal effort and cost for subscribing to certain databases.

"I faced difficulties ... difficulties in finding resources so I sometimes have to contact my colleagues to find what I can't find it" (BE-M-13).

4.3.2 Tasks

When asked about their tasks, participants showed that they are involved in several tasks in daily. Those academic based tasked were categorised as teaching, social services, contribution to committees, research & publishing articles. Each of those tasks is explained in the following sections.

4.3.2.1 Teaching as a task

In addition to research, teaching was one of the tasks that encouraged and required the use of electronic resources. Some of the faculty members depended on electronic resources more than others, due to several factors, such as the background of the faculty member; personal differences; the type of students; and the disciplines staff worked in. It was noticed that, in the Health Science College, Faculty members were better educated about electronic resources than staff in other departments, such as the foundation of education, and in relation to curriculum and teaching methods.

For *Teaching,* e-resources are required to deliver the content of the modules taught by some of the scholars, but it varies, with some depending on e-resources as a basic tool, while others may still be using traditional resources, depending on the discipline. Though used either frequently or occasionally, generally they all required e-resources for certain teaching tasks. The tasks can be summarized as delivering materials, motivating students, or conducting projects. Using e-resources is required for delivering lectures; though this is affected by the discipline and the nature of the module involved. Students are encouraged by most of the faculty to use e-resources, but the encouragement process is highly influenced by the type of student, as one of the participants clarified. In some colleges, students showed a high response and motivation when they were encouraged to use e-resources, but in other colleges they did not. Such response from students might lead faculty members to change their plans and minimize the use of electronic resources, since other faculties were still following traditional approaches. A participant showed her disappointment with the type of students she was dealing with in the Basic Education College in the following quotation, which reveals that sometimes faculty members needed to change their procedures to conform to social norms.

> *"Yes I ask them to do many tasks to motivate them, bonus is subject to certain tasks also but they show a very low response the class culture is affecting our tasks, as the students cultures do as well"(BE-F-1).*

Academics tend to motivate their students by giving them extra marks if they respond to new tools within their teaching methods. The same scholar explained how hard and students resist new tools and non-traditional ways of teaching and explained more this when said:

> *"But I try all my best not get affected... I show them certain tools but they don't like it and resist it hardly they describe me as a tough person and they lose the interest in my modules and they start to complain that my module content is huge and I'm asking them to do many tasks for the coursework. To be honest the students are very low in their educational level I'm really surprised of their levels. If I ask them to search e-resources they don't know how to write references at all although they belong to library and information science department"(BE-F-1).*

Within the teaching process, scholars prepared their modules. E-resources were required by some scholars for this purpose, especially if the module was being taught for the first time, to add and develop material. As one faculty member said, the traditional way of delivering lectures bored students, so she used interesting e-resources instead. If PAAET did not provide the tools she needed, she sometimes used her own. She found these resources improved the students' education; they started to be creative and challenging. Scholars also included e-resources in their reading lists when preparing module materials.

Scholars sometimes participated in conferences and needed information to prepare work for presentations. Seeking information to prepare for their participation in conferences required access to e-resources.

4.3.2.2 Social services as a task

In addition, some scholars were involved in social services known as public engagements in UK- when invited to present a talk about a certain topic, and therefore they needed to search for information about a topic and educate themselves before they could participate and deliver their presentations in schools or other places, as required.

One of the participants summarised their task involvement and emphasized teaching as the main focus thus:

> *"As a faculty member in the college of basic education we do several tasks which can be divided into 3 parts: teaching, research, and social services. These are the three basic tasks, but the main one is teaching"* (BE-M-10).

Social services (public engagement) were considered as one of three main tasks carried out by scholars in PAAET.

4.3.2.3 Contributing to committees as a task

Scholars as participants in committees needed to answer questions regarding issues which were raised by the committee, which they sometimes needed to find out more about. E-resources are a significant requirement in this situation. Also, they were sometimes involved in management tasks where they required e-resources in order to participate positively in the regular meetings.

Committee as a task was on the agenda of scholars as one of the participants said: *"one of the tasks that I'm involved in is teaching as the first task and supervision students and participating in committees"* (BE-M-16). Another scholar confirmed their involvement in committee, saying *"Add to that the participating in committees of the education ministry whenever needed we meet with such committees"* (BE-F-10) and therefore explained why information resources were a necessity:

> *"I carry my laptop with me and my data show as well always with me because I use them during my lectures, meetings, presentations for committees. So I use it all the time".* (BE-F-10)

4.3.2.4 Research & Publishing articles as a task

Research is seen as a significant and required task for a faculty member to conduct in order to develop their career. Faculty members are well aware that the rules in PAAET require them to conduct research in their fields for this purpose, as well to enhance their departments and institution's reputations, and to discover new areas in their fields. Since they were involved in research, they needed rich resources to develop ideas and inspire their thinking.

"I'm mostly involved in the academic research most of my time, why? Because researching is the only way to develop in our career" (HS-M-16).

The participant mentioned that main purpose of conducting research is their need to develop in position. The same participant explained and showed the importance of conducting research when they quantified the number of conducted research and published in peer reviewed periodicals *"I have more than 30 scientific researches "*(BE-M-13). It is clear from the evidence that most faculty members in PAAET were involved in research work and publishing. It also emphasizes the selective peer reviewed specialized in the special area. Scholars select best journals to publish their work showing the challenge and effort in their research career.

Publishing articles is another task that requires scholars to interact with information. It seemed to be one of the most important reasons for scholars' need to access e-resources. Scholars were active in research and selective in choosing where to publish their work as one of the participants said like to choose where to *"published in peer reviewed periodicals specialized in the field"*(BE-M-13). As mentioned by all the faculty members, they had to conduct research as part of their career development, and thus needed access to e-resources which were current and related to their topics, and could be readily accessed. E-resources were required for all the previously mentioned tasks but more emphasis was placed on research tasks. Research as a required task needs highly enriched resources that are current and easy to access. Most of the faculty members preferred resources, such as periodicals, specialized websites, and specific databases which were accessed normally from sources outside of PAAET, such as Kuwait University, or even from outside Kuwait, for example from Egypt and Saudi Arabia, or the UK and USA, by personally paid subscription.

4.3.3   Feelings about e-resources services

As mentioned above, it is clear that there was a shortfall in the services offered by PAAET to support teaching and research, which led some scholars to acquire their own, through personal effort and sometimes cost. This was mentioned by one of the scholars, as follows: *"For me personally data show is the main way I use to teach… I also use sometimes [other] tools." (BE-F-1).*

The same participant added that academics feel that e-resources are important not for academics only, but for students as well: *"e-resources is very important to exchange*

experience and ideas" (BE-F-1). Therefore, academics must use services not only to deliver the information to their students but to train them and encourage them to use those resources as said:

> *"I also teach the students ... [through their] assignments ... how they can [use] it, [since] they don't know how to create new ways, ... I always motivate them to visit certain sites I provide them with some websites where teacher can exchange ideas [such as the] website for teaching reading and writing for Kindergarten stage in Arabic Language which [which I created and m using now" (BE-F-1).*

Being dissatisfied with the services and support provided from PAAET libraries, scholars tried to create and use new tools without depending on libraries. One scholar, for example, was aware of the advantages of technological developments and the usefulness of using them to enhance their presentation of teaching material. Such awareness led the scholar to find new tools to achieve the goals of teaching. In this case the scholar was IT literate to a degree that allowed them to create new tools to attract students to the material, presented in an interesting way. So if the faculty member educates themselves, they will create and invent new tools; but if not, they will continue to depend on traditional ways of teaching and researching and might be not developing their careers. The main evidence suggests that these individuals both developed more in their careers than less technologically able scholars, since both had become deputy managers.

4.3.4 The importance of e-resources

All the faculty members showed that they were aware of the importance of e-resources as most were using e-resources in most of their tasks carried out on a daily or weekly basis as one of the scholars said: *"It's vital for the researcher I have to support my ideas with the resources even my ideas and my readings can't be improved unless the recent resources.* As explained that e-resources are very important tool for scholars, the participant added that some more variable

> *"We have another tool that might help, which is attending conferences, but it can't be done every day. This might be once a year and here in PAAET can be done twice a year and even twice a year is not enough to provide resources continuously, unless we attend as a presenter and even that is not a practical*

*solution, since it's not logical to do it often through the academic year" (*BE-M-10*).*

4.3.5   Problems with e-resources

It has been mentioned earlier that most of the scholars (five out of six) who were interviewed agreed on the importance of e-resources, but at the same time they had many complaints about the resources available to them. One of the scholars complained from the first question of the interview about the lack of e-resources and the difficulty in accessing them, which caused faculty members to spend much time and effort finding what they were searching for:

> *"Teaching is a daily task which requires management of tasks and time. I'm at the same time working as Monitor Academic Accreditation therefore I do other tasks more than teaching. Add to that in my daily tasks doing research, therefore in my daily life I search for information resources but I have a problem which is that we don't have access to Emerald easily, since we don't have a subscription to get the full text, we can get only the abstracts. Therefore I seek other ways to get access. I search the electronic resources available from other universities or subscribe myself to others" (*BE-F-1*).*

Another participant also highlighted the lack of electronic resources provided from PAAET in his field, which led him to use other resources provided by other institutes:

> *"Here we have a library which is poor in resources and we have the LIBRANET which is very limited in resources, where you can find one month active and then another two months not active. Lately they have stopped it to look for a bidder. So we really have a .shortage in resources. We suffer as researchers in reaching resources that can support our studies. We have staff here called 'assistant researcher' who searches for resources in other libraries, such as Kuwait University or GCC library" (*BE-M-13*).*

Most of the scholars interviewed complained about the service, which was most of the time not available. At the times when the service was available, it was not user-friendly. For some fields the databases provided were not related to their fields, or if they were related, they were not available in full text; therefore they did not meet the users' requirements. Faculty members also complained about bad marketing for their library resources, especially the electronic resources. The service seemed to have no clear

strategy to build on, or if the strategy was available, most of the faculty members were not aware of it. Furthermore, budget problems were mentioned by one of the participants considering not shortage in budget, it rather how it was used meaning that other management issues related to their satisfaction by meeting their needs. Another participant talked about the failure of the service thus:

> *"I have no connection with them; sadly we get no benefit, which is a shame for an institute as huge as PAAET. You cannot find any resources unfortunately and I'm sorry to say that there is nothing we can do about it. We have to depend on ourselves and on self-learning, although we are busy enough already"* (BE-M-10).

Although most scholars spoke Arabic and taught modules in Arabic, they suffered from a shortage of Arabic resources. This is a major problem faced by Arab countries, where the lack of publishing, as well as of electronic resources, is very noticeable. Even when there are some Arabic electronic resources available, mostly they are not trusted for the law quality of Arabic publications and publishers as well. The other problem faced by scholars in PAAET was a lack to training courses on how to use e-resources. All of the faculty members agreed that PAAET did not offer any training courses regarding the use of electronic resources. Most of the education was acquired either by self-education or by experience during their study abroad. A lack of communication between departments and ERD was also seen as a problem. They needed to feel that they are involved in decision-making when changing or even stopping any of the services. They felt that their opinion were important in improving the quality of the services. In these circumstances, scholars became more independent in seeking and finding the needed information resources. Most of the effort was done by the faculty themselves to reach what they needed, either by searching, communication, education, or even payments. While time and effort must be expended on their work, faculty members were also busy searching, in a self-learning process, which was time-, resource- and effort-consuming.

As a result, faculty members expressed their desire to have new e-resources related to their fields, current and easily accessible. The criteria that most believed were necessary were that they must be easy to access, related to the topic, and in full text, where language was not the main issue. When they were asked about the preferred e-resources currently used, it was shown that the most relevant ones in their field which were available and most heavily used, namely: Eric (Educational Resource Information

Centre), LISA (Library and Information Science Abstract), PubMed (US National Library of Medicine - free access), and Emerald (scholarly publishers for Journals and Books in Business and Management).

Although the above-mentioned are the most heavily used databases currently, scholars were happy to get more e-resources.

> *"For sure, yes, I hope that in the future there will be huge libraries which provide electronic resources and services." (*BE-F-10*)*

From the stories mentioned, negative experiences were more apparent than positive ones. Finally, interviewees had some issues and ideas to be considered as suggestions to overcome the problems they were currently facing. PAAET must provide full access to well-known specialized databases which provide full text versions. Research automation must be applied via an accessible interface to have electronic versions. There is a need for communication between departments and ERD with regard to the involvement of faculty members in the decision-making process and in inviting bids for services from new companies. Licensing is also needed, as is the need to hire more library professionals in ERD, as well as in college libraries. Good marketing procedures need to be applied for ERD e-resources, with an appropriately allocated budget. Some training courses need to be made available, and properly advertised. Connections with educational institutes need to be improved, and students encouraged to use e-resources more, and to read more widely.

4.3.6   Scholars Information needs

It was noticed that the need for electronic resources varied between faculty members, according to their backgrounds and their disciplines. For instance, in health science the faculty members interviewed showed a high commitment to the need for electronic resources. Such needs had led to creating a new way of working, such as creating a personal website, which was used to deliver the module's material and communicate with students. In the following quotation one of the participants explains how he found e-learning a vital tool in learning and education.

> *"I depend on e-learning in teaching my modules, I have a website (which is not official yet) but it is under testing and now I'm using it التعليم الالكتروني المدمج (compact electronic learning) during each lecture I give the general notes but for details I refer the students to the site in order to connect the students to sites*

or related topics to our discussed issues in other information resources that are related to the syllabus, homework, any announcements, and to get connected between the students and me, the student don't have to call me or even send an email, he/she has to massive system. Personally, I care about using this way and trying to develop in order to cover more modules. And currently we are trying to improve it because I'm interested in this part to cover more subjects" (BE-F-1*).*

Scholars' need for information is high demand and once those needs are not met by services providers, scholars showed high potential of being literate and empowered to create their own ways meeting their needs.

4.3.7 Conclusion

It can be concluded that scholars are involved in multiple tasks when carrying out their daily academic work, namely teaching; participating in social services; contributing to committees; conducting research; and publishing. Among those tasks, scholars showed that they were not satisfied with the resources or the support services. They also emphasized research practice and the lack of resources available to meet their requirements. It was clear that scholars at this point showed their independence in terms of finding their own solutions to seeking out required information. They sought help from outside their institute, and subscribed to databases which they trusted and liked to use. Furthermore, due to the lack of support it was clear that advances in technology and inadequate support changed the practice of scholars, meaning they became not only information-seekers but -keepers and managers, where scholars played the role of librarian for their own collections, whilst the librarian's role seemed to be minor. A summary of the two stages is provided in (Figure 4.1).

First Set of Interviews
Findings (User's Needs & Services)

Information professionals are presenting services and E-resources to scholars

&

Information professionals aware of scholars' dissatisfaction

Findings led to investigate scholars' behaviour

Second set of interviews Findings (information behaviour)

Confirms dissatisfaction and need of resources

&

Scholars created their own way to build their information resources

Figure 4-1: Summary of the two studies

4.4 Publication study

4.4.1 Introduction

By the end of the previous stage, the researcher gained an understanding of the extent of satisfaction between the users and support providers, the librarians. It was clear also that research, as one of the tasks carried out by scholars, is important and scholars showed evidence of the way they struggled to find information for their research. The issue changed the focus of the study to concentrating on research as a process and the information related to research. Although the focus at this stage narrowed to selecting scholars on certain bases and investigating them in a particular way, this change in focus is still under the same umbrella as the first stage, which was the user's information needs and the quality of support provided. As it was clear from the previous

stage that research as a task and its relevant collections are important to scholars, the publication study came to concentrate more on this aspect of scholars' professional lives.

The article-related interviews were different types of interviews which enabled the researcher to discover the ways scholars collected and used material. Once an understanding was generated about the needs of scholars in research as a task, rather than teaching, the idea of publication study emerged. They were designed and established to collect information using a recently published article by each scholar. Each scholar selected the article which would be the focus of the interview. The article was then used to create a conversation between the researcher and the participants about the stages undertaken in the publishing process. This method was useful to use as well as it was approved as good method in PIM study exploring scholars' personal archive (Kaye et al, 2006).

4.4.2   Perspectives on the research process

The participants were asked about how they felt about the research process from the beginning, and that was the key question that encouraged them to talk about the way they used information resources in the research process. They talked about the stages of conducting research and the need for information resources in each stage, in addition to the part of the research where the resources were needed more and used more heavily and sometimes repeatedly referred to. Participants were also asked about the way they managed their resources and if they needed to locate them for other research in the future.

Two of the interviewed faculty members defined themselves as professional researchers, while the other two thought that they had not reached the top levels in their research careers and considered themselves to still be beginners in conducting research. All were keen to conduct research and felt that a research career was part of their life. All mentioned that they were researchers with the long term aim of undertaking research without compulsion. One of the interviewees who felt that he was a professional researcher said he would continue to conduct research for the sake of the research itself, unlike others, who he felt they only carried out research to develop their careers:

> *"So for me I was granted the full professor position 2004 so theoretically, I should have no research encouragements or motivations but in spite of that I am continuously carrying on writing, researching and publishing. What motivates*

me is not only career development but the research which has become part of me. Academics have to continue in research and try to also develop himself and others in the same environment." (A.I.R2)

Scholars find research a vital part of their career, and they are willing to do it without any compulsion being applied by the institution. All faculty members interviewed unanimously agreed that research was a very significant part of their lives, and was one of the major tasks carried out in their careers. They all mentioned that research was behind their career development, starting as Assistant Professor, then Associate Professor, and finally Full Professor. Research was not conducted only for developing their career, but was conducted out of personal interest. They all said that they had conducted research out of interest in certain phenomena and that they would continue to do so. One of the faculty members showed that he felt he had not yet researched at the professional level of research.

> *"I am very ambitious; this is the first thing; if I am ambitious then I think that I didn't do anything so this is the idea. My contribution is my aim, it's not how much I publish as long as I'm concentrating on the quality of my research so my concern is the quality of my publishing"* (A.I.4).

In the same interview and while answering the same question, the participant talked about the motivation factor for publishing in well-known journals in the field:

> *"I publish peer-reviewed articles often and in the highest ranked journals, especially on impact factors ... and my target now is ... to publish in the Royal Society journal which... is a good indicator of the quality of research."*(A.I.4).

So, an ambitious researcher will always be encouraged to conduct more research to produce quality work, which triggers the need to be both creative and competent. An academic career can be seen as productive and challenging, therefore, scholars compete. In order for a process like research to be conducted, it requires information resources that are related to a specific subject which achieve certain standards. A faculty member may need access to related work published some time ago, or to very current work; this depends on the type of research being conducted. The need for information resources, and the searching habits of faculty members, will therefore vary at different stages of a research project. The following sections provide more understanding of what scholars actually do within the stages of the research process.

4.4.3 Locating information resources in different research stages

Locating and finding related or needed information will be affected by factors such as the scholar's discipline; the methodology in use; requirements for each stage; and sources of information and tools enhancing the use. The searching behaviour for information resources shown by faculty members varied in the different stages of their research. In certain stages, faculty members searched intensively and spent much time and effort, whereas in other stages, faculty members were less likely to search, due to their engagement with other tasks within the same research. The stages will now be discussed, and the way that scholars used the published works in their research. The focus will be on how they located information, used it in their research, and managed it. The faculty members showed that they had particular sources that they usually depended on and were familiar with using. Most of the time faculty members started by searching the Internet, and then through subscribed databases or even the online library catalogue.

> *"I do find whatever I need. Well, I always start by yahoo, yahoo search but this is mainly I look for yahoo first then when I need specific paper or any publication so I use [...] the specific websites or the specialized websites"* (A.I.1)

So it is clear that scholars nowadays rarely face problems in locating information resources that they need to conduct research. Scholars now are more likely to be empowered and literate in terms of searching and locating information resources, especially in certain disciplines where electronic resources are mainly used as one of the participants said *"But in general I don't face a problem finding these literature review in any time" (A.I.1).* This participant showed, locating and finding the related information resources that can be used in the literature review chapter of a search is not a difficult task. If scholars know what they need and how to search for it they can easily find it by searching. Scholars, by following certain steps in their searching procedures, can save time. The subject of the search also is a factor of how quickly resources can be located: general topics can be located faster and easier than the more specialized ones.

Another faculty member found it better to start searching in specialized databases such as ERIC:

> *"As you may know ERIC is divided into several areas of specialty so the divisions are according to each discipline. For me, since I am in the field of*

education, I usually use ERIC and when I search I always check my code words keywords and try to narrow down my search into the last 5 years recent publication. If I am not satisfied I try the last 10 years maximum because I am always seeking the latest publications ..." (A.I.4)

In some cases they seek the help of their local librarians but not as the main source. Scholars seem to be more independent in locating their information resources. They will ask for librarian's help only in some rare cases and only when they fail to locate what they want, as one of the participants said.

"I also contact our librarian here in some cases when I can't find what I need and she is very helpful to me she is very professional and she can find me whatever the paper I need" (A.I.1).

Colleagues can be a helpful source for information resources

"Sometimes I seek my friends and colleagues to help. I mean my social network with the other researchers, which I can call the invisible network... [of people] who share their experiences with me..." A.I.1:

Another participant talked about the scholar's network and in a sympathetic way emphasized the advantage of such channels and networks, when being very sad about the lack of them in Kuwait

" Unfortunately here in Kuwait there is lack of this kind of communication; I mean not everyone likes to communicate in this way; besides the number of researchers is relatively small" (A.I.2).

This is just as mentioned by Crane (1972) that scholars' information needs are met through contacts with colleagues, either in the workplace or at conferences, as an informal communication channel known by the "invisible college".

4.4.3.1 Research inspiration stage

The inspiration stage is the initiating step of research. Faculty members showed that, for each of the research studies they conducted, there were certain inspirational sources. Sometimes this came from background reading of books or articles, sometimes from attending conferences, or sometimes based on previous work and experience. When any faculty member was inspired by a certain idea, he/she would find it natural to search for

information about it. Faculty members then sought information through reading, consulting colleagues, or communicating socially through social networks, in order to build a basic background for the subject to be investigated. Since faculty members interviewed were working in Kuwait, most of the time they were willing to conduct research in order to either apply a new theory that they were exposed to out of Kuwait; to conduct an experiment to test certain issues in Kuwait; or even to investigate the differences in a certain setting between Kuwait and other countries.

> *"Nosocomial infection becomes a very important cause of mortality and morbidity worldwide, ok? So we don't have data in the Arab country, ok? And we don't use a good [...] a database for our patients. So my recommendations here are that, in order to decrease this type of infection, we have to have patients' records on a database, ok? This is due to the lack of what we have here in Kuwait or in Arab countries and I recommend it. This is actually what inspires me, the lack of good patients' records to start this research. Here we don't follow the guidelines. I mean the international guidelines, in our hospitals to decrease this type of infection. There is a patient database for Nosocomial infections in UK hospital ok? So when patients enter any health setting… and get infected, we attach his name or his file number, ok? We can find his historical medical background, ok? What infection has he had before? What type of antibiotics has he used before? So knowing this data and a database will give the opportunity to the physician to choose the right medication… and handle this patient properly. This system has not been available here in our hospitals but it is starting to be available in 2012" (A.I.1).*

Other faculty members might conduct research to convince people to apply certain ideas in a specialized field. One of the faculty members said that he was inspired by his colleague who outlined the idea before they then conducted the research to convince others of that idea. Certain information resources were needed in order to get started in the research. A literature review of the other related work must be clear.

> *"My contribution was in writing in a literature review and part of the experiment in the converting section of from non-linear to linear which is what we call it the proposed internal approach. Here in this page the third part I did is that I used the program to find the results because we needed an example to convince the people that our approach is correct. Therefore I prepared the*

software part, writing the problem and running the program and from that we came up with this very nice plot where you can see our answers in it ok?"(A.I.4).

Work experience and challenging problems might be a source of inspiration for research. As one of the faculty members interviewed mentioned, she was inspired by the environment in the USA which she experienced during her study there. All the literature that she was exposed to during that period, and the experience itself, was behind the idea of that research. She was motivated to conduct that study and take the challenge of approving the theory while everyone was else opposed the idea of the research.

> *"... So for this research I choose the worst sample in the USA they call them ..." children at risk" because I wanted to discover if Kuwaiti kids were different from USA kids? That was the big question I was sure they were not, so I worked there with the head staff for 2 years as a volunteer observing and writing notes and video recording and recording. Then I returned home and type it up. **I still have my folders they are very dear to me.** So those kids were called 'at risk' because they might develop bad behaviours, with high probability due to the history of their parents of becoming criminals and going to prison… So their environment was not healthy… With time the teacher… managed to teach them how to read and write. So I came to Kuwait and said here in Kuwait we have good incomes, background and family support so we can do better than this. Therefore I tried to apply the idea, although I was resisted. I faced up to them all and mostly they were my teachers. Anyway this is what I believed in and that's why I did it because I was motivated by what I believed" (A.I.3).*

Events and situations might trigger the research inspiration for scholars, as the quote suggested. It implies that scholars are attached to those ideas which shape their scholarly productivity. It was clear that the previous scholar talked about an experience that was still memorable, and the most important thing was the attachment, as he was still holding the folders related to the research which were described as 'dear folders'.

4.4.3.2 Research planning

Research planning is the stage following inspiration. After thinking of starting the research, planning for the research is the next step. Faculty members said that, at this stage, the search for information resources would be at its peak. Intensive search and collection for information resources, and the gathering of every possible resource that

might help in starting the research, were key. Having deciding to start the research, faculty members showed that they have to sit and plan. They need to build a solid background in order to make sure that the topic was researchable and worth studying. In this stage the faculty members showed certain actions needed to be taken such as searching, selecting and keeping information to be accessed in the near future. One could conduct research on a subject which is familiar due to teaching it in class; therefore planning for the research would require coming back to the resources available already before start searching for something more. Once inspired, scholars faced a planning step, either explicitly or implicitly. As one of the starting steps of research, scholars needed to think deeply based on the found background how to conduct the study. A research plan could include what topics in the literature need to be covered as well as what the best methodology that suits the study would be.

> *"So I start by getting what I have in order to decide how to conduct the research. But if I decide to write on that topic or to conduct research in the same topic, then I have to come back to the resources that are already available for me before I try to search in the library catalogue (I mean the online catalogue that include all PAAET libraries), or the Kuwait university libraries, I mean any available library catalogue. Then I start to search for other resources such as search engines, Google, or whatever. I start to search… the subscribe databases in PAAET [and]… in every available source. Then whatever I can reach I select from them…. Once I have enough resources I start to think about the idea and the way of conducting my research. This I need to know at the beginning before getting started. (A.I.4).*

Other faculty member showed their eagerness to conduct research and planned for a research by thinking deeply about it, and writing down the idea before getting started.

> *"I like to study everything new. Let's say while I'm sitting here in my office a problem has arisen even if it is not related to my field… I am interested in investigating it now. This is my nature: any problem I see I like to know the reasons for it and how I can change that point of view… I believe that good research needs deep thinking in order to plan how to get it done in the best way. And when I read any study I like… the idea of conducting research arise directly, then I write it down and think of it deeply. Then to carry out this research, if the idea is in my field… I do it directly but in other fields I shall wait. If there is a*

new idea which I always get from the English resources, which is why I like using English resources, because there ideas are more advanced and developed in them, especially in educational and personal development, I always take them and apply them here in Kuwait and search it" (A.I.3).

Scholars showed motives to conduct research as discovering new things. And they could be inspired then start to plan a research project. Other participants supported this idea when they emphasised the importance of the initial stages of research project and said that:

"The most important step in research is the very beginning, it is important to know what do you exactly want to do, what methodology will be followed. This should be clear for any researcher before starting the research. For me, even when I did my PhD research, I knew what I want to do- I know the theory that my work was based on. The idea that I wanted to prove, was my novel idea since then I am conducting my research based on that idea. I had all of these ideas written and kept them in two locations. A copy in my office and another one in my place where I live in my house, I mean. Keeping these ideas in reach helps me think all the time about initiating a research" (A.I.4).

From early stages of research, scholars showed that since they are inspired, they start to plan. And consequence of such actions is trying to keep those ideas saved in multiple places available in any possible location.

4.4.3.3 Literature review

The literature review is one of the most important parts of research that requires searching for relevant published works. Scholars all agreed that the literature review was a very important place to start research, especially if the subject was relatively new. They needed to build an understanding of the area and to know the published work related to the subject under investigation. Such a review was really important in order to build an understanding of the background work, and hence to k`1 now the gaps and emphasize the need for conducting research on certain issues. Scholars said that the literature review, whether large, such as in social science, or small, as sometimes happens in scientific research, must be done in order to know the importance of the subject to be investigated, and to know also who has contributed to the problem

previously. One of the faculty members said that she always included a short literature review in her research, since her research was always in the field of science.

> *"My literature review is a part of the introduction … for use we write about maximum 2 pages of what we call it a literature review in a 25 pages article. It depends on the discipline actually as in social sciences the literature review usually long and more intensive part of the research and might be the majority or not the majority maybe half of the research itself. You know my husband is an academic in a social science department that's why I'm telling you about social works. He is an active researcher in GUST University also" (A.I.1).*

Another participant explained in detail why she would need to include a lengthy literature review in her research. Knowing the background of the related work that was done before was the main reason for writing a good literature review. Because of the nature of her discipline, there were some authors that she felt she must talk about in her literature review in most of her research studies.

> *"The basic background of my research should be based on a solid theoretical base, so I usually search for theories that can agree or disagree with the idea of what we have. In the Arab world here since it is a new idea and it was not actually easy to find exactly the same thing as I want… Why is this important? It is important especially here in education department I need to use the theories in order to compare between the theory and the practical application of the theories, so I go… back to the old theories in the 1970s or 1960s or even maybe 1950s because this is the base that we must build on… I have to mention certain authors such as Piaget, Vygotsky, Freud and Frodel. …So when I am intending to apply a new study I have to know what did they say before? Did they support such idea? They may did not mention it at all. But I might use their strategy… or way of teaching kids at the same age under investigation" (A.I.3).*

It was just the same for another participant when he was asked about how he used the previous published works in his research.

> *"Well, it depends on what I'm writing. If I am discovering new fields then I need to write about the history and the previous work; on how the topic was developed until it reached this stage. This is the main thing, even if starting a*

new research idea after some years, people will try to contribute to this field and you will discover that it has sub-tracks instead. "(A.I.4).

A good review of the literature will also show what the most suitable methods are which have been used previously to analyse specific problems, and hence decide on a method for the current research. In social science, as well as in science, the faculty members showed the importance of journal articles found via online databases as a main source of their literature review.

4.4.3.4 Research Methodologies

The research methodology chosen affected the search procedure for information resources by the faculty members within their research. Ethnographic and qualitative studies were used by two of the participants, and experimentation was the method adopted by the other two. It was clear that faculty members used different methodologies according to the nature of the discipline and the research aims, objectives and questions. More specifically, such issues played a major role in shaping how the faculty members to search for certain types of information resources within each research project.

The discipline itself requires the researchers use certain types of methodologies; one participant commented that:

> *"I read my literature usually at the beginning of my research but whenever I need more literature I can go back and read more my literature review chapter is usually short but sometimes in any stage of the research I need to read some more" (A.I.1).*

The research methodology will then lead the faculty member to searching for special types of information resources.

4.4.3.5 Data collection and data analysis

In the data collection and analysis stages of research, scholars seem to move away from information resources. This is probably because in these two stages scholars deal with data either generated or collected. But in some disciplines it might be needed even when dealing with data analysis, as could happen in technical fields, as one of the participants commented: "*I sometimes do need to read even when collecting and analysing data and it really depends on the research itself" (4);* while another participant said that there

was no need for information resources and she usually stopped reading while collecting data, and that analysis depended on the data collected:

> "*for me I start my research by reading and writing literature review in the introduction section but when it comes to data collection and analysis, I stop reading but sure I go back to literature in the writing stage*"(A.I.1).

4.4.3.6 Discussion; returning to the literature; writing

During the discussion and writing stage of each research, all the participants agreed on the need for the literature again. The literature needed in this stage is either the one used in the beginning for the literature review, or in some cases there is a need for searching for new literature to support their findings.

> "*In the literature mostly I don't include my own opinion so it's mostly a review of the research and summary of the studies that I can get use of it then in the discussion part when I discuss the results here I mention my recommendations as a result of what I found. Say I find out that the theory can be applied in the kindergartens supported by the outcomes and theories of those authors mentioned above, for example. Mentioning such authors here and using the references in this section is to support my findings by this literature in order to have a quality and strength research I usually support my findings and show that I have read such issues and my findings was found by some other people before even if there are some variations, supporting my view using literature is very important to me. Then after that I add my own opinion*" (A.I.3).

And another participant supported the same idea of going back to literature in the writing stage:

> "*I read for the purpose of literature review in the beginning of my research but I stop reading in the data collection and analysis… I probably go back to literature in the writing stage where I need support to my findings*" (A.I.1).

When scholars, at the discussion stage of a research, go back to the literature, they might use the previously used resources in the literature review at earlier stages of the research. Therefore, if they found resources at the beginning of a research that was kept by the scholar to be used at this stage, there was a requirement for it to be easily re-

found. The resources located at the beginning of each research can be part of the scholar's personal information collections that might be re-used again.

4.4.3.7 Managing information resources

All the participants discussed the issue of personal information management either explicitly or implicitly. They all mentioned that they do not usually discard the information resources collected for a research project as they believed it would be needed in the future. *"I first download the articles as a PDF version and I print it out and store it to read" (A.I.3).* The collected and kept information collections might be organized into files in either printed or electronic format, or in both formats depending on the way the scholar likes to work. But the kept information is not always found again when needed. Scholars sometimes find it easier to search for it again from beginning and will be happy to do this again and again.

> *"But you know it's easier for me to find it again on the internet it's easier than searching between papers and files.. It's very easy to find them another time I don't actually worry about it because I am a good in searching and I have good searching skills" (A.I.1).*

4.4.4 Summary

From the discussion above it can be concluded that the research process involves scholars practising certain activities within the steps of its lifecycle. The involvement of personal information management in some of these steps is clear. Some scholars might be organized enough to plan for a research project and start managing their personal information collections from the beginning. Scholars might also manage their information collections in different ways. However, one way or another, PIM is involved at some stage of conducting the research, as shown in Figure 4.4. Figure 4.4 shows that PIM is applied in the research process by scholars at some stages more than others. At phase 1 - stage 3 of the study, some evidence of PIM by scholars within their research was clear, but more evidence is expected to come out from the next stage (Chapter 5).

At this point, the researcher came to see PIM as a central focus for the study through these investigations. Sources of inspiration were important to create initial building blocks for personal collections. Finding sources of literature is a very important aim. Meanwhile, the library did not provide a major supporting role, so scholars found

information independently and gathered and collected what they found which they planned to refine in the future. All these issues raised more questions for further and more detailed investigation.

The figure below shows a simple research lifecycle model and the stages involved. As the research develops, and more evidence is collected, based on revised questions growing out of PIM practices within the research process, the researcher will present a more complex research lifecycle showing the PIM practices of scholars who then creates the research-related PICs and how the diverse collections emerge from those actual stages (Figure 5.1). This figure clearly links the exploratory phase to the main study, which is presented in the next chapter, by delineating the actual stages of both research studies.
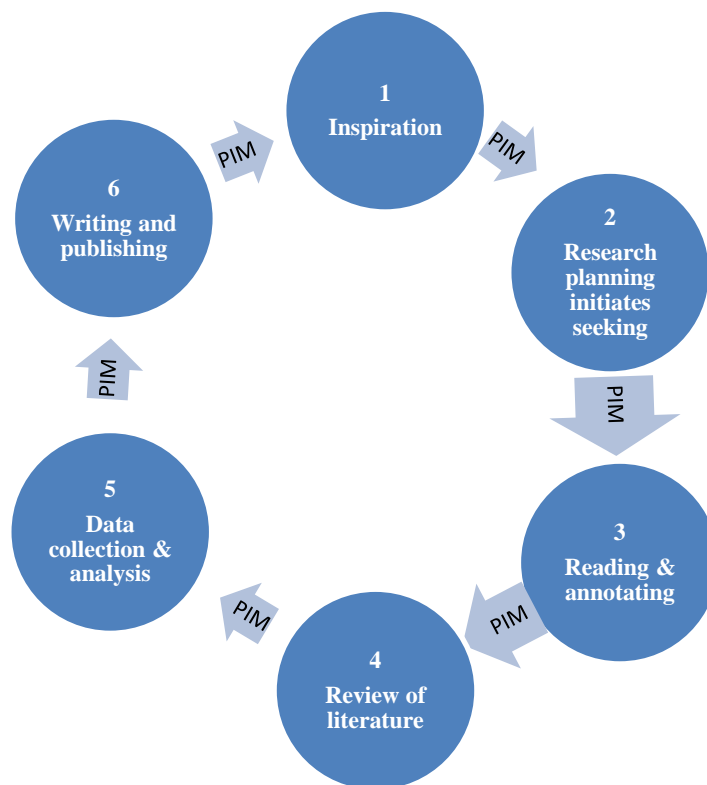
Figure 4-2: Research lifecycle and PIM involvement

4.5 Conclusion

To sum up, 14 interviews were carried out with different stakeholders, including librarians and scholars. The researcher selected those who were felt to have a regular interaction with e-resources, in order to gaining an understanding of the issues related to information practices, behaviour and information needs. When all three sets of interviews were completed and the data was analysed, the researcher became more aware of what the focus of this research should be, which required re-visiting the research questions and amending them as mentioned in Chapter 1(see Section 1.2). In addition, in the scholarly practice study issues related to how scholars locate information resources in different research stages required more in-depth investigation because it was one of the most important sources of information scholars used to build up their personal collections and which was clear in their practice PIM activities later. As the result of the findings presented in this chapter, the research aim and questions of this study was refined. For example, the researcher initially wanted to examine how PAAET's library supported scholars to complete daily academic tasks. As the findings revealed the library did not provide an adequate service to support scholars, the focus shifted onto how scholars could fulfil their information needs in such a context. In a second stage, it was found that research as a task was important and publishing was one of the academics' main concerns. At this stage the study shifted to focus specially on research. Therefore, the publication study was conducted. After this stage the focus was clear and investigating scholar's PIM practice within research process was a convincing evolving topic out of the exploratory stages.

The findings of this research helped the researcher to understand the context directly. The data collection methods were revised. For example, as a result of the scholarly practice study, the researcher decided to use photos and observations tours to investigate closely PICs and PIM issues. In addition, it helped in being more aware of what to avoid in the future in order to improve the data collection process and quality of data before carrying out the actual research, such as communication and self-management skills.

The ethical issues related to the context, as a result of, adding data collection method, needed to be revised and approved form and update it as required to meet the needs of the actual research. Carrying out the research also encouraged the researcher to continue pursuing the interests in this field, with a view to making some contribution to

improving scholars' experience and practice of PIM. In the following chapter, the researcher will present the findings of the main study.

Chapter 5 – Main study: Findings

5.1 Introduction

Having discussed the findings of the first three series of interviews (Phase one) in Chapter 4, Chapter 5 now presents the findings of the fourth series of interviews; phase two of the data collection. The research uses a qualitative approach involving data collected in the form of in-depth face-to-face interviews in addition to observation and photographs of the Personal Space of Information (PSI) of the participating scholars. The chapter will present the findings divided into three main sections: firstly, the emergence of the research-related Personal Information Collections (PICs) using the research lifecycle approach, showing how different types of information related to research emerge from each stage of the research as a result of scholars PIM practice of each stage when conducting certain actions to link them from stage to another. Secondly, a description of the features of the research-related Personal Information Collections (PICs) of scholars is offered. Thirdly, the causes that shaped the features of the collections will be explained in two different layers of factors, namely: Immediate causes and Underlying factors. An advanced PIM based research lifecycle is first presented linking the earlier simple lifecycle which was introduced in Chapter 4 Figure 4.2. This lifecycle was developed from different participants but deals with their research practice and introduced the same stages. The difference between the two models is that the one in Chapter 4 was a rather simple idealised model while the current is more complex and analytical showing the activities of scholars within each stage and explaining the creation and curation of research-related PICs. Then a model combining the features of the collections and the factors shaping them will be presented at the end of the chapter.

Table 5-1: Participant's Information

Age Grp	Gender	Nat. Group	Seniority Group	College	Discipline Group	Edu. BG.	Date Qalif.	Years of exp.
<60	F	Non-K	Non-S	CON	H	Kuwait	1998	9
<60	M	K	Non-S	CON	H	Egypt	1999	12
>60	F	Non-K	Non-S	CON	H	USA	1996	40
<60	M	K	Non-S	CON	H	UK	2005	11
<60	M	K	Non-S	BE	Edu.	Egypt	1996	15
>60	M	K	S	HS	H	USA	1987	35
<60	M	K	S	HS	H	UK	2002	15
<60	M	K	S	BE	E	USA	2006	5
<60	M	K	Non-S	BE	Edu.	UK	2004	12
<60	F	Non-K	Non-S	HS	H	UK	1995	10
<60	M	Non-K	Non-S	HS	H	UK	2003	6
<60	F	K	Non-S	BE	Edu.	UK	2005	6
<60	F	K	Non-S	BE	Edu.	UK	2002	15
<60	F	K	Non-S	HS	H	Kuwait	2004	6
<60	M	Non-K	Non-S	BE	Edu.	USA	1999	20
<60	M	K	S	BE	Edu.	UK	1999	11
<60	F	K	S	BE	E	UK	2006	29

5.2 Emergence of research-related Personal Information Collections (PICs): A Lifecycle approach

In chapter 4 the third exploratory study (the publication study) summarised the research lifecycle and the involvement of PIM within its stages. At that stage, the research-lifecycle was simple and basic, showing the actual stages of any research process, but a hint of PIM practices appeared later in a more analytical and complex way, as in the following section. In spite of the differences between the two lifecycles (Figure 4.2) above, and (Figure 5.1) which appears below, they are linked. The first one provided evidence of PIM involvement while the second explained the PIM practice through the activities within the stages. In addition it showed how the research-related PICs emerged from those stages.

When scholars were interviewed and their personal information spaces investigated by observation and photos, it was found that they created a research-related Personal Information Collection PICs, starting from as early as when a research idea was generated. The nature of scholarly work leads them to be exposed to ideas that inspire them and motivate them to conduct a research project. When they have this sense of inspiration, scholars tend to collect and keep their records of the sources of inspiration. Such collections were once collected and kept, then looped into a lifecycle, due to the

nature and requirements of the research process stages. In each subsequent stage of the research lifecycle, a new type of research-related information emerges and is added to the collection. Within the lifecycle, the different types of information merge together and keeping each type isolated is deemed to be hard due to the nature of the process and requirements of each stage of research. Scholars were handling information at different stages and using them in a non-linear way. Below, the emergence of each type of source related to the different stages of research is explained.

The loop of the research-related collection lifecycle started with idea generation, followed by the literature review, collection of data, analysis of the data and ending in publishing of results. However, this was not a simple linear process. For example, some scholars started collecting data before reading all the related literature. As it is a repeated lifecycle, after publishing some of the collections went through the same stages again depending on need and the involvement of the collection in other research projects. As published research may lead to a new research idea that involved using the previous collection, scholars kept the collection in case it was needed for another research project.

5.2.1 Idea generation

Scholars stated that their research usually began with an idea to explore, a question to investigate or a problem to solve. As soon as the idea was generated, a research-related collection started to be built. A file for the new research idea was created by scholars to keep everything related to their research in. Some scholars created a folder electronically on their computers and others a physical file to keep paper copies in, and both forms can also exist at the same time. From its initial stages, such a research-related collection started to accumulate in different types and formats. A new research idea might stall and not be used, or may be used once research was initiated. Some participants mentioned that a new idea might be interesting for a future research topic, and therefore worth keeping in a 'new research ideas' folder as mentioned by one of the female scholars below while searching literature sources:

> *"Sometimes while I search and read, the funny thing is that I find a new idea for research, so I write on it new research idea and I keep it in a file named research ideas" (CON2-2-17)*

The same idea was experienced by another female scholar, who also stored other items related to the new research idea, such as the previous published research and the related author guidelines and publishers' rules for publishing, as mentioned below:

> *"So these papers are related to the upcoming - what I'm planning to do - which is a new research [project] so this is the journal which includes one of my published articles and here is the requirements and rules that I must follow for publishing in this journal" (CON1-1-17)*

Thus the form of the item collected to store an idea for new research could be information about a target for publication or a piece of previous literature that sparks an idea. When an idea is generated, in some cases it can be developed into a research proposal. A further step within the initial stages of a research project will involve basic readings as well as communications. In order to get approval and support for conducting research, new type of information will emerge, namely sources of literature and personal information about scholars. The sources of literature which are started at this point will increase in the next stage, which is establishing the idea and writing a literature review chapter. Personal information about scholars will also be submitted within their research proposal to the responsible persons starting from head of department.

5.2.2 Literature review

As the next stage of idea generation, most of the scholars' time was spent exploring the previous literature and seeing what research had been done by other scholars in that field. The research-related literature was found either by seeking for new sources of information, which was what happened most of the time, or by re-finding previously-discovered information or even their previous research. Whether it was new or previously-discovered, the related literature was collected as a gateway to producing a literature review. Extensive searching resulted in gathering and formulating information related to the research subject as well as keeping some other interesting information for later use. Sometimes the information needed to be collected from information published anywhere in the world, as mentioned by one of the male participants below:

> *"After I searched my information and collected what I need I start reading to prepare myself for literature review I have to read around the subject what has*

been written everywhere not only in one place for example in Japan or let's say in England or Australia". (BE5-13-17)

The same participant also added that the need to write a literature review was the main reason for searching for, and collecting, information within the research process, as he said: *I mainly collect information for the review of the literature (BE5-13-17).* Then he compared the literature review stage with other research stages, distinguishing between the requirements of each stage.

> *"About the analysis, findings and other things - that will be me and my computer only. And most of the time will be at home as now I use everything, computer laptop even my mobile (I have a smart phone) and I can use it as a computer except for other things that have images or large data. I have other ways as I just said I send it by email, or save it on flash memory or I even just print it"* *(BE5-13-17)*

The above quotation explains the behaviour of a scholar within different research stages. The requirements of the literature review stage are different than others which affected the place and tools needed. It also explains how different formats of information are necessary as well as working in different locations.

The use of literature information sources is not limited to the literature review stage as scholars need to go back to the literature in the later stages of the research which was a good reason for them to keep their collected sources even when they have finished writing their literature review chapter. One of the female participants emphasised the importance of the literature sources within different stages of research:

> *"yes I do write some comments so... I keep my literature because sometimes I need to go back and do some corrections after the peer review and sometimes I need them for the data analysis stage. And again especially when you have it ready for publication we are going to apply for a peer review all of this literature has to be in place because sometimes we need it for the data analysis and... I might need to go back for some of the authors and so as we know the literature review is from the beginning till the end. So I need it all the way through my research." (CON3-3-17)*

For many purposes literature sources need to be kept once found and used. Then kept rather than discarded forming a considerable size of the collection that accumulate for a

period of time which can last forever. Yet literature is not the only type of information within the collection: as the research develops in stages, new types can emerge.

5.2.3   Data collection

Once the literature review was completed, another type of information started to appear in the research-related PICs, which was the Research Data. Following preparation for the data collection stage, data collection tools were devised, such as a questionnaire or an interview manual. These are created by scholars based on their enquiries and knowledge of the subject so far. Once the questionnaire was returned and interviews completed, the data collected from them started to build up in the collection during the data collection stage, before the data was processed and analysed in the data analysis stage. Scholars showed a strong tendency to keep their research data, partly because the research data is unique and it might also be because it was collected with more effort than literature sources (Figure 10). Literature sources can be searched for again, while research data cannot be found again in the event of losing them. Therefore, scholars kept the research data and stored them during the research process and kept them even after results were published.

> *"Here I keep them in a brown envelope I try to keep them next to each other. I wish to keep them all inside the green folder but I'm afraid it's not big enough"* (CON4-4-17).

Even though some believed that analysed data in short form as findings is enough of a summary of the raw data, keeping the original sources of data was usual.

5.2.4   Data analysis

Analysed data appeared in the collection as soon as scholars started the data analysis. Analysed data represented a comprehensive summary of the raw data collected; therefore it could replace the raw data at this stage. In spite of their importance, results and findings might not replace the raw data in some cases or for some scholars, and raw data existed beside the analysed output (Figure 9). At this stage the results might have replaced the raw data, which led to making a decision after evaluation of whether to keep or discard the raw data. Otherwise, the findings were added to the collection as a new item instead of replacing the raw data. Some research required extra effort to extend the work after publishing, and in that case the same data might be needed for that purpose.

Reaching the analysis stage adds information created by scholars. In addition, going back to the literature is required at the end of this stage for the purposes of writing a discussion. Created documents such as the data collected and analysed were merged with other items already in the collection, adding to the collection in terms of size and type.

5.2.5 Writing

At this stage scholars combine several sources of information collected and created within the previous stages in order to interpret and present their research. They showed that the requirements of this stage differ from the initial stages as they separated the research related work into reading tasks and writing. Some scholars mentioned that they can do the writing related work in other places, and the work office is not necessary. One of the participants mentioned that: *After reading and collecting data, analysing and writing is just me and my computer, I can do it anywhere.* Working in multiple locations here is usual as their activities now are to discuss, compare and criticise in order to arrange their findings, write and present. Scholars were trying within their multiple locations to keep updated versions of the collection in each of the work places. One of the participants said that he usually updated his written versions to the last update in each location. Several versions of the same document might come into existence at this stage that then requires organising in order to keep track of the latest version.

Within their collections, scholars had some written-up research that had not been published. A written-up piece of research might stop at this point, stored for further work and awaiting other publisher if it was rejected by one publisher. Keeping the written research is important for scholars and added more to their collection. However the normal stage that follows producing a written piece of work is for it to be published, as it is the main output that satisfies the scholar.

5.2.6 Publishing

The final stage of research is the publication and dissemination of the work. At this stage scholars look for a suitable publisher. Some of them are selective of the best ranked impact factor journals in their field. Looking for a publisher requires communication and dealing with information about scholars and their research. The process of communication with publishers which involves contacting a list of options and this process involves dealing with kind if personal information about scholars

Such information is usually included within application forms such as name of scholars (main and second authors), Title of research, Discipline. Published research at this stage of the lifecycle was added to the collection as a new type of information. Published research was kept, along with the research collection, in its output format or the last version that was submitted for publishing. It was found that published research was also saved in both printed and electronic formats.

5.2.7   Summary

Within the research process, scholars were engaged in actions within each stage (gather & formulate, Collect, Create, Interpret & present, Disseminate, Store and Inspire). Research-related information started to emerge from the actual stages of research and accumulate, forming a complex and diverse collection that enters the Personal Information Management lifecycle in different levels (as seen in Figure 5.1). Once the research was published, a scholar tended to keep the whole set of papers related to the research in a file. This could be called the project file (Figure 5.2), since it included all types of information related to a specific project. A project-related file, envelope or folder will then include all types of research-related items as one of the participants mentioned:

> *"This file includes many things related to that research as you can see. It includes the data collected, and some articles but as I told you the articles I don't bother keeping them printed my main concern is to keep electronic files. It includes as well some notes written and memos related to that research". (HS1-6-17)*
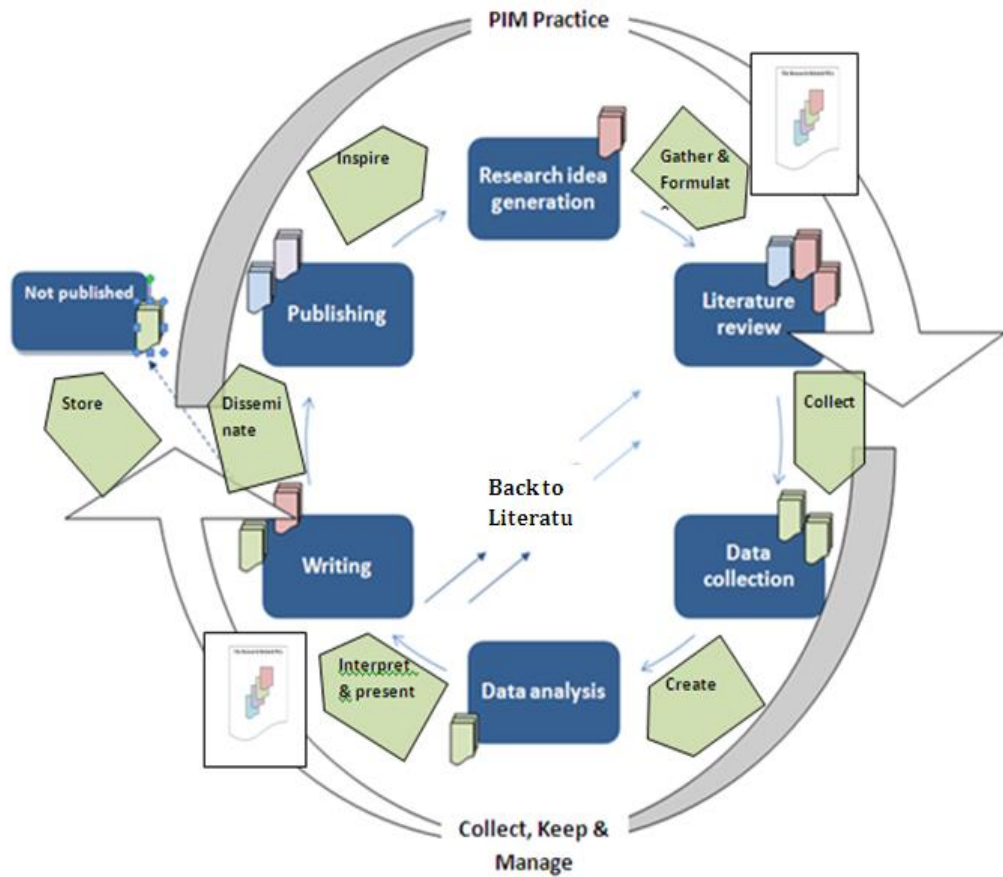
Figure 5-1: Research-related PICs Creation and Curation within the research lifecycle
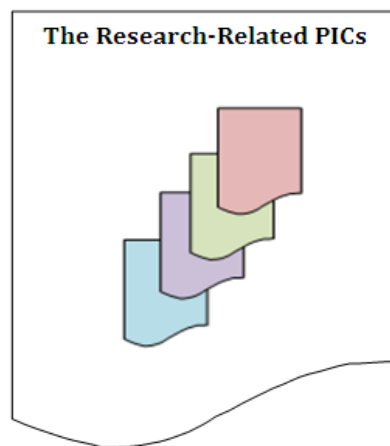
Figure 5-2: Research-related PICs

Table 5-2: research-related PICs types explanation

Type of collections	Description
Sources of literature	Sources of Information (Personal information experienced – by direct seeking or found by chance serendipity) by scholars such as sources of literature on the web. Found and collected for the purposes of literature review chapter and methodology.
Research data	Research Data (Personal information created by scholars (research data & Published research of a scholar)
Published research	Published Research (includes all senses of personal, about, owned, experienced and created)
Administrative paperwork	Paper work (about scholars, about project or research)
The Research-Related PICs	Diverse including all 4 types : 1. Sources of literature 2. Research data 3. Published research 4. Administrative paperwork

Using the research lifecycle approach, the researcher managed to explain how different types of research-related information emerge. Once a type is collected or created, it is added to the collection. The research-related PICs can be visualised as in Figure 5.2 including the four different types of information that scholars used within the research process. Such collection was found as personal collection collected, managed for some reasons. The collection is different due its appearance in the lifecycle for specific purposes that are related to research hence it is a project-related. This explains one of the features of research-related PICs which is presented in the model Figure 5.48 in addition to three other features. The features of research-related PICs will be explained in more detail in the following section.

5.3 Feature of research-related PICs

When scholars were interviewed and their personal spaces of information were observed, it was found that their working spaces were packed with information related to their research. The research-related PICs was found to be huge in scale, diverse in type, hybrid in format and fragmented in location. The collections were also found to be difficult to organise, or were organised in a way that made it difficult to re-find information when needed, and therefore most of it was in practice not retrievable.

5.3.1   Huge in scale

The research-related PICs of scholars were found to be huge in scale. Information was found in the form of piles, files, piles of files, piles within a file, boxes and carrier bags. Such collections were found in a variety of storage locations which will be discussed later in the fragmentation (Section 5.3.4) as in this section the focus is only in size of collection.

Enormous piles of printed papers were discovered in several locations such as on the desk, on a table near the desk, in storage units and inside the files and box files. Few of the participants piled papers in desktop trays or displayed trays mounted on the wall as well.

Furthermore, some piles of traditionally printed documents were stored for mobility purposes such as in a briefcase or carrier bag in order to carry it to other work places for those who work in several locations. Some of the participants who have to work in multiple campuses extended the piling to their car boot to travel with everywhere. Most of the participants were keeping a pile of printed papers related to research on top of their desks, just near their PC in arm reach during research peak stages, so called a hot spot. The hot spot which contained the documents of their active tasks was observed to be the best place for a pile to be born and papers starts to accumulate.

Piles of information were also found towering in unusual places such as on the floor. The unusual places of storage were used by those who lack the facilities of storage in their working spaces. Poor setting of work office such as limited space, shared offices and offices with inadequate furnishing caused the accumulation in unusual places (table5-2 sections 1 – 3).

Very large piles were found in storage units outside of the main setting such as in store rooms. Most of the piles found were not ordered except for one of the participants, who separated different documents within a pile by using portrait pile and landscape pile opposite to each other to distinguish between each different pile (Table 5.2 – section 1).

Large numbers of different types of files were also found containing research-related PICs. A vast amount of traditionally printed information related to research was also stored in files, such as articles, sources of literature and research data. Some of the files might include every item of research-related information including the published paper. The files were stored in several storage units within the work office rarely following organizing criteria as were most of the time tagged with label showing keywords related to research.

Files and envelopes were also found in the form of randomly organized piles not following any clear organizing criteria. Within the files and envelopes, large piles of information were also stored not following criteria of organizing except the chronological ordering where the last found or used document is on top of the pile. Scholars sometimes used different coloured files as a simple way to differentiate different researches. Files were labelled with keywords that a scholar would recognise as the subject area of a piece of research, or a co-author's name, or sponsor's name.

Starting from the personal working office, and specifically the personal desk, the research-related PICs were observed as mostly in different patterns, such as in chronological ordering, in opposite to each other piles (portrait & landscape) piles. Most of the participants were keeping a pile of printed papers related to research on top of their desks, just near their PC in arm reach during research peak stages so called a hot spot. The hot spot as observed found was the best place for a pile to be born and papers starts to accumulate. Piles of documents were found not only in common places such as on the desk and inside files, but were also found in unusual places such as piled on the floor of the work office (Table 5.2 – section 5).

Scholars kept large amounts of traditional print versions of information, as one of the participants mentioned when he was asked about the collection in his office:

> *"I have a big problem [...] My problem is with keeping the hard copy, I can't throw any hard copy away, therefore I have loads of printed papers as I feel afraid to throw them away" (BE5-13-17)*

Another scholar shared the same reasoning for keeping large amounts of information, as scholars seemed to prefer to keep everything and not choose to discard things, even for electronic versions of information, when he said that:

"As you can see I have loads of files as I am that kind of person who doesn't throw anything away. I don't delete electronic files and I don't throw hard copy versions away either. Even if they have been obsolete for ages I feel that I might need them so I keep them in a folder named Old Files instead of deleting them." (BE6-15-17)

Piles of papers were found in work offices that can only be described as not suitable for undertaking research (Table 5.2 – item 5). Some scholars suffered from having a poor research environment in their work offices which could affect their research output if they did not have access to other more suitable places in which to work. This category of scholar was identified as working in places other than the work office as their main working space, e.g. in a home office. Although this case was not common to all departments except one department in the basic education college, it showed a case of bad environmental space effect on research due to limited space, shared offices and using the office for multiple purposes. Such cases helped their collections to be more fragmented than been huge in size since conducting the work in one place was deemed to be difficult, as mentioned by one of the participant:
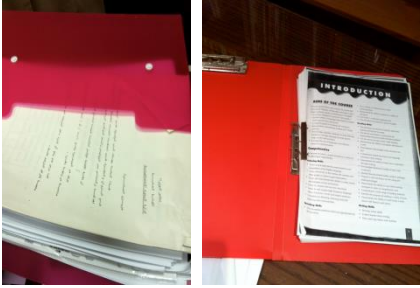
"Here I don't think the environment is quite productive for research basically for lack of resources as it might take long time to find books and articles, and the other reason is the environment, the office itself as you can see we have very small space and shared with others we don't have rooms but we have to share a partition so each 3 in one partition can you imagine..! Obviously it is very difficult to have your own space here in our department. In addition to students visits they can be here every day" (BE6-15-17)

The scholar's research-related PICs started to accumulate when information was first collected in the research early stages as explained above in the lifecycle approach (Section 5.2). Found information was then kept without discarding anything at any time during the research process or even after publishing. Obsolete versions were retained within the collection being accumulated, making it a huge collection, yet one that was rarely used. Not all kept information was re-used by scholars, while kept information continued to accumulate in diverse forms. Information accumulation was found to be in

the form of piles, files, piles of files and piles within a file, found in several locations in the scholar's personal space of information as summarized visually below (Table 5.2).

Table 5-3: Accumulation of traditional print research information

Number	Photograph	Description
1 Piles usually on desks or table near desk		Example of piles of information on scholars' desks. And on a table near the desk.
2 Piles of papers merging with files stored in storage units in the working office		Huge amount of information stored in personal spaces of information using envelopes, files, box-files and stacked in storage units.
3 Piles pf papers in storage units out of the office in		
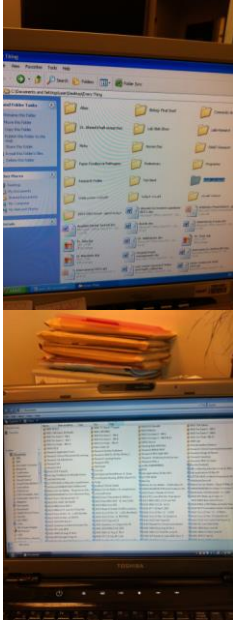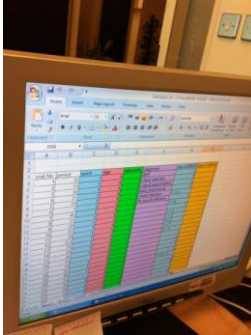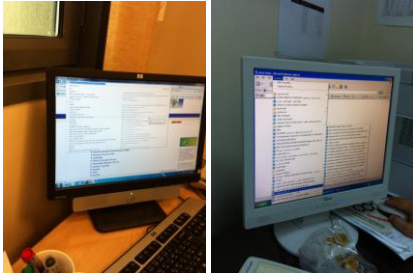
4. Piles within a file		
5 Unusual Storing space In the worki office		Unusual storing piles of papers and envelopes on the floor.
6 Unusual storing space Our of the work office (Car boot)		Unusual storage places, e.g. piles of envelopes in the boot of a car.
7 Piles in different storage		On the wall in a storage unit organizer And desktop tray
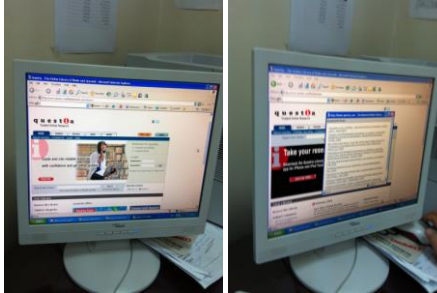
| 8 Storage supporting mobility (carrier bags) | | Using carrier bags seemed common since each bag can hold everything related to a single research project, and can be carried easily to different locations. Can be stored after publishing as well in the same bag. Many scholars liked this way. |
| 9 Variety of physical research-related PICs in different storing types. | | A storage unit in a working office can contain a variety of information stored physically using files, envelopes, box files, baskets, and carrier bags. |

A lot of information was found to be stored physically in printed form and duplicated electronically. Electronically-saved information was also found in large amounts not only saved on a PC and personal laptops, but also stored on CDs, USB memory sticks and external hard disks as their organizing and backup solutions. Some scholars used Internet-based solutions to store their information and facilitate access anytime-anywhere such as on their emails, websites and personal information managers like *Questia* research based (table 5.3). Questia is an online library service that can help scholars manage their research process (http://www.questia.com/). Even when they tried to use the electronic solution to save their information, the electronic solution itself

could also exist physically. Equivalent physical copies of the electronic saved version also exist.

Table 5-4: Accumulation of electronic versions of research-related PICs

Number	Picture	Description
1 Different types of research-related PICs on PC in work office		A mixture of research folders stored on a computer in the work office. The folders include diverse material
2 Research data		Example of the data collected in the format of an Excel file.
3 Research-related PICs on the Intrenet		Bookmarks saved on a computer in the work office to use later.

4 Research-related PICs in external storage devices & briefcases for mobility		An external hard disk used to store diverse research information, carried everywhere, and can be seen on the desk and in a briefcase to take home.
5 Example of a research-related PICs manager (Questia.com)		An example of a research manager used by a couple of researchers to manage their research process. It has articles from the literature on the topic that can be highlighted, and uses many organizing facilities. The tool called Questia and is subscription-based, found by colleagues and shared between them. Scholars who used it found it very useful and wished that such tools were available for them to manage and share their published research with colleagues.

The size of the collection made it difficult to control and track stored items. Therefore, when scholars were asked about how frequently they used the stored collections they did not show that it is highly used compared to the effort of keeping it. Scholars usually would search through search engines for literature sources when needed instead of looking through their collection. In addition, the research data could be accessed through their published research if needed except in a few cases who had had bad experiences of losing the research data. Bad experiences of loss motivated scholars to

keep research data in places within their reach and display it in some cases. The huge research-related PICs was forced to be in that size for the scholars motives as well as worries which can be visualised as in (Figure 5.3) and will be explained in more details in (section 5.3) .

Research-related PICs			
Huge	**Diverse**	**Hybrid**	**Fragmented**
Pile Files Piles of Files Piles within a file	Literature Research data Published Researcch Administrative paperwork	Traditional Print Electronic Mix of both	Main setting Secondary setting Mobile nature

1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Figure 5-3: Factors making the collection Huge

5.3.2 Diverse in type

The huge research-related PICs was found to be diverse in type, comprising sources gathered for 1) the literature review, 2) research data collected and analysed, 3) published research, and 4) Administrative paperwork related to the research process including proposal approval and publishing. All four types were saved by scholars in a variety of ways and formats. Each type had importance for the scholar's information daily practice for the purposes of research. These four types were not the only types found in the scholar's personal space of information, as they were found in some cases merged with other types of information not related to research such as for teaching purposes, since some of the material could also be used for some of the taught modules. Yet they were clearly grouped together. In this section a detailed description of each type will be presented.

5.3.2.1 Sources of literature

Scholars showed their confidence and independence in finding information sources for their research background and literature review, by seeking wide variety of sources. They often started with simple and general sources of information such as Google and Yahoo for initial and basic search. The initial search seems to be not enough to locate the specialised information for their research and therefore a further step is achieved by seeking specialized databases that can provide specialized full text articles. As one of the female participants said

> *"For me I don't face a problem, I start my search by yahoo, can you imagine yahoo not Google. If I managed to find the abstract a further step is to find the full text or more specialized article from the specialized databases in my field. Also I might seek librarian's help if it was hard to find"* (CON2-2-17)

Such databases were not made available for scholars by their libraries and therefore they sometimes subscribe to the specialized databases using their own money. In addition it was found as traditionally printed papers and books within the collections. The sources of related information can also be in the form of attachments received in saved emails, where a colleague has sent them relevant writings. It also can exist in the form of web based files saved as favourite bookmarks.

A review of the existing literature on the chosen research topic was one of the main tasks that required information collection and then to be kept by scholars for the purposes of their research. Reading and writing about a certain subject involved scholars seeking many types of information resources in many formats. Scholars showed that they had gathered a lot of literature-related documents, books, articles as well as saved bookmarks. Found information was then stored both physically and electronically for the purpose of either writing a literature review chapter or a discussion section of their research report in later stages. The literature review task was deemed to be more intensive when the research subject area was new and little research had been undertaken before; in this case, the searching and keeping tasks were more critical. Therefore, literature-related material was stored during the research stage and was not discarded, resulting in accumulation of information in the working space. Whether printed or electronic versions, literature-related information was kept in the scholar's working space. Even after publishing, literature-related information was kept by many scholars because they thought that they would need them for future research on the

same subject. Literature review-related information was also kept for other purposes, such as to share with other scholars inside PAAET and outside. One of the participants said: *I share with my colleague specially the last research as it was joint work. (CON3-3-17)* While some scholars mentioned they kept information in order to share it with colleagues, both in their local network within the department, or even in networks outside Kuwait.

> *"I share with my colleagues some information sources in my social network and mainly by sending emails".* (CON3-3-17)

Some scholars showed that they are critical about sharing their research-related information due to the lack of trust. As one of the participants talked about the plagiarism issue in Kuwait and the hackers of computers when said:

> *"No.. no.. I don't trust distributing my work online or via social network, as I believe it will be stolen [...] specially before publishing my research"* (HS1-6-17)

This kind of information could be found in a variety of physical storage places ranging from their working desk to storage units; or held electronically on their personal computer or laptop or stored on external digital storage units. One of the scholars from the College of Nursing explained that she usually kept some literature review-related information on her desk, but sometimes had to move it to other places in her office depending on the work task in hand:

> *"I have here something about the research project that we are doing now [....] there are few sheets I know they must be here [....] where is it? Yes here if you see this, it is the review of literature, so maybe because of the limited space on my desk I just moved it inside the cabinet while I thought it was still on my desk".* (CON1-1-17)

Scholars tended to move their collected printed articles for the purpose of writing a literature review to several places around their offices, moving them from around their desk to storage cabinets in the room. It can be seen that such moves were controlled by time, space and level or 'density' of research work. The participant showed that the first place a literature-review collection was normally kept physically on the scholar's desk for printed material and on the desktop PC for information in electronic form; while the

second most common place was in a storage unit physically in the same room and in a digital folder electronically not on the desktop.

As other scholars showed, part of their personal collection for the purpose of research was for the literature review which either had been completed, or was being prepared to be used for a specific research project. The same scholar mentioned that keeping found information is part of their job to manage their collection and ensure its future use:

> *"For the review of literature and the discussion part and I keep them all either in print or electronic [form] on the computer. I don't find a problem in the storage space until now so I'm happy to store everything". (CON1-1-17)*

The literature review information was available on scholars' desks or in the same working office while they carried out their research. In some cases, organizing information related to the literature required moving the collection from one place to another during the research process. Especially for those scholars who faced an on-off mode of conducting their research, changing the location of the collection was one of the means they used to organize them. Organizing in different patterns was another way; one of the scholars in the College of Nursing explained how she organized her collection when she cleaned up her desk on a weekly basis, or as required. Some of the piles on the desk were moved to a small storage unit just behind her in order to keep it near the working area but not actually on the desk:

> *"You see these piles I just organized them I just removed piles and piles of papers. You see how I put them opposite to each other". (CON2-2-17)*

So once the literature review information had been collected, it was kept in a pile on a working desk and could be moved to another place once it needed to be organized. Working intensively on research would result in having piles of literature-related information on the scholar's desk, but once the teaching mode was at its peak, the collection was moved to other places.

Information collected for the literature review was kept electronically by those who preferred not to keep printed versions in their offices, or for those who trusted the electronic tools in saving their work. One of the scholars in the Basic Education College mentioned that he preferred working in the electronic environment:

"I don't really keep anything printed or hard copy here but I have it electronically on my computer. Now I started a new piece of research so a new folder is created as a starting point of a research including articles to read for the literature review collected from online searching and databases in the office" (HS1-6-17).

The availability of both printed and electronic formats was in some cases because of their preferences or mood of work. The same scholar, who claimed that he preferred not to keep anything in printed form, during the tour, when hard copies were found on the desk, argued that at some points he needed to stop reading on the monitor and used printed copies:

"Information is kept on the desk to keep it handy and reachable with some books related to the subject. All of these are also available in electronic versions on my computer but it's my nature I don't like to read for a long time from the screen but I like to stop at some point and read the hard copy". (BE4-12-17)

Therefore, in the personal space of information, there was a variety of information available to be used, and stored, for the literature review. Even when scholars claimed that they were not holding any research-related information in their work office because they were working on research in other locations, a lot of literature review-related information was found to exist in their working offices and was being managed in some way. Printed copies could exist for a period of time just to read when a scholar felt like in the mood to do so, but an electronic version must also exist in this case since the scholar's preference was to use electronic versions. Whether kept physically or electronically, it was important for them to keep it during research stages as one of the female participants explained:

"..I keep my literature because sometimes I need to go back and do some corrections after the peer review and sometimes I need them for the data analysis stage. And again especially when you have it ready for publishing we are going to submit for a peer review, all of this literature has to be in place because sometimes we need it for the data analysis and... I might need to go back for some of the authors and so as we know the literature review is from the beginning till the end. So I need it all the way through my research". (CON3-3-17)

Literature-related information such as articles, for instance, was always needed during the different research process stages whether they were active or less active. Furthermore, in non-active stages, literature-related information was also kept as part of the specific research collection for other purposes such as for further research in the area, or for sharing with colleagues in the field.

Scholars showed their disappointment in the way that literature review sources were managed, as they believed it had to be managed better in order to re-find information in the next stages of the research process. They showed some effort in managing their research collections such as annotation, saving electronic copies, printing and filing. One participant said he liked to print out the article and then write in the margin to help when he went back to it.

5.3.2.2 Research data: collected and analysed

In addition to literature sources, the second type of research-related PICs of scholars is research data. Any research required that data be collected, analysed, and then managed by the scholar if he/she decided to keep it during the research process or even after publishing. Developing a questionnaire or interview manual for instance required dealing with information that must be managed at certain points within the research or even after publishing. One of the participants mentioned that the questionnaire he used was kept in the working office and stored in both printed and electronic formats:

> *"I keep my questionnaires in a brown (paper) envelope I try to keep them next to each other, I wish to keep them all inside the green (plastic) folder but I'm afraid it's not big enough… actually my data related to my research are divided into 2 halves one is the hard copy as you may notice stored in the files or envelopes and the other half is on the computer stored on my computer as electronic files". (HS2-7-17)*

The research data also found in diverse forms and formats. In terms of forms it was saved in both physical and electronic format. In terms of formats it existed in word documents, Excel and SPSS for quantitative research. Audio files and transcripts of qualitative research were also in the collection. The research data also included the original questionnaire forms created for collection, and the collected questionnaires in both traditional and printed formats.

While data-related information was found in both printed and electronic formats, it was not easy to keep them all together with other research material. It was found that the original papers of the questionnaire were kept together, while the smaller amounts of processed results summarized in tables, for instance, were found with the other research information such as literature-related information in the project folder. Electronic versions were also stored on scholars' personal computers, as one of the participants demonstrated when he showed how the data related to a research project was stored on his computer. The scholar also mentioned that even old files were kept on his computer:

> *"Here I want to show you a project […] as you can see [there is an] old files folder again and the final reports again. So under each main folder [for a] subject I always keep an old files folder and a final report folder as well as some other things that are related like the data, photos, etc. I also have some Excel files in each folder mixed with the other folders and I name them as the subject name. For each research I have a different Excel file for my data analysis". (HS2-7-17)*

When the finalized version of a research project was created by a scholar, the other versions were not deleted, as explained by the scholar in the quotation above; instead, they were kept together in a folder together named 'old folder'. In addition to data-related information, it appeared that old files were also kept, which will be discussed later in (section 5.2.3.3).

The data collected for each research topic was saved by most participants in an electronic format using tools such as MS Word or Excel or as an SPSS spreadsheet:

> *"For instance there are some Word documents, SPSS for the statistics of my data documents… I mean all about the study is here". (CON3-3-17)*

The data collected for a research project was found stored in several formats as MS Word including the questionnaire sheets and interview manuals. Summarized and analysed data was found in the form of Excel and SPSS. These were the commonest types of files in use. Such files were saved on personal computers, sometimes on the desktop and others in folders. Files saved on the desktop in piles were available to access during the active research stage; once the active stage was over after publishing, files were moved to storage folders. The storage folders were either on the desktop or stored in other ways such as on external storage devices.

Figure 5-4: examples of kept research data

One of the participants, who appeared to exhibit the same behaviour, mentioned that the data could be saved in any format, but must be saved in the project's folder:

> *"Look here for example this folder [...] we open it you can see all related to research data saved in the form of SPSS files to Word and Excel". (HS1-6-17)*

Saving the data was important for the findings stage of a research project and the most important thing at that stage was the data in its summarized form:

> *"See here are my data kept in Excel files as we transfer them to numbers before using them to write our findings". (CON1-1-17)*

The way data was stored may differ slightly between scholars, but was more or less the same in the terms of distinguishing between raw data management and processed data. Raw data is larger in size and less useful for future than summarized data, which can substitute it. Most of the participants mentioned that they saved both with a slight preference for keeping the processed data in its final summarized way. The importance of the finalised summary of the findings did not help in minimizing the amount of data saved; rather, it added more information to either the same folder or a different folder.

> *"I always keep old files folder and final report folder as well beside some other things that are related like the data, photos, etc. I also have some Excel files in each folder mixed with the other folders and I name them as the subject name for each research I have a different Excel file for my data analysis". (HS2-7-17)*

The above group of scholars found it sufficient to keep just the summary of the data in SPSS or Excel tables, but others preferred to keep all the data originally collected in the form of papers copies of the original questionnaires (Figure 5.5). Keeping the original

questionnaires gave the scholar a feeling of being safe, so that if ever needed, they could be found:

> *"Yah these are my data collected for the research. They are the same as I showed you before in the blue folder. These are the main data and the results I put them in Excel files and the reason why I kept them after transferring them into Excel files is that I might need them in the future. I know this is my data original data collected and the Excel files might be enough, but I feel like keeping them". (CON2-2-17)*
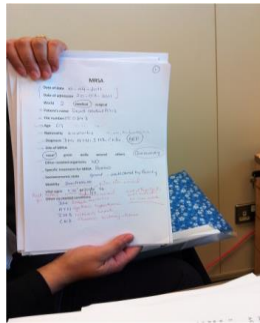
Figure 5-5: Original questionnaire sheets saved for a research project and after publishing *(CON2-2-17)*

Sometimes, when research was carried out over a long period of time, keeping the original data was required. It is obvious that researchers tended to keep all related information for research which was in progress. One of the scholars who participated in the interviews talked about a very long research project and showed the researcher the related information which was stored in several places due to its size. He mentioned that he meant to keep some of the information related to that research visible in the office as a reminder to keep working on that research (Figure 5.6). So even when stored in other places, some of the data was kept in the working space of information, adding more items to this location.

> *"They are all available in the store in the basement of the college. And I am keeping this much here to be honest for another reason, to remind myself about collecting the data for the year. We use the students every semester to go and collect the data so it's is useful for both of us they have training" (HS1-6-17)*

Figure 5-6: research data files (HS1-6-17)
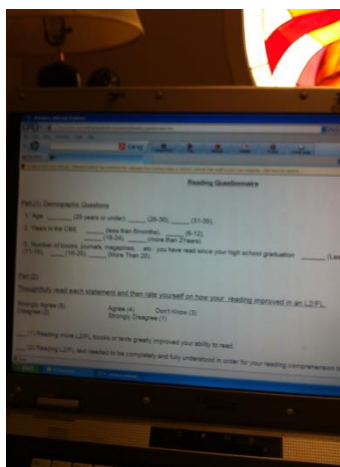
Figure 5-7: Online questionnaire saved by one of the scholars for a research project (BE8-17-17)

5.3.2.3 Published research

The published research was stored within the collection in its different versions before publishing. Different versions were stored on different machines, memory sticks, or sent via emails to themselves. The published research also was found in the form of its output product within the published issues, in addition to online versions. Some scholars seems to be struggling to maintain an updated versions while others were trying to maintain the last version saved everywhere when working on different machines and in different places. One of the participants was happy using Google Doc for maintaining the last version and working in different places was not that difficult for him when mentioned:

> *"I feel more comfortable when dealing with electronic copies it's more easy to use and more flexible. I can also send it anywhere I want. I am dealing with*

Google Doc also and Gmail Doc. Because they can allow me to access and update my documents anytime and anywhere". (HS1-6-17)

Scholars were found to be keepers of research-related information not only during the active stages of the research, but even after publishing. Published research was kept and stored with the research-related PICs in both traditional and electronic formats. In the scholar's personal space of information, published research information was found and stored in different ways such as the final publication print copy or an online saved version in PDF format.

Some of the scholars saved printed copies of their published research together with some of the information related to that research such as the literature, and some notes and memos. Published research was treated in a different way from research in progress. Some of them liked to keep electronic version of their published research:

"here is some recently published research after the paper was accepted by the journal for publishing, but I don't really care about the printed stuff usually, I feel more happy with electronic documents because I can travel easily from here to there if I have a new idea while I'm here I write it down and send it electronically. So that I don't really bother in the future about where is it so I usually keep it on each device in addition to the iPhone. For those which are printed, I scan them myself and I keep them electronically" (HS6-1-17)

Scholars, who liked to keep electronic versions of their work, even after their research was published, argued that electronically-saved copies can be easily accessed because of their mobility. From the above participant quotation it can also be seen that electronic versions were fragmented as they were kept on several devices, forming redundant electronic versions. Other scholars tended to keep only the final version of a published research project in an electronic format, as one of the scholars noted: *"only the finalized ones, whatever has been published, will be in the research folder within the everything folder on my desktop". (CON2-2-17).*

While some scholars showed a preference for keeping electronic versions of their work, other scholars kept printed copies of their published research stored in some way in their personal space of information:

"This drawer, it includes my published research in the journals, and some publications of PAAET that I might publish articles in, so usually I keep the

research products but not here as you see these are some of them. I keep them usually at home, or sometimes in my car". (HS6-1-17)

Published research was kept in their work offices, sometimes in their home offices, and sometimes in mobile spaces such as in a car. Some scholars kept their published research in files or folders organised in categories according to subject:

"I mean for instance the published papers I keep them in specific place like a file or folder, so I mean I divide my work in a clear way. For example if I want something about the water treatment, I can directly go to the blue box file and find what I need. I mean I don't get lost within my work". (HS2-7-17)

5.3.2.4 Administrative paperwork

The research approval needed research administration procedure. The research administration requires special communication with the departments involved for authorization. Publishing procedures also needed such communication with publishers and it requires several versions of the research based on the notes and the comments of the publishers.

"The stages of my research first of all will have a proposal we have to have a proposal and we have to submit this to our committee here ... the committee of research in the college of nursing. So once we have to go through some questions by the committee we have to study our proposal and the exam suggestions some suggestions which deemed for the study and after carrying the suggestions so we will not be ready this part of the study will undergo the necessary administrative structuring they have it has to go for approval again through the college and the college also if they have to do approval from the Public authority for applied education and training PAAET especially if this is will be a funded study ok?" (CON3-3-17)

In order to process the research, scholars needed to follow certain authorisation steps according to the PAAET research policy. As shown in Figure 15 the research proposal had to be started by the scholar filling in an application for research support, which then had to be approved by the head of department as the first level. Then it had to go through several levels of approval before getting final approval; a process that might take several months or even a year before initiating a research project. In order to go through this procedure, scholars had to keep track of the paperwork for the different

stages. Some papers were in printed form while others could be submitted electronically. Within their collections, it was witnessed that some of the paperwork that tracked research approval, together with other paperwork related to the process of publishing papers, was stored. The latter would only appear in the final stages of research after the write-up, in order to find a publisher. The administrative paperwork supporting research was clearly announced for scholars in PAAET on their website showing the steps required as in (Figure 9).
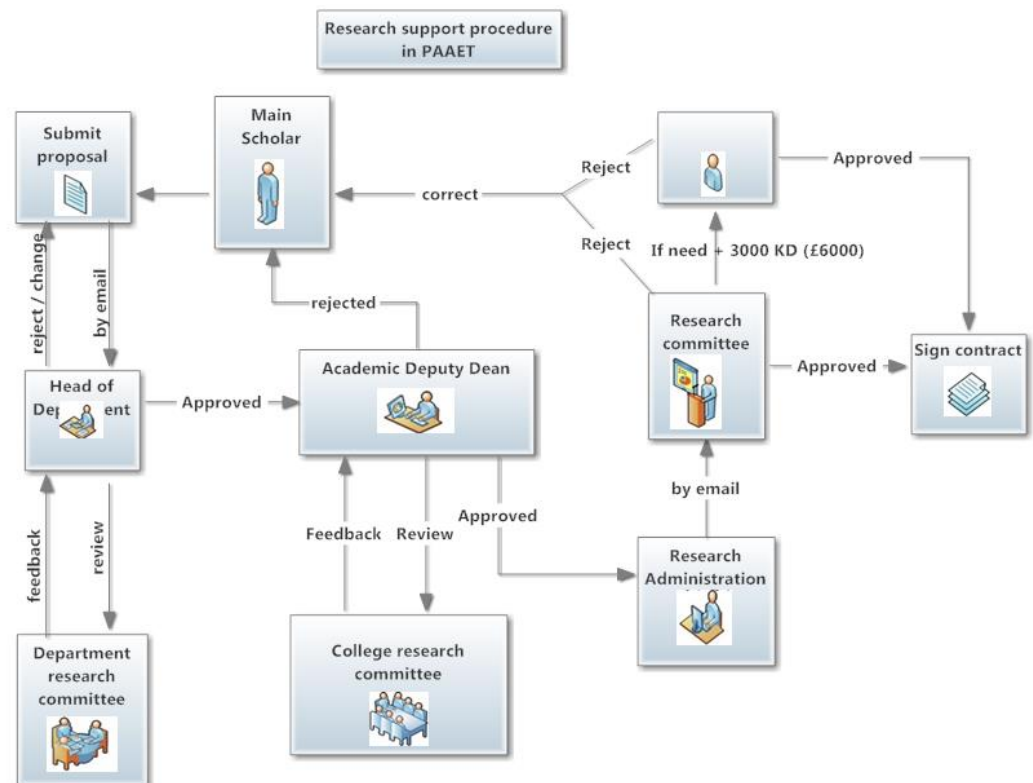
Figure 5-8: Research support paperwork path (modified from Arabic version available on PAAET-Kuwait
http://www.paaet.edu.kw/mysite/Default.aspx?tabid=2608&language=ar-KW)

5.3.2.5 Summary

Although the current investigation focussed on research-related PICs, which generally were separate entities, yet it appeared that some non research-related information could appear within them. Material, for teaching and other administrative work was, sometimes merged with the research-related information. This occurred because other activities, such as teaching, and management-related tasks, had to be carried out by scholars. Although most research-related material were grouped and appeared together, it was not easy to keep research-related collections utterly separate from teaching

material, for instance, as sometimes research material was used for teaching a module (Figure 10).

> *"My teaching material and training courses also I keep them in specific folders. Theses presentations have a relation to my research as they are the output of my research. My presentation lectures are the outputs of my research are kept in specific folder (figure 5.9)".* (HS2-7-17)
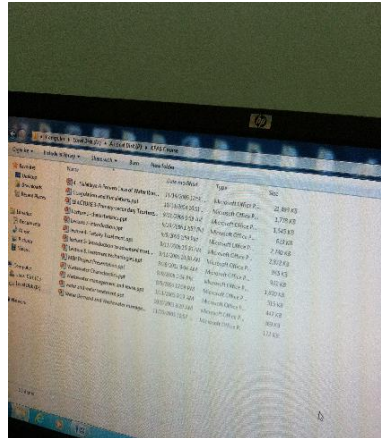
Figure 5-9: Research and teaching material saved together in one folder (HS2-7-17)

However, the research-related PICs were usually clearly separate entities. Scholars were forced to keep the four different research-related PICs for mainly their need for research and for their self-positioning and presenting. Since the four types are related to research and were collected and kept for research, this factor was highly shaped by the need for research to meet the requirements of each stage and lightly affected by the factor of self-positioning and presentation, and this can be visualized in (Figure 5.11).

Research-related PICs

Huge	Diverse	Hybrid	Fragmented
Pile	Literature	Traditional Print	Main setting
Files	Research data	Electronic	Secondary setting
Piles of Files	Published Researcch	Mix of both	Mobile nature
Piles within a file	Adminastrative paperwork		

1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Figure 5-10: Factors to Diverse

5.3.3 Hybrid in format

5.3.3.1 Traditional vs. electronic

The huge and diverse research-related PICs were also hybrid in format. On the personal desks, piles of printed papers, envelopes, flash memory sticks, and external storage hard disks were available near the scholar's personal computer. On the screens of their personal computers there were extensive amounts of research-related folders in addition to email folders and bookmarks. Such combinations gave the research-related PIC the feature of hybridity. The huge and diverse collections in scholars' personal spaces of information were not limited to a single format but were a complex hybrid mix of traditional printed as well as electronic versions. There was no clear strategy of keeping print or electronic versions, or even both; what was found was a random mix of both formats with frequent redundancies. Scholars tended to keep printed and electronic versions which increased the size of the collection, as one of the participants mentioned:

> *"I have a cabinet of 2 metres by 1.5 metres I keep all the hard copy documents in and it is located in the basement of my house where I store my printed versions, even my questionnaires. Any hard copy - I keep them. I also have a hard disk memory where I store things in it this hard disk is of high capacity*

storage I keep many things even a copy of the printed and scanned documents in the hard disk" (BE5-13-17)

The effort of keeping scholarly information was not limited to one version or type; instead it was extended to include both formats. Even when a hard copy was kept, in some cases a scanned copy was also kept in an electronic format and stored digitally, as one of the participants commented: *"I scan them myself here in my office as I don't trust print versions'"* (HS1-6-17). Another scholar supported the idea when he said that: "*the printed copies are in the coloured folder then to the box file, and electronic versions will be on the electronic folders on the PC."* This means that the collection was built in a hybrid way by collecting and keeping both formats of information, as can be clearly seen from the participant quotation and figure 5.12.
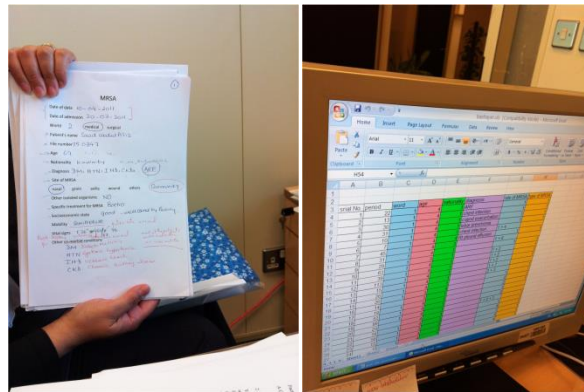
Figure 5-11: Example keeping both traditional print and electronic versions of the same research-related information in the same place (CON2-2-17)

Even for those who argued that electronic copies were preferred and said they did not keep any printed copies, it was witnessed that printed versions were still kept, even though they stated that they believed paper copies were not worth keeping.

All four types of the diverse collections were found in both formats, though with some variations. It was observed that the literature was more likely to be found in both printed and electronic form. Some scholars preferred reading printed versions, while others preferred reading electronic ones. Some would tend to start with one version and then continued reading in the other. So, three types of scholar's preferences were found in terms of the preferred format, namely: i) fully printed, as one of the scholars mentioned: "*So I usually print them I like reading from printed versions, then I read, highlight, write some notes then I keep them in the file" (HS2-7-17);* ii) fully electronic, with its mobility advantages as one of the participants mentioned: "*I feel more happy with electronic documents because I can travel easily with my stuff" (HS1-6-17)*; and iii) a

mix of both. Within all three types of preferences, there was a mix of hybrid collections, even for those with extreme preferences, as there always seemed a need for both formats at some point during the research process. Whether it involved changing location, or involvement in a specific task, there was clearly the need for both formats at a certain times, such as reading while writing as one of the participants mentioned:

> *"umm most of the time I read on the monitor and sometimes I print you know when I feel that I am typing something I print so that I can read it and type"* *(CON1-1-17).*

Published research also was available in traditional printed as well as electronic form. Scholars would always keep the published research project file, but would move it to another storage location such as a storeroom or home office. An electronic version of the published research was also found stored on digital devices

5.3.3.2 Summary

The feature of hybridity was forced by all immediate factors each in different strength that can be visually read in the figure below except for the foreign resources. Foreign resources have led scholars to find and concentrate on traditional print resources as the availability of Arabic resources online is not showing that quality needed (Figure 5.13).
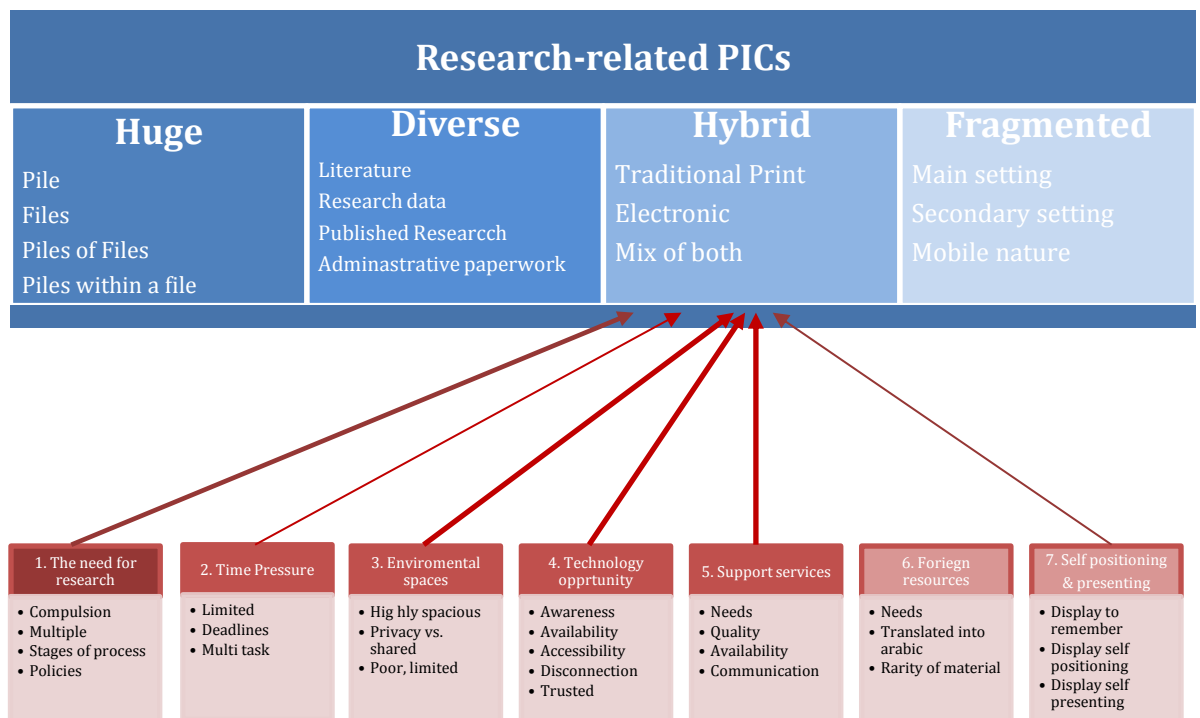
Figure 5-12: Factors to Hybridity

5.3.4 Fragmented

The huge, diverse, and hybrid collection of research was stored in multiple locations since scholars worked in different locations such as their work office, home office and other locations. This section provides a description of two main areas where information was kept: the personal space of information and storage space.

5.3.4.1 Personal space of information

It was witnessed that scholars were working in multiple places or personal space of information. The personal space of information – where scholars' personal information existed including research-related – was one of three types of settings, namely: main, secondary and mobile.

The main setting was where most, or in some cases all, of the research-related tasks were started or carried out, such as the work office for most of the participants. Few scholars did –research-related work only in their home office. The main setting had the advantage of including most of the collection due to the time spent there and that many tasks undertaken there related to research. The main setting if it was a work office, it showed a typical working environment such as in the picture (Figure 5.13).

Figure 5-13: A typical main setting - work office (HS2-7-17)

The secondary setting, such as a home office, was where tasks could be continued. For instance, if reading articles was started in the work office, and the scholar could not finish reading them due to the time limits of doing other tasks, the scholar had to finish reading them by taking them home. This is the case when scholars have their 'target of the day'. Such behaviour was commonly observed for most of the participants. Taking home non-completed tasks could be achieved in different ways such as taking home printed or electronically-saved versions, or even by sending the electronic version to

themselves by email in order to be able to access it at the other location. Home office can be a corner of a room or a full room depends on the space available. As one of the female participants mentioned:

> *"You know I don't have a space for office as I live in a small apartment but I have a desk with computer in a room and bookshelf with some books"*. (CON1-1-17).

This space might be more cosy and relaxing and following certain organizing pattern that is visually attractive for the scholar such as stacking books by size as the one in (Figure 5.15)

Figure 5-14: Secondary setting - home office (BE8-17-17)

The personal spaces of information could therefore be described as either static or dynamic locations. A static location was where the content was limited to one place and could not be accessed from other locations without moving facilities, such as in a storage unit in the working office or on a desktop personal computer for electronic versions. On the other hand, a dynamic location was where the collection was accessible in a more flexible way such as on a USB flash drive or an external storage device – for electronic versions - or by use of a briefcase and carrier bags – for traditional versions - that was carried to several locations. Many of the participants complained about working in different places, while a few found it interesting to change location according to their mood. For many of them, working in different settings was not a matter of choice, as much as it was shaped by the nature of their working activities within the facilities available and the time constraints.

When asked about the place they conducted their research, most of the participants said that they worked in multiple places. Work office and home office were the two most common places, while a café or holiday house came second; on an aircraft or even out of the country, were the least-frequently mentioned. Scholars also worked on several machines between the main, secondary and even in a mobile setting using devices such as a laptop. Some of them had two working offices due to availability of two gender segregated campuses in some of the departments in PAAET and sometimes for their position. Some scholars have two work offices if they are teaching in both campuses as well as if their position required their availability in both locations. Those who have two work offices usually scheduled their days and time to work between two locations. Those categories find using electronic solutions is necessary to help their fragmented information. One of the participants said:

> *"But I work in several places: two work offices and a home office therefore I always make sure that my work is always saved on flash memory and sent by email to myself to make sure that I can access them from anywhere". (HS1-6-13)*

Scholars used electronic solutions to facilitate access in other locations and many of them used email to send work to themselves in order to access it at the other location and continue the work. Another scholar shared the same practice of taking some material saved electronically to other working settings.

> *"Well, I usually save my file in an electronic form like any article I find it useful and interesting for me and my research I save it to my flash memory or this what we call it, external storage device, so that when I go home and I want to review that I can do it because I am carrying them with me.. I also have internet access at home so that sometimes I do the search at home and I will save the data and then I will bring it here so either I start at my office and save it and take it home or I start at home and continue at work because I am tight on time and I have to work for long hours per a day" (CON1-1-13)*

This argument is a bit different as it shows that the availability of the Internet at the other working location made it possible to start new work such as searching instead of just continuing work that had been already started. Starting a new task in the other setting required taking steps to save it that changed the beginning of the keeping process, with the risk of either creating a collection with in-built redundancy, or finding items missing when accessed in one of the other locations. Therefore, some scholars found it

better to keep all the collection in one format, specifically the electronic one, in order to access it in any of the locations, as mentioned by one of the participants below:

"For me actually most of my research materials are kept in soft copies and even when I write if I want to do a piece of research the easiest way for me is to go online and get the material. So as for the hard copies I just keep them in envelopes and I bring it here in my work office if I need it and if I have to continue the work I take it home in the same folder then after I finish I bring it back and store it here in my work office. So related to research I keep most of the things here in the work office in the lowest shelf as I showed you and the soft copies in the computer and the flash memory as well". (CON1-1-13)

Even when the format was claimed to be limited to electronic versions, hard copies were also found to exist in the work office as the main setting, which meant that hybridity together with fragmentation were two functions that could not be minimized for the research collections. Scholars within their research were involved in reading things on their monitor, printing them out, and moving things between different locations.

"So sometimes I print them out or I save them on flash memory and I take it home with me. So mainly it's something between home and here. Sometimes I won't be available at home or in the library or the office like weekends in my holiday house or visiting my sister or even travelling somewhere for those times I have to take with me some printouts although I don't prefer them because it consumes papers and ink I don't like it but if I will be in the plane and I want to read then it's good to take printouts with me it's very easy for me to read and write some notes on the papers. For other times I like to save them on my flash memory or I send the information needed to myself again by email I compose and email addressed to myself then I attach the papers I want and send to myself so that I can guarantee it will be always there and stored and can be accessed anywhere. The only problem with email that might occur is that the Internet must be available to access them whereas the flash memory does not need that". (BE5-13-17)

Scholars noted the differences between using traditional printed and electronic versions when they talked about their working spaces. Working with traditional printed versions

in physically static locations was less flexible than using electronic versions that could be accessed *'any time anywhere'*.

It has been noted that whether the research was carried out in the main setting or the secondary setting, it needed suitable environment and availability of research-related collections. It is also noted that electronic resources are inclusive and easier to access than traditionally printed material as mentioned by the participants and shown in (Figure 5.15).
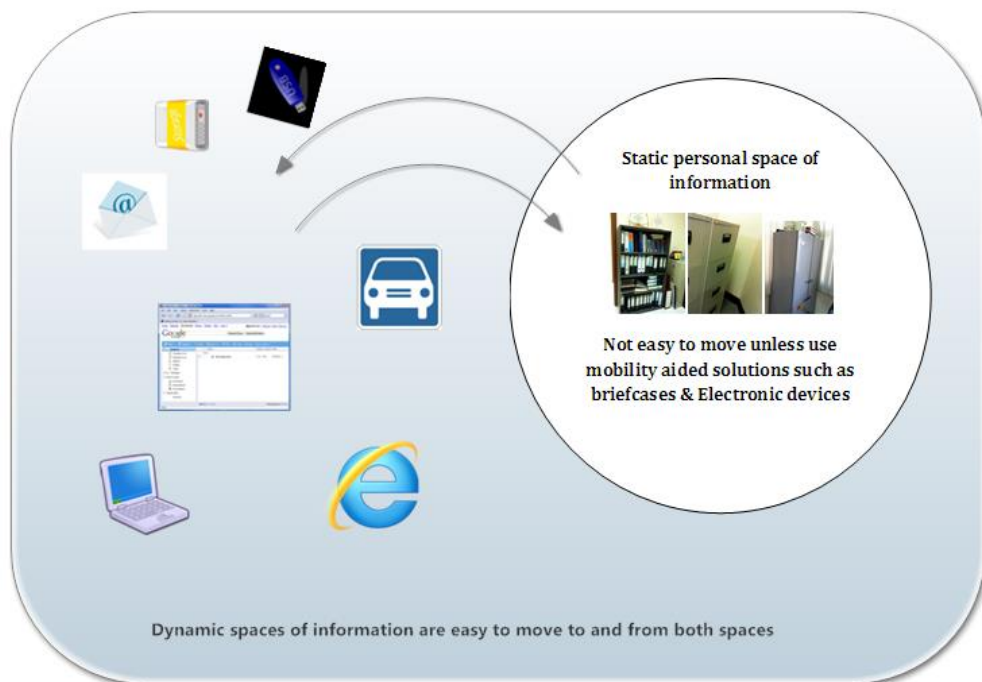
Figure 5-15: Limitations and flexibility of dynamic vs. static Personal spaces of information

5.3.4.2 Storage

Working in different locations necessitated the existence of the collection in each of the locations either by carrying the collection between locations or in some case keeping multiple copies at each location. So the question is for a scholar to decide up on keeping only in one location, or in all locations, or in way that can be accessed '*anytime anywhere*'. All types of research-related PIC were stored either physically in printed form, or electronically, and most of the time in both. The accumulation of stored information usually started from the scholar's hot spot (explained in 5.3.1) – which was the closest place to the scholar's reach – on their desk (Figure 20). The existence of information in the hot spot occurred during the active stage of the research. In the less-

active stages, the research-related information was moved to another storage place, which most of the time was in the same room. In the final stage of publishing the research, information storage was of a permanent nature which was usually outside of the main setting personal space of information. The three stages that summarises the density of research and the keeping, moving and storing locations can be visualised as in (Table 5.5).

Table 5-5: Storage in terms of research stage density (Hot spot approach)

Scholars experience was that working in different locations made it challenging to have a strategy to manage their collection as declared many participants experienced the problem of fragmentation and one of them said:

> *"Yes this is another problem that makes it more complicated; I work on a PC at work and two other laptops at home with another PC". (CON4-4-17)*

5.3.4.3 Summary

Five of the immediate causes affecting the collections that made them fragmented were: research, time pressure, quality of space, technology opportunity and support services. Although all five of them were found to be significant, time pressure and quality of space were found to be the ones that affected the fragmentation of the collections most (Figure 5.16).

Research-related PICs			
Huge	**Diverse**	**Hybrid**	**Fragmented**
Pile	Literature	Traditional Print	Main setting
Files	Research data	Electronic	Secondary setting
Piles of Files	Published Researcch	Mix of both	Mobile nature
Piles within a file	Administrative paperwork		

1. Needs of research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Figure 5-16: Factors to Fragmentation

5.3.5 Scholar's PIM practices

Achieving irretrievability of stored research-related PICs was not an easy goal for scholars. In order to understand the success and failure of retrieving stored information, an explanation of how scholars keep and manage their collections will be presented. In addition, reasons behind keeping and ways of re-finding stored collections will be discussed.

Due to the need for research, scholars were found to be seekers/ finders, keepers, and managers yet hardly re-finders. All the scholars who participated from the Education and Health colleges spent considerable time and effort manipulating their research-related PICs from the moment the research idea emerged until the process ended by publishing their work.

5.3.5.1 Scholars as finders/ seekers (information collectors)

As explained earlier in the emergence of research-related PICs (section 5.2) scholars seek and find information which they collect and build for the purposes of their research in different types and formats.

Scholars as independent information seekers found their information in many ways and from different sources, mostly independently, and rarely by seeking help from others

such as from librarians or even colleagues. Finders, who were independent, were mostly satisfied and mostly knew where and how to get the information needed, although it might cost them more time and effort. While others, who looked for support from librarians, were mostly disappointed due to the quality of services offered, the quality and amount of information available, as well as its relevancy.

> *"Well the stuff that I store for my research all are a result of my search for material either from Google mainly or specialised databases like science direct. So I search, then when I find what I need I save it and then print it out to use it for my research"* (HS2-7-17).

Any related information found was evaluated, then a decision made about whether to keep it and use it now, keep it to use it later, or discard it if was not good enough (see Figure 5.18 below).

As information seekers, scholars evaluated the found information at different levels, as valuable information was kept separate in some way to assure its best use either at the moment it was found or at some later time according to the evaluation outcome which mostly ends up by keeping everything (Figure 5.17).
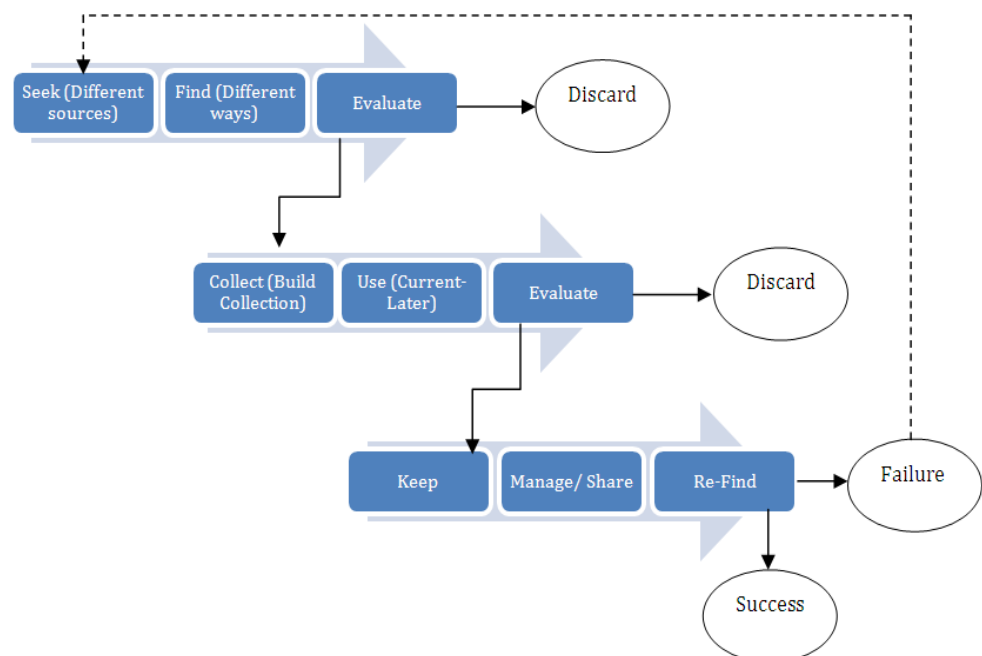
Figure 5-17: Levels of decision making on keeping vs. discarding during research lifecycle

5.3.5.2 Scholars as keepers

Scholars kept information related to their research once they had decided that it was useful and could be used in their research. Even useful information not related to a current research project was sometimes kept for other purposes when they found it interesting. Two steps of evaluation were identified when scholars were interviewed. The first step came after seeking and finding. Once found, the information was evaluated in terms of how useful and relevant it was for the current project, or possibly for other tasks within their field. Non-relevant and not useful information was discarded immediately at this stage (figure 5.17). Useful information, on the other hand, was kept either physically or electronically. Once built, the collection was subject to either immediate use or for use later. Once used, the information was subjected to another round of evaluation. If it was not needed after use, then it was assumed to be discarded, yet there was always an opportunity to subject the information to another round of evaluation and since scholars were trying to avoid making a decision, the default output is to keep. Many scholars did that at certain points during their research process. Information evaluation sometimes took place after each semester, when some scholars like to clear their offices by evaluating the piles on their desks and moving some of the information to another place. At this stage, some information was discarded while other information was likely to be kept longer or even forever. Once investigated, the scholars built their collection for the purpose of research to establish which features were caused by specific factors.

5.3.5.2.1   Reasons for keeping

When asked about the reasons for keeping the research-related PIC in the way found, scholars mentioned or showed by their behaviour some reasons that forced them to keep PICs. They explicitly mentioned that they kept them for re-using them and to aid their memory in carrying on tasks. Yet the observation and the data analysis showed that there were implicitly reasons behind keeping. Those reasons were the main factors of keeping information that shaped the features of research-related PICs. The implicit reasons behind keeping are research related, time related, technology related, environment of space related, foreign resources related, and most of all, self-positioning and presenting purposes. Scholars showed that some of the material might be needed for future research. Saving time was an important objective, because of the time pressure which they suffered from. Their working environment also helped them deciding on

keeping as much information related to their research as they could due to the availability of space for most of them and also for the low price of electronic storage devices with larger capacities. Scholars showed an attitude that if storage was available then there was no harm of keeping things. The language barrier was also an influence in that rare items such as information in Arabic or translated from English, important to some scholars, had to be kept.

Finally, though it is never directly stated in the data, it is evident from the pride they took in presenting their collections to the researcher during interviews that the collections are important to their feelings of achievement which is their self-positioning and self-presentation.

Scholars liked keeping everything related to their research to satisfy themselves and to show others who visit their spaces the amount of knowledge they added to their field and how they progressed in their career. Some of the scholars showed the researcher their files that held the research which was used for their career development (figure 5.18).

Figure 5-18: Research conducted for career development

The factors that motivated scholars to keep most of the experienced and created information were mainly the key motives behind their behaviour of keeping. Many backup procedures followed to help their fear of loss due the bad experiences they either encountered or heard from friends. This, along with their lack of trust in the support services, as well as technology use for some of them, forced them to keep and keep (figure 5.19).
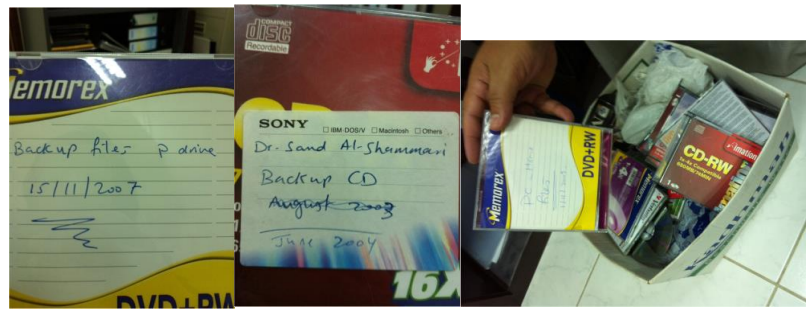
Figure 5-19: Backup stored for long time (HS2-7-17)

5.3.5.2.2   Strategies of keeping

For just one, or a multiple of the reasons mentioned above, scholars kept information in different ways. Two extreme patterns of keeping were found namely absolute keepers and absolute discarders (Figure 5.20). At one extreme, those scholars who were not bothered about evaluating the information at certain stages, or did not have time to do so, and did not trust that they could easily find it again later when needed,   tended to keep everything assuming that it was the best way to find it when needed. At the other extreme, those who trusted the information technology would discard everything found, assuming that they could *"easily find it again and again",* as described by some of the scholars. Between the two extremes, the remainder of the scholars interviewed could be located. Although they would not discard things easily, the absolute keepers were not happy with their way of keeping everything. They wished that there were better ways to help them in deciding whether to keep or discard some of the information. As it stood, keeping everything was the best way to make them feel safe. Storage space was also a factor that helped them decide to keep everything. Scholars argued that they had enough physical space to keep a huge amount of printed information. They also argued that electronic storage was available and cheap. Since both physical and electronic storage was easy, then why not keep everything? One of the participants mentioned that if the problem of storage space arose, he would consider discarding things; otherwise, keeping everything was the way to go.

Absolute keepers

Keeps everything found

physical and electronic storage available.

don't trust technology

don't trust support services

Absolute discarder

Discards everything found

trust technology

trust their ability of re-finding
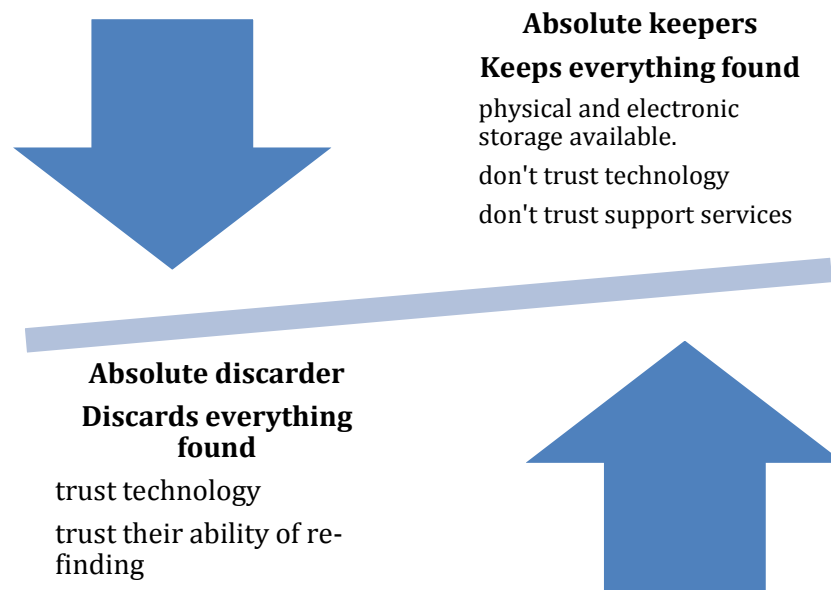
Figure 5-20: The keeping vs. discarding forces

5.3.5.3 Scholars as information managers

Once kept, the research-related information was managed by scholars in either a clearly-defined way and known by the scholar, or in an undefined way which was random and lacked a defined strategy. Those who showed a defined way of managing their collection followed it by managing each of part of the collection. They started by establishing a folder to hold their collections physically; the folder was labelled with the title of the research or with a keyword that led to the research once searched. A parallel electronic folder was then established and used to include information. Physically, some scholars used specific tools to help them organize their collections, such as envelopes, carrier bags, or coloured plastic folders. The coloured folders strategy was used by several scholars, but one of them used it to indicate the number of research projects in hand with a maximum three colours only on the desk (figure 5.21). One or two projects was fine, but no more than three, as he felt only able to manage a limited number of simultaneous projects.

Figure 5-21: Using colours in organizing collections

Although coloured folders were used to distinguish one project from another, the information within each folder was piled in chronological order. All the diverse types of research-related information could be found in one folder. As the folder was limited in size, other information related to the same research project existed in other locations, e.g. storage of the data collected for the project. Scholars would have preferred to keep everything related to the research in one folder, but due to space limitations, it was difficult to achieve. Other than in coloured folders, scholars mainly kept their research-related collections in paper envelopes, carrier bags and box files (Figure 5.22).

Paper envelope (CON1-1-17)   Carrier bags (HS5014-17)   Files and Box files (CON4-4-17)

Figure 5-22: Different ways of storing research-related PICs

During the active stages of the research, collections were found to be kept to hand on scholars' desks. However, once the research had been published, the collection was stored in a permanent place outside of the main work setting (Table 5.2 item 3). In the same way, electronic documents were kept on the desktop PC during the active research stages; but once the research was completed, they were moved to other folders or external storage devices. In spite of scholars' attachment to a main setting, their electronic collections were also fragmented in terms of its location, with scholars using

multiple devices and many forms of storage (emailing items to themselves, flash drives, external hard drives, etc.).

One of the main drivers for how information was managed was concern about information security. The importance of this appeared in mobile storage options that could be accessed at anytime and anywhere. One scholar moved their information between different locations by storing it in the boot of their car (see Figure 6 table 5.2). The lack of trust in library services due to a perception of their poor information resources forced scholars to collect, keep and hence manage information in order to satisfy their information needs. Also the deluge of information from a variety of sources obliged scholars to collect and keep information that was substantial and related to their research. In contrast to previous times, such a deluge of information encouraged scholars to be self-dependent and not rely on library visits. In this context particularly, scholars found building a personal collection was a way of building their own legacy and identity, in addition to it being a convenient way of sharing information with others. Scholars liked to keep publications displayed on open shelves, and kept spare copies to present to visitors.

Electronically, research-related folders were created from the very beginning of the information collection process. The electronic folders were usually on their desktop PCs during the active research stage. Once published, the electronic research folder could either be moved to a different location on a PC other than the desktop one, or deleted from the desktop PC after being backed up on an external storage device such as CDs, USBs, and external hard disks (figure 4.24).

Figure 5-23: Diverse electronic research-related PICs inside a research folder
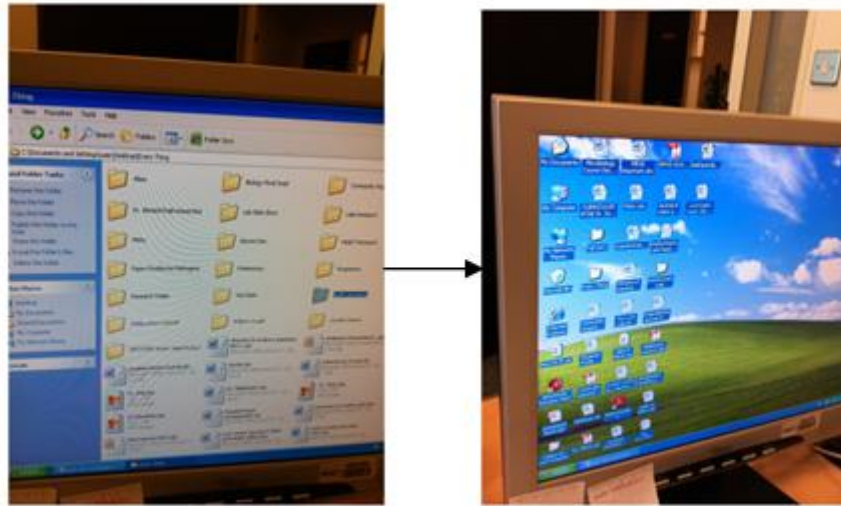
Figure 5-24: Keeping research folder on desktop PC during active stages and moving to another folder after publishing

5.3.5.4 Scholars as Re-finders

When attempting to re-find information, scholars showed four patterns of re-finding, namely: finders-keepers, finders-not keepers, loser keepers and losers-not keepers. The two absolute extremes of keepers and discarders showed both patterns of re-finding and not re-finding. Sometimes, absolute keepers managed to re-find what they kept (Finders-Keepers) and sometimes not (Loser-Keepers). In the same way, not keepers, who discarded everything and were not bother about keeping, showed the two patterns of re-finding (Finders-not keepers) and sometimes failed in re-finding (Loser-not keepers).

It might be that a common main reason for keeping information is to be able to find it later, or for other reasons that are explained further (5.3.5 section 1.3). Scholars used different strategies to make their stored collections retrievable. One of the female participants from Health College did not manage to re-find a selected research-related item from her collection and mentioned that: *I can't recall now... you know those times when you want something and you can't find it available.. This is the case I believe.* (CON3-3-17). This opinion was shared by other female participant from the education college when mentioned:

> *"I can't find everything I want from the stored information you know as I researcher I cannot get exactly what I want and I keep searching on and on and on"* (BE5-13-17)

When scholars were asked to retrieve research-related information for the project they were working on, they took a long time to locate the information, although some of it was actually available on their desks (if printed) and somewhere on their PC (if electronic. '*Cannot re-find*' was a phrase used by many of the participants when asked to re-find something. Many scholars admitted that, while they kept this mass of information, they doubted they could actually re-find things from the collection they had built up; instead, they said they would probably just do a new search from the beginning in the case of literature where they easily google it again. In the case of data, re-finding was different, as data is a particular piece of research is rarely needed again for another research project unless it was a continuation of the original one.

> *"As I said I don't throw anything away, I have everything here, around 30 references; I kept them here all together. Just be careful about what I mean. These 30 references are from, for example, 10 research projects because from each research I might find more than one article [secondary references]. So yes I can find them but generally as I told you if I need anything I can go and search for it I can easily find it again and again. If I didn't manage then I seek the librarian's help but for this research I did not seek the librarian's help at all. In general I keep my references in PDF files but I can find then as I said by searching again". (CON2-2-17)*

When data was analysed, it was found that, as retrievers, scholars fell in one of four categories. Those who tended to keep everything can be either finders or not finders. Also, those who tended to discard everything can be either finders or not finders. Most scholars were found to be keepers and not finders as in category C (see Table 6 below) mainly because they cannot recall the place they stored something because of the way collection occurs within their research process. Scholars mainly fall under category C because of many reasons such as conducting multiple tasks at the same time and working under time pressure which are more explained in details under factors shaping the features of research-related PICs below (see section 5.4). When attempting to re-find information, scholars showed four patterns of re-finding, namely: finders-keepers, finders-not keepers, losers keepers and losers-not keepers. The two absolute extremes of keepers and discarders showed both patterns of re-finding and not finding. Sometimes, absolute keepers managed to re-find what they kept (finders-keepers) and sometimes not (loser-keepers). In the same way, not-keepers, who discarded everything and were

not bothered about keeping, showed the two patterns of re-finding (finders-not keepers) and sometimes failing to re-find (loser-not keepers).

Table 5-6: Keepers/ Finders relationship

Scholars retrieval efforts	Keepers	Not Keepers
Finders	A Don't trust tools Keep everything Manage or not manage kept information Kept information can be found Works most with both print traditional versions	B Trust tools and services Trust Internet Depend on technology Confident of retrieval efforts Work more with electronic versions
Not Finders	C (most found) Keeps loads Keeps mostly everything in both versions Redundant copies Fragmented storage Don't trust or rely on specific tool or services Never manage to retrieve kept information Work heavily with both versions	D Don't keep Can't re-find

5.3.5.5 Summary

Because active keepers conducted less evaluation in order to discard unimportant information, scholars encountered accumulation of research-related PICs that are hard to manage and retrieve. As active keepers, they wish to be successful re-finders. Yet they showed active keeping efforts with unsuccessful re-finding outcomes in both format traditional printed as well as electronic. Although one might suppose that electronic versions are easier to re-find, the participants showed that even electronic versions are harder to find. This explains why they were keeping hybrid collections even when they felt that electronic collections are better. They also showed some

attempts at using labelling, and coloured folders in order to categorise their traditional collections. Which means depending on one format is such a hard task and dealing with electronic versions is even harder to achieve. They wish to save their time and effort in order to conduct their research in a full supportive environment. However they showed a struggle in having such an environment. Out of the analysis of the data, the researcher identified factors that shaped the research-related PICs which will be explained in the following section (5.4).

5.4 Factors shaping the features of the research-related PICs

The research findings suggest that two different layers of factors are driving the emergence of research-related PICs features. Some factors were affecting the features of the research—related PICs directly, named immediate factors. Those immediate factors were also affected by the second layer of factors which were shaping the collection in an indirect way. The importance of the factors as expressed by the participants gave them the priorities as appeared in the model. Therefore, the immediate factors showed larger effect on their collections than the underlying. Whereas, the underlying factors shaped the immediate factors, hence the collections in an indirect way.

- The immediate factors: encompasses the common elements that shaped the appearance of the PICs' features due to its immediate action on the research-related PICs.

- The underlying factors: encompasses the main elements which are related directly to the scholars themselves their attributes, shaped the appearance of immediate factors. The underlying factors affected the immediate factors directly yet shaped the features of the collections in an indirect way.

Accordingly, the emergence of Research-Related PICs encompasses the main features of PICs. It is important to note that emergence of the PICs has been a result of many factors. In addition, different set of causes, effects, and actions were involved and they were the main tools assisting the appearance of each layer. In this section, an explanation of each level of the two factors will be presented, as their effects on the collections and the interrelation between them.

5.4.1   Immediate factors

When scholars' offices were investigated and interviews were analysed, some factors were found that shaped the features of their collections in a direct way causing them to

be huge, diverse, hybrid and fragmented. These are the immediate factors, namely The need for research; Time pressure; Environment of the work space; Technological opportunities; Support sources; Foreign resources; and Self-positioning & self-presentation. These were the most frequently-seen factors which shaped the research collections of scholars in PAAET. They were described as immediate because of their direct effect on the collection's features.

5.4.1.1 The need for research

Scholars in PAAET – as in any other universities - are required to conduct research for several reasons, such as for career development and adding knowledge to their professional field by exploring and testing found phenomena, in addition to their own interest in research as academics, as one of the participants said about research when asked about their position in research: *First I have to say that we have to do research. It's important for our professional growth (CON1-1-17)*

The requirement to undertake research came from PAAET's rules and regulations for scholars for their career development, and there set policies. Research was a requirement for career development within the professional field and subject area taught by the scholar. Such a need to conduct research created a sense of challenge towards it. This applies more to non-Kuwaiti scholars than to Kuwaiti scholars specifically than it is for Kuwaiti an issue will be discussed below in the nationality factor. PAAET rules for scholars' career development is conditioned by their research projects achievements. A main point related to research subject is that PAAET require senior scholars to conduct several research projects within their major subject focus. This requirement makes it very important for a scholar to keep all research-related PICs for future research. In addition, limiting the research subject to certain area was frustrating for researchers since they might be interested in other areas within their discipline. If a scholar conducted a piece of research in other than expected area by PAAET it would not be approved for career development, especially in the early years of their career, as one the participants mentioned:

> "For career development we are asked to conduct studies in certain subjects which are limited to our main discipline as other subjects will not be accepted for career developments. Sometimes I feel... I mean me as a researcher, or thinker... I read other topics that I want to measures it by conducting a research, but at the end they will not be taking into consideration and will not be used for

my career development therefore, what most of us do is that they concentrate on the limited options of topics until we finish the development at that time then we can do research on different topics" (BE7-16-17)

It was found that scholars within PAAET departments worked on research within limits that forced them to search for and find research-related information. In addition, they had to keep found information by building PICs, which they did either through personal effort or in some cases just by serendipity. Their fear of not finding what they need forced them to value every piece of information for the need for research.

The information used for a research project was valuable for scholars, and therefore it was kept even after publishing, in order to use it in the future for the same research project or even for commencing work on another research project within the same subject area. The joint work also and collaboration between colleagues made scholars to be more committed to keep research-related information in case if one of the colleagues asked about it.

"I like the research practice but all [t]hat I have done so far since I came back from my study until now is just joint work with my colleagues. We have done some research about globalization, discourse, and mostly related to our discipline which is education because you know the career development is connected to our research practice. If you don't conduct certain research, then you will not develop" (BE2-8-17)

Within that need of conducting research, specifically in early stages of career development, scholars find it very important to keep their research-related PICs in order to conduct future research. The need for research then helped the collection to be huge leaving scholars with no choices than keeping. The need for research and only the need for research forced the collection's diversity emergence in this specific context or the research. As explained in the emergence of research-related PICs (section 5.3.2.4) it showed that there is administrative paperwork required to be processed for a research project (see figure 5.8) and this adds more tasks to scholars to be handle within different management levels which needs follow up and requires long time. One of the scholars mentioned that *the agreement usually takes long time that a research topic might be out of date and we lose interest in (CON4-4-17)*. In addition, the research affected the hybridity as well as the fragmentation of the collection and affected the four explained features of the collections as can be visualised in (Figure 5.25).

Research-related PICs			
Huge	**Diverse**	**Hybrid**	**Fragmented**
Pile	Literature	Traditional Print	Main setting
Files	Research data	Electronic	Secondary setting
Piles of Files	Published Researcch	Mix of both	Mobile nature
Piles within a file	Administrative paperwork		

1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Figure 5-25: The need for research factor

5.4.1.2 Time pressure

Besides teaching, research added a substantial task to scholars to be carried out during their daily working hours. "*Unlike scholars in the UK or USA*" (BE1-5-17) - mentioned one of the participants - the working hours in Kuwait are much shorter due to many reasons which are cultural, social and environmental. In Kuwait it is very common that the whole family join together for lunch in the afternoon. A long time ago it used to be at 1 p.m. while now it's later, up to 3 p.m. This practice is possibly due to the climate which requires people to go back to their home in the afternoon for a break to avoid working in very high temperatures most of the year. Some workers stop their work at that point while others resume and go back to work at 5. For scholars, it's more flexible and they can stay when they want to, yet it is very common that the administration office is closed after 3 p.m. so if they require any research-related paperwork, it has to be done during working hours. Although scholars can stay as long as they want in their offices, it was noticeable that the culture affected that for many of the scholars and shorter working hours applied time pressure on them. Within the short time limit allowed, multiple research tasks had to be done at the same time by scholars, which made the time pressure affect their collections even more. Scholars were found to be frustrated with the restrictions on their time, and therefore tried to save time by storing

most of the discovered information in a way that would save time later when they need to re-find things, instead of having to start again from the beginning.

Time pressure was not due multi-tasking only, but within the research process itself. Some scholars mentioned that sometimes they feel pressure when they have to publish multiple projects at a time with deadlines to meet. Time pressure forced shaping accumulating of the collections within the research active stages. Needs to meet the task of the day in order to meet the deadlines shaped the collections fragmentation in order to complete the work in other setting when the scholars have to change their working space. Moving back and forth in their working spaces makes it necessary to print and carry some sources of literature. In addition, it required scholars to use electronic versions to update their work and carry or the research here and there (picture 5.26).
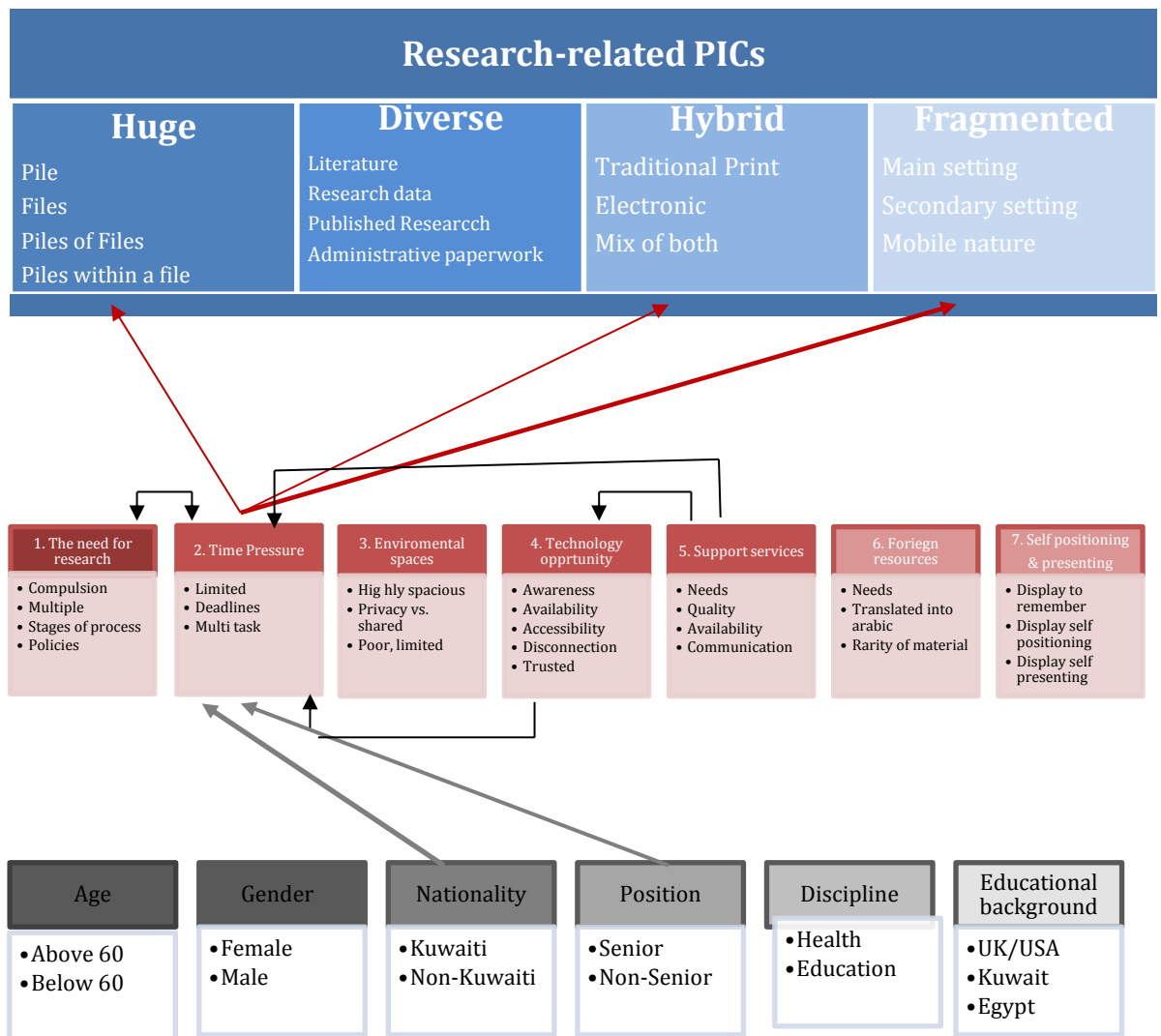

Figure 5-26: Time pressure

5.4.1.3 Environment of the workplace

The quality of space available affected the size of the collection as well as its hybridity and fragmentation (figure 5.27). Those who were lucky enough to have large offices, were not worried about storing huge amounts of information in their collections Mainly the senior scholars who have the opportunity to store their collections in a storage room while they have larger rooms and in some cases several rooms in two buildings. In PAAET some of the departments are gender segregated and therefore, some of the scholars have to have two work offices one in each campus, the boys and the girls. That led to more fragmentation. It also led to hybridity since keeping collections in several locations meant storing information in both. Yet the nature and format of the information stored may vary according to tasks need to be carried out, as one of the participants showed a huge collection in one work office and described the other office as empty from traditional print collections.

> *"The other office seems to be empty from all papers more than this is. In the other office it's very clear that I rely on the electronic versions of everything. Well, even in my home office I don't keep papers. I have an office at home which is spacious and wide, it has book shelves full of books which I never look at. I prefer electronic in everything. Even my teaching resources and modules they are all became electronic. I also sometimes like to read out side in one of the cafes so I usually carry my laptop and some papers in an envelope. The papers can be some decisions or memos to remind me about things to do as a follow up to messages. So the most important in this case is my laptop and my flash memory which I don't ever let go here you see I am carrying it in my pocket"* (HS1-6-17)

It has been noticed that some participants say something that they believe in while the observation and the photos showed some different evidence. For instance the participant quotation above showed that the scholar prefers electronic, and argued that he didn't keep printed while the observation and photos (Figure 5.27) showed the opposite. This might be because people sometimes believe they do things while in fact they are not.

Figure 5-27: Accumulation of traditional prints in an office which thought to be electronic based (HS1-6-17)

On the other hand, those who suffered from limited space have to store their research-related PICs in a location other than their main setting (work office) such as in home office as one of the participants mentioned: *Here I don't think the environment in quite productive for research (BE6-15-17).*

The environment of the work area of scholars in its both main and secondary settings as explained in section 5.3.4 – sub-sec 1 Personal space of information, affected the research-related PICs directly. The environment of the work area played a big role in forcing the collection's fragmentation mainly in addition to hybridity and size (Figure 5.28).
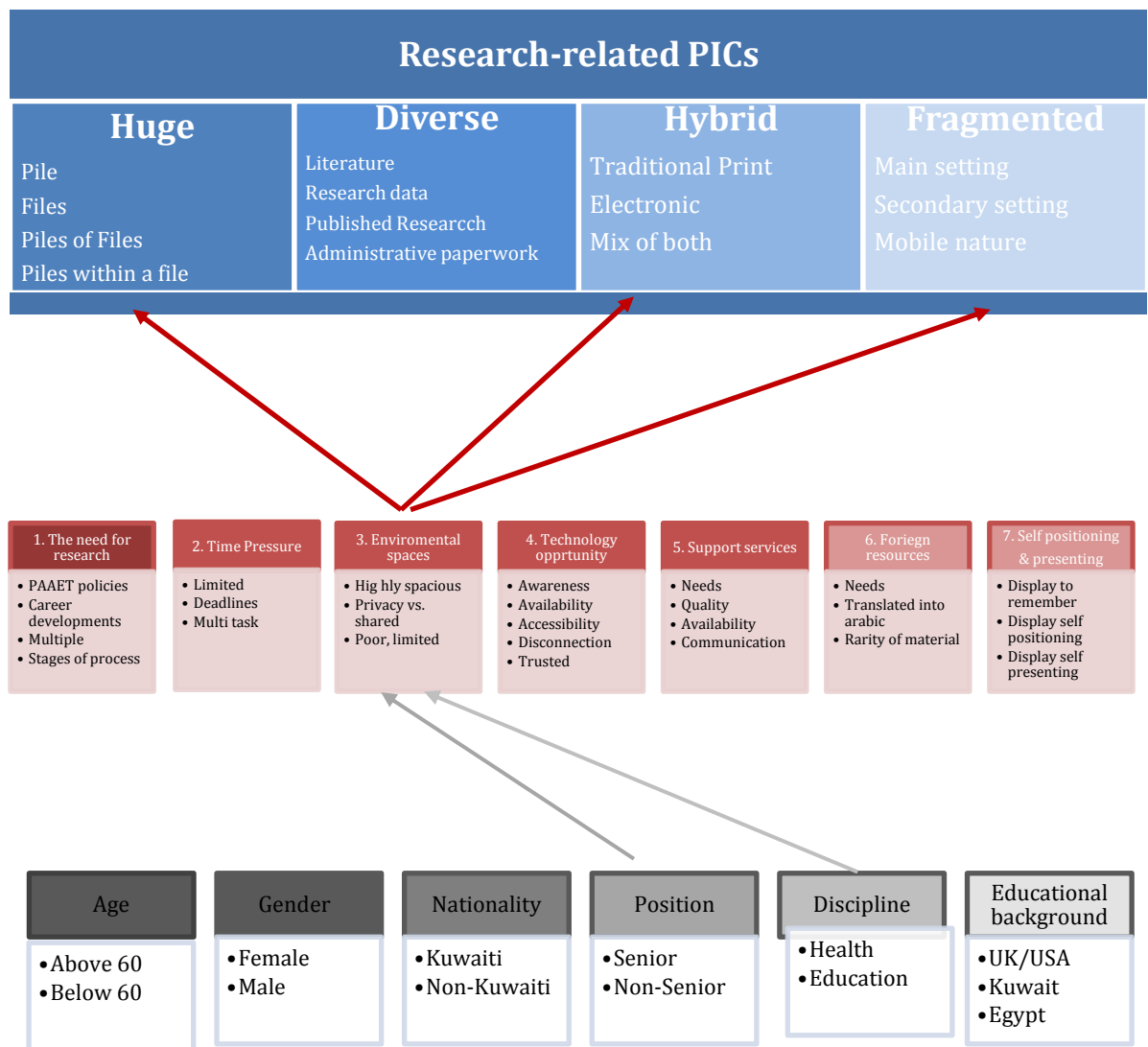
Research-related PICs			
Huge	**Diverse**	**Hybrid**	**Fragmented**
Pile Files Piles of Files Piles within a file	Literature Research data Published Researcch Administrative paperwork	Traditional Print Electronic Mix of both	Main setting Secondary setting Mobile nature

1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• PAAET policies • Career developments • Multiple • Stages of process	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Age	Gender	Nationality	Position	Discipline	Educational background
• Above 60 • Below 60	• Female • Male	• Kuwaiti • Non-Kuwaiti	• Senior • Non-Senior	• Health • Education	• UK/USA • Kuwait • Egypt

Figure 5-28: Environment of the workstation

5.4.1.4 Technology opportunity

Information technology development has recently presented a variety of opportunities to scholars in terms of conducting research. The facilities offered by the Internet and the easy to use tools available for current of applications, challenge users to become more effective users of the solutions offered. Such opportunities helped scholars to be independent in finding information, yet helped in growing the amount of their collections. Scholars showed that they are aware of some facilities that allow technology to help in managing their information overload and their growing collections due to the variety of sources. Such vast options of information available everyday helped scholars build their information collections in an active way as well as storing them in different tools such as email, bookmarks and others. Email specifically, was a highly used option by scholars to save, use and manage their collections for short and

long term. They showed that they trusted the email option that they can rely on as one of most of the scholars mentioned:

> *"Yes I use my email to save and backup my files in case my computer needs to be formatted" (HS2-7-17)*

The ease of searching and availability of information offered by developed tools which allow receiving information by subscribed channels, caused scholars to keep material without a chance to evaluate the information due to time pressure. In terms of searching, scholars showed that they are not happy with the searching tools available to them. Sometimes they showed lack of awareness due to their lack of interest as well as trust of the technological tools provided by PAAET, such as using the portal gateway or the official email in addition to the databases for locating information for their research.

> *"I don't use PAAET email, I use my personal email, honestly I feel more confident and comfortable [with it]"* (BE2-8-17)

Some also complained about the unavailability of databases when they were aware of them. Therefore they thought that any locally supportive tools are useless and inaccessible. They suffered from disconnection and discontinuing services supporting search and therefore they lack trust of technology opportunities available from PAAET. This forced them to be more independent seekers, finders and keepers for their collections. Scholars also showed their confusion about tools available and their awareness while they searched for their own sources of tools to manage their research process and collections. One of the tools mentioned by two of the participants is Questia.com. It provides a tool for creating a research project, collecting literature sources from a database library, highlight their readings feature and show them where they stopped when they logged out (see figure 5.29).

Figure 5-29: Research PIM manager (Questia.com)

They showed that this kind of tool they get introduced to by their academic social network and they are using it heavily to locate, store and track their progress in each research project. They showed their disappointment in the unavailability of such tools from the university. As they were subscribing to that tool by themselves for several years and paying an annual fee, it was clear that it was seen as really worth it. They also showed that scholars in Kuwait can afford it since they are financially stable compared to other countries, yet their disappointment is that there might be better services which should be the role of service providers in PAAET to announce and make them aware of it. The issues altogether helped forcing the collection to be huge, hybrid and fragmented at the end (Figure 5.30).
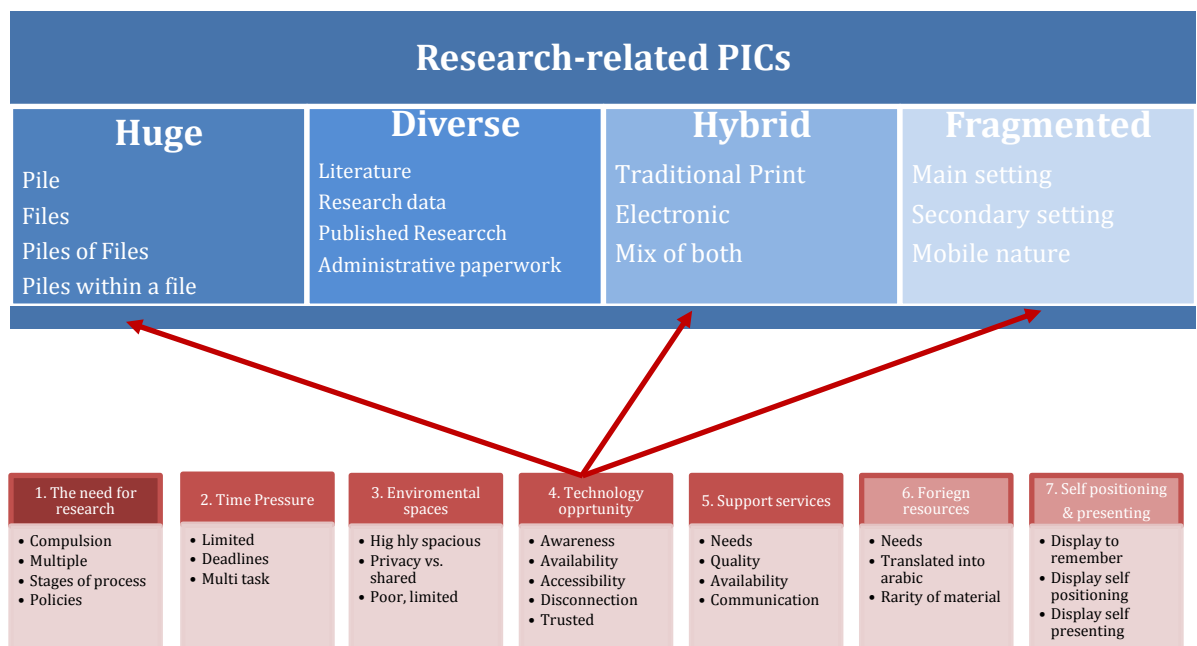

Figure 5-30: Technology opportunity

5.4.1.5 Support services

5.4.1.5.1   The Need for research support

One of the main driving factors that shaped the way the scholars' collections evolved was the support services available. Most of the times during the interviews they have to point to what they need and what they are currently have available in terms of supporting research. They also showed their independence from librarians' support when one of the participants said:

> *"I can find my information. I don't ask librarian unless if I didn't find or if I need them to print for me" (CON3-3-17)*

Although scholars were independent in collecting and managing their research-related PICs, they declared that there is a need for support:

> *"To be honest I feel that everyone needs help once their collections and duties gown and even if I still can manage it I will need that help soon" (HS2-7-17)*

When participants were asked about the services offered to them by the PAAET libraries, all showed their disappointment and dissatisfaction with the type and quality of services offered to support their research tasks. Scholars expected support to be available to aid the finding, keeping and re-finding tasks carried out during their research projects. In addition, they expected a better quality of service compared to what was offered by Kuwait University and other educational institutes outside of Kuwait. One of the scholars argued that the level of digital resources offered by LIBRANET did not provide full text articles when searched and not within the subject area needed: *"LIBRANET don't meet our requirements and they are not enough" (BE2-8-17)*. The same participant continued that taking personal responsibility for finding resources was acceptable at that stage, such as taking out a personal subscription to certain databases, as well as attending conferences and book fairs:

> *To be honest I don't use them at all because most of my work is connected to my resources which I used from the USA as I feel they are better resources so I didn't try LIBRANET. I also feel happy with my resources. (BE2-8-17)*

5.4.1.5.2   Quality of services

Many scholars described the information resources provided by the support services such as databases or books in the libraries as very poor and not meeting their requirements for the purposes of research. LIBRANET, for instance, is a digital resource that provided some information in electronic format, but was not used by most of the scholars, as one of the participants stated: *"LIBRANET don't meet our requirements and they are not enough" (BE2-8-17).*

They also mentioned the services provided to support their research and described them as poor in terms of the type as well as the quality. They mentioned that they would expect better communication services, and   better resources to be provided that met their requirements.

5.4.1.5.3   Poor communication

The scholars interviewed pointed to the poor communication between themselves and librarians as the main services providers, in addition to other involved staff in PAAET, who could play a role in developing the quality of the services. They expected some kind of meetings on a regular basis or a committee that represented the scholars in order to define the services needed, rather than wasting time, money and effort on useless services. Scholars showed that communion efforts with their colleagues were a device for exchanging information and as source of getting information sometimes:

> *"I also ask my colleagues as one of my information sources I can get benefit sometimes" (BE1-5-17)*

Communication affected some other immediate factors laterally, and they are the need for research, Time pressure, and foreign resources (figure 30). This was very noticeable in the way the scholars communicated with support service providers such as librarians, heads of department and administrators. While they were complaining about the bad communication, many of them actually said they don't communicate with other services providers in PAAET although they thought it would be better if they do so. Also they believed that if the quality of support services is improved then they can save much more time to use for their research. The rarity of Arabic publication also was badly affected by the support services, as scholars have to spend time and personal effort to have such material while if the support service might provide fast and more professional support.

5.4.1.5.4   Lack of trust

From the bad experience that many scholars had been through with the library services, they did not trust the services provided any more, to the point where even if there were a good quality of service, scholars would not trust them.

The support services ultimately had an effect in making the collections to be huge, hybrid and fragmented (figure 5.31).
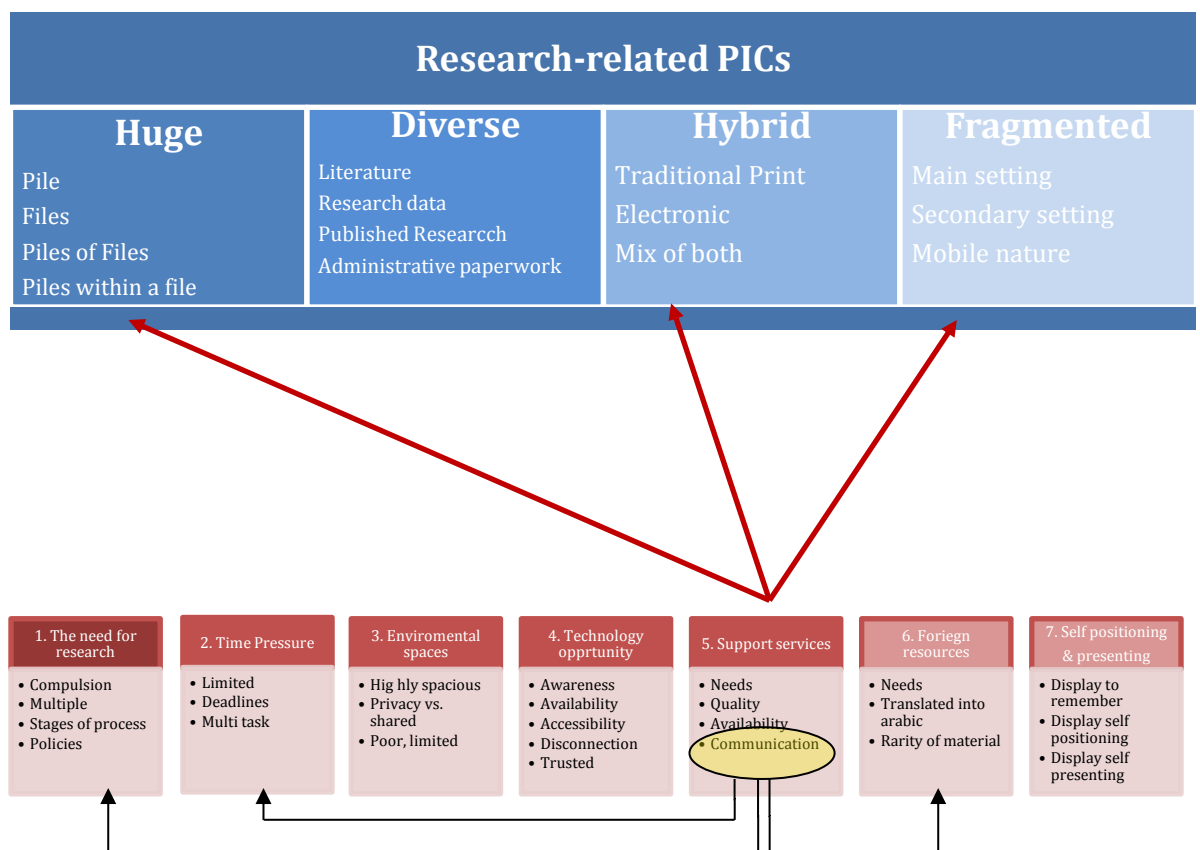

Figure 5-31: Support services

5.4.1.6 Foreign resources

It was found that availability of English resources was one of the factors that immediately affected and shaped the features of the scholar's research collections, which in turn was driven by age of the scholar, their discipline, and the place where the scholar obtained their PhD. One of the participants in the Education College, who was over 60 years old and had obtained his PhD from Cairo in Egypt, depended on Arabic resources for several reasons. One of which was the level of his use of the English language, which resulted mainly from the place his PhD was obtained from, and the discipline he majored in, as he taught modules in the Arabic language rather than in

English, as others also did, especially in the Health Education colleges. Since he only taught in Arabic, and felt he was too old to learn the English language, he was an Arabic resources seeker, even though he believed that there were better resources available in English. Therefore, he was willing to attend book fairs in order to purchase good Arabic resources as well as some translated from English into Arabic. Seeking quality Arabic resources was hard, due to the quantity and quality available, and the limited number published online. Scholars thus expected support from service providers to meet their Arabic resources needs, as well as providing the technology to access powerful Arabic resources, or at least provide connectivity to other well-known databases outside PAAET for instance. Arabic resource seekers were looking for information in a traditional way by visiting book fairs mainly to collect recent books as mentioned in the following quotation from one of the participants:

> *"I also usually visit any book fair mostly the one held here in Kuwait every year and I make sure to buy the most recent publications in Arabic or English but translated to Arabic because my English is not so good. I sometimes buy 10 – 15. Before I used to depend on the books and resources imported from Egypt but now I do not collect from Egypt with all my respect to them but there are few published works that you think of good value or simplified to our focus in the discipline. Therefore I collect others published for example from Syria, Iraq, Lebanon, as I might find good information" (BE1-5-17)*

This way of finding English information resources affected the size of the collection, since the preference for keeping was very strong, and dominated any thought of discarding. Hence, if the size of the collection was huge, keeping it in one location was difficult, which led to a fragmented collection in terms of physical location. Electronic resources in the Arabic language were also rare, and it was found that all the scholars in the health discipline needed English resources, and used them heavily. This forced the research-related PICs to be different, including Arabic resources for certain scholars. English resources are available in good quality on the internet, which makes it easier for it seekers to find them. On the other hand Arabic resources are poor in their quality of online publishing; therefore it is a problem for those who need them. English resources seekers were more happy and confident in their findings efforts and less worried about losing them, while Arabic resources seekers were worried and need to extra effort to find their resources by visiting book fairs. In this way their collections has a feature of rarity and keeping them is more critical than for others. Foreign resources helped

scholars to collect a variety of information sources and accumulate rare material which they spend more time and effort doing. Accumulation of such information also made it necessary to keep them in multiple locations while they were growing. This was also influenced by scholar's age, discipline and place their PhD was obtained from in the second level of factors (Figure 5.32).
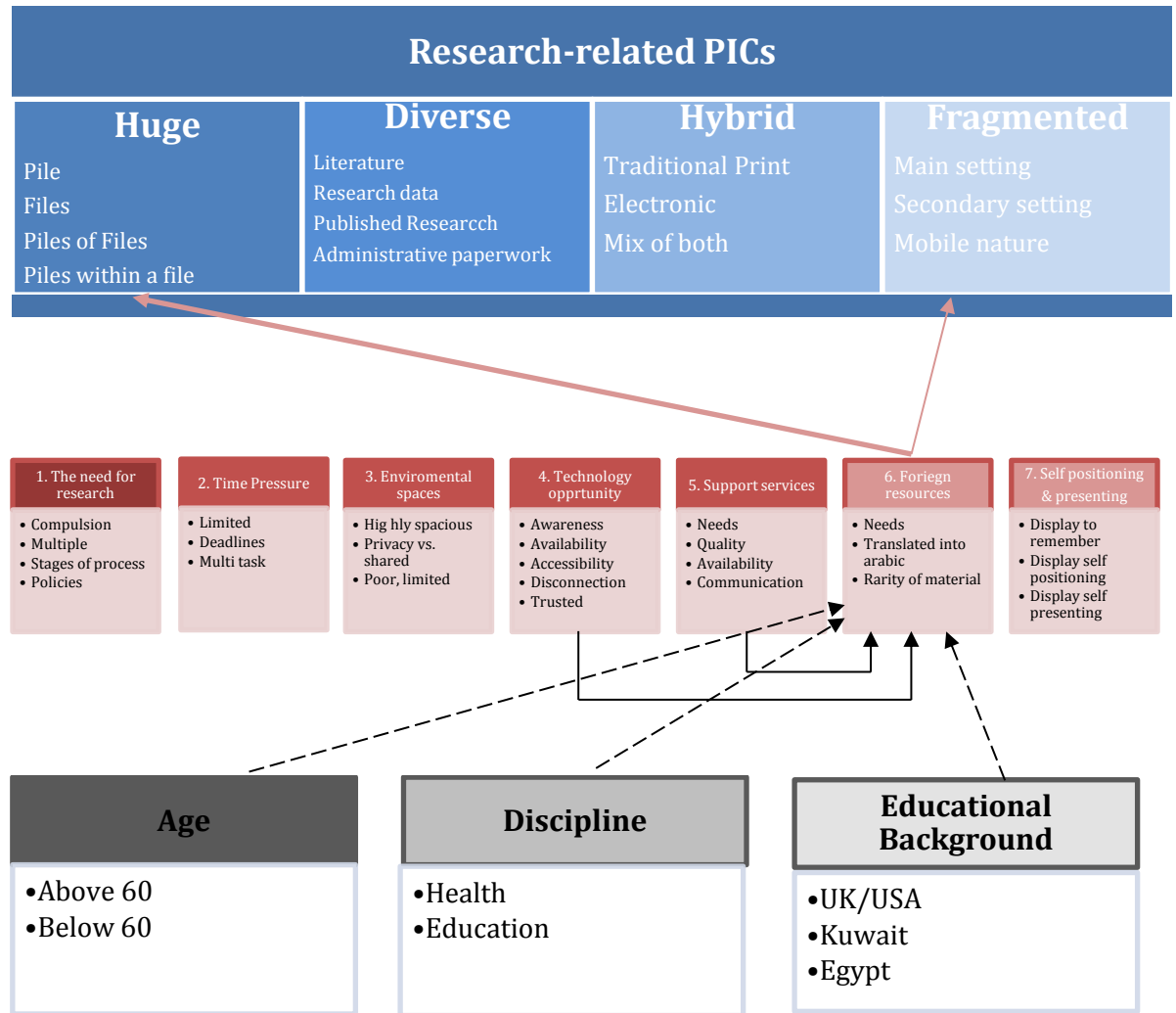
Figure 5-32: Foreign resources

5.4.1.7 Self-positioning & Self-presentation

It was found that some scholars liked to display their collections in their personal working spaces. Some items were meant to be displayed rather than kept in storage units and drawers. The displayed collections were not limited to books and research output. Instead it included several other items that were displayed in some way, such as awards and certificates. Such items were used for several purposes which are not limited to, as they declared, for sharing and remembering. The researcher understood that some

research-related PICs were displayed for the purposes of self-positioning to satisfy themselves and self-presentation to others in addition to remembering.

5.4.1.7.1   Display as a reminder

Some of the scholars displayed their research collections in their personal working space as a way of reminding themselves of tasks that needed to be done. When the collection was visually displayed, it helped them to remember or keep track of tasks that needed to be undertaken within their busy day. One of the participants mentioned that:

> *"You know I kept these papers here so that I can remember to take it with me in my bag and sometimes I keep my key on top of it. And this paper here you see there is a pen on top of it because if I'm reading I might write some notes"* *(HS2-7-17)*

This can be seen in Figure 5.33 below

Figure 5-33: Display as a reminder

5.4.1.7.2   Display for self-positioning

On the other hand, other scholars displayed their collections just as a way of reflecting their personal identity. Scholars differed in the way they liked setting their work out. For purely personal purposes, without any task-oriented reasons, many scholars liked to display their collections on open shelves rather than hiding them in closed cabinets or keeping them in other locations such as storerooms or other work places. Scholars liked to see their progress around while they are working in their offices, like the published research in figure 5.34 below. Scholars sometimes displayed non-research related items like pictures mounted on the wall in figure 5.34. Although the items were not related to

research, they were used to inspire their thinking and sometimes to look at when they break during the research process. Wanting to feel they were in a comfortable place having favoured items around helped scholar's mood and motivated their progress.

Figure 5-34: Display as self-positioning

Scholars needed to look at their progress to satisfy themselves in their academic career position in terms of research as well as career development. They also showed that they like to display their research output to present to others who were visiting their offices, to show their academic activities in terms of research.

5.4.1.7.3 Display for self-presentation

Some of the displayed collections, such as books and published research, were kept on open shelves and others were stored in glass-fronted cabinets in order to be displayed, not only to the scholars themselves but also to others who visited their work places. Others, such as colleagues or students who visited their offices, could be welcomed by a book to read or some of the scholar's published research. Displaying was not only for welcoming visitors, but was also for sharing with colleagues, and presenting it as a gift for visitors as the collection in (Figure 5.35) below shows.

Figure 5-35: Display published research

Display for self-presentation to others is another reason for displaying their own collections in their personal working spaces. If someone visited their offices, they loved to show them their collection, and they were proud of the unique nature of it.

Figure 5-36: Display to self-presentation to others

The display was set out on a table as there was sufficient space in the room to do this, as shown by the horizontal line in Figure 5.36. Also shown in the figure is how the displays were connected to the gender factor, as shown by the vertical lines. Female scholars liked to display their collections in an attractive and organised way, and presented them better than male scholars did.

The self-positioning and presenting of scholars was slightly affected by gender factor and added factors to the features of the collections to be huge, diverse and fragmented (figure 5.37).
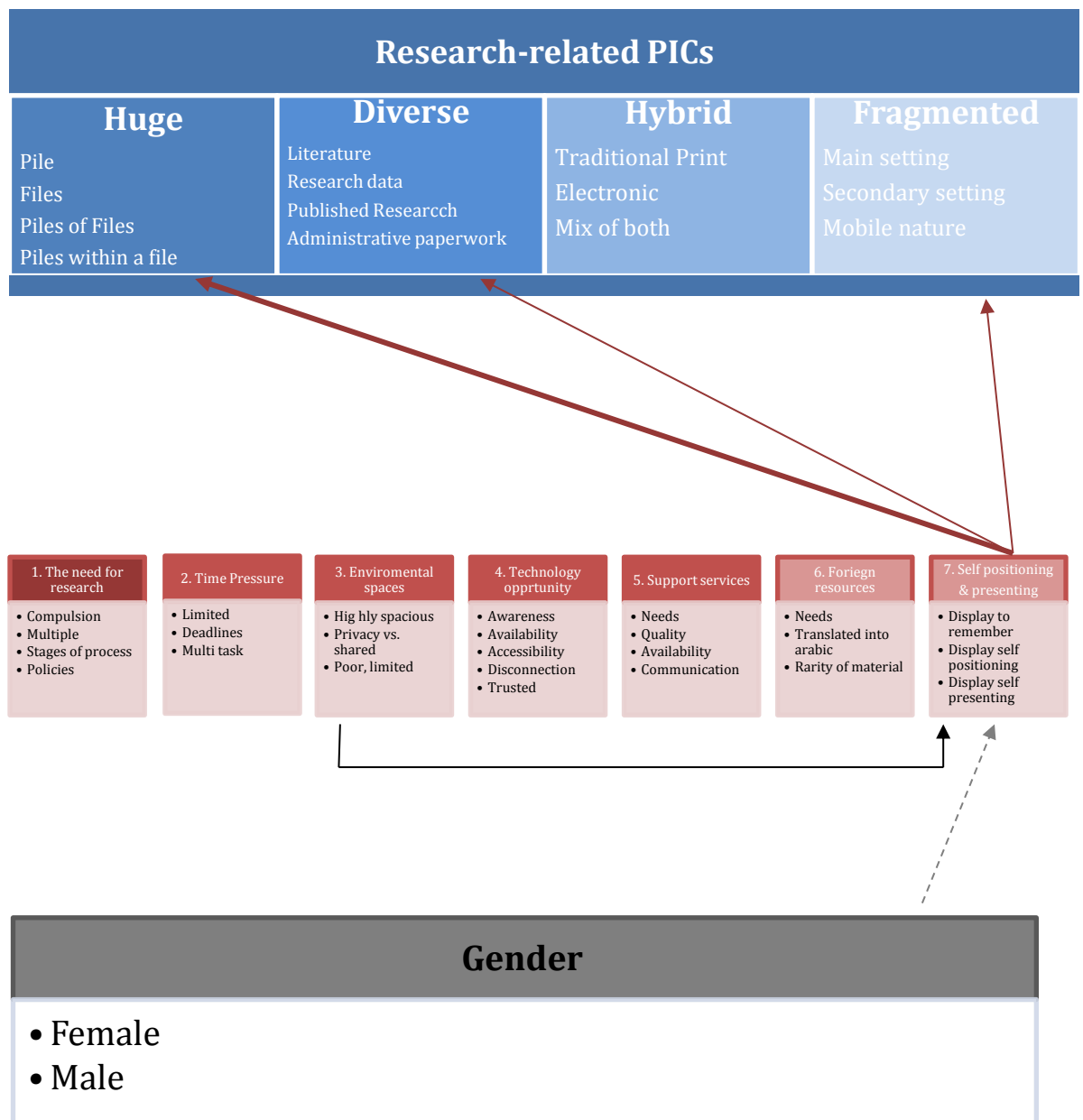
Figure 5-37: Self-positioning & self-presentation

5.4.2 Underlying factors

The underlying factors encompass the main elements which are related directly to the scholars themselves where their attributes, shaped the appearance of immediate factors. The scholar's Age, Gender, Nationality, Seniority and educational background affected the features of the research-related PICs in an indirect way by affecting the immediate causes. This section presents an explanation of how such causes forced the features of the collection in an indirect way.

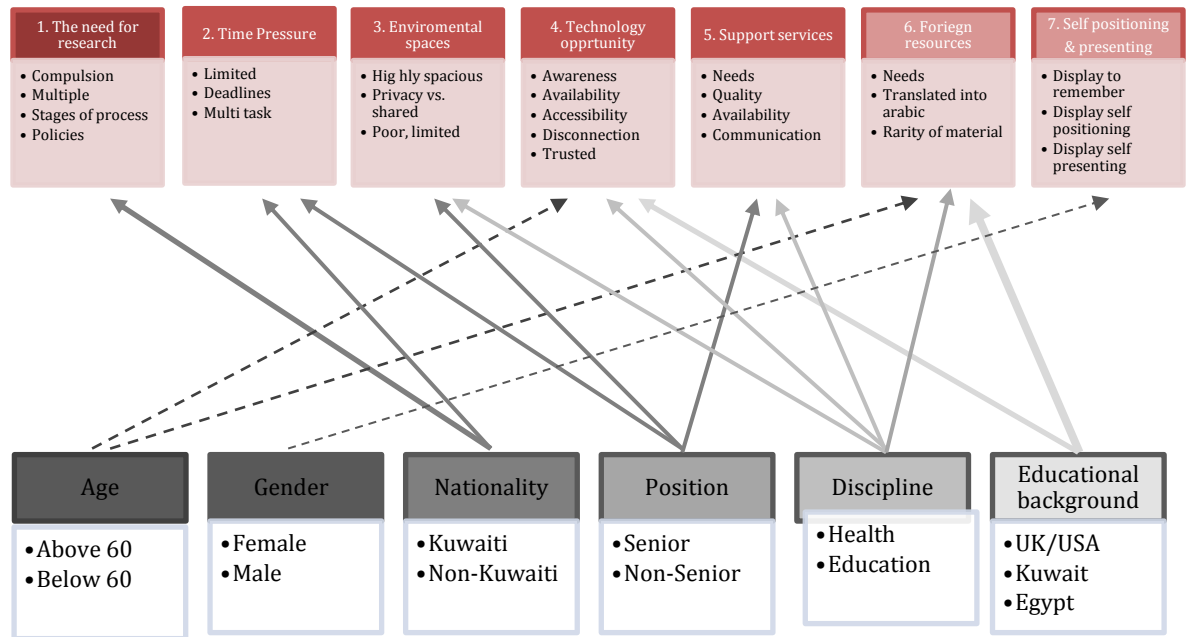Figure 5-38: Underlying and Immediate causes relations

5.4.2.1 Age

The scholar's age was found to be one of the causes that affected the features of the collections indirectly by itself shaping two of the immediate causes, namely 'Technology opportunity' and the 'English resources'. It was found that age affected the way in which the research collection was built. Scholars who were older seemed to face problems in using the technology

> *"You can see I am an old man and I started collecting them since I was a student in Cairo. You know before we have to visit the library to find what we need it's not like nowadays as everything is available by just a click while sitting at your home" (BE1-5-17)*

This scholar specifically mentioned his age, stating his age as a factor of having huge amount of information, and explained the reasons why his personal space of information looked different, where papers were stored everywhere as can be seen in Figure 5.39.

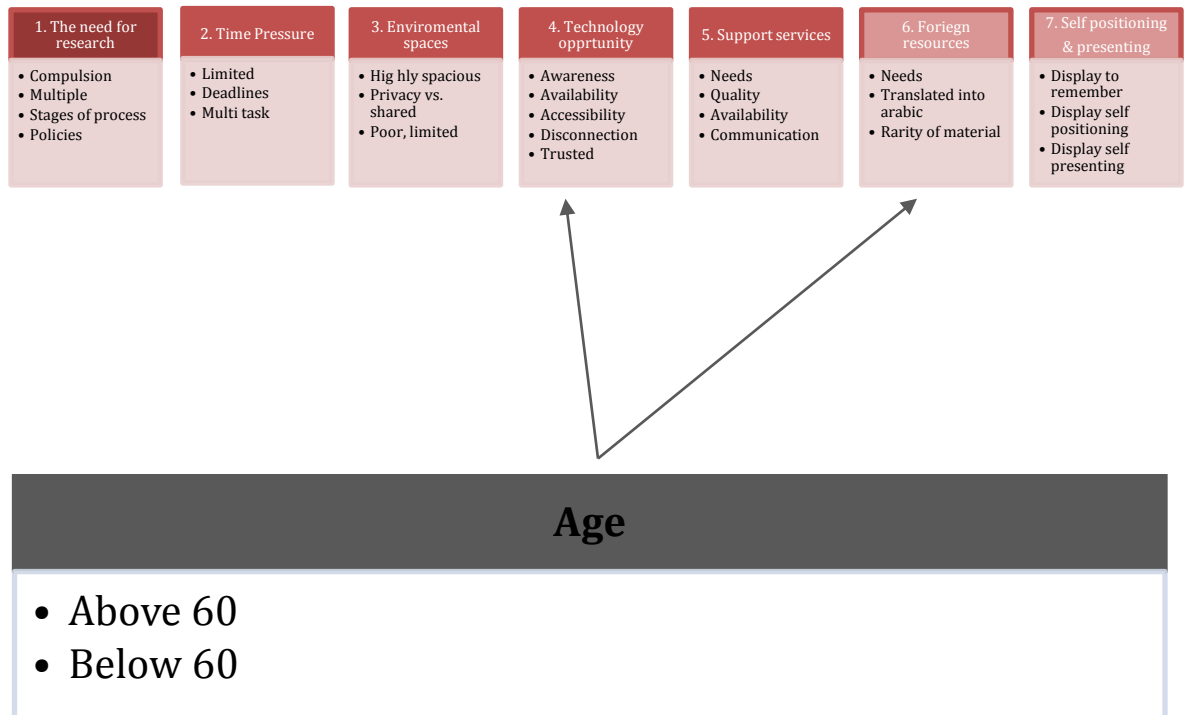Figure 5-39: Age affected the working place (BE1-5-17)

1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Age

- Above 60
- Below 60

Figure 5-40: Age factors

5.4.2.2 Gender

Gender was not found to be a cause that highly affected the display of the collection and other things in the personal space of information. The one factor was that it was found that females preferred to organize their collections in a different way from men, wishing to display them in a way that was visually attractive (Figure 5-41).

(BE4-12-17)   (CON2-2-17)   (BE8-17-17)

Figure 5-41: Female Personal space of information

(HS1-6-17)   (CON4-4-17)

Figure 5-42: Male Personal space of information

Female scholars seemed to prefer to work in a relaxed atmosphere, and therefore their work places were set out in a way that looked different from those of males. One of the participants articulated this clearly when she said:

> *"I try my best to make the atmosphere relaxing and comfortable and every once in a while I filter my papers to avoid working tension as you can see now three days I go I started to tidy my office. You see these piles I just organized them. I just removed piles and piles of papers. You see how I put them opposite to each other" (CON2-2-17)*

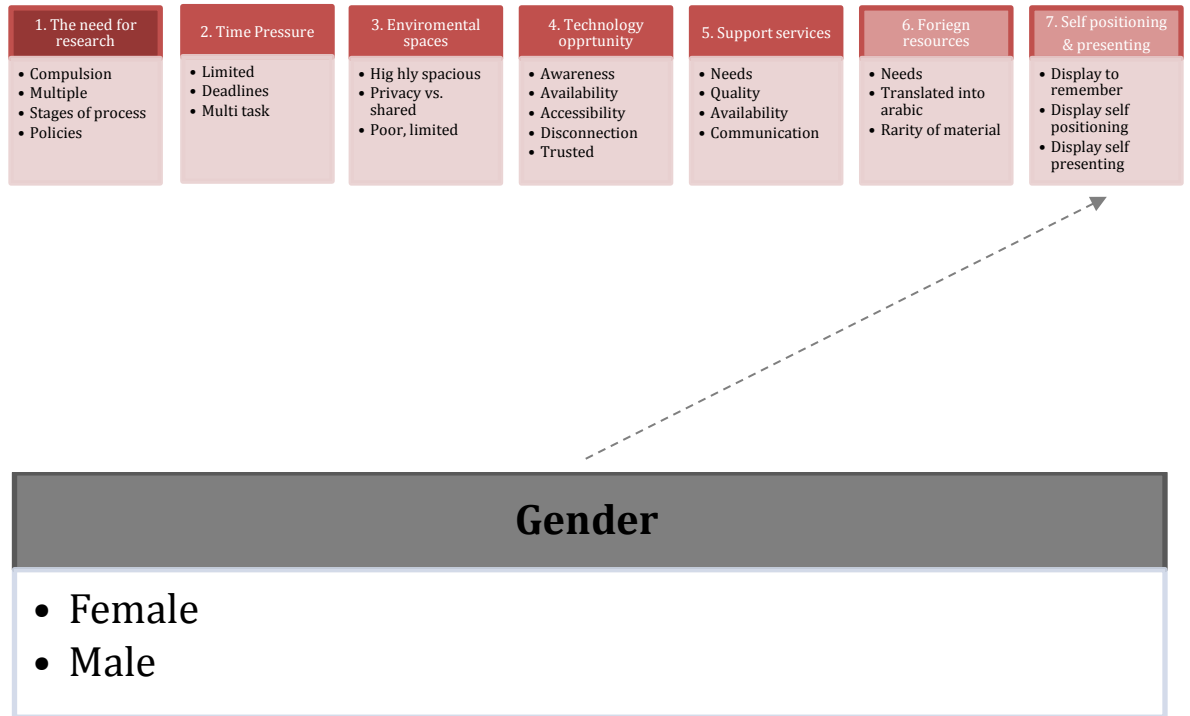The relation between gender and display is shown in Figure 5.43 below.

1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Gender

- Female
- Male

Figure 5-43: Factors of Gender

5.4.2.3 Nationality

Nationality was one of the most significant underlying factors which shaped the research-related PICs, affecting the time pressure in a marked way as well as the need for research. The participants in the current research project can be categorised into two main groups of nationalities namely Kuwaiti (65%) and non-Kuwaiti. (35%), the proportion in the study shown in (Table 5.7)

Table 5-7: Proportion of Nationality distribution

	Health	Education	total
Kuwaiti	5	7	12
Non-Kuwaiti	4	1	5

There was a big difference noticed between the two categories in terms of their position in research and hence their time pressure.

Nationality was found to be a cause that affected research as a career development aspect which forced non-Kuwaiti scholars to produce more published work in a year than Kuwaiti nationals. If their publication output during the year was not felt to be satisfactory, then the contracts of non-Kuwaiti scholars were at risk, and subject to not being renewed. Therefore, it was found that non-Kuwaiti scholars faced more pressure

in terms of publishing their research. In this case, time pressure was obviously affected by nationality, since non-Kuwaiti scholars were asked to publish a number of research papers during the year. Kuwaiti scholars were also expected to publish in order to develop their careers, but it seemed that they were not subject to the risk of non-renewal of their contracts. Working in PAAET, as in any government sector role in Kuwait, was regarded as a highly secure position for Kuwaiti employees.

> *"First I have to say that we have to do research it is important for our professional growth, as well as its relation and importance for our contracts renewal since we are not Kuwaitis, then every year we have to renew our contract so as part as of the contract renewal, we need to write down in our renewal application the progress of our work done during a year, like what research we have done for example here is the last one here there is particular score for that also. So I can say that research is a must that we have to do it. So for promotion and our professional growth we have to do the research for my career development I mean" (CON1-1-17)*

In the above quotation two main points were mentioned about the importance of research for scholars in PAAET; these are related to career development and contract renewal. The career development requirement is applicable to all scholars in PAAET, whereas the contract renewal just relates to non-Kuwaiti scholars. Kuwaiti employees in general and scholars in PAAET particularly, have the advantage of job security from the Kuwaiti government, as their job is not at high risk in the way that it is for non-Kuwaitis. Kuwaiti scholars do not have contracts that need renewal on a yearly basis; their jobs are according to their qualifications and are very secure. On the other hand, non-Kuwaiti scholars had to list their yearly progress in research in order to get their contracts renewed. A main point related to research subject is that PAAET require senior scholars to conduct several research projects within their major subject focus. Such issue make it very important for a scholar to keep all research-related PICs for future research.

> *"So I can say that research is a must that we have to do it. So for the promotion and our professional growth we have to do the research for my career development I mean" (CON1-1-17)*

Looking at the bottom of Figure 44, starting with the underlying causes, the only factor affecting time pressure was the scholar's nationality. It was found that non-Kuwaiti

scholars worked under more time pressure than Kuwaiti scholars which made the factor of nationality clearly noticed, hitting the need for research and time pressure (Figure 5.44).
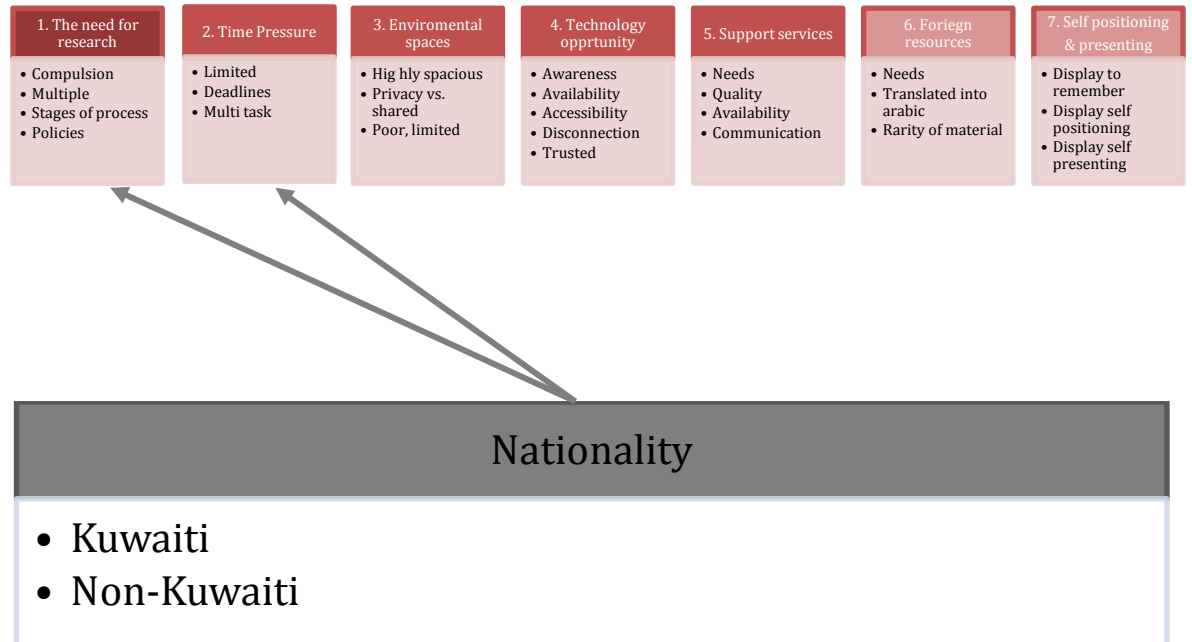

Figure 5-44: Time pressure factors

5.4.2.4 Seniority

As scholars developed their career from assistant professor, the time pressure, quality of space and the support services changed. It was found that senior scholars suffered more from time pressure due to level of duties expected of them. While time pressure affected them negatively, the quality of their working space was affected positively by seniority. Senior scholars had more chance of getting better personal spaces of information, being more spacious and with additional   storage opportunities. The need for support services was also higher for senior scholars, who would need them more as time pressure and level of tasks affected them more strongly (Figure 5.45).
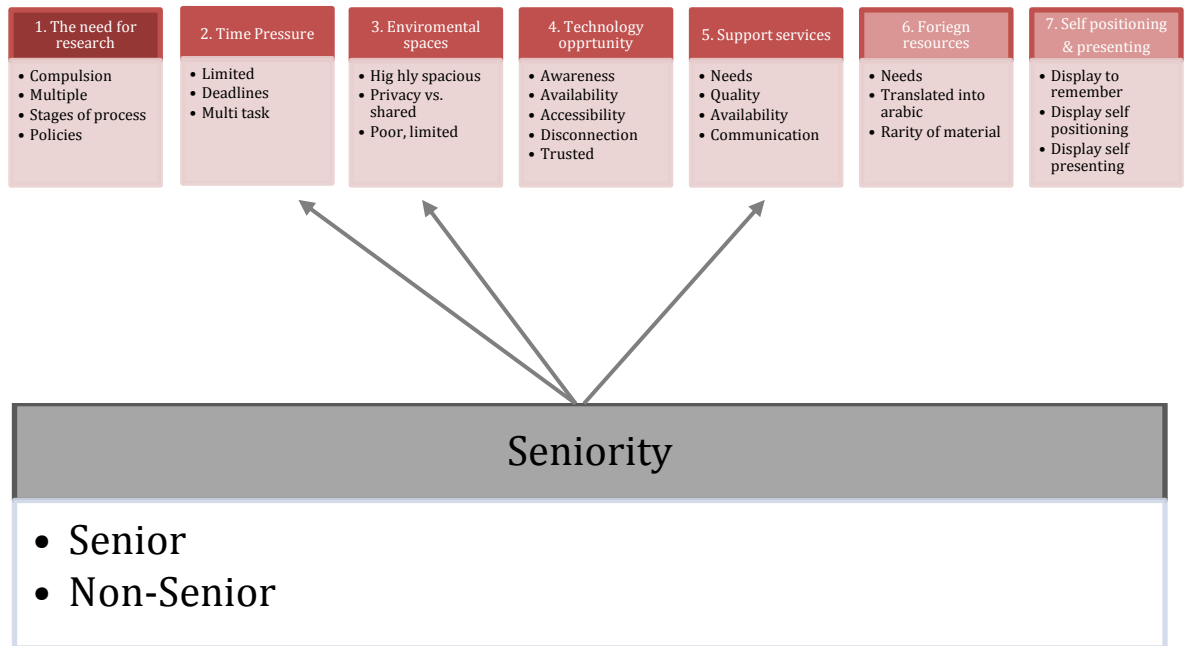
1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Seniority

- Senior
- Non-Senior

Figure 5-45: Seniority factors

5.4.2.5 Discipline

Two disciplines were investigated in the current research namely health and education. It was noticed that the discipline the scholar worked in affected the quality of space, technology opportunity and the English resources causes. When interviewed, it was clear that the quality of personal spaces offered to scholars in the College of Nursing was better than for those in the Basic Education College (Figure 5.46).
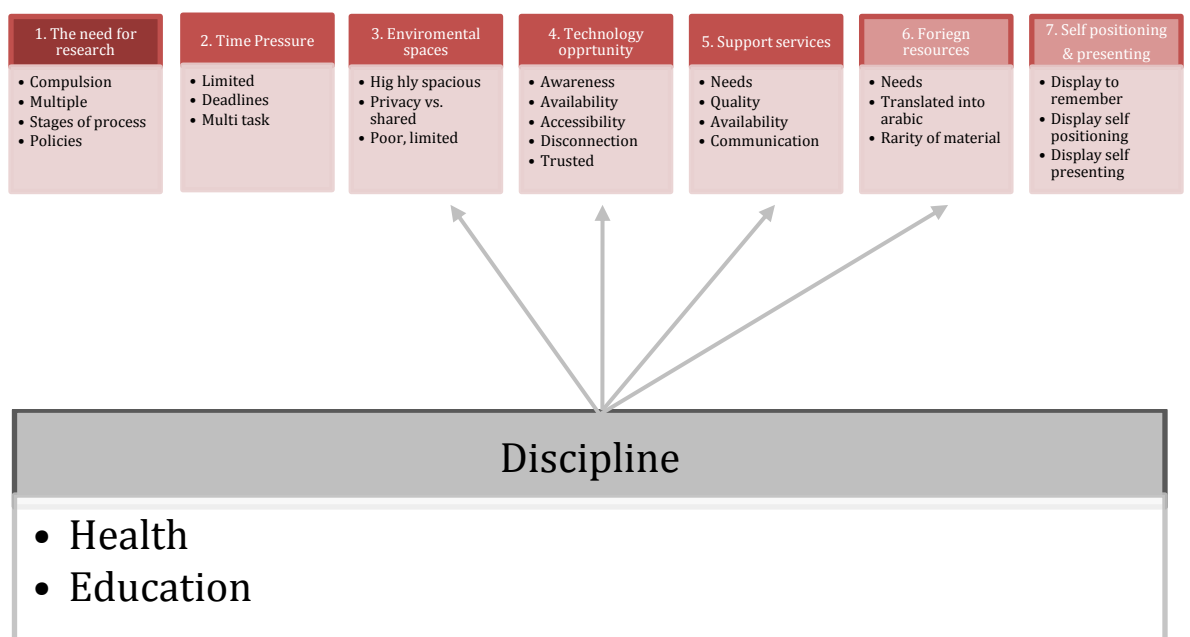
1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Discipline

- Health
- Education

Figure 5-46: Discipline factors

5.4.2.6 Educational background

The place where the scholar obtained their PhD affected the use of technology and the use of English resources causes. It was found that scholars who graduated from the UK and USA dealt better with technology opportunities and made better use of English resources than those who graduated from Arabic colleges. The reason was that those scholars who graduated from the UK and USA showed a higher potential use of technology and as a result had better access to English resources, which in practice dominate the online and virtual environment (Figure 5.47).

1. The need for research	2. Time Pressure	3. Enviromental spaces	4. Technology opprtunity	5. Support services	6. Foriegn resources	7. Self positioning & presenting
• Compulsion • Multiple • Stages of process • Policies	• Limited • Deadlines • Multi task	• Hig hly spacious • Privacy vs. shared • Poor, limited	• Awareness • Availability • Accessibility • Disconnection • Trusted	• Needs • Quality • Availability • Communication	• Needs • Translated into arabic • Rarity of material	• Display to remember • Display self positioning • Display self presenting

Educational background
- UK/USA
- Kuwait
- Egypt

Figure 5-47: Educational background factors

5.5 Summary of model

The proposed model (Figure 5.48) explains the relationship between immediate and underlying factors and the features of research-related PICs, which are size, diversity, hybridity and fragmentation. The model shows in the top part, the features of the research-related PICs. These collections emerge from the stages of the research lifecycle model; from the way material was used, kept and managed within the research process stages (see section 5.2.7 Figure 5.1). The four features characterise the size of the collection, and how scholars accumulated the collections in the form of piles, files, pile of files and randomly stored piles within a file. The diversity of the four types appeared as the second feature of the research-related PICs as they emerged from the research lifecycle model (Figure 5.1). Hybridity refers to the use of different formats within the

collections, both printed and electronic material. These two formats were found to be very rarely separate from or independent of each other. Finally, working in different working spaces causes fragmentation of collections and makes it necessary for material to be stored in multiple locations. The model also provides an explanation of the factors behind the appearance of such features of the research-related PICs.

At the second and third levels the model illustrates the factors that shape the features of the research-related PICs, which affect the way scholars exploit the collections. These factors are categorized into two layers, namely immediate and underlying factors. The immediate factors in the model (in red) are those which affect the collections in a direct way and showed a marked effect on the collections and PIM practice. The underlying factors which affected the features of the collections in an indirect way appear at the bottom of the model. These affected the immediate factors in a direct way and the features of the collections in an indirect way.

The red color representing the immediate factors is used not to show that they are more important than the underlying factors, but to distinguish the two levels and to show the direct effects. The grey color of the underlying factors, on the other hand, was used for the same purpose of distinguish them from the immediate factors.

The arrows are used to show the directions and the effects of each factor on the features of the collections. Bold arrows indicate more marked effects than the thinner arrows, which in turn stronger effects than those indicated by have dotted arrows. For easier reading of the model a key demonstrating the shapes and colours used is also added

Key of shapes and colours used in the model
- Bold arrows represent marked effect from a factor
- Medium thick arrow represents mild effect from a factor
- Thin arrows represents slight effect from a factor
- Dotted arrows represents very slight effect from a factor

Features of research-related PICs

Immediate factors

Underlying factors
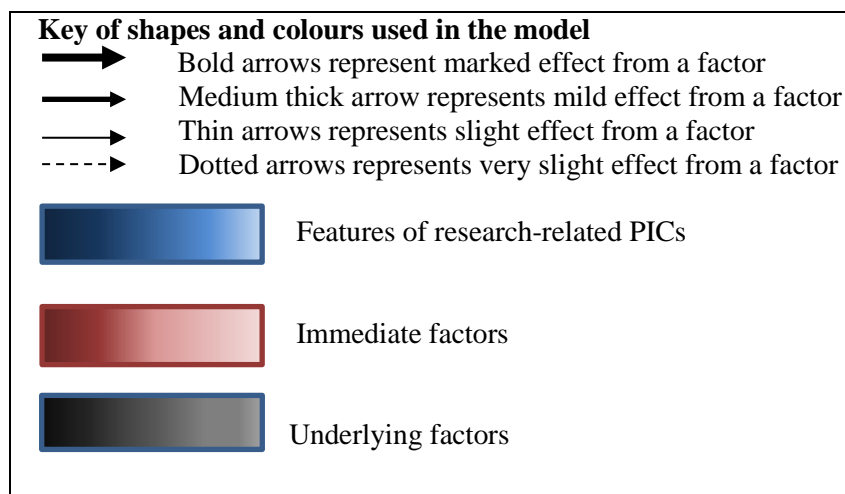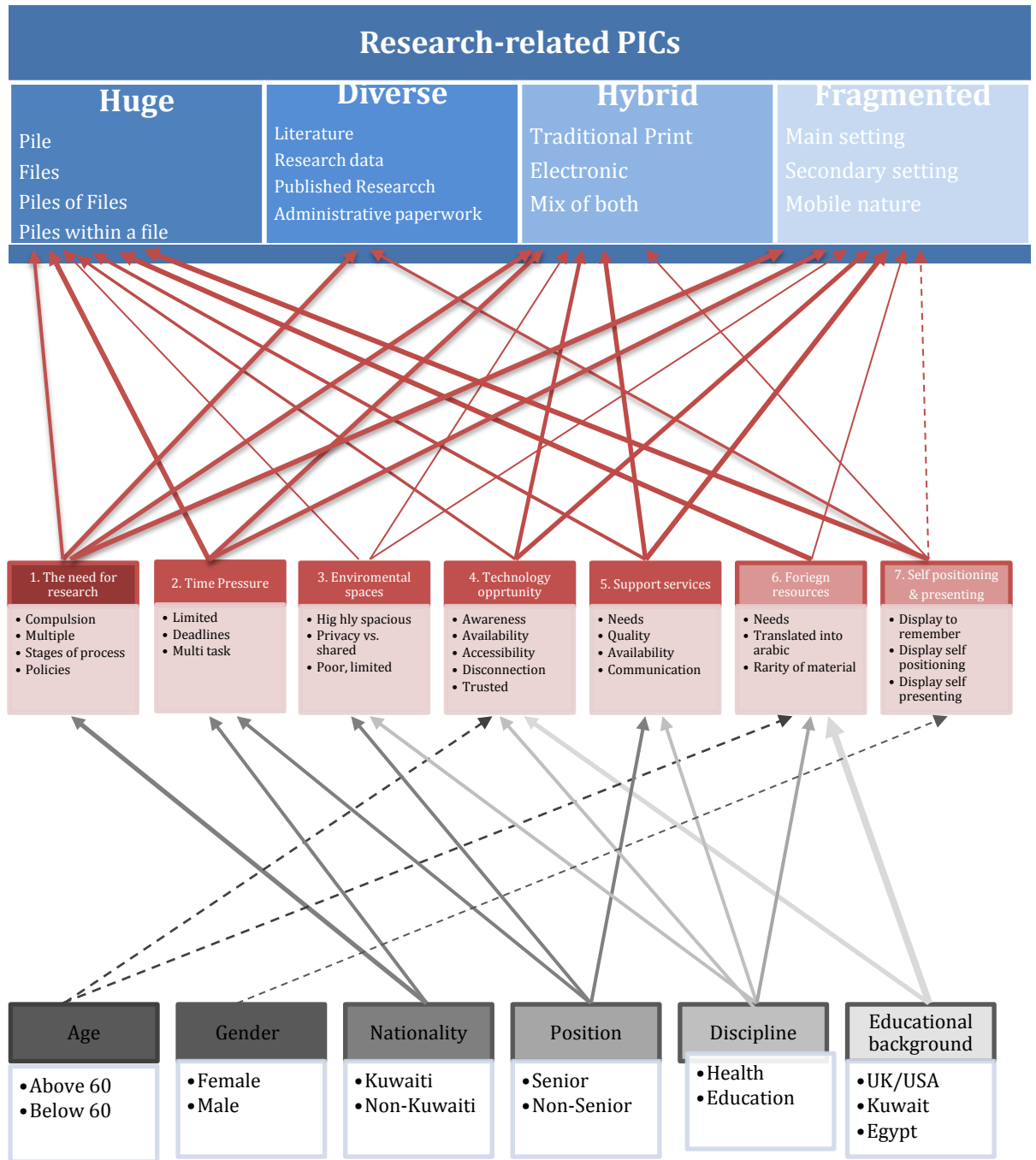
Figure 5-48: The factors shaped research-related PICs

5.6 Conclusion

It can be concluded that scholars are engaged in their research related activities within their research process which leads them to collect information for each stage within the research lifecycle. The research-related collections then is collected and created through those stages which sometimes overlap to make it complex process. The research-related PICs as a result found in four common features namely Huge, Diverse, Hybrid and Fragmented. Due to the complexity of the process of creation and requirements of keeping the collections in such features, the collections are not easy to manage and hard to re-find if it was saved for future use.

The chapter presents explanation of how the research-related PICs were created within the research process, their features as well as the factors shaping them. Those factors were found affecting the appearance of the collections in a direct way therefore was called immediate factors. In addition, some factors affected the features of the collections and the scholar's practice in an indirect way, and were called Underlying factors.

The next chapter presents a discussion of the key findings identified in the current chapter in light of previous theoretical and empirical studies related to scholars PIM practices and their collections to discuss the similarities and differences between those and the current findings in order to highlight how the current study contributed to the field.

Chapter 6 – Discussion

6.1 Introduction

This discussion chapter will compare and contrast the findings of the current study to those of previous literature in the field of PIM and to scholars' research practices more generally. This chapter will firstly summarizes the main findings of the current research, then go on to relate these findings to the key factors raised by Kaye et al. (2006), and position the current research in relation to key factors that influence the creation, organization and use of PICs by scholars. The chapter will then discuss both immediate and underlying factors. Each factor will be considered separately, with the immediate factors being as follows: need for research; time pressure; workspaces; technology opportunity; support services; self-positioning and self-presentation. The chapter will then explore the underlying factors in the same order as in the model. Following this, a comparison is made between the components of Wilson's (1999) Model of Information-Seeking Behaviour and the complementary elements of the model proposed in this study. The decision to carry out such comparison was based on the idea that there are clearly a number of factors influencing personal information management and, which would appear to be similar to those influencing people, regardless of their position, in which they perceive a need for information, which thus involves information-seeking behaviour. Finally, the chapter will conclude with a summary of the main issues that have emerged from the discussion.

6.2 Summary of findings

In the current research, it has been found that scholars are engaged in a range of activities that lead them to build research–related PICs within their research. It was found that, within the research lifecycle, scholars were collecting, creating, keeping and managing material for the purposes of their research projects. Once an idea for a new research project emerges, a research-related collection starts to appear, beginning with the creation of a new research ideas folder. When the new idea becomes a research project proposal, other elements of the collection are gradually built up, such as the research-related literature. Subsequently, data collected will need to be kept, organized and managed in order to enable easy access, when needed, for the purpose of the research. Results, findings and publications are all likely to be generated and stored, as is administrative paperwork, which is also likely to be required at several stages of the

project. This research study refers to the collections that have resulted from this process as research-related PICs. , There is some dispute over whether PICs are ever entirely research-related, but since those of the scholars that were examined in this study were mainly directly towards, or wholly related to, research, this term will be applied here. Nevertheless, since the researcher only examined parts of the scholars' collections, how the research-related PICs relate to the wider collection is problematic. The fact that scholars' PIMs differ from those of, say, trained librarians, and that they tend to use their initiative and make on-the-spot decisions as they develop their collections, means that they are much less likely to have collections that are purely research-related. If some of the recommendations of this study, which suggest ways that scholars can improve their PIM practice, are adopted, this should be less of a problem in future research in this area.

These collections, once created, tend to build and pile up in workspaces over time. The research collections were composed of four main types: sources of literature; research data; published research; and administrative paperwork. Collections were stored in both traditional printed as well as electronic formats. The availability of electronic versions, which has the advantage of access any time anywhere, did not lead scholars to use only the electronic versions. Even those who stated that they were highly committed electronic content users had an accumulation of printed papers piled in their offices too. The current research showed that traditional printed collections are not, in practice, separated from electronic ones.

Scholars were working in multiple places, which led to their collections being stored in several locations and hence being fragmented. They would start a research-related task in one place and then have to carry on that task in another place, due to time limitations. This led to the collection existing in several locations and therefore being scattered between main and secondary settings or working environments, in addition to being distributed across several computers and other digital devices.

Scholars commonly kept every piece of information they encountered related to their research. They valued highly the information generated, such as research data and interpretations of it, in the form of published research. They tried to classify and distinguish their collections using folders and coloured envelopes, yet the only commonly identified strategy followed to manage the collection was to have a comprehensive folder that included all items related to their research. The features of

the collections, together with the scholar's PIM practice, led to the situation where they could not find information in the collection. In addition, curating the stored information seemed not to be a defined aim; rather, they were keeping everything without a clearly defined objective set of priorities or planning. For scholars, the pressure to undertake the need for research and to save time, overcame their fear or worries about a technology crisis at other moments. In order to understand the issues surrounding the construction, development, maintenance and purposes of research-related PICs, the factors shaping the collections must be understood.

The current research explains the factors that shaped the features of the research-related PICs, in two different layers, namely immediate and underling factors. The immediate factors were those that shaped the features of the collections in a direct way, and were: the need for research; time pressure; workspaces; technological opportunities; support services; foreign language; and self-positioning and self-presentation. The second layer of factors involved the underlying ones, which affected the collection in an indirect way by shaping the immediate factors. They are the elements which are related directly to the identities of the scholars themselves, namely: age, gender, nationality, seniority and educational background.

6.3 Kaye et al. (2006) and the current research

Kaye et al. (2006) is one distinct study that relates closely to the current research. Their study focused on the general PICs of academics, not just research-related material. It provides a description of the archives of academics, explores the motivations to archive materials and the way that motives shape how those collections are structured. In addition, the purpose of Kaye et al.'s (2006) study was to develop software to support PICs. The study showed that academics did not always archive materials in order to retrieve them later, as was previously believed; rather, there were many other purposes found for which their PICs were collected.

A significant difference between the two studies is that, while the current study focuses on research-related PICs, Kaye et al. (2006) looked at whole collections, giving their study a wider focus and a more holistic view compared to the present one. They described the general PICs of scholars, including some academic-related material such as data and published research. On the other hand, they did not look at the sources and processes through which collections developed: rather they looked at PICs as a

completed collection of existing content, while the current research identified very specific types of content related to research, and also examined the process of creation.

Both studies used more or less the same methods of collecting data, namely interviews, office tours, and photographs of participants' working spaces. However, they differed in the research questions asked. Kaye et al.'s (2006) main research questions asking why scholars archive and therefore what the main motives behind keeping PICs are. They commenced their research by asking a set of questions as follows:

> *"How do academics solve storage problems and access material wherever their collections space is located; How such practices change in response to evolving careers; new archival and career technology; fears of archiving disasters; the growing amount of resources available; and the struggle to cope with the ever-increasing accumulation of material; Whether we can identify systematic practices, coping strategies, or what might be called different styles of organizing personal achieves; Whether best practices can be learned in order to maximize the utility of systems". (Kaye et al, 2006: 276)*

Both studies looked at the workplaces of scholars, which extended to other places beyond the main work office. Kaye et al. (2006) looked at the PICs of scholars in several workplaces (their work office and their laboratories), while the current research explored the different work spaces of scholars (mainly a work and home office combination) without looking at shared work spaces, such as laboratories. This is significant because Kaye et al. (2006) found that collections in laboratories were slightly different from personal collections.

The participants in Kaye et al.'s (2006) study were larger in number and from a wider range of academic disciplines than in the current study, which includes only two disciplines. Kaye et al. (2006) had 48 participants from different academic disciplines from an Ivy League University in the USA, ranging from graduate students to emeritus professors, and including scholars from a wide selection of nationalities and ethnic backgrounds. In contrast, the participants in the current research were 17 scholars from two different disciplines, namely Education and Health, in PAAET-Kuwait. This means that Kaye et al. (2006) sampled a wider range of disciplines yet covered each in less depth than this study. The national context is also likely to be a factor in the differences in findings, though this issue is also not addressed by Kaye et al.

6.3.1   The motives approach

The main focus of Kaye et al. (2006) was to look at the motives for archiving and the way that each motive led to a different type of archiving. Five motives were identified: *"To find it later, Building Legacy, Sharing, Confronting fears & anxiety, Identity construction"* (2006: 275).

6.3.1.1 To find it later

If a scholar's motive behind archiving material was to easily find it again later, an easily accessible collection stored in *"filing cabinets, bookshelves, and boxes"* and in very close proximity to the scholar, or *"within arm's reach"* was likely. This type of archive contained material which was actually retrievable, although the retrieval time for scholars varied according to the ordering method used for their collections, whether alphabetical or subject order. In spite of the desire for retrievability, scholars were usually disappointed about the ease of finding items within their collections. They were also disappointed when their collections started to pile up awaiting filing in secondary files, such as in a *"to-file-box"* (2006: 374).

6.3.1.2 Building Legacy

Building a legacy is when scholars collect material about their life and work that can speak about their life-stories and achievements, according to Kaye et al. (2006). The main purpose of this type of archive was to *"make a visual sweep"* (Kaye et al, 2006: 277) for visitors and tell them a story about the scholar's personality, life and work experience. Scholars who create legacy archives usually keep everything, but do not generally want to access material from within this huge store of information. For this kind of motive, scholar's archives do not need to be accessible. Although this kind of archive uses rigid structures (alphabetical and chronological order) and scholars tend to be proud of them, they were rarely accessed. Scholars within the current study constructed such archives for some of their collections. It was found that some of the research-related PICs were stored for the purpose of legacy, such as to record their published research and awards, which were often also displayed in their work spaces. Furthermore, a range of reasons for storing were identified other than legacy building as discussed in the sections that follow.

6.3.1.3 Sharing resources

When scholars stored information for the motive of sharing, this tended to occur in spaces that were themselves shared, such as hallways and laboratories. This kind of archive supported retrieval for a large number of people rather than just individual scholars. Although one or two persons were responsible for maintaining such archives, it was accessed by several groups of people, which reflects the "home grown" nature of some personal archives. Although scholars within the current study talked about the benefit of saving research-related PICs in their own work spaces for sharing with colleagues, an investigation of such spaces was not carried out. However, sharing was a one of the motives discovered within the scholars' organized collections.

6.3.1.4 Confronting fears and anxieties

Scholars who exhibited fear of loss created a different kind of archive. The fear of loss archive is to protect the information from accidents such as fire, theft or computer crashes. Losing archived material due to accidents may lead to an emotional reaction if a scholar is attached to the lost collection. This category of scholar placed great value on the archives and showed this by keeping redundant material such as published copies of the same material in different formats. They also tended to create a catalogue for their collections so that they could find material in case of loss. Others became concerned about keeping content after losing information in an accident. Preservation as a main goal seems to be impossible to achieve for some kinds of material, specifically those which are found in biology laboratories. One interviewee asked *"How do you back up a protein? How do you keep a moth alive? How do you keep a cancer cell from growing?"* (2006: 279). In the current study, scholars were concerned about losing their collections either from experiencing information loss due to a hard disk crisis; changing devices; moving to a new building; or knowing about negative experiences they themselves or their colleagues had had. Some scholars were addicted to back-up procedures and developed piles of storage devices. On the other hand, special types of collections, such as proteins and moths were not encountered in the current study, and while this type of concern was present, it was not the only motive of any interviewee.

6.3.1.5 Identity construction

Some archives of scholars were structured not to store, retrieve and reference information but rather to display the identity of the scholar. Four main factors are said

to affect identity construction: *"a personal rationale, the built environment, mobility and the social environment".* The main aim of this type of archive is to show "oneself to others". Furthermore, the archive speaks about the archiver's role in the organization, their achievements and their interests. The difference between this and a legacy archive can be said to be related to currency. The legacy archive is something which a senior or even retired scholar might keep and display. In a sense, this process can be seen as the completion of identity construction. A personal rationale is what motivates scholars to keep, store and display for personal satisfaction, without having any particular need for specific materials. While the built environment sometimes helps scholars to keep and display their PICs, those who like to keep all the data and information collected benefit if their working environment allows them to do this. Mobility is a factor that helps in identity construction within archives, when scholars create mobile solutions for their collections, as the social environment sometimes encourages scholars to show others in their vicinity who they are, professionally and personally, through the display of visual attractions in their work spaces. When on show, their collections can talk about their career achievements and their family and home background through the display of personal photographs, etc.

By this categorisation of motives, Kaye et al. (2006) dealt with the scholars' PICs as static existing collections in the archives as final products. Furthermore, they decided that each scholar had only one main motive for archiving. The current research differs, as it found that re-finding information was a crucial stage for all interviewees and central to PIM practice. For most participants, all the motives identified by Kaye et al. (2006) were also recognized in this study, but scholars usually had multiple motives. Thus the simple framework of Kaye et al. (2006) did not seem to apply; rather, a mix of multiple motives was found in all cases. Some additional factors which occasionally appeared to be shaping collections were also identified.

Scholars spoke about the sources of their collections as important for locating an item in the research lifecycle. Therefore, the following section will discuss the findings of the current study and show how the difference appears to illuminate the more dynamic nature of scholars' PICs.

6.3.2 Creation and curation approach (current research)

6.3.2.1 The creation of the collection

The current research investigates the creation of the research-related PICs which emerged from different stages of the lifecycle as well as the management of such specific collections. The lifecycle also explains the emergence of each type within the diverse collections. The current research asked scholars about what they did during their research and the scholars explained the steps in detail. Such questions helped to establish an understanding of the sources of the research-related PICs. Kaye et al. (2006) simply did not ask this type of question; all their results can be seen as reflecting a rather fixed view of what constitutes a collection.

Therefore, the current study defined a specific collection which has been named a research-related PIC, including sources of literature, research data, published research, and administrative paperwork. The research-related PICs were found embedded in wider PICs, as scholars were not professional in organizing their material and did not have a specific classification system to present it, as would be the case with a library collection. The investigation in hand showed that scholars made some efforts to initiate a structure and establish the research-related PICs as a discrete entity that could be separated, which was also found in the academic collections seen by Kaye et al., though this was not the focus of their investigation.

6.3.2.2 Motives vs. immediate factors

Kaye et al. (2006) suggested that academics had different archives and each had a different motive. The current research explains the factors that shaped the collections and offers supporting ideas for the motives behind keeping. This section will follow the structure of the factors shaping the features of the collections in the current study and compare the current and Kaye et al.'s (2006) studies in relation to each factor.

6.3.2.2.1   The need for research

The need for research shows what Kaye et al. (2006) report as 'find it later' behaviour that involves a scholar keeping information to re-find and re-use in future research projects. However, it was found that material stored in the research-related PICs was not retrievable most of the time. The motive identified in this research mirror agrees with Kaye et al., (2006) who described scholars' disappointment when they could not re-find

what they had stored. Similarly, scholars within the current research study were mostly disappointed at not finding things stored in their PICs, and usually found other ways of re-finding them, such as searching again from the beginning through the Internet. This suggests that, just as Kaye et al. (2006) reported, finding things again later was not the main purpose for keeping all PICs, although it was quite common; rather, it was a purpose that was found difficult for scholars to achieve in the present study.

6.3.2.2.2   Time pressure

Scholars in the current research needed to save time as they worked under the pressure of deadlines. This was not a factor in any of the structures encountered by Kaye et al. (2006), although it is hard to believe that scholars were not concerned about time. Although time was a major issue shaping the research-related PICs, it was not reported by Kaye et al. (2006) because they focused on the main motives that led to collecting, rather than the wider shaping factors that impacted on how material was collected and organized.

6.3.2.2.3   Work spaces

Work space, which was a factor in the current study that shaped the scholars' collections, was not investigated by Kay et al. (2006), although their study implies that work space has an effect on the collection, as explained in the issue of mobility. By contrast, it showed a marked effect on the features of the collections in the current research. However, it is very unlikely that the form of collecting exhibited in the previous study was not affected by whether the scholar had a large or small office; or by the shape of their study space(s).

6.3.2.2.4   Technological opportunities

Technology clearly affected scholars' collections in both studies. Kaye et al. (2006) found that one main purpose behind keeping personal archives by academics was their fear of loss due to unexpected crises, showing their anxiety about losing information they valued. In the current research also, although scholars were happy about technological opportunities, they showed that they could not trust technology completely due to either their limited skills or painful experiences of technology failure that had happened to them or to their colleagues. For Kaye et al. (2006) the focus was on anxiety and fear of loss, motivating academics to follow certain back-up procedures to avoid the disappointment of losing their archives, rather than on doubts about the

reliability of technological preservation. This may signify differences between the two sample cohorts resulting from underlying differences in technological infrastructure, and also from cultural attitudes to technology.

In addition, the use of email as one of the technological opportunities appeared in the current research. Kaye et al. (2006) reported that some academics used their email as an elaborate hierarchical storage system for their collections, which showed that the archive was for legacy purposes rather than retrieval. The current research found that scholars relied on email to manage their collections and as back-up storage too, but it was usually to support mobility and facilitate access in different locations as well as to support version updates.

6.3.2.2.5 Support services

Support services were a factor affecting scholars' collections in the current study, but were not reported as a factor by Kaye et al. (2006). A possible explanation is that the libraries in the USA are more trusted due to the support and services they provide to their users. In this study, support services were a major factor which affected the features of the collections; they were identified as a main driver of scholars' PIM practice, due to their disappointment in the type and quality of support offered to them. By contrast, the disappointments Kaye et al. (2006) noted were self-directed criticism. Again, this may be the result of cultural and societal differences between the profiles of the two groups. Scholars in the current research reflect the culture in Kuwait, when they complain about the type and quality of support services. Although a country like Kuwait has the budget to serve users, in practice delivering a service that meets users' needs, in addition to changing perceptions and some values, were major issues. Al-Qallaf (2007) conducted a study on academic and research libraries in Kuwait, measuring the effect of technology on librarians who work in such libraries. She collected data from 147 publicly-employed librarians using questionnaires yielding a 66 percent response rate (97 out of 147 responded). The study reported that *"respondents are optimistic about technology, believe that it improves their job performance and are up to the challenges that technology brings"* (2007: 168). However, negative issues were also reported such as their feelings about a *"lack of positive feedback from management acknowledging their effort and performance"*, in addition to *"lack of technically oriented professional staff and technological breakdowns"* (2007: 168), which they thought were major influencing factors on their practice. In addition it showed that librarians work under

stress and face many challenges, especially because of the lack of adequate training programmes. The study also made some recommendations aimed at improving their work environments. This confirms that librarians in Kuwait, specifically in academic and research libraries need to face changes in their roles to meet scholars' expectations from recent technological developments, as reported by the current study.

6.3.2.2.6   Self-positioning and self-presentation

Self-positioning and self-presentation are personal factors that affect the appearance of the collections in scholar's work places. Kaye et al. (2006), when investigating academics' PICs, found that some scholars archived primarily for constructing a personality. Such a motive was clear from the structure of their offices, involving visual displays for visitors which talked about their career and life. Kaye et al. (2006) found that academics used their personal archives for identity construction when noticing that some participants wrote a list of accepted conference papers on the white board; left a mathematical algorithm on an unused chalkboard; displayed their children's drawings; or when new faculty members hung their diploma awards on their office walls. The current research also found that scholars sometimes did not keep information to re-use in their future research, but rather for their self-positioning and self-presenting. This can be explained by the personal value individual academics attached to their collections. Scholars showed this tendency when displaying some of their research-related PICs in their workplaces to reflect their career development and achievements displayed in their offices, which they were naturally proud of.

This connection to the collections supported Kaye et al., as it reveals the attachment academics have to their collections, such as when one of the participants talked about how painful it was to lose her archived collections due to fire and having to work in the same office without her PICs being displayed behind her. But the difference is that the current research reported self-positioning and self-presentation as one of a number of factors that can affect a single scholar at the same time. On the other hand, Kaye et al. (2006) explained the issue as a distinct characteristic that would be the dominant factor shaping a particular scholar's office. Kaye et al. (2006) used different terminology for this type of practice, applying the term "*Identity construction*" (2006: 275). This confirms that this factor was present in both studies, but the current study examined the issue in more detail. Self-positioning and self-presentation are related to the scholars' personalities. The scholars in this study were observed to keep collections in order to

self-position for two main reasons: firstly, to reinforce their own sense of self-worth; and secondly, to self-present examples of their achievements in order to impress others. This gives us a more detailed picture of this factor than the umbrella term used by Kaye et al. (2006).

6.3.2.3 Motives vs. underlying factors

Some underlying demographic factors were found affecting the research-related PICs of scholars in the current research, yet were not mentioned in Kaye et al. (2006). A possible explanation is that some of the factors are Kuwait-specific, such as nationality; and some were missed in Kaye et al.'s (2006) investigation, perhaps because they focussed on the collections as a static entity rather than a dynamic process. (Kaye et al. 2006)

6.3.2.3.1   Age

Age was an underlying factor to a minor degree within the current study, which did not show a marked effect on the features of the collections. There was just a slight effect in one extreme case, where an older scholar organised his physical collections in a remarkably individual way, with piles of papers stored in an unusually chaotic manner; all the other scholars, who were considerably younger, had very different PIM practices. However, other elements, such as this individual's relative lack of workspace, may have been at least as important a factor in influencing his PIM. Kaye et al. (2006) did not report this factor at all within their investigation of 48 academics' personal archives, which is a pity, since their cohort was approximately three times the size of the present study; they might have been able to provide a more detailed exploration of the impact of this factor on scholars' PIM practices.

6.3.2.3.2   Gender

Gender was another factor which had a slight effect on the research-related PICs of scholars in the current study. Kaye et al. (2006) did not identify the gender distribution of participants, so therefore could not have identified gender as a factor The current research, however, found a degree of difference in the shaping features of the display of collections, as females tended to display their research-related PICs in an attractive way that may reflect their personality or identity; by contrast, males' collections tended to be presented in a less attractive way. Kaye et al. (2006) considered identity construction but did not assess the effect of gender in terms of personalising collections. However, if

we understand that factors like nationality and gender are key elements of identity, it is unsurprising that they then play a role in influencing the particular nature of individuals' PICs. While Kaye et al. (2006) delineate the individual elements of PICs; they tended not to consider the wider cultural influences on PICs.

6.3.2.3.3   Nationality

Nationality showed an effect on scholar's practices for several reasons. Firstly, there was a difference between the rules and regulations for Kuwaitis and non-Kuwaitis at PAAET which affected the scholar's practices and hence their collections. For the former group, their position was secure; this was not the case for non-Kuwaitis, as will be discussed in more detail later (Section 6.4.2). However, it could be argued that it is actually the PAAET regulations which created this separation, rather than nationality itself. On the other hand, because the need for research appeared as a factor affecting the features of research-related PICs, we can see that this need can be influenced by both the institutional culture and the personal values derived from the individual's cultural identity, which can include the individual's nationality. Kaye et al. (2006) did not report nationality as a factor, nor distinguish between different nationalities among the academics who participated in the study.

6.3.2.3.4   Discipline

Academic discipline was one of the underlying factors investigated in the current research. Kaye et al. (2006) investigated 48 scholars from multiple disciplines and noted a number of factors affecting the way academics organized their collections in different disciplines. This can be seen in the example of wondering how to preserve a protein, a moth or a cancer cell in a biology laboratory. The current research found no such evidence, due to the fact that the scholars' academic discipline was limited to just two areas (Health and Education) which turned out to be rather similar in behaviour, perhaps partly because their research methodologies were similar. However, the fact that discipline had an effect on the workspace was not reported by Kaye et al, but was implied when they explained how special types of collections needed special and different care for preservation, such as those in laboratories. Here too, cultural differences may have been involved, in that Kaye et al. (2006) focused on US institutions, where disciplines have historically been distributed into discrete and very distinct types of study; this may not be so evidently the case in other cultures. Although

they investigated many disciplines, they looked at only a few people in each, which probably made it difficult to identify this as a variable.

6.3.2.3.5   Seniority

Seniority was discovered to be a factor affecting PIM practice in the current study. Senior scholars had to deal with more fragmented collections due to the fact that they worked in several places and had more duties. This factor was not reported by Kaye et al. Perhaps all the scholars in their study were equal, regardless of their differential institutional position. However, this seems quite unlikely, as senior staffs in most organisations are known to have heavier demands on their time, and a wider range of responsibilities to attend to, and therefore are likely to have different PIM needs compared to more junior staff. It is possible that Kaye et al. (2006), failed to identify this factor because did not collect demographic data on the participants.

6.3.2.4 Educational background

In the present study, educational background was shown to be a distinct factor which influenced scholars' PIM practices, because most PhD holders in PAAET had previously received their award from Western universities which noticeably affected their PIM practices compared to the minority of scholars who had received their PhD awards from Arabic universities. The most overt difference between these two groups was that the former had more advanced IT skills and applied them in their PIM practices and the methods of collection they used; the effect being that those with more developed skills tended to be better at PIM overall. Kaye et al., on the other hand, did not investigate this factor, possibly because all respondents were senior members of staff and all had very similar Ivy League backgrounds.

6.3.3   Conclusion

The factors found shaping scholars' research-related PICs in each scholar's offices revealed that several factors played a role in the appearance of their collections. Rather than having one structure for each office or collection, as suggested by Kaye et al. (2006), the current study showed that several structures can appear in a single office or collection. For instance, a legacy archive can be found in a scholar's office, in addition to retrieval and display archives. Furthermore, since most archives viewed were still active, they also had multiple purposes in many instances.

6.4 Features of the collections

The previous section discussed the kind of factors which affect the nature of PICs and PIM. Another way of considering collections is in terms of the main features that belong to them. The following section explains the four main features identified in the literature as significant aspects of scholars' collections.

6.4.1 Huge

The research-related PICs accumulated over time grew to a very large size in both physical and electronic storage spaces because of the nature of the scholars as active keepers of information. Enormous piles of printed papers and files were found in scholar's work spaces, which agrees with Kaye et al.'s description of *'things piled up'*, (2006:3) and *'sizable collections'* (2006:4) in the participants' offices. Furthermore, it supports other previous studies that have delineated the failure of PIM due to the size of the accumulated collections (Bordman, 2004; Marshall, 2008; Kroll & Forsman, 2010; Auckland, 2012). Auckland's (2012) review emphasized that studies found researchers retained huge amounts of data and struggled to manage them. Keeping everything related to the research is the scholar's typical habit. Keeping everything without any criteria of what to include in their research-related collection is an issue which reinforce growth of the collection. This finding is in agreement with Marshall (2008) , who showed that, within a collection, there were two extreme choices of what to include: i) just the information necessary for publishing a paper, or ii) every item related to the paper; however, none of the participants followed either extreme but were placed somewhere in between.

The current study revealed similar findings, as scholars did not show a specific pattern in their keeping habits. Marshall (2008) discussed two types or aspects of collection management: versioning and managing data. The current research supports Kroll and Forsman's (2010) finding that, in a research lifecycle approach, researchers struggled to manage their information due to the accumulated size of the collections, which showed that they need support in their research. Whittaker and Hirschberg (2001) found in a study of paper archives that, on average, researchers had 62 kg of paper, which is equivalent to a pile of telephone directories 30 m high. Furthermore, people keep information passively in a way that makes it very hard to find things in the future (Whittaker, 2011). In order to assure effective use of stored personal information, curation (active preservation) is required (Whittaker, 2011). The huge size of research-

related PICs makes them difficult to manage, and hence ultimately makes it difficult to organize, retrieve and curate the information.

6.4.2 Diverse

As suggested above, the emergence of the research-related PICs showed a diverse collection of sources of literature, research data, published research and administrative paperwork.

Some studies have given the impression that PICs are a vast chaotic jumble of material. Others have looked at PICs as being diverse in broader terms, including the range of items: papers, books, documents, emails, bookmarks, etc. (Jones, 2007; Bergman et al., 2006; Indratmo & Vassileva, 2008; Whittaker, 2011). Some have noted that collections include more specific types of items such as artefacts (Kaye et al., 2006). The current study has attempted to narrow the focus to be solely concerned with *"project-related information"* (Jones and Teevan, 2007: 12). The research-related PICs thus become more visible, and so one of the consequences of this approach is that it actually makes clear the limits of the level of diversity in this type of collection.

Four types of resources collected by scholars are related to research: sources of literature; research data; published research; and administrative paperwork. Each element was investigated in terms of the findings, such as sources of literature or PIM studies, but they were not differentiated in any way in the scholars' PICs in the current study, either by the participants themselves or the researcher. However, the fact that a story concerning one of the types, Research Data Management (RDM), has recently become visible in academic institutes, related to the issue of ownership and publishing of research data and results, shows how significant diversity is in relation to PIM, and how the demands made on scholars, and the ways information is shared, are rapidly changing (Cox and Pinfield, 2013). RDM, as mentioned earlier in chapter 2 (see section 2.7), is about the management of data which is one of the types identified related to research. If any cloud solutions to support the RDM a critical agenda must be prepared in order to meet the requirements of research data sensitivity which concerns several academic institutions in the UK. Research data in specific now is facing challenges such as *"inappropriate storage facilities, lack of adequate data protection mechanism, poor data sharing means, inadequate data analysis tools, and the huge cost"* (Williams et al, 2014). A cloud based solution hence might overcome some of those challenges. Furthermore, the use of cloud solutions seems to pave the way to reducing the need to

have multiple CDs, disks, USB sticks and all the confusion associated with such devices which reduces a common PIM problem of saving multiple copies in several places and devices ie. Fragmentation. Nevertheless, at the same time, problematic issues, such as security, privacy and data protection, are raised by cloud storage, especially with material like research data, which is more likely to include sensitive data. In other words, regardless of the fact that the huge size of printed versions of material was a main feature of this study, this situation could change in the future because the practice of PIM has started to change, as the number of organizations moving towards storing information in the cloud to manage research data has begun to increase while considering the security issues as the providers of cloud based solution are mostly controlling the data more than the clients themselves (Dahshan, 2014).

6.4.3 Hybrid

The four different types of research-related PICs were: collected, created, stored and accumulated, in both traditional printed and electronic formats. This is consistent with the findings of Kaye et al. (2006) regarding academics' offices, as the respondent's archived material in both physical and electronic spaces, which shows a strong relationship to the current research. Other studies have tended to investigate either printed material or electronic forms, but not both together. For instance, Williams et al. (2009) investigated how people create, organize, manage, use and dispose of their digital archives, without considering traditional printed forms as the current research does. Whittaker and Hirscheberg (2001), on the other hand, investigated how people managed traditional paper archives. The current research found that scholars engaged in PIM activities using the research-related PICs in both formats, even when they claimed that they relied heavily on just electronic media. When investigated further, even those who claimed they relied solely on the digital form were found to be retaining accumulated traditional printed copies.

6.4.4 Fragmented

Because of the time constraints imposed by working hours, as well as the specific cultural lifestyle of Kuwait, scholars worked in different spaces, which added a further feature to the collections, which is fragmentation. A very large amount of information was stored in the main office setting. In addition, either duplicate copies or different versions of research-related PICs were stored in the secondary setting, which was an office at home in most cases. In addition, information was stored electronically on

different digital devices including computers, memory sticks and external hard disks. The issue of fragmentation was noted by Kaye et al. (2006) when discussing the problem of working in multiple locations and the need for mobility solutions. Since scholars were working in different places, their information needed to exist in different locations. This made it difficult to locate the needed information, as different versions of electronically updated material could not always be made available in all locations, while relying on traditional print versions made it harder to carry the material between multiple locations. Fragmentation of information was noted as a main problem of PIM by many scholars in the field, who described how difficult it was to overcome the problem of storing information in different locations using a number of different devices and tools (Boardman & Sasse, 2004; Jones, 2008).

Working in different locations made scholars look for mobile solutions to carry information with them to be used later if tasks were not achieved or completed during the working day. Mobility solutions such as briefcases, carrier bags and the back seats of cars were the most commonly-used forms for traditional printed material, while abundant use was made of self-addressed emails, which was a method commonly used for electronic versioning, in addition to flash memory sticks and external hard disks. The findings also gave results which corroborated many of the findings of Kaye et al. (2006) who found that academics used vehicles, bags and boxes to move hard copy material in collections between multiple locations (Tian & Belk, 2005).

In addition, electronic information, such as files and documents, was fragmented across several locations, either on the same digital device, or in different folders. This confirms what Bergman et al. (2006) saw as a major problem of PIM where a project file exists in this state. It makes efficient PIM very difficult, partly because it may not be possible for scholars in this situation to apply the same tools to the different fragments of the collection in the different locations and formats they might have, and partly because different parts of the collection may be physically and electronically disconnected from the others, so that organizing them would prove very difficult. This problem presents a severe challenge to information maintenance and organization (Jones, 2008).

6.5 Other relevant literature

Other studies have looked at issues related to academics' PICs and PIM, especially in the recent literature, where it has been discussed in relation to changes in the Higher Education sector in general, and to the impact of the technology revolution on research

in particular. This section will consider the perspectives of these studies and compare their findings with those of the current study.

6.5.1 Immediate factors

6.5.1.1 The need for research

This defines how scholars are required by their universities to undertake and publish a certain amount of research in an academic year in order to keep their jobs (especially non-Kuwaitis). From the way the need for research has appeared as a factor affecting the features of research-related PICs, it is understood that this need can be influenced by either the organizational or institutional culture or by personal values derived from the individual's personal cultural background. Kroll and Forsman carried out research in 2010 to examine the impact of support services provided by academic libraries and how these services would influence the way that researchers conduct research. The study involved 38 individuals (researchers, research assistants, graduate students, grant and other research administration specialists, and university administrators) who were based in four leading universities in the USA. They found that university- related the need for research could include: "*some form of central facility for managing grants and contracts*" and "*academic departments having staff who look for information regarding new opportunities*" (Kroll and Forsman, 2010: 7). These can be seen as key institutional needs but at the same time the universities are expected to follow institutional arrangements required by the need to compete for funding. Accordingly, it is also vital for western-style universities to have access to bodies such as, the National Science Foundation and the National Institute of Health in the USA because these are big research funders (Kroll and Forsman 2010). In this sense, in order to meet the institutional need for research, researchers are expected to carry out more research to be able to gain promotion and therefore to keep their contracts as also seems to have been the case in PAAET University.

Another important need for research in Western universities is for their staff to be highly trained and very flexible in order to play effective roles in research in general and more specifically collaborative research, as increasingly funding is available for complex projects which require cross-disciplinary integration. Kroll and Forsman (2010) mentioned that, although researchers are based in the university, they have access to different sources of funding which are provided by various funding agencies. This indicates that institutional culture is not the only issue that encourages the need for

research in Western universities. The present study indicates that the scholars were not able to access other bodies to gain funds to complete their research. On the contrary, this study shows that non-Kuwaiti scholars were under pressure to carry out more research to retain their position, as the only source of funding available to them.

From another perspective, the influence of disciplinary culture has been mentioned by, Becher and Trowler (2001), who describe how academics understand and position themselves in their academic disciplines and explored the different characteristics and knowledge of scholars in their academic environments. They describe the nature of academic work and how academics are required to compete with each other. Scholars work in order to gain a professional reputation. Competition may vary among people and across different disciplines and different institutions. In PAAET specifically this is confirmed and scholars showed that there are certain motives to conduct research, while their motives were affected by the institutes' obligations in law to meet their research requirements and hence achieve their goals, which therefore shaped their motives.

In addition, Becher and Trowler (2001) summarized Slaughter and Leslie (1997) when they stated that *"There has been a discernible movement towards 'academic capitalism' in which market like behaviour has become common at both the institutional and the academic staff level"* (2001:9). In other words, in Western universities competition is a factor for both individuals and organizations. Becher and Trowler (2001) clearly indicated that this competition in Western universities exists in relation to the following: students, funding, prestigious projects and market share.

However, this does not seem to always be the case, as scholars may not always pay much attention to competition issues; it sometimes seems more related to the workplace environment or the institutional culture in which the scholar works. This seems to be the case in this study as the current research shows that scholars working on research in the Kuwaiti context were more concerned about the need for research due to pressure from PAAET administrative requirements rather than due to competition. Furthermore, to confront their fears of losing information that they had found and paid for independently, they became active keepers of a large amount of diverse information within their research-related PICs. Their lack of trust in the services available, as well as in the technology, also meant that they took personal responsibility for handling their PICs, although they thought better support might ease their worries. In addition, this concern was reflected in keeping multiple copies backed up in several locations making their

collections fragmented both physically and electronically mainly to meet the need for research.

The institution-based motivation of having promotion based on research seems to be related to anxiety regarding the institution's status and rank in the higher education sector because PAAET had only become a university recently. It is also able to fund its own research so does not need to compete directly for external funding of staff or students.

In PAAET, research is required to be approved at three separate levels of the organization, namely at departmental, faculty, and university level. This involves an intense and prolonged inspection of all aspects of a research proposal, which takes a substantial amount of time before acceptance is achieved. For this reason, scholars can sometimes lose motivation and this can limit the quantity and quality of the research. The inefficiency of this system means that, by the time approval is gained, the research topic may be out of date; this is specifically the case for the health field where research topics must be up-to-date. In other words, in the Kuwaiti context, there are less external competitive pressures on research completion, but internally, for individual scholars, there is a significant amount of pressure to complete research for personal enhancement. This affected individuals' PIM practices. For instance, it was found that the non-Kuwaiti scholars working under these circumstances valued their collections and believed that they needed to keep everything for the type of need for research. Kuwaiti scholars faced less pressure on the need for research than non-Kuwaiti scholars did.

There are a number of important outcomes and effects of the situation for both of the lower status types of scholars. In the Kuwaiti context, ambitious younger staff members must take on multiple tasks in order to achieve promotion. In the western-style context, younger scholars as a whole have to produce a large amount of research on a number of different projects in order to justify an extension of their contract. As a result, in both circumstances, scholars are likely to be frustrated by the limitations imposed on them and to have high stress levels, due to the very competitive market in which they are operating. Moreover, both because of the range of projects they tend to work on; the need to generate data and resources for future work; and the time and space constraints involved, many PICs are likely to be complex and diverse. This in turn leads to specific features of research-related PICs appearing more and more commonly in the HE context, namely: the increasing size of collections in terms of the breadth of source materials; the

amount of data; and the amount of paperwork, due to the urgency involved in responding to opportunities. The level of intensity and sense of insecurity involved for such scholars means they are more likely to maintain information in a wide range of formats using a number of different technologies, often leading to duplication, especially in terms of hard and electronic versions; these may not be very well organized, due to the constraints mentioned above. Accordingly, as no research has been done to confirm these patterns to date, in the conclusion chapter of this study the researcher will suggest further research be carried out in this area.

The position where scholars on short-term contracts are amassing a lot of material in a disorganised way also raises the question of how scholars can retrieve and re-use information for different future research studies. A relevant study is Marschal (2008), who undertook an empirical study of scholars from five different disciplines, investigating their scholarly writings, collaboration, information management and their long-term archiving practices. She reported two main issues that are related to the need for research in the current study. One is storing and managing material during the writing process which she classed as versioning and data management issues. The second is related to long-term archiving after the publication of a paper, where participants mentioned that they kept the following items, in order to support collaboration:

> *"Paper sources and alternate versions of publications; The PS or PDFs for the published version; Research code; Data and logs and the scripts to manipulate them; Bibliographies and publications that represent closely; related work; and Email (individual messages and message attachments)" (2008: 257).*

The writer draws attention to the necessity to think through the process for *"storing, documenting, and versioning data… [and] anticipating future use"* (Marschal, 2008: 255). It can be seen that the features of research are directly related to, and influenced by, the need for research and the context in which it takes place, as well as by the particular factors which influence each scholar in their research.

6.5.1.2 Time pressure

Clearly the rapid development and spread of new technology has had a significant impact on research over recent decades, and continues to play a major role in the lives of academics. Scholars have access to a much wider range of resources and data and

their performance in research is therefore greatly enhanced by these technological developments. However, changes in the higher education field, some of which are related to these rapid developments in technology, have made research activities more challenging for scholars. For instance, Connaway et al. (2011) investigated convenience which is considered as a main theme in different information-seeking behaviours. The data was collected and analysed from two multi-year Institute of Museum and Library Services (IMLS)-funded projects. In the second phase, 307 randomly-sampled subjects responded to an online survey with telephone interviews used as a follow-up. Their findings showed that people prefer to use easy and convenient information resources in their daily lives, due to time constraints and other limits. They referred to the fact that most individuals do not have enough free time to enjoy searching for information or practicing a new method of searching or experiencing new sources of information. Time pressures were also found to affect PIM, as the process of organizing one's research materials and collections can be seen as a frustrating and time wasting process in the present study.

Bent et al. (2007), in their study of UK researchers, aimed to identify their role as researchers and their learning and needs within their research. They collected data through face-to-face, telephone and email-based interviews, and used this to define several ages of the researcher's academic life and the needs of each stage. The study mentioned that academics were working under time pressures which sometimes affected their research productivity; this was especially the case in relation to senior academics, where the interviewees referred to the pressure from lack of time to accomplish multi-tasks, including teaching and administration work. They also refer to the study by Mansourian and Ford (2007), who argued that "both textual overload and outcome overload" (2007: 90) are common factors in the contemporary research field.

Kroll and Forsman (2010) looked at the issue of time pressure in a detailed way, and identified a number of consequences of it for individual researchers and the wider academic community. For instance, they noted that:

> *"Scholars… have very busy research agendas and… [so] do not always have uncommitted time… hence… [they] spend little effort looking for potential collaborative partners and frequently do not wish to be approached by anyone outside their current circle"* (2010: 9).

This pressure obviously has the potential to cause quite serious problems in developing and sharing research findings and building on existing research. It is also quite possible that it could lead to duplication of studies. In both instances an unintended consequence of the increasing use of new technologies may be inefficiency in some areas, such as collaboration and PIM. Kroll and Forsman (2010) also drew attention to another paradox of the adoption of new technology, in relation to the fact that *"researchers… have no time to take on the burden of uploading their work to an IR, devising metadata, and creating useful organization"* (2010: 11). Furthermore, they also say that researchers tend to adopt the most immediately available and most familiar technologies to carry out data searches, but that, while it make sense for the individuals concerned to "adopt information tools and services that are easy to use and that simplify their work" (2010: 16), this approach can raise wider issues, as often "[these] tools and services are not optimal, comprehensive, or on the "approved list preferred by their university" (2010: 16). Thus time pressures affect both a scholars' time for PIM-related activities and their choice of tools.

In the present study it was found that a number of academics in PAAET recognized that although there was understandably strong demand for, and use of, Google and other meta-databases, due to the speed and accessibility involved, they recognized the limitations of these tools, such as the fact that information may not always be reliable and/or accurate. In other words, the scholars seemed aware of the possible risks of using Google to seek information and fulfil their information needs, but were attracted to it because it is easy to access and will help them save time and alleviate time pressures. It could be argued that this technology encourages scholars to build huge PICs, due to both the availability of resources and the difficulties of making efficient judgements about the relative value of different resources for research purposes.

Connaway et al. (2011) showed that convenience is a key factor in determining a scholar's choice of tool for, or approach to, conducting research. They argued that *"convenience… may act as a criterion in choosing information sources or strategies, and in judging their ease of use"* (2011: 180). It is noticeable, according to Connaway et al., that this key factor applies across all academic ranks, which strongly suggests that it may be a product of structural factors common across many institutions: for instance, that there will always be time constraints on any project or activity, since time is always limited, regardless of context or the efficiency of systems. Likewise it could be argued that certain facets of human nature constrain the amount of innovation which can be

achieved in any circumstance, as there is always likely to be a preference for 'what works' and what is familiar rather than for the new and the unfamiliar.

Connaway et al. (2011) also suggested that students have a tendency to *"use the expertise that they had… gained in information seeking to create timesaving strategies to complete the work with minimum effort"* (2011: 2409), and strongly imply that this is also true of academic staff. They argued that a potentially limiting factor in academic work in general is the tendency to stay within *"a well-known comfort zone in information seeking"* (2011: 180). In other words, people's tendency to treat certain activities such as PIM as things that just need to be done will tend to lead them to do the minimum required, and may play a part in restricting the impact that technological developments have on research, as much as limitations or weaknesses in the infrastructure of institutions or the knowledge and awareness of individuals.

6.5.1.3 Work space

Another factor that plays an important role in the types of collections created and how they are maintained is work space. This can be defined as a combination of the size and quality of the space or spaces available, as well as their levels of privacy. Work spaces are the offices and other areas where scholars conduct most of their research-related tasks; hence, it is the space where research-related PIC items are kept. In order to facilitate retrieval or for other reasons, people try to organize collections in quite particular ways. Kroll and Forsman (2010) showed that researchers often find their own solutions to data storage and collection maintenance issues in their work spaces, though these tend to be mainly short-term. The current study also found that scholars adopted individual storage solutions for their research-related PICs in a way which was affected by their work spaces. Accordingly, approaches used by the researchers in both studies seemed to be very individual, as none of the scholars received systemic training to learn how to perform such activities. The result, especially when combined with factors such as lack of time, is much non-optimal behaviour.

Lee (2003) reported the results of a study on university lecturers from various academic, demographic and cultural backgrounds, based on extended interviews which provided an in-depth description of their experiences in these activities, especially their interactions with material information sources. The study examined users' interactions with their information environments, and how the structure of information resources in such environments affected the users' seeking strategies. The resulting descriptions

were analysed to present preliminary parameters for structuring information resources within users' information environments. This involved separating the information environments into three main sections, with related sub-sections, that were either temporarily created by the user or inherent in the structure of the material. Lee (2003) showed that each of the interviewed respondents organized his or her own office into several unique zones, with different parts of both the physical and electronic office space designated to different aspects of research, such as the book collection; the journal collection; the article collection; and bookmarked websites. Some of the participants in the current study also manifested similar behaviour. When we look at previous studies, we can see how the use of office space has changed over a period of time, as the electronic modes of finding, organising, retaining and maintaining collections have become dominant. For instance, Lee (2004) drew attention to a study by Case (1986), which explored human information seeking and use through examples used in information behaviour research, by reviewing more than four decades of research on the topic, which showed that most participants used their offices to take notes from and organise source material. He compares these findings to his own study, which showed that nearly all respondents could "engage with active information seeking in the office… [using the] Internet… [which] made this personal space the central location for information seeking". Further developments in technology since this study have meant that such practice has become very widespread in both Western societies and, as this study indicates, in developing countries, so that workspaces in many different settings have much in common.

Malone (1983), in a series of interviews investigating how professionals and clerical office workers organize their information in their offices and on their desks, described the office workstation as like a desktop where users display and manipulate information in something like the way they deal with paper, file folders, and other items on their real desktops, for the purposes of organizing, reminding and storing. In contrast to Lee, this study found that there was a very wide range of degrees of organisation of PICs and related materials in work spaces, stating that "*The difference among people ... was the variation in how precisely organized their offices were. At one extreme, offices were filled with miscellaneous piles of paper... At the other extreme were offices that relied heavily on information stored in files and in precisely characterized piles... The two kinds of office organization could be called "neat and messy"* (1983: 104). Malone (1983) argued that one solution to achieving an organized work space and manageable

collections is using titles or labels. He added that, at the same time, it has been argued by psychological studies that a spectrum of brain types exist, from the convergent, which is very orderly and precise, to the divergent, which is very disorderly and allusive, with most individuals having mental structures located somewhere on this spectrum (Malone, 1983). Nevertheless, the argument about this issue can be complicated, with a lack of evidence and research identified in the literature.

In the current study, scholars who had large offices tended not to worry about keeping huge amounts of materials, since space allowed them to do this, and they would not worry until all available spaces were filled with collections. In terms of organizing, most participants followed labelling strategies and chronological ordering. No further neatness structures were discovered in the physical collections. However, electronic collections showed hierarchical ordering in some cases. It was found that some scholars had large working offices and most worked in a private work space. Few were found sharing with others. Those who had large and good offices did not worry about keeping everything in the same office, while those who suffered from limited space had to keep their collections in multiple spaces. As a result, their collections were more fragmented. A number of studies such as Lansdale (1988); Jones (2006), have shown that the quality and quantity of space available affects the size of a collection as well as its hybridity and fragmentation.

Tian and Belk (2005) looked at the meanings of possessions displayed in the offices of employees in a high-technology company, and put forward the concept of the 'extended self' to theorise this phenomenon. Extended self simply represents two terms: self and possessions. According to symbolic self-completion theory, individuals who have an incomplete or unclear self-definition complete the identity by acquiring and displaying symbols or possessions associated with it. In addition, the way people used personal possessions in the Tian and Belk study (2005) revealed that, while the senior management team had traditional private offices, other members of staff had semi-separated 'cubicles' of limited size in which to work in an otherwise largely open-plan area. They found that, as a result of the restricted range of possessions that could be put in the office space, only the most critical items tended to be *in situ*. In terms of the latter circumstances, they noted that people tended to build 'sonic' barriers, using music to ward off the sound of other people's business, and to maintain the integrity of their own work space.

Marschall (2008) was certain that *"place has an undeniable effect on what people do…[because] some venues are just more appropriate for writing and research than others"* (2008: 253). She noted that, since work often takes place in multiple spaces, with the separation between work, home and informal spaces commonly acknowledged, sometimes certain types of work cannot be carried out in certain environments, such as the limited availability, or absence, of databases or other resources In the current study scholars also followed the same strategy, carrying out research-related tasks in multiple places, often reading in public places, and preferring to write in other spaces; this separation of activities being mainly shaped by time pressure and mood. Accordingly, from the findings of this study, it has been found that the way the scholars present and organize their collections was related to their feeling that they needed to extend themselves. They seemed very careful in terms of displaying everything related to their professional work, including their PICs. Moreover, as all of the scholars had their own office, most tended to create a research space for themselves that presented their own personality and seemed to be unique for each individual.

6.5.1.4 Technological opportunities

Kroll and Forsman (2008) discussed issues related to technological developments and the use of Information Technology in HE. They begin by setting out in a clear and comprehensive manner the way in which such technologies are increasingly embedded in scholarly practice: *"technological innovations roll out at a rapid pace, offering new options for how scholarly work proceeds through the course of the research life cycle"* (2010: 5). They claimed that academics are very flexible in incorporating new developments into their work and also in rejecting technological tools that are less efficient, or which do not work for them in the specific circumstances in which they are working at any one time: *"researchers have quickly adopted products that expedite their work, while rejecting those tools and services that do not offer ease of use and sizable payoff"* (2010: 5).

Specifically, Kroll and Forsman's study found that *"researchers today derive great benefit from using network-level search engines such as Google and from convenient access to electronic journals"* (2010: 5). One downside they identify is directly related to the opportunities that the new technologies offer, which is the rapid and extensive accumulation of material. When this process takes place at a period when change in general is very rapid, the likelihood is that much material can very quickly become

unavailable because key data may be recorded on media which has subsequently become outdated and is therefore likely to be incompatible with the most recent tools (Kroll and Forsman, 2010).

Kroll and Forsman (2010) considered this issue to be highly significant due to the potential unseen risks to scholars that it entails. They pointed out that, firstly *"researchers rely on a broad range of commercial products to conduct analyses tailored to the type of data"* (2010: 11). In other words, most researchers use whatever software is commercially or available. They suggest that such packages may not always be the most suitable tool for a particular type of research, even to the extent that they put forward the idea that scholars might develop their own tailor-made tools instead, though this very rarely occurs in practice. Secondly, they make a further point that there is a tendency, not only amongst scholars, but inside universities generally, to assume that the current tools available will continue to be viable into the indefinite future: *"no faculty voiced concern that electronic articles might become dated or unavailable at a future date."* (2010: 15); and that *"today's electronic journal content will be refreshed and digitally manipulated as required to carry it forward indefinitely over time"* (2010: 15). In other words, the very evident strengths and benefits of new technologies in the modern academic context can create a cultural attitude amongst scholars which relies excessively on the maintenance of the status quo, or that these new technologies at least exacerbate complacency. This suggests that people should be more worried about these possible outcomes and that this should influence how they manage their PICs and how institutions help scholars to do this.

Another issue was also raised by Kroll and Forsman (2010) who stressed that, in order for the university to meet their need for research; they needed to provide researchers with up-to-date technologies to manage their content. This issue has also been identified in the present research as the scholars interviewed desired such support. Many suffered from technical failures so had to store the same piece of information in a variety of forms just in case a system failure happened.

From another perspective, in most of the literature, there was a common thread that suggested that older academics sometimes struggled to move beyond practices with which they were familiar: in other words they were reluctant to adopt and embed new technologies in their research. However, the current study found that, in PAAET, this was not the case, as older members of staff were as keen and able to adapt their practice

as others. Nevertheless, the study did not focus on habit-forming behaviour and the impact this might have on the scholar's ability to adapt their practice to different circumstances.

In chapter (5), it was also seen that a number of scholars in PAAET believed that the university library services were not keeping up-to-date with technological developments, which meant that they used these services less and less. This is an issue which is discussed in more detail below, under 'Support Service'. However, Kroll and Forsman (2010) presented this issue from a different perspective, noting that *"the library [did have] a vision to invest… in electronic journals, yet in their hectic work life the role of the library in maintaining digital access is invisible"* (2010: 17). It may well be that there are substantial differences in quality between university libraries in Western countries compared to those in developing countries, but the idea put forward here suggests that sometimes scholars may not be aware of the kinds of support and guidance which the library services offer, due to the fact that they are hidden within the technological infrastructure. The current research did not explore this possibility in relation to PAAET but it is a fertile area for future study.

6.5.1.5 Support services

In most higher education environments, support services play a critical role in helping the institutions to meet the needs of their researchers. However, since new technologies have had such a major impact on the way research is carried out over recent years, the rapid changes which have occurred have also affected support services and set them new and difficult challenges. For instance, Kroll and Forsman (2010) explained that the modern researcher tends to look for *"easy solutions that are adequate, not optimal"* (2010: 5), meaning that they tend to look for immediately accessible information, rather than wait for better quality data. This seems to be linked to the way that new technologies have increased the rate at which information has become available exponentially. They point out that one of the consequences of this process is that *"many researchers flounder in a disorganized and rising accumulation of useful findings that may be lost or unavailable when conducting future research"* (2010: 5). In other words, scholars today require immediate access to information they can get easily, yet the consequence can be that they are unable to manage the quantity of data effectively. Kroll and Forsman (2010) indicated that the problems involved in maintaining research collections effectively have serious consequences. For instance, they noted that *"a wide*

variety of researchers voice their inability to create consistent and shareable metadata and their disorganized storage strategies" (2010: 18). They recognized the need for academic libraries to support researchers in this respect, suggesting that this could be in the form of *"aggregating discipline-based tools, providing customized services and emphasizing user-centred services"* (2010: 18) in order to enable staff to work collaboratively and efficiently. This, of course, is a challenge for support services, since it means that they are increasingly required to adopt new technologies in order to provide up-to-date services. They face the prospect of becoming redundant if they cannot change their role to meet new demands. Kroll and Forsman stated that *"Universities are doing a uniformly poor job of storing, managing, and providing access to the discoveries they are encouraging their faculty to pursue through the research process"* (2010: 18). The result of this inability to meet the needs of its research staff is that most store documents in a haphazard manner, which is detrimental to the current and future work. They also indicated that the degree of disorganization in scholars' PICs is closely related to their dissatisfaction with central support services. A study showed that scholars preferred support which was directly related their faculty and specialism, and found general support services much less useful. In the current study, the academics interviewed showed a pronounced dissatisfaction with the university support services. There was a general agreement that these services did not meet the need for researchers and directly led to the size of collections in particular. The scholars mainly agreed that there was no real strategy to engage with the changes needed to compete and collaborate with other institutions globally, which was put down to poor management and inadequate leadership, rather than a lack of resources or resistance to change. In addition, routine and cultural conventions seemed to play a role in decision-making, often making them long processes, so people usually avoided the delay by seeking easier solutions.

Al-Moumen (2009), in her PhD thesis on information-seeking behaviour in Kuwait University, investigated students and academics and reported that faculty members and librarians in Kuwait University thought the librarians were under-qualified and unable to provide the support they needed, which led them to be more independent in finding their own information resources and using their own financial resources for this purpose. This is further mirrored by the investigation in hand, as it found that scholars spent their own money to subscribe to the information databases that satisfied their needs as researchers, which the support services did not provide. The common findings of Al-

Moumen and this study show how availability of budget helped academics seek their own resources. A possible explanation, which might be unique to Kuwait, is that scholars did not face personal budget limitations on doing this. Kuwait, as one of the richest countries in the world, provides education, health services and housing to citizens free of charge, which makes people feel comfortable about using their personal finances for their work when they are not happy with the services provided by their institutes. Though scholars in Western universities are quite well-paid, the cultural context, whereby employers have traditionally been seen to have a responsibility to support their staff's needs, also militates against such a situation occurring in these universities, coupled with the fact that researchers, in the early stages of their careers at least, tend to have modest incomes.

This confirms that support services play a very important role in modern HE institutions, but that their position within those institutions means that they find it difficult to change very quickly or dynamically.

Connaway et al. (2010) showed that younger people (in this case undergraduate students) are more likely to be motivated to value immediacy and accessibility of resources in their studies than older scholars. They want services to be easy and convenient to access information. These scholars therefore, recommend that library services in particular need to change dramatically. They say that, not only should university libraries provide authoritative and reliable digital sources, but should also provide a much wider range of media to deliver a greater variety of information *"from e-journals to curated data sets, as well as emerging services such as virtual research environments (VREs), open-source materials, non-text-based and multimedia objects, and blogs"* (2010: 188). Developing such resources requires substantial time and money; dedicated staff training; and consistent and reliable leadership from senior management, if it is to succeed. It can be said that the demands being placed upon support services for *"multiple delivery modes to meet the different information needs of users in different situations"* (2010: 188) make the role of these services today both crucial and problematic, bearing in mind that, in the current study, this is reflected in the character of research PICs, as it has many other effects. Bent et al. (2007) pointed out that support services can help researchers to feel valued and empowered, if they provide the right kind of support. This would suggest that any separation between these services and their academic users can be repaired. However, they also describe the significant changes which support staff and services would need to embrace in order to become available in this way for staff. They

argue that *"librarians may need to raise their profile, become 'researchers' themselves; getting embedded in the research community; gaining credibility; and collaborating as equals"* (2007: 93). In other words, Bent et al. foresee the need for support services to become more specialised and to change dramatically, to the extent that they might actually merge with the research communities they serve, in order to satisfy the needs of contemporary scholars. Accordingly, academic libraries have tended to focus on support for teaching, while support to research has not been a strong area. In this study, this gap is reflected in the character of the scholars' research-related PICs.

6.5.1.6 Self-positioning and self-presentation

In the findings of the study (chapter 5), the issue of self-positioning and self-presentation was discussed where it was noted that scholars used the physical space available to them in the form of a dedicated office or something similar, to project an image of themselves and their academic identity to others; nevertheless it was a strong theme. Scholars were shown to self-position and self-present in the way they organized and displayed their collections and their PIM practices.

Marshall (2008) extended the concept of self-positioning and self-presentation beyond the physical environment into the virtual, electronic space. She suggested that developing an online presence is increasingly important to scholars, in order to have their published documents available online and positioned effectively to present themselves and their research in the best light: *"Not only do these documents keep track of a scholar's intellectual legacy; they also are used to point to authoritative online versions of the documents"* (2008: 258). On the other hand, she also pointed out that establishing such an online identity can be complicated and time-consuming. This is because "often, to fulfil personal and institutional needs, a researcher has to edit several different web pages and CV-like documents in the wake of each publication" (2008: 258). We can see that constructing and maintaining an identity as an academic through self-positioning and self-presenting is a complex and difficult process, as it is for people generally, although it seems easier in the physical space than it would be in the electronic one. In fact, according to Kroll and Forsman (2010), the level of complexity involved, and the amount of time and effort consumed, means that some individuals and organizations prefer not to undertake this type of activity: *"Faculty ... admit that they spend little time entering or updating their professional information into websites of any kind"* (2010: 14). They suggest that a key reason for this is that online identities are

often feigned or faked, to the extent they tend to be seen as unreliable, on the whole, and that other academics and their institutions *"are sceptical of the reliability of what they might find when searching for individuals on institutional websites or expert profiling sites"* (2010: 14). In other words, although self-presentation and self-positioning is important for scholars and their institutions, many difficulties are involved in doing this successfully. In fact, Kroll and Forsman (2010) implied that trustworthiness is best achieved through *"personal introductions and face-to-face interaction"* (2010: 14). This could be linked to the finding that some scholars in the present study preferred to keep and display hard copy versions of their PICs, or some parts of them, for self-positioning and self-presentation. This is reinforced by the fact that a number of scholars presented physical copies of their work to the researcher, rather than pointing to electronic versions, to confirm their status and achievements.

Tian and Belk (2005) introduced an interesting new dimension into the consideration of this aspect of PICs and related issues, showing that individuals do not produce personalised environments at work in isolation, but that these domains have an interface with other central aspects of people's lives, such as home and family. They described a dynamic interaction between the two environments thus: *"As more functional work-related possessions enter the home, more symbolic home-related possessions ... enter the workplace"* (2005: 297). They see this process as mediating a sense of uncertainty about work or study identity, in that they say such behaviour helps to *"overcome feelings of alienation and transience by making a personal mark"* (2005: 299). It could be argued that this circumstance is particularly apposite to the early career researcher or to a scholar who has recently changed jobs, at least in Western universities. Both of these situations are becoming increasingly common in contemporary higher education institutions, where contracts tend to be shorter, and mobility and turnover is higher. On the other hand, in the current study, scholars did not experience these kinds of pressures, and were not subjected to the same levels of insecurity and instability, except for the non-Kuwaiti staff. The researcher did not focus on this factor in the study, but no obvious difference between Kuwaiti and a non-Kuwaiti member was evident, in terms of the extension of the self across these two domains. Nevertheless, this is an interesting area for further exploration in future research. On the whole, the current study and the literature on this topic points to the fact that, as Belk (1991) stated, most people stored and seek possessions because they conceived objects as a source of trust which provided a sense of security. These objects supply the keeper with love, protection, and security.

Therefore, Tian and Belk stated that *"a sense of past is essential to managing our identities"* (2005: 302) in order that the individual does not *"each day ... greet an unfamiliar self in the mirror"* (2005: 302).

6.5.2   Underlying factors

It is well established that demographic aspects such as Age, Gender, and Nationality, play a central role in influencing people's attitudes, lifestyles and behaviour. Thus, in the present study, it was expected that these factors would have an influence on individual scholars' PIM practice. In addition, factors relating to education were also taken to be key underlying influences on these activities, since the PIC-building strategies of academics are in themselves an essential part of educational practice. It is clear in this study and others that these personal factors, together with institutional ones, play a key role in all aspects of individual practice, including PIM.

6.5.2.1 Age

One underlying factor that is addressed in the literature and in the current study is that of age. It is often assumed that those who are biologically older are likely to be less efficient in their use of technology and less able to change as new developments arrive. However, the literature questions the basis of this assumption in a number of ways. Firstly, it is important to distinguish between biological age and professional age. In other words, an older person may have entered the profession later than their peers. This could mean that their information skills are either higher or lower than an equivalently-aged academic who has spent their life in academia, depending on the environment in which this individual has lived and worked previously. Furthermore, the assumption that younger scholars always prefer electronic media to physical, hard-copy resources is not always borne out by the literature in the field. For instance, Connaway et al. (2010) noted that *"younger scholarly users in this study identified somewhat more with physical libraries than expected"* (2010: 180). Bent et al. (2007) also made a similar observation, noting that, while it is true that informational literacy can decrease with age, nevertheless this is not an inevitable consequence. They noted that *"a researcher may cross the threshold concept of understanding and changing their attitude to the broader concept of information literacy at any 'age' and this understanding, once reached, will never be lost"* (2007: 96). In other words, the assumption that 'older' means slower, or that it automatically increases users' levels of difficulty in adjusting to new technologies, and/or their levels of resistance to them, is questionable.

On the other hand, it should be said that a number of studies do show a correlation between age and more limited technology use, if not necessarily between age and information literacy. Zimmerman (2009) noticed a significant difference between the use of emails by those of a young biological or professional age and those who were older, where the former used email more regularly. However, this study also showed that factors other than age affect the regularity of the use of email, specifically rank in this case, indicating that the situation is complex and mixed. Rowland and Nicholas (2008) carried out a study which looked at this issue from a qualitative rather than a quantitative perspective, which gave some surprising findings. They found that *"the information literacy of young people, has not improved with widening access to technology"* (2008: 297) and drew the conclusion that younger people had some significant problems with new technology, despite their strong preference for it. They cited evidence from Horrigan (2007) that younger users have a passive attitude to accessing information through electronic means, compared to those who are biologically and professionally older, who tended to use such tools more actively: *"Wikipedia and YouTube both exhibit a marked age separation between viewers of content (mainly18-24s) and content generators (mainly 45-54s and 35-44s respectively)"* (Horrigan, 2007: 298). Moreover, Rowland and Nicholas (2008) found evidence to show that, while *"the young... may have been the earliest adopters but now older users are fast catching up... the so-called Silver Surfers"* (2008: 301).

These findings strongly suggest that there are no fundamental differences in ability, skill levels or enthusiasm for new technologies amongst scholars of different ages, and that, where the younger generation may have an advantage, older scholars either have other skills which bypass this problem or have the capacity to develop their information literacy to the level of the younger generation, if not beyond. The present study confirms these findings. Few if any differences in information literacy were seen across a wide age range of respondents. Enthusiasm for, and understanding and take up of, new technologies was very widespread. In the present study there was no indication that scholars of different ages used new technologies differently for their PIM.

However, this study did not explore the relationship between age and information literacy in detail, since the focus was on PIM. The study did indicate that some slight difference in perceptions and use of technology exist according to age, but it is difficult to quantify precisely how significant this may have been.

6.5.2.2 Gender

Becher and Towler (2001) offered a detailed summary of the development of the post-war Western university sector and its move towards massification - delivering to mass audience. Amongst other things, they draw attention to the historical inequalities between males and females in Higher Education in Western societies, commenting that *"gender regimes in universities have traditionally been profoundly unwelcoming to women and had allowed the unacknowledged exploitation of their work"* (2001; 19). However, they point out that the situation changed in recent years, due to greater scrutiny and transparency through audit and assessment exercises and changing curricular structures, which have altered boundaries and borders for research, implying that they have come to include more female-oriented matter.

Gender is one of the factors that have been measured in previous studies, such as those investigating information seeking behaviour. For instance, Rowland and Nicholas (2008) argued that "diverse information seekers" show different behaviours, as "one size does not fit all" and that gender is a strong predictor of some patterns of information-seeking behaviour, in addition to *"geographical location, type of university and status"* (2008: 295). Zimmerman's (2008) study explored the issue in depth, generating four measures of perceived benefit, and found no significant findings related to gender difference; although it did find that males made more use of e-mails than women. This result did not reflect a difference in productivity between the genders and therefore it was concluded that the "gender gap is decreasing".

Not many studies found gender to be one of the factors shaping scholar's PIM practice or the features of the collections, and this was also found in the current research. On the other hand, although there was no marked effect on the management of the collections, nevertheless female participants displayed their research-related PICs in a more organized way and were found to be keen on the self-presentation of awards they had gained during their academic careers. It was evident that women's use of work spaces involved more display items; more attention to creating visually attractive self-presentations; and more thorough organization of both PICs and office spaces as a whole. This may be an example of the complex and diverse ways in which the increasing involvement of women in Higher Education has shifted the nature of research environments and practices more in favour of females, which has therefore led to more female involvement. The massification of the Higher Education sector has also been

partly responsible for this change, since it would not have been possible to grow the sector to the extent that Becher and Trowler describe without recruiting more females into this sector at all levels.

6.5.2.3 Nationality

Cultural factors seem to play a significant part in scholars' PICs and PIMs. For instance, it is possible that the kind of preoccupation with neatness of office space and collections reported by Malone (1983: 105), where *'messy'* individuals showed signs of defensiveness about this aspect of their PICs and 'neat' individuals showed signs of aggression to the former types, might be culturally specific to Western culture, or just to US culture.

Another example of the way cultural values can inadvertently influence research findings is found in Tian and Belk (2005: 298), who specified that their study took place in a *"privately owned, for profit, business-to-business organization located in a major south eastern U.S. city"* yet go on to suggest that the way their subjects projected their extended selves into their work spaces was *"like an Asian household shrine to the ancestors".* Here cultural generalisations are made, based on the perception of other cultures, filtered through the lens of an early twenty-first-century American perspective. In general, there is a sense among those who write from within a Western context that the data they generate has universal applicability. However, the present study challenges this notion, since it is clear from this study that nationality showed a marked effect on scholars' collections.

The difference between the rules and regulations for Kuwaitis and non-Kuwaitis affected their practice and hence their collections. Other studies did not report nationality as a factor affecting the PICs of academics. The current study, on the other hand, found that this factor had a clearly noticeable effect in shaping the research-related PICs of scholars. While these differences are not cultural, in the sense that the separation is not a product of the difference between Kuwaitis and non-Kuwaitis, it is the product of a particular culture, namely that maintained by the Kuwaiti state, which is simultaneously the root cause and product of a two-tier higher education system. This division resembles the gender imbalance that existed in Western higher education institutions in the past, to an extent, and could be said to be very similar to that which exists in the same institutions today in relation to the separation between Home and International students, in terms of fees, rules and requirements.

6.5.2.4 Discipline

The scholar's academic discipline was one of the underlying factors investigated in the current research. As it was a factor affecting different topics, it might be a factor affecting the PIM practices of scholars. Lee (2003) related scholars' information-seeking behaviours to key factors, including discipline.

Becher and Trowler (2001: 14) made a point that relates to this issue when they discussed how disciplines have increasingly tended to fragment into sub-disciplines. They concluded that in higher education *"both theoretical understanding and practical policies cannot be assumed to relate equally to all academic contexts"* (2001; 21). The sense of diversity and multifariousness represented here strongly suggests that PICs and PIM methods are increasingly likely to vary between groups and even individuals, as well as within disciplines.

Zimmerman (2008), noticed that discipline influenced the relative benefits of email use, finding that that a *"significant difference was… found between social science and the humanities regarding email benefit and email contribution"*, with humanities benefitting less (2008: 34). On the other hand, they found no significant differences in this area between social science and science faculties. The evidence seems to point to quite uniform practices across disciplines, although these studies do not directly address the issue of PICs and any differences which might exist between disciplines in this particular area.

Other studies found that discipline might affect the scholar's working space, as well as the size of their collections. Belk and Watson (1998) found that professors' offices in different disciplines had some personal material that could vary in size from one to another, as well as with the type of personal collection.

The researcher investigated the issue of discipline as it was expected to make a slight or marked difference within scholars' PIM practices and hence affect their research-related PICs, yet surprisingly it did not. In the current research, in the two disciplines investigated, scholars showed approximately the same potential for keeping and managing the research-related PICs. The spaces however, in the two disciplines investigated showed a slight difference, as within health colleges scholars might work in laboratories and hospitals within the main and secondary settings of their work and home offices. Hence the collections were located in such places and shared with other

colleagues as well. Although some extreme cases were found such as one department in the Basic Education College having poor quality workstations because they shared a small space and had limited physical storage, their retention behaviour was not affected, as they accumulated collections in other places such as home office spaces. A possible explanation for the relative lack of difference between scholars in the two disciplines is that in both scholars followed the same quantitative methodology rather than both quantitative and qualitative approaches being used. The researcher expected scholars in education would tend to use qualitative rather than quantitative approaches, but this proved not to be the case.

Among PIM there might be differences in the way scholars organize collections in different disciplines as the nature of the collection itself might be different. Specifically, those PICs in health and science are likely to be quite specialised, since they will contain data such as experimental material, which would not be found in other disciplines, and which are likely to shape the nature of those collections. Likewise, collections held in science laboratories are likely to take a different form, and have different content, than text-based materials generated in offices.

6.5.2.5 Seniority

Seniority is another factor investigated in the current study in terms of workspaces, length of tenure and size and types of PICs. Senior scholars had a better chance to have large offices than those who just started their career. In terms of collections, all participants more or less reflected the same features of collections, although the offices of those in top management were bigger and better in quality. Bent et al. (2007) identified each stage as having different requirements, due to the amount of material they had accumulated and the different purposes they were likely to use their collections for. While Bent et al. included a wide variety of career stages, and could thus compare and contrast scholars' PIMs and PICs at different levels of seniority, in the current research most scholars were quite senior, active researchers and were all experienced in research and held similar positions within the university, because the aim of the study was to explore the nature of PIM by looking at the developed practices of such scholars.

Bent et al. defined seven scholarly stages, showing that both age and seniority have a definite impact on scholars' needs for research within each stage: *"Master students; Doctoral students; Contract research staff; Early career researchers; Established academic staff; Senior researcher; Experts"* (2008: 84). They explained that each stage

of a researcher's career has demands. One might expect this would also impact on PIM, yet the current study did not suggest that seniority had an impact on PIM practices. A possible explanation of this is that the participants involved fell only into the two last categories given above. This is because they were purposefully selected in order to be able to investigate their built collections over time. Therefore, beginners in the field were not good candidates for the current investigation, as they would not possess reasonably-sized research-related PICs. In spite of this, the last two categories which are presented here did not show that scholars at different levels of seniority required different support, as all participants showed their independence, to a degree. However, seniority affected two immediate factors: time pressure and environmental space. This was due to the fact that the senior scholars in higher positions worked under more time pressure due to the wider responsibilities they had. Their working office was also usually quite a lot bigger than their less-senior colleagues, which provided more space for storage. In addition, they sometimes had two working offices, which contributed to the fragmentation of their collections.

6.5.2.6 Educational background

Bent et al. (2008) showed that educational background influenced scholars in the early stages of their careers. However, in the current research the early stage mentioned by Bent et al. (2008) is not reflected. Instead, it was clear that educational background influenced technological issues, support sources, foreign resources, and self-positioning and presentation. Clear differences appeared between scholars who had obtained their PhD from the UK and USA universities and those who had obtained it from Arabic countries, such as Egypt. This distinction parallels the situation in Kuwait University and PAAET. Kuwait University, as the main university in the country, faces a challenge to meet the shortage in faculty members in order to handle the increased number of undergraduate students of about 50% yearly. Producing a ratio of student to faculty of 26:1 increases the support needs of graduate students. In order to meet this need, they have set one of their objectives as offering graduate scholarships abroad (Al-Bader and Bou-Rabee, 2013). PAAET supports the same strategy to meet the needs of faculty members.

Such educational backgrounds affected the nature of the collections generated and also their use of technology. As the need of those who had not studied in the West was for rare Arabic resources, or resources translated from English to Arabic, this need was

often not satisfied by the online environment. As a result, the locational element of individuals' academic backgrounds was shown to play a significant role in their collection and management of research material. This factor was identified in the current research, as many of the participants had taken their degree outside of the country. Therefore educational background affected the scholar's practice in the way they found and managed their research-related PICs.

6.6 Wilson's models of information-seeking behaviour and the current research

Chapter 2, section 2.3.1.1 explored Wilson's (1981) study, which established the first version of his model information-seeking behaviour and his follow up study (1991), in which he developed his model into a new version as he became more aware of the factors that influence seekers of information.

In terms of needs, Wilson (1981) suggested in his first model that information needs is one of the terms related to information-seeking behaviour; and in his second model (1991), more awareness of the layers of needs appeared, where seekers' information needs are more likely to be not primary but secondary needs. In this research, however, the need for research appears to be an immediate factor that drove researchers in PAAET to seek information.

According to Wilson (1999) time pressure is one of the environmental elements that seem to have an influence on individual seeking behaviour. Rather, the lack of adequate time to seek information can be seen as an obstacle to information seeking. In the present research, time pressure played an important role and influenced the way researchers sought, searched, used and organized their personal collections.

Wilson mentioned that demographic factors, such as gender and age, can affect the way people seek information, based on evidence from various studies. He also linked these factors to the personal characteristics of the seeker. Nevertheless, in this study, there was no indication that gender and age influenced the types of collections scholars created or maintained.

In terms of culture, this study shows that the difference between the rules and regulations for Kuwaitis and non-Kuwaitis affected their practice and hence their collections. Wilson also saw that culture influences the way people from different cultures perceive the possibilities of information acquisition. In addition, he linked

issues related to technology, self-positioning and power distance (seniority) to the culture, similarly in this research such issues appeared to have an influence, bearing in mind that it was categorised under underlying factors, which seems to justify Wilson's perspective.

Another factor that plays a significant role in the types of collections created and how they are maintained is work space. In Wilson's model, a factor such as geographic location was identified to have an influence on people seeking information behaviour but there was no mention of the influence of the workplace on the behaviour of seekers, which is an area for further investigation.

Further, educational background is also a factor, as suggested by the findings of this research, but there was no sign of its influence on Wilson's model of information-seeking behaviour. On the other hand, Wilson mentioned channels of communication and information sources as a factor that can prevent people from seeking information, but such factors have not been identified by this study.

To sum up, the comparison between Wilson's models of information-seeking behaviour and the outcome of this study reveals that several similar factors seemed to influence scholars' methods in managing and maintaining their personal collection that were also identified by Wilson to have an influence on the way people seek information. At the same time, a number of factors identified in this study were seen by Wilson as related to the main factors (e.g. culture). Accordingly, a number of other factors, such as channels of communication, were identified by Wilson but were not found in the current research.

6.7 Conclusion

The factors which affected the appearance of research-related PICs to be: huge in size, diverse, hybrid and fragmented in terms of 'Immediate factors'; while those which indirectly affected PICs were termed 'Underlying factors'. These factors played a major role, which was reflected on the scholar's PIM practices in the way they decided to keep resources in the first place, having found the information, and then reasons they gave for keeping these collections. In addition, the factors reflected on the features of the collections and hence a main PIM problem which is the difficulty of re-finding kept information.

The respondents expressed their way of handling research-related PICs and suggested that research was a major academic task, which lacked attention at the time this study

took place, and that more studies of this area would help them to overcome their problems and enhance their PIM practices. From their point of view, support in their research practices would help them to overcome the problems of PIM and therefore improve the efficiency of their research production.

The scholars made some attempts to improve their PIM practices using their own initiative, but these proved to be limited, due to constraints on time and the various factors involved. Scholars, their institutes and support service providers (internal and external) should be involved in order to achieve these improvements. The impact of the factors explains many critical aspects of this problem. The next chapter shows how this study contributed to scholars' PIM and draws some practical implications for all stakeholders. It also provides suggestions for future studies of this fertile phenomenon, as explained in the investigation in hand.

Chapter 7 – Conclusion

7.1 Introduction

Having discussed the study findings in relation to previous research in the last chapter (Chapter 6), this chapter brings together all the work done in the study. The first section presents a summary of the findings in order to show how the aim of the project was met and the research questions were answered. This is followed by an exploration of the contributions to the field in terms of both knowledge including theoretical, empirical and methodological. The implications of the research findings to the various stakeholders in scholars' PIM (Personal Information Management) are then presented. Finally, the limitations of the study and possible future research directions are set out.

7.2 Summary of the research

This study explored the factors that shaped scholars' PICs (Personal Information Collections) within their research processes by reviewing the literature (Chapter 2) and selecting and applying a suitable research methodology (Chapter 3). The research design was based on a two stage investigation: an exploratory stage (Chapter 4) and the main study (Chapter 5). Then findings were discussed and contextualized with the relevant literature (Chapter 6).

Chapter 1 of the thesis introduced the concept of PIM and research practice as human enquiry as the context of the study. The study explored the factors which shape how scholars manage their PICs within their research projects. In order to achieve this aim, the research questions were as follows:

1. How are scholars' research-related PICs created?

2. What are their characteristics?

3. How are they are used?

4. What are the factors shaping them?

The investigation examined scholars from two disciplines, namely Education and Health, in the Public Authority for Applied Education and Training (PAAET), a public university in Kuwait. The research questions were based on the idea that discovering the factors which shape research-related PICs would add to the theoretical understanding of

PIM in the Library and Information Science field and also help improve scholars' PIM practices and the support offered to them by their institutions.

Chapter 2 provided a review of the literature and helped the researcher to map and locate the current study in the wider field of research on PIM. It then addressed information needs and information-seeking behaviour to understand how scholars find information. It reviewed, in a broader sense, how PIM relates to other concepts in the field, as well as how PIM studies are focused. This overview was then narrowed to a review of the PIM concept, including PICs and PIM activities, followed by identifying the problems of PIM and highlighting some solutions. It also provided a review, based on scholars' PIM practices, to understand the scholars' activities within their research processes. In short, the chapter provided insight that enhanced the understanding of scholars' PIM practices and how they shaped the researchers' understanding of this area. Furthermore, it related the scholars' PIM practices in a way that explains how they find, keep and use information within their practices; the main issues which were explored in this study.

Chapter 3 presented the research design and methodology used in the current research. It first provided the philosophical choices available to the researcher, explaining the need for adopting an interpretivist epistemological position in order to gain an in-depth understanding of social reality. This involved investigating a small group of scholars' practices and attitudes in order to gain an understanding of the social world in which they conducted their PIM practices. This chapter also provided an explanation of, and justification for, adopting qualitative methods to investigate PIM, arguing that this was suitable for such a study seeking to gain a deeper understanding of the phenomenon of scholars' PIM practices in an exploratory study. The chapter provided explanations of the qualitative methods of data collection used in both the exploratory and main studies. It first explains the interviews of the three studies within the exploratory stage. The chapter then provided further explanation of the multi-methods used within the main study, namely interviews, photography and observation via tours. The 17 participants in the current study, from two disciplines, namely Education and Health, were asked open-ended questions through interviews in addition to photographs being taken during tours of their working spaces. Using multiple types of data in investigating PICs was effective in providing a fuller understanding of the research problem. In addition, using multiple methods helped to overcome the limitations of each method if adopted alone.

Chapter 4 presented the findings from an initial exploratory study. It explained three series of interviews which the researcher conducted before the main study. In the librarian service study three librarians were interviewed in order to establish how library services met scholars' information needs. It was found that librarians were aware that scholars were not satisfied with the quality, size and content of the databases the library services made available to scholars. The scholarly practice study, the second stage of the exploratory study, involved interviewing six scholars to discover how they met their information needs within their daily tasks, and whether they were satisfied with the existing support from library services. The data supported the findings of the librarian service study stage, and showed that scholars were unhappy with library services in terms of their teaching, research and other tasks. In particular, in terms of research, the scholars were in need of further support and this seemed to contribute to their unhappiness in relation to the services offered through the library. The academics wanted better quality information which was more relevant to their particular fields. At this stage, the researcher decided to adopt a more specialised method of data collection through interviews based on recently-published articles by the scholars themselves. This method was chosen in order for the researcher to discover more about the use of information within the research process, so that the challenges faced by scholars within their research, and the approaches they adopted towards solving or reducing these difficulties, could be examined in detail. Throughout the process of constructing these interviews the researcher understood that the scholars were adopting new practices in response to changes in their academic environment, mainly related to rapid technological innovation, which were not being met by the institution, and which therefore required the scholars to behave more independently. This independence explained how the scholars came to build and manage their own collections. The exploratory study played a significant role in the investigation, as it contributed to the process of narrowing the focus, redirecting the researcher and guiding the formulation of the main research questions, which was the focus of the main study explained in the next chapter.

Chapter 5 set out the main research findings and sought to answer the research questions. This was done firstly by addressing how participants collected and created their research-related PICs through the actual stages of the research process, taking a research lifecycle approach. This gave an answer to the first research question, about how scholars' research-related PICs are created. The second research question was then

answered by providing a description of the features of such collections as they grew in size, and became more diverse, hybrid and fragmented, and hence became much less easy to retrieve information from, or in extreme cases, content became irretrievable or impossible to retrieve information from. This last point addressed the third research question of how these collections are used, where they were saved for future use. Furthermore, it was found that they were kept for other purposes than to retrieve information from, such as for display purposes. The last research question was addressed by offering explanations of the factors which affected these collections: either in a direct way, involving the immediate factors (The need for research; Time pressure; Working spaces; Technology opportunity; Support services; Self-positioning and Self-presentation); or in an indirect way, through influences here called the underlying factors (Age; Gender; Nationality; Seniority; Discipline; Educational background). Finally, a model was offered explaining the relations between the features of research-related PICs and the factors affecting their appearance.

Chapter 6 discussed the findings of the research in relation to previous studies. The chapter focused the discussion on a selection of highly-relevant literature, addressing the gap in the literature established in Chapter 2. It contextualized the findings, first with the most closely related empirical study, comparing and contrasting the current research with that of Kaye et al. (2006). These authors provided a model that comprised the main motives of academics for keeping general PICs, which involved building a legacy, sharing information, confronting fears and anxiety, and constructing a personality. For each scholar, Kaye et al. (2006) identified an organising principle underlying the scholar's PIM practice which was the product of a distinct and singular motive. The current study, on the other hand, suggested that this model did not reflect the reality of the motives which influenced the scholars in this study. Rather, it was found that each scholar's PIM practice was affected by several motives, which was reflected in their collections. The chapter then provides further discussion of the findings, using other studies which revealed a range of factors affecting scholars' practices, either through a PIM-related lens or from other perspectives, such as information practice and information-seeking behaviour. It was found from   that comparison that there are many factors that affect scholars' PICs. These are identified in current study and were not well established or considered in the previous literature. The model provided at the end of Chapter 5 summarised how these factors are important for the investigation of PIM practice because of the way they affect PICs in either an

immediate or underlying way. This chapter helped in highlighting how the current study contributed to PIM research both theoretically and empirically.

7.3 Contribution to current knowledge

The current study contributes to Library and Information Science (LIS), and particularly to PIM as an important sub-field of LIS, as well as to our knowledge of scholars' PIM and information behaviours more generally. The study filled a gap identified in the literature relating to scholars' research-related PIM. Specifically, this type of study is novel in developing countries, especially in relation to Kuwait where, as far as the researcher could ascertain, there is no previous literature. Most studies in the Kuwaiti context investigated scholars' information behaviour; this study is certainly the first to examine scholars' PIM in a Kuwaiti higher education institution, namely PAAET. PIM practice in non-Western settings is a neglected area of study.

The contributions made by this study can be categorised into theoretical, empirical and methodological contributions that add knowledge to, and enhance understanding of, PIM practices of scholars. This is in contrast to the PIM literature which usually focuses on the broader PIM practices of individuals.

7.3.1   Theoretical contribution

PIM is a sub-field of the discipline of Library and Information Science, not only because the materials people collect are a form of information but also because the tools used to build and manage PICs invariably involve use of information technology. Nevertheless, while it is generally recognised that PIM is at the heart of modern research practices, it is still a relatively under-researched topic. Bergman (2013), in a recent study that investigated 20 participants using semi-structured interviews aiming to identify and map PIM variables, argued that "*PIM research moves from an infant stage of exploratory studies to more rigorous quantitative ones*" (2013: 464) in response to the need to characterise diverse PIM practices. Most recent studies tend to focus on the management of digital content; the management of hybrid content is somewhat neglected. Furthermore, there have not been many studies of researchers' collections as such, since most previous investigations have focused on information needs and finding material. It is important to look at the collections themselves in their contexts and see how they develop dynamically and what factors and forces are at work in the construction and curation of these collections, as these are the areas that most concern

scholars. It is also important to think about the relation between printed and electronic material.

As this is the first study of scholars' PIM practices specifically within a Kuwaiti context, it might be thought that specific environmental, social and cultural factors might make such a study less representative of scholars in general, since Kuwait is a small country with a specific academic culture and educational institutions. However, this could be said of nearly all PIM studies, which invariably examine the practices of a cohort from a single shared culture (usually the USA); there could therefore be culturally-specific issues that it is of value to explore. In fact, many of the concerns of scholars in this study in the Kuwaiti context have been shown by comparison to the previous literature to be similar to those of scholars in other cultures and societies.

This study delineates the specific elements which comprise scholars' PICs, where generally in the literature PICs include a variety of materials and PIM is not focused on this particular type of collection. This is important because there is no specific theoretical framework currently in use which explains scholars PICs that are related to research. This study used the research lifecycle to understand the requirements of scholars for each stage within a research process, and hence identified the four types of material in research-related PICs. This research then provided a model describing the features of the collections and explaining the relations between the features of research-related PICs and the factors which impact on or underlie the way in which individual scholars build, maintain and access their collections. The model contributes to theory by merging and relating both the features of the research-related PICs of scholars and the factors affected them. Most of those factors appeared in relation to PIM for the first time.

When we look at the research questions which the present study is designed to answer, a number of elements emerge which can be construed as making some contribution to the question of how to understand the theoretical frameworks of academic PIM. For instance, in relation to the first question, regarding how scholars create their research-related PICs, adopting the research lifecycle approach to explain how these particular types of collections are built offers a novel perspective on the issue. The current study contributed to knowledge by using the basic research-lifecycle (chapter 4), and further developed it in a deeper analytical way to a specialized PIM based research-lifecycle (chapter 5) showing the activities of scholarly practice in each stage. This enabled the emergence of each of the four diverse types of research-related PICs (see section 7.3.2).

Other studies tend to look at PICs as existing and completed collections, rather than considering the sources of the materials and the on-going processes involved in the construction of PICs, which affects their appearance, their utilisation and the potential they offer for re-use and curation, amongst other things. On the other hand, the current study explained how scholars find, keep and manage information related to their research during these stages and showed how their practices reflected a non-linear process and which illustrated the complexity of the collections as a consequence of the process.

The findings of this study confirm many things found in the previous literature, such as the enormous size of PICs, their hybridity and tendency to be fragmented, along with various other very common features which have been widely explored in the literature. Nevertheless the concept of diversity explains a key characteristic related to scholars' practice which has been less well documented, namely the four types of collections. Previous studies have, of course, recognised that PICs are often diverse, in the sense that they comprise varied resources and materials, but the present study defines diversity in a more structured way, which may be helpful for future researchers in this field to follow, as well as offering practical implications for different stakeholders, as discussed in more detail below (see section 7.4). Furthermore, whereas Kaye et al. (2006), in the study most closely related to the present investigation, explain the general PICs of scholars, they do not specifically identify the nature of those PICs. Another difference is that Kaye et al. (2006) decided that each individual scholar organises their PICs in a way which reflects only one motive, an approach which is difficult to justify, as it bears little resemblance to the reality of the complex nature of motive and decision-making in any process of organising and storing material. The current study recognises that each scholar has a combination of different motives for carrying out any PIM activity, as is explained in the model mentioned above.

In terms of the third research question, previous research has considered one of the main PIM problems to be that people are unable to re-find material that they have stored, due to the complexity of their PIM processes, or in some cases, inaccessibility caused by obsolescence. The current study, although it does confirm these findings, shows at the same time that scholars kept PICs for a variety of reasons, not just retrieval. One of the reasons that scholars said that they undertook extensive PIC building and maintenance in this study was due to the lack of trust in both the support services and the technology

available to enable them to access and secure their work; this seems to be an original factor in relation to this particular cohort of participants.

7.3.2 Empirical contribution

In the study, the researcher used the collected data in its different stages to address in a rigorous way the scholars' PIM practices within the research process. The study contributed to knowledge by adding several elements empirically which appeared through the process of explaining the emergence of research-related PICs using a comprehensive research-lifecycle model. This research lifecycle has the advantage of adding scholars' PIM activities to a basic research-lifecycle (Figure 4.2 & 5.1 Captured from Exploratory & Main studies).
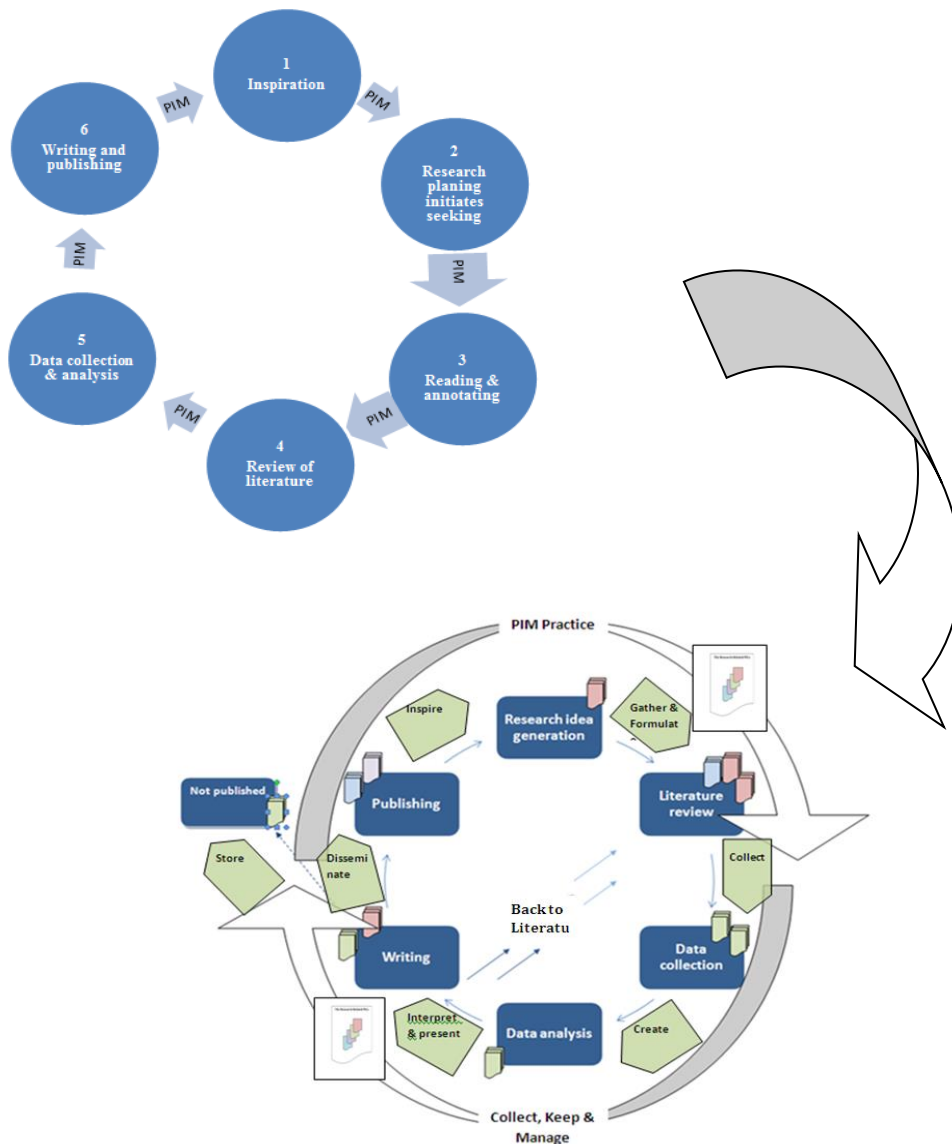
The first diagram (basic research-lifecycle) gave the basic grounds for developing the PIM based research-lifecycle, named the research related PICs creation and curation lifecycle in the main study. The latter in its turn, explained the diversity feature and how the research-related PICs emerged from that lifecycle.

Those collections which emerged from the research lifecycle, showed certain features as represented in the model (Figure 7-1) below as captured from Ch5.
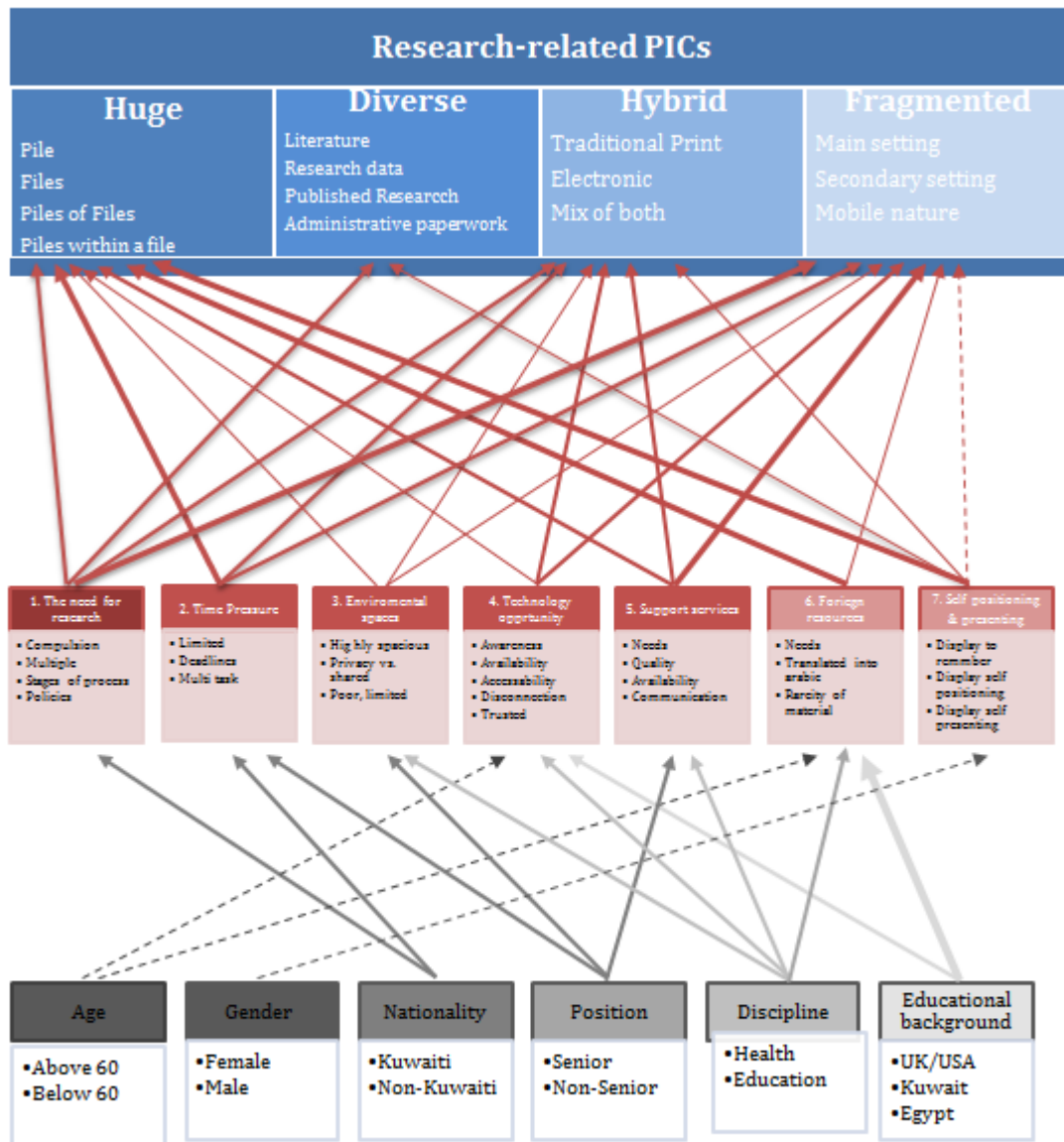
Figure 5-48: The factors shaped research-related PICs

Figure 7-1: The factors shaped research-related PICs

Finally, previous studies have offered suggestions regarding the factors which shape the appearance of PICs; the present study has confirmed many of these to be relevant to the

scholars in PAAET. In general the model provided in Chapter 5 contributes to existing understanding by explaining the relationships between immediate and underlying factors and the features of the collections. Furthermore, this study has identified some distinct factors which impact on PIM practice and the appearance of the collections. In terms of immediate factors, the study identified two novel factors, both of which had a significant impact on PIM practice. The first is the need for research; the second is the situation, as in PAAET, where scholars have a different first language to that which is used in the majority of the literature, in this case, English; this is a foreign language for most scholars in this institution, yet they have to use it in their PIM practice. Also, where scholars needed to use their first language, Arabic, the resources available to them in this language were more limited. This study indicates that the foreign language issue in Kuwait and other Arabic-speaking contexts has an impact and is a factor in the way scholars manage their PICs.

In terms of the underlying factors, this study highlights how gender, nationality and educational background all significantly affect scholars' PIM practice. This suggests that the general PIM theoretical models need to be adjusted to take into account a wider range of factors influencing these practices, depending on the context in which scholars carry out their PIM. For instance, the Curation lifecycle of PIM proposed by Whittaker, mentions that it "involves future oriented activities" (2011: 7) and therefore suggests further investigation of how technology opportunities best fit individuals by understanding why they keep and manage information rather than just knowing they build extensive collections and keep almost everything. It also suggests that useful empirical and methodological issues could provide better understanding of *"extremely hard to gather data"* (2011: 54) about *"people's personal information habits"* (2011: 54). The current study contributes to this by explaining the creation of collections, their features and reasons for keeping things by explaining the factors that shaped scholars' PIM practices and their research-related PICs.

Furthermore, the study provided understanding of scholars' PIM practice within their research and how they store the research-related PICs according to the density of the research stage. This explains how they keep the research material in the hot spot in the active research stage. As the process develops, they move the collections to a more settled storages when they feel safe about urgent needs or the collection those places seems to be cold spots as the collections are rarely to be experienced. (Figure 7-2 as captured from Ch5-Table 5.4)
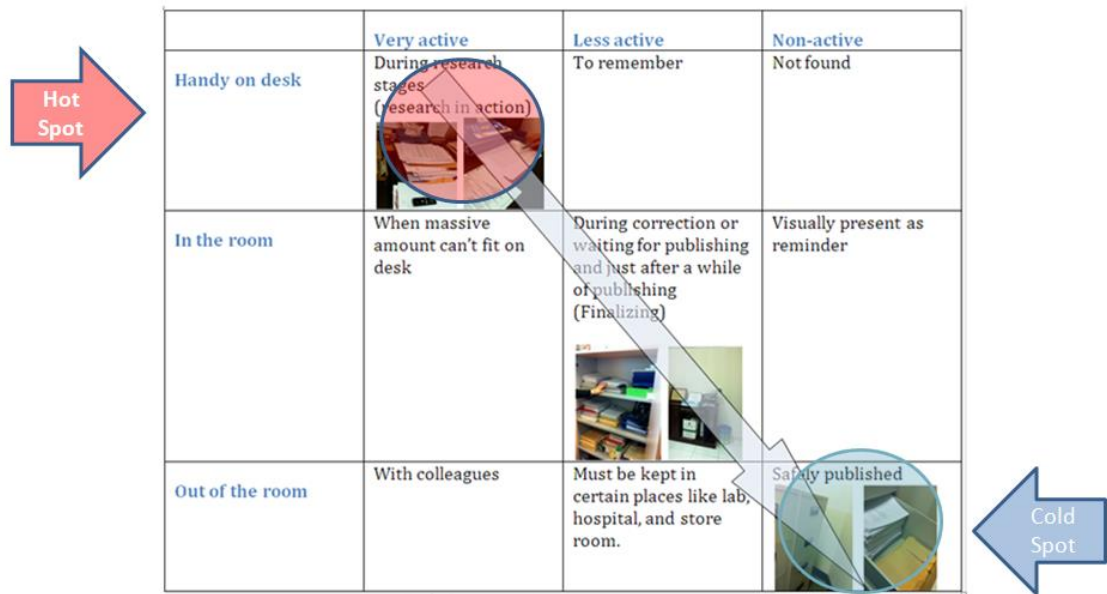
Figure 7-2: Storage in terms of research stage density (Hot spot approach)

The research identifies the patterns of keeping and not keeping vs. finding and not finding. Those are mapped in 4 different categories (Table 7-1 as captured from Ch5-table 5-5) that any scholar may follow during a research process in order to evaluate their practices and use it as a diagnostic tool as explained above in (section 7.4.1).

Table 7-1: Keepers/ Finders relationship

Scholars retrieval efforts	Keepers	Not Keepers
Finders	**A** Don't trust tools Keep everything Manage or not manage kept information Kept information can be found Works most with both print traditional versions	**B** Trust tools and services Trust Internet Depend on technology Confident of retrieval efforts Work more with electronic versions
Not Finders	**C (most found)**	**D**

	Keeps loads	Don't keep
	Keeps mostly everything in both versions	Can't re-find
	Redundant copies	
	Fragmented storage	
	Don't trust or rely on specific tool or services	
	Never manage to retrieve kept information	
	Work heavily with both versions	

7.3.3 Methodological contribution

The study has gone some way towards enhancing our understanding of research-related PICs by using multiple methods of data collection, namely interviews, photographs, and observation via tours. It has demonstrated that using these three methods together can enable a researcher to successfully examine key inter-related features of PICs. This is not in itself a totally unique approach: other scholars have used it, such as Kaye et al. (2006). However, it does confirm the view that more novel and innovative methods, such as taking photographs to produce visual data and making observations via tours of personal spaces to produce informal background notes, enhanced the understanding of how particular scholars managed their PICs. These visual records enabled the researcher to compare scholar's self-representations through the interviews with physical evidence, in order to confirm or, in some cases, challenge the identities projected by scholars. The surprising result was that the researcher identified the fact that, in some cases, the image projected and the reality recorded were divergent. This insight has potentially significant implications for the wider research community as it reinforces the view that data based on statements by participants is unreliable, and that it may therefore be necessary to implement multiple methods in order to confirm the validity of findings.

7.4 Practical implications

The study identifies several stakeholders in scholars' PIM who might be informed by its findings, including scholars themselves, librarians, institutions, policy makers, PIM

system vendors and software developers. Each stakeholder can be informed by the current study. If the problems found by this study remain unsolved, the implications are that researchers will be less efficient in creating and organising their PICs, which will have detrimental effects in terms of time pressure and re-finding stored material.

7.4.1 Implications for scholars

There are specific changes to their practice which scholars could adopt, with the support of their institutions, which would enable more efficient PIM. Firstly, they need to evaluate their collections regularly in order to weed out obsolescent and unused material, which has been kept for later use. The study identified four distinct types of information (Sources of literature, Research data, Published research and Administrative paperwork) that scholars kept within their collections. These four types would help scholars categorise the collected information as an initial step for organizing and managing the resources collected, as well as adopting suitable solutions for each of the four types, which can be treated differently. Scholars were found to have multiple versions of materials in their collections which required adopting versioning procedures or using tools that supported versioning to track their updated work. As the model showed, since one of the features of these collections was fragmentation due to the scholars working in multiple places, mobility solutions that reduce redundancy and increase compatibility would help scholars to reduce such sizable collections. Addiction to back-up procedures due to fear of loss must be controlled in an optimal way by following frequent procedures using optimum tools. As was shown in this study, scholars do not rely on one format for their collections; they rather preferred to use two, which made the collections hybrid. Managing collections should therefore support both formats instead of adopting purely electronic solutions to manage electronic versions. Labelling traditional printed material might be one solution, but radical solutions linking physical versions, such as using special barcode labels and related reader devices, to electronic ones might be the best way to support hybrid collections.

Scholars need to be more aware of the need to store material effectively through good filing and archiving practices, including using primary and secondary storage mechanisms to prioritise access efficiently. It could be argued that adopting such practices means loading greater time pressures on academic staff, and that organising and curating material is time-consuming, which is the most common reason why PIM is not always undertaken on a regular basis. However, if scholars have a clear awareness

of time management procedures and implement them in their daily practice, it is possible that these issues may have little or no negative impact on scholars.

Another implication for scholars is that it is essential that they keep their IT skills and their knowledge of technological opportunities up-to-date by active communication with support service providers in order to identify and access appropriate research management tools which would increase the efficiency of their PIM practice. Since scholars will always feel an element of distrust towards tools whose workings they do not understand, or whose applications they do not believe are relevant to their own research, they should take up opportunities to trial new software packages and to work with mentors or other staff who can help them to develop their skills. This would enhance their PIM practices by the adoption of tools to help them evaluate, weed out and minimize the size of their collections. It would also help them to be aware of solutions, and hence to be trained in using them in order to overcome problems of versioning and fragmentation, in addition to reducing the size and hybridity of collections.

A key implication for scholars is that they may be required to rethink their PIM practice, moving away from self-reliance and back towards developing a close relationship with support services based on clear and effective methods of communication on both sides. This is because the study shows that it is clearly very difficult for an individual to meet their own needs for managing content from research, regardless of how enterprising they are; and that, ultimately, institutions have the wealth and organizational power to provide the sophisticated types of tools needed in a complex modern academic setting.

A practical implication for scholars might be that it is useful to rethink and evaluate their research-related PICs within the stages of research-lifecycle by visiting the diagram of levels of decision making below (Figure 7.3 as captured from Ch5). In addition, scholars can use (table 7.4 as captured from ch5) to examine their storage practices and identify the critical points of storing and whether it would be better to devote time to decide what to do with information next. In addition, the table Finders/Keepers (Table 7.2 Captured from Ch5) can be used as a diagnostic tool to audit their current practices and decide where to focus their effort for improving their PIM practices by thinking in which category they belong and in which they wish to move to.
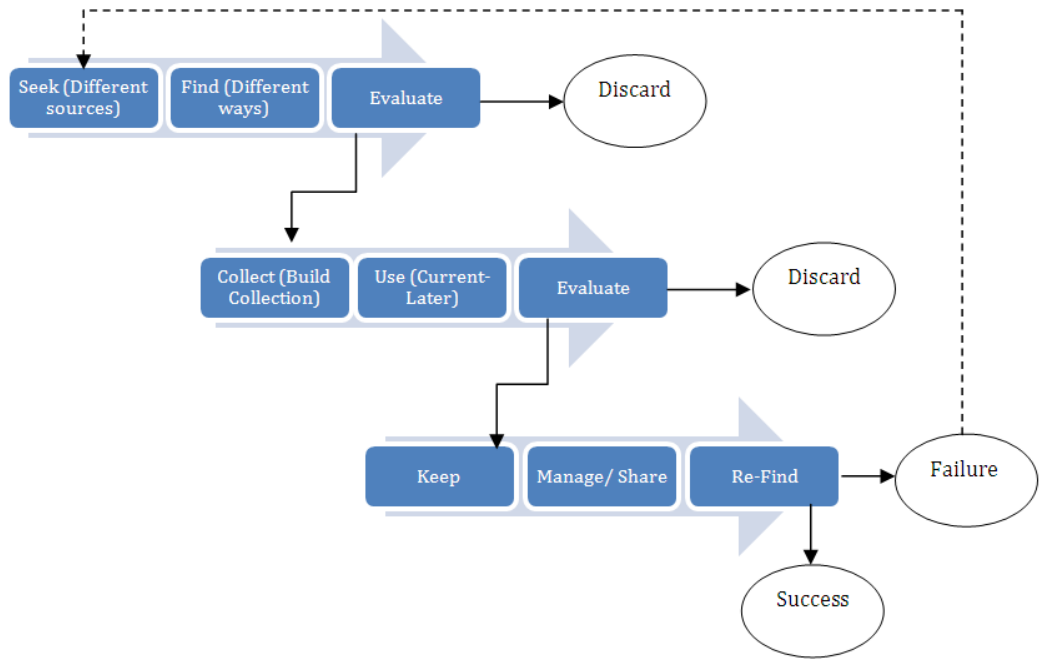
Figure 7-3: Levels of decision making on keeping vs. discarding during research lifecycle

Figure 7-4: Storage in terms of research stage density (Hot spot approach)

Table 7-2: Keepers/ Finders relationship

Scholars retrieval efforts	Keepers	Not Keepers
Finders	**A** Don't trust tools Keep everything Manage or not manage kept information Kept information can be found Works most with both print traditional versions	**B** Trust tools and services Trust Internet Depend on technology Confident of retrieval efforts Work more with electronic versions
Not Finders	**C (most found)** Keeps loads Keeps mostly everything in both versions Redundant copies Fragmented storage Don't trust or rely on specific tool or services Never manage to retrieve kept information Work heavily with both versions	**D** Don't keep Can't re-find

7.4.2 Implications for librarians

This study establishes an understanding of the nature of scholars' practices within their research which reflects their high levels of independence in locating, saving and re-finding information related to their research. Potentially it is necessary for scholars to work closely with the support services, especially librarians, to be aware of possible

solutions available to them for supporting their PIM practice. Librarians have useful skills relevant to PIM, in terms of their knowledge of the supporting tools and applications available for different types of research, in addition to their expertise in classification and archiving. Providing such support requires empowerment programmes for librarians focusing on PIM in order to be informed about the research process and the requirements of each stage within the research lifecycle. Furthermore, they would also need to promote the services available to scholars.

The need for research more specifically defining research-related PICs should give librarians guidelines regarding what actions need to be undertaken for each type of collection. Knowing that the need for research and time pressure are the two main factors affecting scholars' PIM practice should help librarians to focus on planning and communicating with scholars in order to overcome scholars' problems and provide the proper support.

Finally, librarians need to be alert to developments in the field of technology and to be able to assess new tools and software thoroughly and effectively in order to provide scholars with the best available tools and applications to enhance their PIM practices. Furthermore, they will need to market these products effectively in order that the take up of the best tools and the acquisition of the most useful software for scholars in particular fields is as efficient as possible.

7.4.3 Implications for institutions

Understanding the features of the personal information collections of scholars in this study and the factors influencing them could be beneficial to PAAET as an institution because it might enable management to improve the PIM practice of its scholars by meeting their needs within research and helping them overcome time pressure with that support. It is also beneficial in facilitating technology adoption of tools that fit their needs. It is helpful for PAAET to understand the effect of working space quality on scholars' practices; this could also provide guidelines for their plans for scholars' offices and storage spaces. Furthermore, understanding scholarly practice and the related PICs will help policy makers and support service providers improve their services in order to meet the scholars' needs in terms of allocating budgets and manpower. Hence the benefit of the study is that it serves both individual scholars and the educational organization in which they work. If the institution in question, or any other institution, were to successfully implement effective support for scholars' PIM

practice its reputation would rise and it would be likely to receive greater recognition and accreditation, due to the increase in the quality of research which would ensue. Indeed, such improvements would be likely to assist institutions to achieve their aims and objectives for research and beyond, turning them into a general remit since promoting good practice in one area of an organisation often leads to improvements in others.

More specifically, institutions should provide the support services required by scholars in order that they can effectively manage their collections. This involves creating policies which support scholars' PIM practices by offering personal information management courses and training programmes in using specific PIM software in order to help scholars manage and better retrieve their collections and so save time. Moreover, the institution also needs to have a policy framework which provides more general training in new developments in information technology which was one of the immediate factors that affected scholars' PICs, so that their academics can continue to employ state-of-the-art tools in their PIM. In order to achieve these ends the institution must allocate sufficient manpower and budget to the programmes in order for them to work successfully and provide the proper support services for research and scholars. It also needs to include an assessment framework which monitors the effectiveness of these programmes on a regular and on-going basis in order to ensure that all staff are being reached and receive the same level of support in this area. Institutions can enable their staff to develop their time management skills in a similar way to help them overcome the time pressure, by providing training opportunities in which scholars learn how to apply these skills in their daily research activities. Finally, all institutions should monitor their training programmes regularly by collecting and analysing data regarding the implementation of programmes and staff perceptions of them.

One of the ways in which this research contributes to the wider research field is that it identifies the separation between support services and scholars' needs in terms of their research practices, procedures and requirements. The study has highlighted the need for enhanced communication between the researcher, support staff and administrators for the institute, in order to facilitate research and enable effective management of research-related PICs. It also identifies a gap in policy formation supporting research, as it shows that universities tend to choose off-the-peg policies for this purpose rather than tailoring services to meet the needs of individual scholars, which can vary due to the wide variety of factors that affect the researcher and the research process.

7.4.4 Implications for service policy-makers

Where policy-makers and political decision-making bodies leave the development of PIM practice to the institutions themselves, this study suggests that inefficiency and poor quality support services for scholars results. Instead, it is likely that these political bodies will need to intervene to actively promote best practice in PIM in the future. They may well be required to provide funds for training support service staff to higher levels and for recruiting qualified experts in the field, in order to boost the practices and development of the scholars and their research. Authorities may well need to draw up guidelines regarding how such funds should be used and where responsibility should lie to ensure that they are devoted to improving this particular area of university activity. Furthermore, it is important that government bodies enshrine the value of best practice in PIM in mission statements and policy documents, in order that progress towards these goals can be measured.

7.4.5 Implications for vendors and software developers

Understanding scholars' needs relating to their PIM practice is important for vendors of products and services which aim to meet these needs, as doing so they would then be in a position to provide convenient solutions for scholars in the form of customised packages, to manage sizable collections, in both printed and electronic form to support the hybrid research-related PICs. Vendors should consider producing more specialised packages, given what is now known about the research lifecycle, the nature of the research stages and the creation of each type within the collections as they evolve, in terms of storage and enhancing effective retrieval, in the form of research-related personal information manager tools. As research-related PICs were found to be diverse, each of the types identified, namely sources of literature, research data, published research and administrative paperwork, could be handled separately, as each requires a specific type of tools and support. Research data for instance needs special attention to preserve as well as handle it in terms of its size, forms and formats within a scholar's collection. Therefore, vendors need to be aware of its nature in order to be able to propose solutions. Many of the tools provided support sharing. However, knowing that privacy issues of research data in relation to the different stages of the research lifecycle is important to scholars makes it a major factor for vendors to consider and build in to any tool produced to handle research data management and sharing.

Vendors also need to be aware that solutions provided for scholars in terms of tools for PIM should enable communication and sharing of PICs in order to support collaboration in the scholars' research communities; therefore flexible as opposed to static packages need to be offered to institutions, and the value of such packages needs to be publicised. On the other hand, all vendors must take seriously the issues of security, which are especially acute in the very competitive market of higher education, ensuring that products that enable the sharing of research-related PICs includes tools for protecting material which might be considered by the scholars to be of a highly sensitive and/or valuable nature. As one of the types of research-related PICs of scholars in current study this indicates how research data is an important item of the diverse collection and requires attentions.

In addition, knowing the factors that affected scholar's PIM practices and hence their research-related PICs, should provide grounds for software developers to consider those factors. The model explained in Chapter 5 showed how those factors affected the collections in a direct or indirect way giving software developers priority lists of how to consider those factors. Keeping studies explained how keeping everything was the best solution for some individuals instead of evaluating and deleting collected information (Jones, 2004; Marshal, 2008a), while other reasons for keeping should be considered by the developer. Time management supporting features could be an advantage to overcome time pressure for instance. Providing trusted tools for back-up procedures should also help overcome scholars' fears of loss of their valuable collections.

7.5 Further work

From the findings of the current study and the analysis provided in the discussion chapter, it is clear that this is a fertile area that needs further work. This section considers some of the ways in which the study could be extended by future research to build on the current work. This study investigated only two disciplines, namely, Education and Health. Although no great differences were found in scholars' practices, it would seem important in future research to extend the study to participants from other disciplines to provide wider comparisons among disciplines or other more general studies of scholar's PIM practices. It can be hypothesised that different disciplines would require different types of collections due to the specific requirements of each discipline. The whole research lifecycle may be different in different subject fields, and methods of data collection could be different; therefore the way of creating the collections could potentially be radically different. The type and forms of information

collected would also be expected to be different and so research-related PICs would develop in a different way. For instance, scientists might include audio-visual sources, specimens and other materials in their collections. History scholars could store old manuscripts such as maps. Knowing that different disciplines involve different materials would require consideration of preservation procedures as well as retrieval. A further study investigating how research-related PICs are created using the research lifecycle model proposed in the current study and applying it to different disciplines could reveal different stages,   or the creation of different types of collections, within the research process. A useful study for the future would thus be to investigate the features and more specifically the diversity of research-related PICs in different disciplines.

The investigation in hand was based on research-related PICs of scholars and did not include their general PICs. This choice of focus was effective in helping to identify the character of these specific collections. However, investigating scholars' general collections would provide more understanding of their behaviour and create a deeper understanding of some of the factors that closely relate to personality such as self-presentation. Furthermore, this would give a much better understanding of the whole collection, and how, for example, teaching-related material was stored and used in relation to research-related material.

The current study examined individual scholars' working spaces, to provide a rich understanding of their PIM practices. However, the research suggests that further studies examining shared spaces, such as laboratories, needs to be carried out, in order to identify the nature of shared personal collections related to research in this type of environment, as most previous studies have focused on individuals' unshared and distinctly demarcated private office spaces. Also, the research prompts the suggestion that research-related personal collections in secondary settings, such as the home office space, should be investigated in more detail, since this area is also under-represented in the literature; such studies will help to expand our understanding of the diversity of collections, their fragmentation and reintegration in various locations and scenarios. This may well lead to a reconsideration of the preconception that fragmentation is necessarily a problem for scholars. This type of study would be better done by investigating all the working spaces of each participant in order to tackle the problem of fragmentation and what scholars' PIM practices are towards such problems. Using photographs has proved efficient in this study as a method of collecting data related to

PIM, while using diaries might be a good choice for those participants who are not easy to contact to allow researchers to make home visit to investigate their home offices.

This research focused on scholars at PAAET in Kuwait, which provided the context of the study. On the other hand, other settings need studying to establish patterns in a wider frame, such as other educational institutes in Kuwait (public and private). In addition, more studies in the Gulf region would increase understanding of PIC-related activities and enable further comparisons, including between Gulf Corporation Council (or GCC) countries which are in the same geographical region as Kuwait, or other Middle Eastern ones.

Although this study looked at some demographic factors and related them to the features of the collection, some issues need further investigation. Quantifying some factors more precisely, such as age, is necessary. This research adopted a purely qualitative and naturalistic approach to data collection. If a different methodology had been used, involving triangulation and the collection of quantitative data, the research may have reached more explicit conclusions about the demographic attributes of the participants and the relationship between age, in particular, and PIM practice. This is something for a follow-on project, or to put it another way, a large scale survey might be a further rich field for study.

Malone (1983) described two kinds of office organization, "neat and messy" (1983: 104). He argued that one solution to achieving an organized work space and manageable collections is using titles or labels. He added that, at the same time, it has been argued by psychological studies that a spectrum of brain types exist, from the convergent, which is very orderly and precise, to the divergent, which is very disorderly and allusive, with most individuals having mental structures located somewhere on this spectrum (Malone, 1983). If this is true, then the formalised duality of 'neat' and 'tidy' might be said to be a product of convergent thinking, while people with divergent tendencies might benefit from perceived 'messiness'. In other words, there are two different types of people in terms of their ways of dealing with collections: 'tidy' people who reflect tightly structured mental functioning and a tendency to focus on discrete elements; and 'messy' people, whose mental functioning is more loosely structured, more flexible and tends to be more global. Nevertheless, the argument about this issue can be tricky, with lack of evidence and research identified in the literature. This suggests that it is important for further studies to be carried out in the area to investigate why messiness

can be more efficient for some scholars in some circumstances, while neatness is most efficient for others. A study that compares the levels of convergent and divergent thinking with 'neat' and 'messy' collections might offer interesting results.

Another key area this study has highlighted which needs further research is the investigation of research support service providers, involving libraries and the various administrative levels of universities, especially the research department, and how they can meet the needs of scholars in relation to providing up-to-date research facilities and resources. There is also a need to consider how they can help scholars to manage their research-related PICs and exploit their collections in future, as the literature has only produced limited suggestions regarding this problem, as far as the researcher has managed to discover.

One issue that emerged from the research was that native and non-native scholars at PAAET had very different career opportunities in that the former were on permanent contracts and only competed electively for promotion, while the latter had temporary contracts, which they had to work hard to have renewed each year. The researcher characterised these scholars as 'non-Kuwaiti' but did not identify the range of different nationalities involved in this large cohort. In order to capture the diversity of this population it would have been helpful to use a mixed method, gathering quantitative data on the nationality backgrounds of all participants, as this would have given richer and more specific data. Likewise, the current study also recommends that the exploration of underlying factors that influence PIM should be researched in future using a mixed method, so that quantitative data can be used to enhance the understanding of the elements that make up the personal aspects of PIM in future studies. This would allow a more complex and richer picture still.

Another example of an area which could be fruitful for future study is the way cultural values can inadvertently influence research findings, as found in Tian and Belk who specify that their study took place in a *"privately owned, for profit, business-to-business organization located in a major south eastern U.S. city"* (2005: 298), yet go on to suggest that the way their subjects projected their extended selves into their work spaces was "like an Asian household shrine to the ancestors". Here cultural generalisations are made, based on the perception of other cultures, filtered through the lens of an early twenty-first-century Western perspective. In general, there is a sense among those who write from within a Western context that the data they generate has universal

applicability. However, the present study challenges this notion, since it is clear from it that nationality showed a marked effect on scholar's collections. Accordingly, as investigating the influences of nationality on PIM has been beyond the scope of this study, further studies are required to address this cultural bias.

Quantifying the accuracy of scholars' perceptions of their PIM practices and comparing these measurements across key demographic indicators identified in this study, such as gender, age and nationality, would be valuable for future research, as it would provide an insight into differences between various types of individuals, but could also improve the tools for measuring individuals' perceptions in research in general, as it might allow researchers to better take biases into account when analysing quantitative data.

7.6 Closing statement/remarks

Factors shaping PIM are changing very rapidly, so that new questions are emerging very quickly. A consequence of this is that several critical new questions have emerged in the wider field during the course of this study. For instance, in the context of growing concern with improved management of research data including sharing data, one issue related to scholars' PIM practices and the role of libraries which has appeared very recently is Research Data Management (RDM) (Cox and Pinfields, 2013). The importance of scholars' PIM practices will grow driven by the need to consider maintenance and sharing issues which arise from the question of who should be responsible for the management of this data and for deciding how it should be shared, to whom it should be made available, and under which circumstances. The decisions made when answering this question will have a major impact not only on scholars' PIM but also potentially on their future careers. Furthermore, librarians will face challenges to their roles in such a "highly dynamic context" (Cox and Pinfields, 2013) and must seek to provide a professional support service. They should be involved in initiatives empowering them with skills and raising their awareness of this new dynamic and diverse context. Understanding PIM will become more central for this as a result.

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Appendices

Appendix 1: Information Sheet (English & Arabic) - Exploratory study

Information Sheet/ Interviews

1. Research Project Title:
Use of Electronic Resources by Faculty Members in Academic Libraries

2. Invitation paragraph
You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. What is the project's purpose?
The aim of this project is to examine the use of Library electronic resources by the members of the faculty in all colleges and institutes of the Public Authority for Applied education and Training/ Kuwait. And to assess the factors influencing the current use of the electronic resources provided.

4. Why have I been chosen?
You have been chosen to participate in this study as member of sample that is selected according to your profession to collect an in depth information.

5. Do I have to take part?
Taking part of this study is totally optional, so you have the choice to participate or not. You also have the right to withdraw from participation any time you wish. On the case of accepting participation on this study you will need to sign a consent form.

6. What will happen to me if I take part?
To participate you just need to answer interview questions where you will be asked to provide your name, and email address in order to enable us to interpret data collected across the module as a whole. Participants will be asked about the electronic resources currently available in PAAET.

7. Will I be recorded, and how will the recorded media be used?

1

The interviews will be audio recorded and will only be used as a research tool for collecting data. It will not be used in any other way without your written permission. Also their use will be restricted to the researchers in this project.

8. What do I have to do?
You just need to answer the interviews questions. You will be free to elaborate as some questions will be open ended.

9. What are the possible disadvantages and risks of taking part?
There will be no risk or disadvantage of taking part of this research also no restrictions or any changes in your lifestyle.

10. What are the possible benefits of taking part?
No direct material benefit would be for your participation. However you will have a sense of your initial use and future needs to electronic resources and their aid in your teaching and conducting research or publishing your peers.

11. What if something goes wrong?
You can contact my supervisors Dr. Andrew Cox a.m.cox@shef.ac.uk for any complains you may have. However you may contact the University 'Registrar and Secretary if you feel you have any complains that have not been handled to your satisfaction.

13. Will my taking part in this project be kept confidential?
All the data collected will be anonymized, including the names of all faculty members and any other information through which you might be recognized.

14. What will happen to the results of the research project?
Results will be published as part of my PhD thesis and possibly also at conferences and in journals.

15. Who is organising and funding the research?
I'm a research student in the department of information studies at the University of Sheffield and sponsored by the Public Authority for Applied Education and Training-Kuwait.

2

16. Who has ethically reviewed the project?

This project has been ethically approved via Information Studies department's ethics review procedure

17. Contact for further information

For more information please contact me by email in lip09ma@sheffield.ac.uk

Please note that you will be given a copy of the information sheet as well as a signed copy of your consent form.

Thank you for your kind participation in this project.

3

صحيفة المعلومات

1. **عنوان البحث:**

استخدام مصادر المعلومات الإلكترونية من قبل أعضاء هيئة التدريس.

2. **دعوة:**

أنت مدعو للمشاركة في مشروع بحث وقبل أن توافق على المشاركة، من المهم فهم
الهدف من البحث. الرجاء قراءة المعلومات التالية بحذر ومناقشتها مع أشخاص
آخرين ان كنت ترغب بذلك. خذ الوقت الكافي لكي تقرر المشاركة من عدمه. شكراً
على قراءة هذا الجزء.

3. **ماهو الهدف من المشروع؟**

الهدف من هذا المشروع هو لاختبار استخدام مصادر المعلومات الالكترونية من قبل
أعضاء هيئة التدريس في كليات ومعاهد الهيئة العامة للتعليم التطبيقي والتدريب في
الكويت. كما أنه سوف يقيم العوامل التي تؤثر على مصادر المعلومات الالكترونية
المتاحة حالياً.

4. **لماذا تم اختياري للمشاركة؟**

لقد تم اختيارك للمشاركة في هذه الدراسة كعضو تم اختياره من عينة على أساس
التخصص، الأقدمية، والنوع.

5. **هل يجب علي المشاركة؟**

المشاركة في المشروع اختيارية، كما يمكن الانسحاب من المشاركة في أي وقت
تشاء. ان رغبت في المشاركة سوف نطلب منك توقيع نموذج الموافقة.

6. **ماذا سيحدث لي في حل مشاركتي؟**

للمشاركة سوف نطلب منك الإجابة على أسئلة المقابلة، الإسم، البريد الإلكتروني
حتى يتسنى لنا معالجة البيانات ككل.

7. **هل سيتم تسجيل المقابلة؟ وكيف سيتم استخدام المادة المسجلة؟**

سوف يتم تسجيل المقابلة. هذه التسجيلات سوف يتم استخدامها فقط كأداة لتجميع البيانات.

8. **ما هو المطلوب مني؟**

فقط الإجابة على أسئلة المقابلة. وتستطيع إضافة تفاصيل حيث أن بعض الأسئلة سوف تكون مفتوحة.

9. **ماهي مساويء أو خطورة المشاركة المحتملة؟**

لاتوجد أي خطورة أو مساويء للمشاركه ولا قيود على نمط حياتك.

10. **ماهي مزايا المشاركة المحتملة؟**

لن يتم تزويدكم بإصدارات في حال المشاركة، ولكن معرفة عن إستخدامات مصادر المعلومات الإلكترونية سوف يساعد في تطوير الخدمة ويحفز ممارسات أفضل لها في المستقبل.

11. **ماالعمل في حال وقوع أخطاء؟**

تستطيع الاتصال بمشرفي د. أندرو كوكس a.m.cox@shef.ac.uk في حال وجود أي شكوى. تستطيع الاتصال بالمسجل أو الأمينفي جامعة شفيلد إذا كانت شكواك لم تعالج لإرضائك.

12. **هل مشاركتي سوف تكون سرية؟**

جميع البيانات سوف تكون مجهولة المصدر بما فيها الأسماء أو اي معلومات أخرى.

13. **ماذا سيحدث لنتائج البحث؟**

النتائج سوف تنشر كجزء من رسالة الدكتوراة، مؤتمرات، ومجلات.

14. **من المنظم والممول لهذا المشروع؟**

أنا طالبة أبحاث في قسم علوم المعلومات في جامعة شفيلد. ومعيد بعثة في الهيئة العامة للتعليم التطبيقي والتدريب.

15. من قام بمراجعة المشروع أخلاقياً؟

تم التصديق على البحث أخلاقياً عن طريق قسم علوم المعلومات.

16. لمزيد من المعلومات يرجى الاتصال على:

Liq09ma@sheffield.ac.uk

يرجى العلم بأنه سوف يتم تزويدكم بنسخة من صحيفة المعلومات بالإضافة إلى نسخة موقعة من نموذج الموافقة.

نشكر لكم حسن مشاركتكم في البحث.

Appendix 2: Consent form (English & Arabic) – Exploratory study

University of Sheffield

Participant Consent Form

Title of Research Project: Use of Electronic Resources by Faculty Members

Name of Researcher: Mrs. Mashael Al-Omar

Participant Identification Number for this project: Please initial box

1. I confirm that I have read and understand the information sheet
   dated *[insert date]* explaining the above research project
   and I have had the opportunity to ask questions about the project.

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. *contact number 07767391510*.

3. I understand that my responses will be kept strictly confidential.
   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.

4.   I agree for the data collected from me to be used in future research

5. I agree to take part in the above research project.

_____   _____   _____
Name of Participant   Date   Signature
(*or legal representative*)

_____   _____   _____
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.*

Date: 18th Dec, 2009 Name of Applicant: Mashael Al-Omar

استمارة الموافقة

عنوان البحث: استخدام مصادر المعلومات الإلكترونية من قبل أعضاء هيئة التدريس

اسم الباحث: مشاعل العمر

رقم المشارك في البحث:

الموافقة	البيان
	أقر بقراءة صحيفة المعلومات الخاصة بالبحث وحصول على فرصة كافية للاستفسار
	أنا على علم بأن مشاركتي تطوعية ولي الحرية للانسحاب في اي وقت
	أنا على علم بأن إجوبتي سوف تعامل بسرية. كما يحق لفريق البحث الاطلاع على أجوبتي المجهولة المصدر.
	أوافق على استخدام البيانات في بحوث مستقبلية
	أوافق على المشاركة في البحث المذكور أعلاه

اسم المشارك	التاريخ	التوقيع
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الباحث الرئيسي	التاريخ	التوقيع
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Appendix 3: Librarian study Interview questions - Exploratory study

1. When was the library established? Why was it established (Mission)?
2. How many librarians are there? What are their qualifications and experience? What is the organizational structure?
3. Is the staff getting the required training courses to empower themselves electronically?
4. The size of their collections?
5. What is the budget for e-Resources?
6. The electronic resources available? What are they? How they are chosen? Organized? And Presented?
7. Who are the main current users?
8. Who are the current users? For what purpose do they use the library (studying, teaching, research)?
9. Are the current faculty members using the electronic resources? For what purpose? How (on/off campus)?
10. Do the users know about what the libraries are presenting? Are there any current awareness procedures?
11. Is there an electronic collection development policy? Provide a copy if possible.
12. What are the problems that they are facing currently?
13. Is there any future plan regarding the electronic resources? If yes, what is it?
14. Are these libraries evaluated? How often?

Appendix 4: Preliminary Interview questions - Exploratory study

The Old Organizational Structure of the Educational Resources Department (ERD) before 2010:
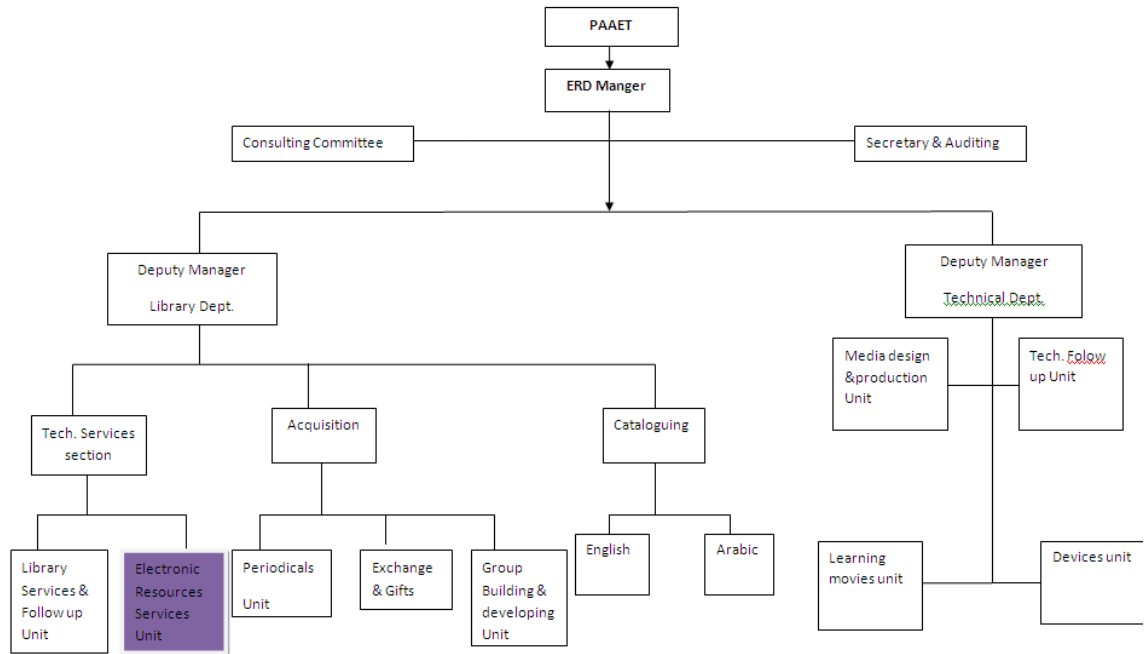
The New Organizational Structure of the Educational Resources Department (ERD) from 2010:
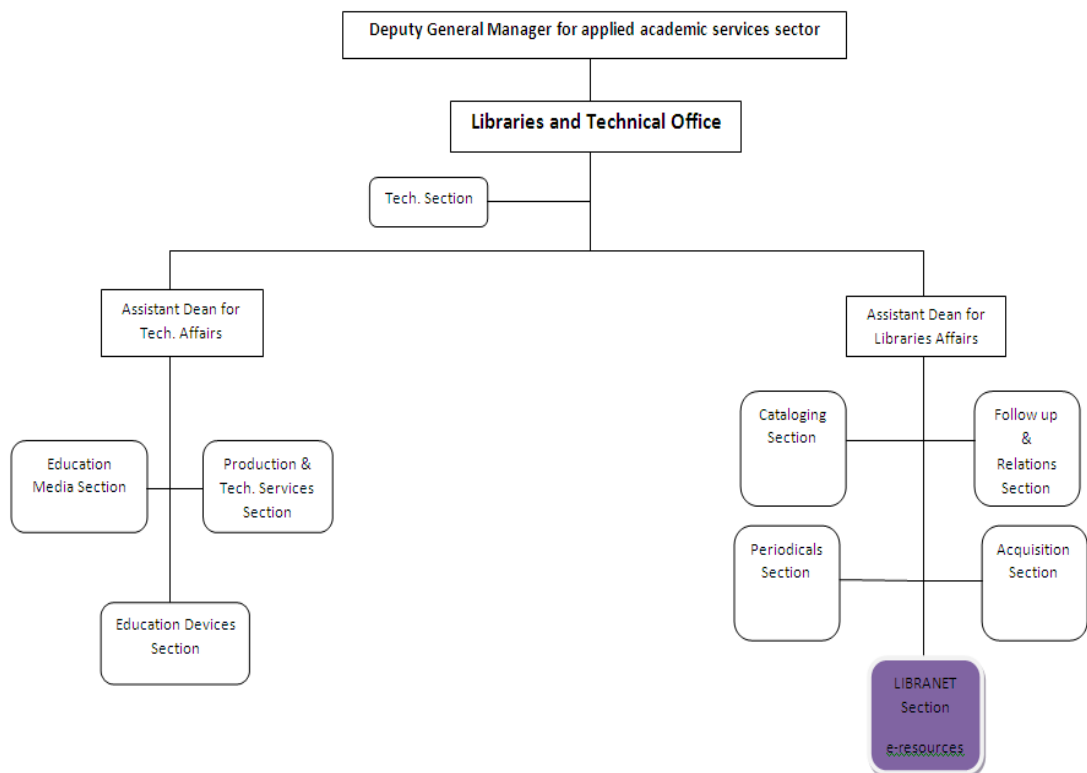
Appendix 5: Databases summary - Exploratory study

Discipline	Database
Multidisciplinary	ASK Zad (Arabic database)
	Academic Search Premier
	Proquest Central
	SAGE JOURNALS ONLINE (demo)
	Dissertations and Theses
Education	ERIC
	Professional Development Collection
	Career and Technical Education
	ProQuest Education Journals
	Proquest Central Education Databases
Business	Business Source Premier
	Wilson Business
	CBCA Business
	Snapshots Series
	Regional Business News
	ABI/INFORM Dateline
	ABI/INFORM Global
	ABI/INFORM Trade & Industry
	Accounting and Tax
	Banking Information Sources
	Hoover's Company Records
	OsResearch

	ProQuest Asian Business and Reference
	Prequest Central Business Databases
Science and Technology	Ei Compendex
	ProQuest Computing
	ProQuest Telecommunications
	ProQuest Science Journals
	ProQuest Central Technology Databases
Medical	Medline
	CINAHL Plus with Full Text
	PRE – CINAHL
	Ovid Nursing Collection
	Nursing and Allied Health Source
	Pharmaceutical News Index
	ProQuest Health and Medical Complete
	Proquest Central Medical Databases
News	Canadian Newsstand
	CBCA Current Events
	ProQuest Newspapers
	U.S. National Newspaper Abstracts (3)
	Proquest Central News Databases

Library Science	OCLC WebDewey
	Classification Web
	ITS for Windows
	LISA
	Library, Information Science & Technology Abstracts (LISTA)
	Books in Print
	ULRICH'S International Periodical Directory
Other	Criminal Justice Periodicals
	ProQuest Military Module
	Legal Collections
	ProQuest Psychology Journals
	ProQuest Religion
	Academic Research Library

Appendix 6: Exploratory interview questions – Exploratory study

Second Set of Interviews

Exploratory Instrument

First part will be about personal information.

Name: ……………………………………………………………

Gender: …………………………………………………………….

Major Discipline: …………………………………………………..

College: …………………………………………………………….

Years of Experience: ………………………………………………..

1. Can you talk about the tasks that you are involved in on a daily bases as one of the faculty members of PAAET?
2. Can you talk about the occasions where you need to search for information resources (specifically electronic resources)?
3. For what purposes do you basically need to search for information resources? For teaching or research? How often do you usually do that?
4. What are you teaching? How many modules each semester?
5. What are the basic procedures followed to deliver these modules? Do you use electronic resources?
6. Do you have a reading list for each module? Does it include electronic resources?
7. Are there sufficient electronic information resources in your specialized discipline?
8. How about the students, are they encouraged to use electronic resources?
9. How about research, are you involved in research work or publishing academic articles?
10. What kind of references do you usually use in order to inspire your writings?
11. Do you currently have specific resources to use? Why do you prefer them?
12. If you have the choice, would you use other resources than the ones you are using currently?

13. Can you talk about the steps carried out in order to find information resources usually? Are you satisfied when you follow these steps? What are the difficulties that you usually face?

14. Can you talk about life experience of two incidents one positive and other negative you faced lately while searching for electronic resources?

15. Can you talk about the importance of electronic resources in teaching and research?

16. What criteria do you prefer to use to choose electronic resources? (Relevance, currency, language).

17. In what way are you following the new electronic resources hosted by PAAET libraries? Can you tell me how do the libraries announce or market the electronic resources?

18. What do you think about the current electronic information resources?

19. Are there any strategies followed by PAAET libraries for promoting the use of electronic resources?

20. Have you had any training courses about how to use electronic resources effectively? Do you think you need any kind of training courses on how to use electronic resources?

21. In your opinion, what are the difficulties faced when you are searching for electronic information resources for academic use?

22. As a faculty member in PAAET, can you talk about the importance of and need for electronic resources in teaching and research in the current time and in the future as well?

23. Do you have any suggestions about how to fulfil your electronic information needs?

24. Do you have any other concerns to add that were not mentioned in the previous question?

البيانات الشخصيه

الاسم: ....

الجنس: ....

التخصص: ....

الكليه: ....

سنوات الخبره: ....

1. كعضو من اعضاء هيئة التدريس في الهيئة العامة للتعليم التطبيقي والتدريب. ارجو التحدث عن المهام التي تقومون بها يوميا؟
2. ما هي الحالات التي تحتاج فيها الي البحث عن مصادر معلومات (بالاخص مصادر معلومات الكترونيه)؟
3. لاي غرض تقوم بالبحث عن مصادر المعلومات هل للتدريس ام للبحث؟ وما مدى تكرارها؟
4. ماهي المواد التي تقوم بتدريسها؟ وكم ماده تدرس في كل فصل؟
5. ماهي الطريقه الاساسيه المتبعه لتوصيل المعلومات الخاصه بكل مقرر للطلبه؟ هل تستخدم مصادر معلومات الكترونيه؟
6. هل لديك قائمه للقراءه لكل ماده؟ هل تتضمن مصادر معلومات الكترونيه؟
7. هل توجد مصادر معلومات الكترونيه كافيه في مجال تخصصك؟
8. ماذا عن الطلبه؟ هل توجد ايه طرق متبعه لتحفيزهم على استخدام مصادر المعلومات الالكترونيه؟
9. ماذا عن الابحاث؟ هل تقوم بعمل ابحاث معينه؟ او تقوم بنشر مقالات اكاديميه؟
10. ما نوعيه مصادر المعلومات التي تستند عليها كمصدر لابحاث لكتاباتك؟
11. هل لديك مصادر معلومات محدده تستند عليها؟ لماذا تفضلها؟
12. اذا كان لديك الخيار.. هل تود استخدام مصادر معلومات غير المستخدمه حاليا؟
13. ارجو التحدث عن الخطوات التي تقوم باتباعها عاده للحصول علي مصادر المعلومات؟ هل انت راضي عن هذه الخطوات؟ وماد الصعوبات التي تواجهها عاده؟
14. اوجو التحدث عن حدثين تعرضت لهما اثناء بحثك عن مصادر المعلومات مؤخرا احدهما ايجابي والاخر سلبي؟
15. من وجهة نظرك و من واقع خبرتك ماهي اهمية مصادر المعلومات الالكترونيه في التدريس والبحث؟
16. ماهي المعايير التي تفضلها لاختيار مصادر المعلومات الكترونيه؟ (العلاقه بالموضوع, الحداثه, اللغه)
17. باي طريقه تتعرف علي احدث المصادر المعلنه من قبل اداره المكتبات؟ هل تقوم اداره المكتبات بالاعلان او الترويج لمصادر المعلومات الالكترونيه؟
18. ما رايك بمصادر المعلومات الالكترونيه المتوفره حاليا؟
19. هل هناك ايه اساليب متبعه من قبل اداره المكتبات للتشجيع علي استخدام مصادر المعلومات الالكترونيه؟
20. هل سبق ان التحقت ببرامج للتدريب علي كيفيه استخدام مصادر المعلومات الالكترونيه؟
21. برأيك ماهي الصعوبات التي تواجهها عندما تقوم بالبحث عن مصادر معلومات الكترونيه لاغراض اكاديميه؟
22. كعضو من اعضاء هيئة التدريس في الهيئه العامه للتعليم التطبيقي والتدريب ما مدى اهمية مصادر المعلومات الالكترونيه والحاجة اليها في التدريس والبحث حاليا ومستقبلا؟
23. هل لديك اي اقتراحات حول كيفية الوفاء باحتياجاتكم لمصادر المعلومات الالكترونيه؟
24. هل لديك ايه اضافات او قلق او مخاوف اخري لم تذكر في الاسئله السابقه؟

Appendix 7: Article-related interview questions – Exploratory study

Part 1: personal information

Name:

Gender:

Age:

Nationality:

Highest academic qualification:

      Place obtained:

      Date obtained:

Position:

Name of college:

      Department:

      Area of teaching:

Years of experience:

Part 2: Interview questions

Questions related to Research background

In the first part of the interview an understanding of the academic's research background will be obtained by asking some questions related to his/her research career background. The researcher will attempt to get an understanding of the participant's research career, the methodology that is used, and the way the literature is used in their research by asking the following questions:

1. Where do you see yourself in the research career?
2. What methodology do you usually follow in your research? (to remind myself.. Grounded theory, experiments… etc).
3. How do you locate published works on the Internet?
4. What sources do you mainly use to search for the literature you need?
5. How do you use literature in your research?
6. How are you managing (storing and using) the found resources?

Questions related to published papers

In a more specific way, information about a real life experience will be obtained by selecting two recently published peer-reviewed articles to talk about. The researcher will select from the available list as well as that the faculty members will nominate two of their peer-reviewed, recently published articles that they prefer to talk about.

General:

1. Can you tell me about that research?
2. Where did you get the idea of writing this article? (to remind myself, The sources of your inspiration? Background readings for example?)
3. In your opinion, which of the references listed can be considered the most important references? (highlight 10).
4. How did you collect these 10 references 1st, 2nd, 3rd… and so on… up to the 10th selected reference?
5. How did you start your search for each reference?

About each of the selected ten references (the first ten used references used in the article):

1. Can you please mention how did you find this reference? (Locate).
2. Can you please explain in which stage of your research you found this reference? (Use in research).
3. Can you please explain how it's being used in the article? (Use in the research).
4. In your opinion, why do you think it's an important paper to include in your research? (How to evaluate it).
5. Did you print it first in order to use it?
6. Did you save it to a disk, USB, or Social bookmark in order to manage it? (about Objective 4).

Appendix 8: Information sheet (revised) – Main study

Information Sheet

1. Research Project Title:

Factors that Shaping Scholars' Personal Information Management:

A Case study of PAAET, Kuwait

2. Invitation paragraph

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. What is the project's purpose?

The aim of this project is to discover how scholars manage their personal information collections and to explore the factors that shape the way they manage it within their research processes in the Public Authority for Applied education and Training/ Kuwait.

4. Why have I been chosen?

You have been chosen to participate in this study as a member of sample that represents scholars of PAAET colleges.

5. Do I have to take part?

Taking part of this study is totally optional, so you have the choice to participate or not. You also have the right to withdraw from participation any time you wish. On the case of accepting participation on this study you will need to sign a consent form.

6. What will happen to me if I take part?

To participate you just need to answer interview questions where you will be asked to provide your name, and email address in order to enable us to interpret data collected across the module as a whole.

In the interviews, participants will be asked about their personal information collection that they use in their research process.

7. Will I be recorded, and how will the recorded media be used?

The interviews will be audio recorded and photographs of the offices will be also taken and will only be used as a research tool for collecting data. It will not be used in any other way without your written permission. Also their use will be restricted to the researchers in this project.

8. What do I have to do?

You just need to answer interviews questions.

9. What are the possible disadvantages and risks of taking part?

There will be no risk or disadvantage of taking part of this research also no restrictions or any changes in your lifestyle.

10. What are the possible benefits of taking part?

No direct material benefit would be for your participation. However you will have a sense of your initial use and future needs for your personal collections and their aid in conducting research or publishing for your peers.

11. What if something goes wrong?

You can contact my supervisor Dr. Andrew Cox a.m.cox@shef.ac.uk for any complains you may have. However you may contact the University Registrar and Secretary if you feel you have any complaints that have not been handled to your satisfaction.

13. Will my taking part in this project be kept confidential?

All the data collected will be anonymized, including the names of all faculty members and any other information through which you might be recognized.

14. What will happen to the results of the research project?

Results will be published as part of my PhD thesis and possibly also at conferences and in journals.

15. Who is organising and funding the research?

2

I'm a research student in the department of Information School at the University of Sheffield.

16. Who has ethically reviewed the project?

This project has been ethically approved via the Information Studies department's ethics review procedure.

17. Contact for further information

For more information please contact me by email at liq09ma@sheffield.ac.uk

Please note that you will be given a copy of the information sheet as well as a signed copy of your consent form.

Thank you for your kind participation in this project.

3

Information Sheet

1. Research Project Title:

Factors that Shaping Scholars' Personal Information Management:

A Case study of PAAET, Kuwait

2. Invitation paragraph

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

3. What is the project's purpose?

The aim of this project is to discover how scholars manage their personal information collections and to explore the factors that shape the way they manage it within their research processes in the Public Authority for Applied education and Training/ Kuwait.

4. Why have I been chosen?

You have been chosen to participate in this study as a member of sample that represents scholars of PAAET colleges.

5. Do I have to take part?

Taking part of this study is totally optional, so you have the choice to participate or not. You also have the right to withdraw from participation any time you wish. On the case of accepting participation on this study you will need to sign a consent form.

6. What will happen to me if I take part?

To participate you just need to answer interview questions where you will be asked to provide your name, and email address in order to enable us to interpret data collected across the module as a whole.

In the interviews, participants will be asked about their personal information collection that they use in their research process.

7. Will I be recorded, and how will the recorded media be used?

The interviews will be audio recorded and photographs of the offices will be also taken and will only be used as a research tool for collecting data. It will not be used in any other way without your written permission. Also their use will be restricted to the researchers in this project.

8. What do I have to do?

You just need to answer interviews questions.

9. What are the possible disadvantages and risks of taking part?

There will be no risk or disadvantage of taking part of this research also no restrictions or any changes in your lifestyle.

10. What are the possible benefits of taking part?

No direct material benefit would be for your participation. However you will have a sense of your initial use and future needs for your personal collections and their aid in conducting research or publishing for your peers.

11. What if something goes wrong?

You can contact my supervisor Dr. Andrew Cox a.m.cox@shef.ac.uk for any complains you may have. However you may contact the University Registrar and Secretary if you feel you have any complaints that have not been handled to your satisfaction.

13. Will my taking part in this project be kept confidential?

All the data collected will be anonymized, including the names of all faculty members and any other information through which you might be recognized.

14. What will happen to the results of the research project?

Results will be published as part of my PhD thesis and possibly also at conferences and in journals.

15. Who is organising and funding the research?

I'm a research student in the department of Information School at the University of Sheffield.

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17. Contact for further information

For more information please contact me by email at liq09ma@sheffield.ac.uk

Please note that you will be given a copy of the information sheet as well as a signed copy of your consent form.

Thank you for your kind participation in this project.

Appendix 9: Consent Form – Main study

Model Participant Consent Form

Title of Research Project: Use of Electronic Resources by Faculty Members in Academic Libraries

Name of Researcher: Mrs. Mashael Al-Omar

Participant Identification Number for this project:　　　　**Please initial box**

1. I confirm that I have read and understand the information sheet/letter (delete as applicable) dated *[insert date]* explaining the above research project and I have had the opportunity to ask questions about the project.

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. *Insert contact number here lead researcher/member of research team (as appropriate).*

3. I understand that my responses will be kept strictly confidential (only if true). 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 report or reports that result from the research.

4.   I agree for the data collected from me to be used in future research

5. I agree to take part in the above research project.

_____   _____   _____

Name of Participant   Date   Signature

(*or legal representative*)

_____   _____   _____

Name of person taking consent   Date   Signature

(*if different from lead researcher*)

To be signed and dated in the presence of the participant

_____   _____   _____

 Lead Researcher   Date   Signature

To be signed and dated in the 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.

Model Participant Consent Form

Title of Research Project: Use of Electronic Resources by Faculty Members in Academic Libraries

Name of Researcher: Mrs. Mashael Al-Omar

Participant Identification Number for this project: Please initial box

1. I confirm that I have read and understand the information sheet/letter (delete as applicable) dated *[insert date]* explaining the above research project and I have had the opportunity to ask questions about the project.

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. *Insert contact number here of lead researcher/member of research team (as appropriate).*

3. I understand that my responses will be kept strictly confidential (only if true). 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.

4.   I agree for the data collected from me to be used in future research

5.   I agree to take part in the above research project.

_____   _____   _____
Name of Participant   Date   Signature

1

(or legal representative)

_____   _____   _____

Name of person taking consent   Date   Signature

(if different from lead researcher)

To be signed and dated in the presence of the participant

_____   _____   _____

Lead Researcher   Date   Signature

To be signed and dated in the 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 10: Interview Guide - Main study

The next stage of data collection will include 17 in depth face-to-face interviews with scholars from two disciplines in PAAET - Kuwait named Basic Education College of Nursing College. To investigate the factors that shape scholars' personal information management within scholars' research process.

The Basic Education College composed of the following departments:

1. Science including Chemistry; Physics; Geology; Botany & Microbiology and Zoology.
2. Physical Education and sports
3. Library and Information Science
4. Syllabus and Teaching methods
5. Education management

The college of Nursing is composed of the following departments:

1. Nursing Diploma dept.
2. Nursing BSC dept.
3. Specialized programs and postgraduate dept
4. Biomedical Science dept.
5. General Science Unit
6. Language Unit

Based on conducting research, scholars from several departments of Education College and the Health sector of College of Nursing will be chosen. Basic communication before the interviews will be carried out by the researcher to assure introducing the research and the researcher and to make sure that a comfortable setting for the interviews will be achieved in order to create conversations with the interviewee and collect deep qualitative data about themselves.

Important list to remind myself:

- Information collections related to research can be: books, journal articles, any data generated, any data collected, and any research output (posters, published work…etc), electronic files and folders on the personal computer, electronic folders in the emails.

- Places to do research related work can be: work office, home office, any other places like café for example, anywhere just with their laptop with them.
- Tools of PIM can be any software that can help the researcher in managing their collections as simple as word and excel files or more specialised software such as: Endnote, Mendeley.

Part 1: personal information

Name:

Gender:

Age:

Nationality:

Highest academic qualification:

    Place obtained:

    Date obtained:

Position:

Name of college:

    Department:

    Area of teaching:

Years of experience:

Part 2: Interview Guide

Related to information practice (IP):

1. Can you tell me about your research?

Related prompts:

- What area of research?
- The stages of conducting research?
- Using information in different stages of research?
- Research methods?

2. How do you keep track of your referencing in your research?
   - Are you using any tool to organize your bibliographies like one called Endnote.. Have you heard about it?
   - Have used any?

3. When conducting your last research, can you tell me about the information resources used in that research?
   - Where did you get them from?
   - Do you use information for the first time or that has been used in other research before?
   - Can you describe the way of finding information from your personal collections? Was it easy or difficult to find?

Related to working place (PSI):

4. Can you talk about this room, how much of your research you do in this room?

Related Prompts:

- Talk about the cabinets in the room? How many cabinets?
- How are the information organized in those cabinets?
- What are the types of information related to research in the room? (books, articles, … as listed above)
- Does the room contain Piles? or Files? Can you talk about them?
- Any of them related to the research? Format print or electronic?
- Can you talk about the related to research in particular?
- Why do you keep them here?

- Why do you keep them in this way?
- If some are related, then where do you keep the rest of each research?
- Can you show me some other research related information in this room?
- Why do you keep them in this way?
- Why do you keep them in this place?
- Taking some evidence by picture and record the comments on that picture
- Do you keep backup copies of any information in this room in anywhere else?

Related to Personal Information Collection (PIC)

5. Can you please describe your personal information collections related to your research in this room?
   - Why do you keep research related information as part of your personal collections?
   - Can you describe how are you storing and maintaining your personal collections to use them in the future?
   - Can you talk about incidence experienced where you tried to find information from your collections and you failed to find it? and what are the reasons?
   - Can you talk about incidence experienced where you tried to find information from your collections and you succeed to find it?

6. Do you keep a directory of your collection?
7. Can you describe how are you using the stored collection in your research?
   - Do you usually search through your collections?
   - Do you usually find what you search for from your collection?
   - Do you find it useful for your research to build and maintain personal collections?

Appendix 11: The expected output of the interviews

About information practice:

- The type of research in relation to discipline
- Use of personal collections in their research

About Personal space of information:

- Some interesting settings of organizing the place to present some patters or ways of organizing like neatly organized or not organized piles, files, books, printed documents, electronic files, electronic storages (USB and HDs)

About personal information collections

- Size and load, duplication (fragmentation)
- Directory
- Usefulness

About ways of organizing personal information collections

- About personalized ways such as using word and excel
- Adopted tools of managing personal information collections such as Endnote and Mendeley
- Networking and exchanging documents and information related to research

Themes to get out of the interviews:

1. Type of information:
   - Books (owned/ borrowed)
   - Prints (journal articles, research papers)
   - Files
   - Electronic files (on computer, Hard disc, USB)
   - Emails
   - Bookmarks
2. Purposes of keeping :
   - Value of information
   - To find it later
   - Love to build PIC
   - To share it with others
   - Worries of lose

- To complete a project

3. Ways of re-finding:

- Piles on the desk

- Files on build in shelves

- Files in a cabinet

Appendix 12: emerging codes from interviews – initial list

1. research material storage

2. multiple working space

3. multiple research at a time

4. hours per day

5. research strategy

6. electronic storage

7. Searching

8. stuff on desk

9. cant re-find easily

10. future research

11. E-folders description

12. Keeping

13. literature review

14. research stages

15. format preference

16. storage space

17. Remembering

18. move to new building

19.   co-authoring

20.   non-routine

21.   Exploitation

22.   research peak

23.   managing strategy

24.   Discarding

25.   research methodology

26.   raw data management

27.   keeping electronic

28.   keeping physically

29.   referencing tool

30.   Collaboration

31.   Networking

32.   Communication

33.   Backup

34.   storing criteria

35.   Re-finding

36.   directory

37.   Disseminating

38.   Organizing

39.   Finding

40.   Annotation

41.   New research idea

42.   Writing

43.   Tools

44.   Publishing

45.   Data practice

46.   Format

47.   storing in email

48.   colors

49.   Home office

50.   Re-use

51.   failure in re-find

52.   unable to manage

53.   Duplication

54.   chaining

55.   file naming

56.   solution

57.   problems

58.   keywords

59.   career development

60.   non-kuwaiti scholars

61.   Hospital

62.   Labs

63.   Patients

64.   Practitioner

65.   Contract Renewal

66.   Progress in a year

67.   Score

68.   Promotion

69.   Nationality

70.   Motives for research

71.   Time

72.   Compulsion to research

73. Research=reading and writing

74. Computer

75. No differentiation

76. Planning

77. Flash Memory

78. Internet

79. Work office is main base

80. Long Hours

81. Free time

82. Teaching time

83. Task of the day

84. Target of the day

85. Regime

86. Hard work

87. Exams

88. Articles

89. Limited space on desk

90. Non research stuff

91. Move

92. Cabinet

93. Confused

94. Summer holiday

95. Past

96. Present

97. Up comming

98. New research

99. Retrieval

100. Limited desk size

101. Article rejected

102. Abstract

103. Full text

104. Electronic resources

105. Preferences

106. Read electronic

107. Keeping everything

108. New computer

127. SPSS

128. Peer review

129. Carier bags

130. Bag

131. Keeping after publishing

132. Secured

133. Books

134. Piles

135. Papers

136. Desk

137. Laptop

138. Multiple devices

139. Questionnaire

140. Data analysis

141. Double effort

142. Assisstance

143. Joint work

144. Training

163. Shelves

164. Lables

165. Naming

166. Opened envelope

167. Work in progress

168. Meeting

169. Notes

170. Data

171. Main author

172. I dont delete any email

173. Complicated

174. Criteria

175. Old research

176. showing place

177. Easily refind

178. Same interface on all computers

179. CD

180. Quatations

181. Files

182. Size

183. Meeting minuets

184. Corrections

185. Bookmarks

186. Online

187. Satisfaction

188. Notification

189. RSS

190. Disturbed

191. Website

192. Create

193. Boys campus

194. Not organized

195. Girl's Campus

196. Work on electronic always

197. Dont keep physically

198. Scan

199. Dont like printed copies

200. Comfortable

201. Easy

202. Access

203. Google Doc

204. Anytime anywhere

205. Education

206. Hate printed

207. Smart phone

208. Copy on each device

209. IT

210. Bad Experience

211. No strategy

212. Main working station

213. Trust

214. Worried

215. Plagiarism

216. Cautious

235. Everything electronic

236. Always carry with me

237. Visually apper

238. Handy

239. Losing information

240. Research title

241. Boxes

242. Hard copy

243. Research area

244. Amount

245. Discipline

246. PhD

247. Save time and effort

248. Sources of information

249. Crash my files

250. Load of files

251. Research subject

252. Old files

271. Google

272. Librarian

273. Yahoo

274. Keyword

275. Justification

276. E-folders

277. PDF

278. Word Doc

279. Save

280. Highlight

281. Read printed

282. Read through monitor

283. Folder

284. Classification

285. Desktop

286. Folder naming

287. PAAET

288. Other than research task

Appendix 13: Emerging Code from Interviews –revised list

Emerging codes from Interview 1

1. Abstract
2. Active research mood
3. After publishing
4. After semester clean
5. Alphabetical
6. Analysis
7. Article acceptance
8. Article proposal
9. Article rejection
10. Articles
11. Attachment
12. Backup
13. Books
14. Bottom of the shelf
15. Broad view
16. Cabinet
17. Cannot find
18. Career development
19. Carry with me (Mobile storage)
20. Co-authoring
21. Comments
22. Communication
23. Comparison
24. Computer saved files
25. Confused
26. Continue task
27. Contract renew
28. Data collection
29. Databases
30. Delete
31. Desktop
32. Detailed view

33. Directory

34. Discard

35. Discussion

36. Duplicate copies

37. Email

38. Endnote

39. Envelope

40. E-resources

41. Evaluate

42. Exam period

43. Excel

44. External hard desk

45. Facebook

46. Flash memory (USB)

47. Field

48. Findings

49. Finished research

50. Folders naming

51. Free time

52. Full text

53. Future

54. Google

55. Google it

56. Hard work

57. Home

58. Home office

59. Hours per day

60. Internet access

61. Journal

62. Journal guidelines

63. Keeping

64. Keeping everything

65. Kept with colleagues

66. Keyword naming for files

67. Labelling

68. Library

69. Limited space

70. Literature review

71. Methodology

72. Methods

73. Move

74. Multiple research projects

75. My document

76. Needed

77. New building

78. New computer

79. New information

80. New research

81. Non-Kuwaiti

82. Non-research stuff

83. Non-routine

84. Old information

85. Online search

86. Organize

87. Past

88. PDF

89. Personal library

90. Personal use

91. Plan

92. Preference

93. Present

94. Printed papers

95. Problem

96. Problems

97. Promotion

98. Published article

99. Published papers

100.   Publisher

101.   Publishing

102.   Questionnaire

Appendix 14: possible themes or core themes initial stage

Storage	Space	Practice	Time	IT / Tools	Strategy	Human aspects	Change
• research material storage • electronic storage • stuff on desk • E-folders description • storage space • storing criteria • Limited space on desk • Cabinet • Limited desk size • Envelops • Store room • Special data storage area • Desk •	• multiple working space • Home office • Hospital • Labs • Work office is main base • Home • My library • Research place, one place • Working places • Desk	• multiple research at a time • searching • keeping • literature review • research stages • co-authoring • exploitation • research peak • research methodology • raw data management • keeping electronic • keeping physically • collaboration • communication • Re-finding • Disseminating • Finding • Annotation • New research idea • Writing • Publishing • Data practice • Re-use • career development • Contract Renewal • Progress in a year • Promotion • Motives for research • Compulsion to research • Research=reading and writing • Exams • Articles • Retrieval • Article rejected • Research vs teaching • Uniqueness of research	• hours per day • future research • Time • Long Hours • Free time • Teaching time • Target of the day • Task of the day • Summer holiday • Past • Present • Up coming • New research • After publishing •	• referencing tool • networking • Tools • storing in email • keywords • Computer • Flash Memory • Internet • New computer • Email • SPSS • Secured (info security) • Laptop • Multiple devices •	• research strategy • non-routine • managing strategy • Discarding • Backup • Directory • Organizing • Colors • Duplication • file naming solution • problems • Planning • Task of the day • Regime • Envelops • Semester cleaning • Sharing • Weeding • Carrier bags (mobility) • Bag (mobility) • Piles • Laptop •	• cant re-find easily • remembering • collaboration • failure in re-find • unable to manage • non-kuwaiti scholars • Nationality • Hard work • Confused • Read electronic • Keeping everything • Statistician • Keeping after publishing • Double effort •	• move to new building • chaining • Move •

Appendix 15: Nvivo Nodes

Appendix 16: Coding interviews

stored in the files and the other half is on the computer stored on my computer as electronic files. About the files.. well my research area or my discipline is between 3 main areas named: water treatment, environmental impact assessment, and waste water treatment. So I keep everything like documents, articles related to me work in separate file. I mean for instance the published papers I keep them in specific place like file or folder, so I mean I divide my work in a clear way. For example if I want something about the water treatment, I can directly go to the blue box file and find what I need. I mean I don't get lost within my work.

M: does that mean that any blue coloured files or folder represents the water treatments?

P: no not necessarily it's just my way of labelling.

M: do you organize your labelled files alphabetically?

P: no I don't have much to worry about alphabetizing them to be honest. I believe if I have a lot more files I should worry about organizing them therefore I don't worry much about it because anything I want I can find it easily.

M: can we have a look at one of the files please?

P: yes sure we can do, for example here this files named 'paper economic evaluation' (pic 2) this is one of my research I kept here some papers about the economic evaluation of certain topic. This research is 70% of its way to be done as you see here in the file there is a draft of my writing (pic 1) as it is in the final stages. I call it papers to represent articles or my paper to be published I mean. Ok there is another thing I want to tell you about for example this is called waste water management paper, so it is about waste water management so you can see I kept the articles here. This research

Appendix 17: Nvivo Nodes include texts and photographs

Appendix 18: Adding text notes to some photographs

Appendix 19: Selected and coded

Appendix 20: Note taking and explanation to coded photographs

Appendix 21: Note taking and drawing of home offices by researcher

Appendix 22: Example of using photographs as data and how it was coded with interview transcripts by Nvivo

Appendix 23: Conference publication – Finders, keepers, losers seekers: A study of academics' research-related personal information collections

Finders, keepers, losers, seekers: A study of academics' research-related personal information collections

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Abstract. In conducting their research, scholars are not only information seekers, they are information keepers and managers as well. This paper describes a study of seventeen scholars from Education and Health disciplines (College of Nursing and Health Science College) in the Public Authority for Applied Education and Training (PAAET), Kuwait and their research-related personal information collections. A model explaining the size, diversity, hybridity and fragmentation of these collections to immediate and underlying causes is presented.

Keywords: Personal Information Management, Human Computer Interaction, Information Behavior, Information Practice, Information Retrieval.

1 Introduction

Within their research, scholars engage in *"searching, collecting, reading, writing and collaborating"* [25]. As a result of these information practices, they build and then have to manage significant Personal Information Collections (PICs) [23], [16]. Such materials accumulate over time [17] and collections can grow to be huge in size, diverse in nature and format [11]. They include books, published works, and web pages, emails and electronic files on a computer's hard drive [11]. Ensuring that information can be re-found when needed and so "exploited" [17], [27] is an information and data management challenge [10].

Investigation of these issues requires a holistic view of what are often separated out as different fields of study, i.e. Information Behaviour (IB), Personal Information

Management (PIM) and Information Practice (IP). Research in this area should link information practices to the research process, and include investigation of the management of research data as well as secondary literature and other information. Studies often focus either on physical or electronic information collections [5], [15], [1], [13], [28] but both should be looked at together.

The purpose of this paper is to describe a study that was carried out to develop such in-depth understanding of scholars' research-related PICs. The study examined how research-related PICs are created, used and managed within the research process. It explored the factors that shape their management and sought to evaluate how successful scholars are at achieving the exploitation of information they collect.

2   Literature Review

Personal information management (PIM) is about how people "*acquire or create, store, organize, maintain, retrieve, use, and distribute the information needed to complete tasks (work-related or not)*" [12]. Researchers have investigated PIM in diverse ways such as to develop a system for information retrieval to facilitate information reuse [29] while others investigated information discovery and finding only [6], [7], [20], [4].

Relatively few studies to date have investigated scholars as information keepers and managers, rather the focus has tended to be on scholars information seeking behavior, in the context of their literature review [6], [24], [22]. One exception is Kaye et al. [18] who investigated forty eight scholars in multiple disciplines and ranging in seniority from graduate students to professors by touring their offices and conducting semi-structured interviews. The study found that academics not only store information for the purposes of information retrieval, but also for "*creating legacy, sharing resources, confronting fears and anxieties and identity construction*" [18]. The main uses were similar across disciplines and seniority. A great variety of storage strategies were uncovered in the research. Physical collections of information were stored in anything from custom-built offices to a mobile solution of bags and boxes stored in the back of a car. Digitally, academics developed their own individual way of archiv-

ing digital material rather than using available tools and solutions [18]. This is a relatively unique study.

Therefore, the aim of this research was to add to such relatively sparse literature by examining how research-related PICs are created, used and managed within the research process by answering main questions: What are personal information collections of scholars like? How do scholars use their personal information collections in their research? It also explored the factors that shaped their Personal Information Management (PIM) activities such as discipline, seniority, time pressure and the quality of support services.

3   Methodology

The study adopted an emergent design and an interpretive-qualitative approach based on in-depth, face-to-face interviews in order to understand the scholars' world and life [3] as they talk about their experience in their own words [21]. The focus of this paper is to present analysis of seventeen interviews of scholars in the Public Authority for Applied Education and Training (PAAET), Kuwait, from the disciplines of Education and Health preceded by tours of their personal space of information and observation.

In addition to interviews, photographs of scholars' personal space of information and their information collections were taken and treated as data complementing the interviews and achieve more understanding [26]. The interviews were transcribed then analyzed thematically with the photographs to produce a list of codes which were then integrated to produce the themes identified in the textual data [19]. Transcripts and photographs were sorted into broad categories known as "proto-themes" [8] in order to allow themes to emerge from the data by categorizing similar topics together. The transcribed interviews were re-read in order to refine the proto-themes into the actual themes [3], [8].

4 Findings

The study found that scholars' research information collections are large, diverse, hybrid, and fragmented (see figure 3 below). Scholars' personal space of information contained a massive quantity of information related to their research that is stored in different places at different stages of the research. The part of a scholar's desk where they were working usually contained an accumulation of information related to research, sometimes merged with non-research material such as for teaching, and management tasks. Research is an "off-on process" scholars said, so that when they are in an active research mood, the amount of the information on their desks is larger than when they are less active research mode. Within their working offices, the research collection accumulated in different storage places such as open shelves, drawers and closed cabinets in the form of piles, files, pile of files and randomly stored piles within a file. Information was stored in huge amounts electronically too. Electronic folders were found on scholars' desktops, external storage devices, and stored virtually in personal E-mail or websites of participants that were created in an effort to support their own research tools of management.

Fig. 1. Pile and files of diverse papers stored physically in different ways in the main setting working space

Fig. 2. Electronically stored diverse research related information collections

The research-related PIC was found to be typically diverse in type, including four main categories of material, namely: sources gathered for the literature review, research data, publications and administrative papers.

Even after publishing a paper, literature review sources were kept by many scholars. They said that they thought they would need the material in future research in the same subject. It was also kept to share with colleagues in their local network within the department or anywhere across Kuwait. The second type of information was research data. It was found that the original paper questionnaires, for example, were kept together with processed results. Electronic versions were stored on their personal computers. Some scholars found it enough to keep the summary of the data in SPSS or Excel tables, but others preferred keeping the data as originally collected in the form of paper questionnaires. Research publications were also part of the collection, again occurring in both traditional and electronic formats. The final category of material in the collection was paperwork related to the research project.

In addition to its size and diversity, the scholars' collection was hybrid in formats including a complex mix of physical and electronic content, and located in multiple locations that change at different research stages. There was typically no clear strategy of keeping print or electronic or even both. All what was found is a random mix of both with a large amount of redundancy. All four types forming the diverse collection were found in both print and electronic form. Some scholars prefer reading printed versions while others prefer reading electronic. Some would tend to start with one version and continue reading in the other.

The collection is also fragmented. Enormous piles of papers and files were stored in multiple spaces whether in the main or secondary setting, in addition to abundant external storage devices for saving electronic versions such as flash memory and hard disks. Working in different locations necessitated the existence of the collection in each of the locations either by carrying the collection between locations by a mobility solution or like in some case keeping multiple copies here and there. Scholars tried to build an identical copy of the collection in each location, however hard that was to achieve.

The causes for these collection features can be divided into two main categories namely immediate and underlying causes.

The immediate causes found were the need for research, time pressure, quality of space, technology opportunity, support services, English resources and display. Scholars were obliged to conduct research for their career development. Conducting multiple research projects at the same time, along with poor support services, created time pressure and affected the research collection size, hybridity and fragmentation. In order to overcome the time pressure, and accomplish their tasks, scholars tried to manage their time by taking uncompleted tasks to a secondary setting (usually home) rather than conducting all research activities at the workplace. The quality of personal space triggered the failure of management of the research collection. Shared or poor quality offices forced scholars to find different working spaces which encouraged information hybridity and fragmentation. Technology opportunities such as the facilities of internet and ease of tools with the currency of applications were also effectively challenging scholars to maintain control. Such opportunities helped create the deluge of information. When participants were asked about the services offered to them by PAAET libraries, all talked about their dissatisfaction about the type and quality of services offered to support their research tasks. Scholars expected more support to aid their information finding, keeping and re-finding tasks. As some of the modules they teach have to be taught in Arabic language, English resources were one of the factors that shaped the features of the scholar's research collections. The research collections were displayed in the working spaces by some scholars for a number of reasons. The displayed collections were not limited to books and research output, but included awards and certificates. Such items were used for several purposes not for just sharing, and confronting fear of loss, but were displayed for remembering, constructing identity and creating legacy as well.

The immediate causes were driven by a number of underlying causes, namely Age, Gender, Nationality, Seniority, Discipline, and the Place PhD obtained. The age of the scholar affected the extent to which scholars took technological opportunities and English resources. Their need of Arabic resources also was affected by the place PhD obtained, as scholars who had graduated from UK and USA had no problem of using English resources, while those who graduated from Arabic universities struggled finding Arabic resources and translating material. It was found that female scholars were more eager to display their research related collections as well as their certificates and

awards. Nationality affected the research and time pressure, as non Kuwaiti scholars were working under more pressure to conduct their research in order to renew their contracts. Seniority affected time pressure, quality of space, and support services. Whereas, the discipline affected the quality of space, technology opportunity, support services and English resources.

5 Discussion and conclusion

This research explored the research-related personal information collections of scholars in a novel context, Kuwait. A model was produced capturing the main factors shaping the collection, and its size, diversity, hybridity and fragmentation. It identifies that such collections are typically made up of four types of information content. The model offers an analysis of both the immediate and underlying causes of this character. Although many of these factors (such as language and support related issues) are relatively unique to the Kuwaiti context, most of the features of PICs in terms of scale, fragmentation and hybridity as well as how the collections are used mirror findings from previous studies e.g. Kaye et al. [18].

If judged by the ability to re-find information scholars' research-related PICs were in many respects a failure. Analysis of the immediate and underlying causes of the character of the collection point to a range of beneficial interventions from improved space, technology support through to training in IM principles.
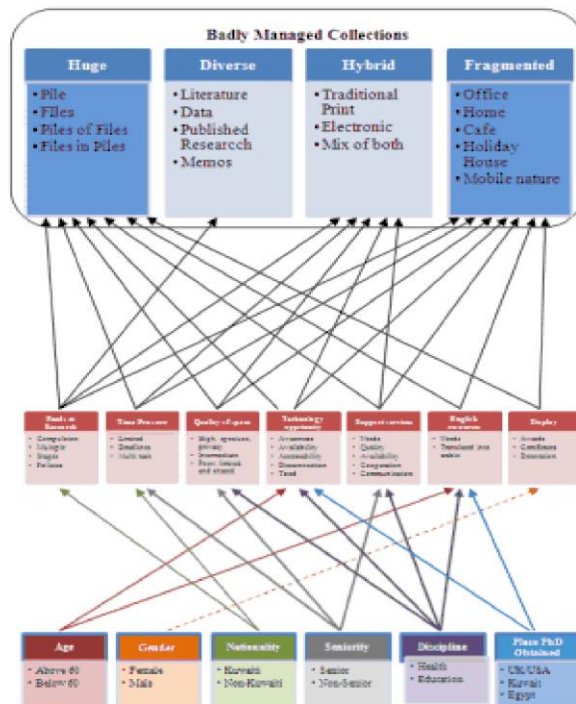
Fig. 3. Features and causes of research-related personal information collections

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Appendix 24: Codes explanations manual

Codes Manual

This guide is to provide a brief description of the codes created and their meanings. Codes are extracted from the literature and emerging from the interviews themselves.

Number	Code	Definition	Example
1	Research Material Storage	the strategy and stages that the research martial will be stored by during and after the research process	On desk, drawers, or shelves
2	Non-Kuwaiti Scholars	any scholars who are working in the Public Authority for Applied Education and Training – Kuwait and non Kuwaiti citizens	Egyptian, Indian.
3	Multiple Working Space	the places that scholars would stay in to do research related tasks	Work office, or home office.
4	Multiple research at a time	conducting several research at the same period of time	2 or more deferent research at the same time
5	Hours per day	number of hours spent per day on research related tasks	2 hours per day used for research
6	Research strategy	the way that research is carried out by scholar in all stages	The modd of scholar and the personal way of conducting the research
7	E- storage	the way that the research materials are stored electronically	Electronic files on PCs, Flash memory, External storage device, personal laptop.
8	Searching	the way of finding the information related to the research	Library visit, direct searching the web, databases, browsing, chaining.
9	Stuff on the desk	research information kept on the desk	Piles of papers on desk, files, envelopes and trays.
10	Cant re-find easily	when scholars are struggling in finding stored research information	Spending longer time to find information without good results.
11	Future research	the idea or plan of new upcoming research in the future	New research idea emerging from the current work.
12	E-folder description	the location of e-folder and its content	A research folder on desktop containing

			PDF articles, word documents, excel, SPSS files.
13	**Keeping**	The act of keeping and leaving methods of research related information or data in a physical storage or electronic after using within a research.	Filing article after reading, or saving PDF on computer, filing questionnaires either physically or electronically.
14	**Literature review**	All the information that are used to get an understanding of a certain subject and write the literature review chapter in a research.	Either articles related to literature review or work stage of research.
15	**Research stages**	the stages of research from the inspiration to publishing	Literature review, data collection, findings.. etc stages
16	**Format references**		
17	**Storage space**	the physical space where a scholar keep research related information and store it for a period of time	Book shelves, drawers, cabinets..etc in the work or home office
18	**Remembering**	Being able to determine the stuff stored in certain place in the past.	can tell the place of an article that was used in previous research and stored by the scholar.
19	**Move to new building**	The incidence of changing the working place from old to a new location	Moving to a new office or even a house.
20	**Co-authoring**	Working on a joint research with colleagues	Multiple author research
21	**Non-routine**	Work that is done in a random stages without definite defined stages.	No specific place or time to read or write or even to store data.
22	**Exploitation**	The best re-use of kept information	Can re-find the personal collection and re-use it.
23	**Research peak**	The stage where the researcher face intensive research related work	Spending more time on research and publishing multiple research at a time.
24	**Managing strategy**	The way scholars manage their personal information collections.	Filing in shelves, or saving electronically or both.
25	**Discarding**	After evaluating the need of a used information in a research and deciding on discarding it	A user can review the personal collections in a weekly or monthly basis and deciding on throw

			out some of the collection such as printed article or e-document
26	**Research methodology**	Is the way of conducting a research following a research design, collecting data and analysing it.	Quantitative, qualitative and mixed
27	**Raw data management**	The way of keeping and storing the original data collected	Such as original questionnaire or interview audio files.
28	**Keeping electronic**	Keeping research information in an electronic form on computer or external electronic storage.	Word documents, excel, PDF, ..etc.
29	**Keeping physically**	Keeping research information in printed forms in certain place in the office.	Files, piles, boxfiles, bags, folders
30	**Referencing tools**	A software that is used to keep track of the bibliographic used in certain research	Endnotes and Mendeley
31	**Collaboration**	Working together	Working on the same research by group of scholars.
32	**Networking**	Exchanging information by certain rout	By emails, websites, social networks.
33	**Communication**	Converting research related information between colleagues	Sending emails or discussing research related work orally or in meetings.
34	**Backup**	Any way used by scholars to store extra copies of their work to avoid lose in the future.	Storing duplicate printed copies in different places, or saving extra copies of electronic files in flash memory or hard desk. Or even send it by email.
35	**Storing criteria**	The ways that scholars use to store their information during the stages of the research.	Like in the beginning on the desk, then in drawers, and at the end at home.
36	**Re-finding**	The way a scholar tend to find an information that was used before and stored in the personal collection.	Finding an article that was stored in a research folder on the desktop.
37	**Directory**	A list of the personal collection stored in the working place.	A list of the personal collections
38	**Disseminating**	Making the research accessible for others by publishing	Publish work
39	**Organizing**		

40	**Finding**	Seeking information channels in the beginning of e research to locate information resources.	Searching online, databases, library
41	**Annotating**	Writing note on the margin of a journal article that can be used as a guide of re-finding in the future.	
42	**New research idea**	An idea that was encountered during conducting different research and intend to do it in the future	An idea that was found during reading an article.
43	**Writing**	The ending stage of a research when a scholar make the	
44	**Tools**	Any method that is used to help in organizing and managing the personal collections	Software
45	**Publishing**	The final stage of a conducting a research when publishing the work in any journal.	
46	**Data practice**	the way of managing the data collected for a certain research, dealing with and managing it.	Storing original questionnaires in files or e-folders.
47	**Form**	The type of document	Hard copy or electronic files
48	**Storing in email**	Using email to store research related information	Sending email to the researcher himself or to someone else
49	**Fragmentation**	Is the problem faced by a scholar when storing the research information in different forms and different locations	Storing an article multiple computers and external storage devices.
50	**Leaving**	Is the act of a scholar when decide not to keep an information used in a research	A website that can be find again
51	**Heavily used information**	The information that are used as daily bases	Information kept on the desk or handy area
52	**Sometimes used information**	Information used occasionally	Stored in the room in place that is used usually
53	**Never used information**	Information that are stored without use	Stored out the room in a permanent storage
54	**Very active storage**	The space or drawer that is used in daily bases	A place on the desk like a try or box or small table near the desk
55	**Active storage**	Drawer or storage unit in the office that is used usually but not daily	Storage unit in the same room

56	Not active storage	Storage locked out of the room	In archive room, or at home
57	Plan	A plan for storing information	Prepare storage units and electronic folders for research information before starting the research
58	Gather	Put together all information related to certain research in one place either physically or electronically	Like in a folder keeping PDF file of articles, word documents, SPSS and any related information
59	Duplication	The same information can be found in multiple research folders	An articles used in 3 different researches will be located in 3 folders.
60	Chaining	Using the bibliographical references of previous research to find certain reference	Try to find an article that was used in previous research by following the references list
61	File naming	The way files are named on a computer	Like research folder on the desktop
62	Labelling	Using labels to organize the information stored in a certain place	Labelling the files by name of the research
63	Colouring	Using colours to distinguish the information as a classification tool	Putting colours or using coloured files
64	Tagging	Using tags or short keyword to distinguish the information and help finding it again	Tagging an article, website, or a photo
65	Storing by time	Classifying information stored according to time	More than one location for each collection
66	Solution	What scholars thinks is a solution of a problem in management	Struggle to find a file and just thought of a solution or applied a solution created by the scholar to avoid the problem.
67	Dependency	A user who can find the information needed without seeking for help	Using specific sources found by the user
68	Literacy	A user who is able to find the information needed easily	
69	Google	Any use of Google to aid information management	
70	Retrieval preferences	The preferred way by a user of retrieval	

71	**Evaluation**	Judge how useful the information in order to decide it is the one needed or not and will be needed in the future so that it should be kept	
72	**Maintenance**	Reviewing the stored information and storing it in a good way to preserve it for ftuture	
73	**Information retrieval**	Able to get the needed information	
74	**Limited time**	Short period of time to have a task done	
75	**Problems**	A trouble faced by the user while using personal collection	Can find Cant organize Multiple names Multiple places..etc
76	**Keywords**	Short words that can be used to describe files and folders on a computer that the user only can understand	Folder named R as a short for research
77	**Files**	Storage tool to keep papers in an organized way	
78	**Piles**	Loads of papers that are nor organized in any criteria	Piles on desk, drawer or shelf
79	**Files in piles**	Files found in pile of stuff without clear criteria	Loads of files in a place or a shelf
80	**Piles in files**	Un organized content in a file	A file with piles of papers without named barriers
81	**Email M**	Using email as a tool to organize Personal collections	Creating named folders to save emails or sending emails for the purpose of storing
82	**Bookmark M**	Using bookmarks as a tool for managing personal collections	Filing bookmarks related to research under named folder
83	**Databases**	Using certain databases to find and re-find	