

**School of Media, Creative Arts and Social Inquiry
Faculty of Humanities**

**Collaboration between Academic Libraries in Australia and Iraq to
Address the Information Gap in Iraq**

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DECLARATION

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ABSTRACT

Recent wars in Iraq have caused a loss of scholars and library collections resulting in significant information gaps, including the destruction of library collections of global importance. This thesis investigates the extent of collaboration between academic libraries in Australia, Iraq and some other countries, in particular those that share similar characteristics such as Indonesia, Iran, and Africa, with the aim of suggesting opportunities for greater cooperation between them, particularly between Iraq and Australia, in order to help close Iraq's information gap and restore the quality of the country's higher education sector.

An initial review of the literature identifies three key areas—namely, the nature and extent of the “information gap” in Iraq, the use of scholarly communication and the way these relate to collaboration within and between academic libraries. These key issues direct the methodological and analytical approaches used in the study.

The methodology involved collecting data through interviews with academic library practitioners in both Australia and Iraq and with researchers from developing nations. Three universities and their associated libraries in Iraq and two universities in Australia were involved. Data collection in Australia was through digital audio recording. The Iraqi subjects were interviewed via an online tool, using a secondary device for recording the interviews. Interviews conducted in Arabic were translated into English, and all interviews were transcribed and managed using NVivo qualitative analysis software. Thematic analysis was then undertaken to develop a comprehensive understanding of the emerging themes.

The results were used to develop a theoretical structure for the facilitation of scholarly communications between Iraqi and Australian academic libraries. A significant information gap exists in academic libraries in Iraq in terms of access to or producing knowledge, because of the missing infrastructure. The main factors here are economic, technological, political and cultural (including language barriers). As a result, academic librarians and students in Iraq and other countries make much use of free social media. Copyright and licensing rules are further obstacles to all sharing of knowledge.

This study recommends the facilitation of scholarly communication between Iraqi and international academic universities and libraries by encouraging

participation in the open-access movement, the use of (social) networking between academic libraries and addressing language barriers. It is an appeal to all authors and publishers to make information available without financial or other barriers.

Of great importance is the development of compatible library systems between Iraq and other countries. This necessitates using a common language, being Arabic or English, although it is acknowledged that English, for the time being, will be required.

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DEDICATION

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LIST OF ABBREVIATIONS

24/7	24 hours a day, seven days a week
AL	Australian librarian
ARL	Association of Research Libraries
AUSIT	Australian Institute of Interpreters and Translators
BCE	Before the Common Era
CAUL	Council of Australian University Librarians
CEHAO	Centro De Estudios De Historia Del Antiguo Oriente
CIA	Central Intelligence Agency (United States)
CLBU	Central Library of the University of Baghdad
CU	Curtin University
ECU	Edith Cowan University
GDP	gross domestic product
GS/CLBU	General Secretary of Central Library of the University of Baghdad
HDR	higher degree by research
IBC	Iraqi Body Count
ICTs	information and communication technologies
IFLA	International Federation of Library Associations and Institutions
IIE	Institute of International Education
IL	Iraqi librarian
Int. R	international research student
IPU	Iraqi Physicians Union
IR	international research
ISIS	Islamic State of Iraq and Syria
ISO	International Organization for Standardization

IT	information technology
IUC	Iraqi Union Catalogue
IVSL	Iraqi Virtual Science Library
LNC	Library of the National Congress
MOHESR	Ministry of Higher Education and Scientific Research (Iraq)
NTIA	National Telecommunication and Information Administration
OA	open access
OAP	open-access publishing
OECD	Organization for Economic Co-operation and Development
PC	personal computer
PKP	Public Knowledge Project
RSS	Rich Site Summary
SCN	scholarly collaboration network
SPSS	Statistical Program for Social Sciences
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UWA	University of Western Australia
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

The higher education system in Iraq was for a considerable period recognised as the best of its kind in the Middle East and Gulf region (UNESCO, 2004). Until recently, a high number of academic staff in Gulf countries had attained their higher degrees in Iraq. During the last three decades, however, the higher education system and its infrastructure in Iraq have witnessed a significant decline in quality and reputation due to the impacts of wars, economic sanctions, and the targeting of key educators and researchers (UNESCO, 2007). The result has been the emergence of an information gap that threatens Iraq's economic, social, and political recovery from decades of war and internal strife. The focus of this research is to determine the role that academic libraries in Iraq can play in reducing the information gap and assisting to restore the quality of the country's higher education sector. Further, the study compares information and knowledge management approaches in other countries through the lens of the academic librarian.

The Field of Study

In the context of this thesis, there was no definition of the information gap available that focused specifically on national development. Therefore, it was necessary to develop a definition appropriate to the current research, drawing on a common understanding of the notion.

In this thesis, the term *information gap* in Iraq means the gap between information access (specifically scholarly) in Iraq and information access in more developed nations. Development of any nation depends on the presence of an information-rich and capable society. Higher education institutions are among the instrumentalities of a nation that deal with the creation and transfer of information, and therefore directly impact on the progress of development. Their essential role is to provide instant, up-to-date, accurate, reliable, and comprehensive information to their communities in order to directly assist their development (Korzh, Fedushko, & Peleschyshyn, 2015).

This study uses the terms *information* and *knowledge* interchangeably. However, the concept of knowledge must start from data and information. Following Peter Drucker (1988, p. 4), who calls information "data endowed with relevance and purpose", Spiegler (2003, p. 6) concludes that:

If data become information when they add value, then the information becomes knowledge when it adds insight and better understanding.

In the context of this thesis, the knowledge gap refers to the absence of data that is needed to build information. For example, in Iraq, in the war periods, there was a lack of available statistical data, especially those related to the education system and its institutions. This led to a lack of understanding and created a knowledge gap. The term *development gap* is also used, and means a further widening of the concepts of the information and knowledge gaps. According to Zacher (2012, p. 35), the development gap has several components, including technological, educational, economic, social, and cultural components, as well as those related to information and consumption. The information gap is one of its components and interrelates with all other components.

In recent decades globalisation has significantly impacted many aspects of life, including higher education institutions in developed and developing countries. Altbach and Knight (2007) describe globalisation in this respect as the economic, political, and social forces pushing 21st-century higher education towards greater international involvement in matters of development. They argue that:

The consequences of globalization include the integration of research, the use of English as a common language in scholarly communication, the growth of international labour market for scholars and scientists, the expansion of telecommunication companies and electronic publishing, and the use of information technology. Information technology facilitates scholarly communication allowing for archival and effective storage, selection and dissemination of knowledge, to use e-journals as a faster way than the printed ones, and for service providers to offer academic programs through e-learning (Altbach & Knight, 2007).

This, in theory, is good news for all forms of education. Yet there is a flipside for developing countries. Globalisation tends to follow the money in all its endeavours, including education. It does not allow for sharing information unless there is a monetary advantage. Therefore, some developing countries will be left behind, as far as education is concerned, because there are more profitable ventures elsewhere. This widens the knowledge gap. In addition, the lure of better wages may cause a brain drain of scholars away from developing countries.

The term *information gap* has different components that shape the nature and the extent of the development gap as it is experienced by developed and developing countries. In broad terms, an information gap reflects the array of educational, technological, and economic gaps that separate the developed countries from the developing (Bornman, 2016). Other components of the information gap previously identified in the literature are the circumstances of language, gender, age, culture, and geography. These various gaps, and the precise nature of the information gap, will be considered in detail in the literature review in Chapter 3.

Most developed countries have adopted pro-development policies that are largely based on knowledge as a primary source of wealth and added value (Ergazakis & Metaxiotis, 2011). This investment reflects the rise of the services sector and the emergence of the “knowledge society”, which entails the increasing dependence of many nations on knowledge-related products and highly educated personnel as drivers of economic growth (Altbach & Knight, 2007, p. 290). Knowledge-based economies in turn rely on effective higher education and research information gap underpin continued economic growth. The current differences between the higher education institutions serving developed countries and those serving developing countries result in an inequality in the availability of information and knowledge and thereby widen existing information gaps, as globalisation has tended to concentrate knowledge, wealth, and power in nations already possessing these advantages. For example, international academic mobility (an essential component of higher education and research) similarly favours existing, well-developed education systems and institutions, thereby compounding inequalities in development (Altbach & Knight, 2007).

Other factors that have been identified as impacting on the effectiveness of growing knowledge economies in developing countries include shortfalls in the production and sharing of knowledge; entrenched problems in technological infrastructure; disparities in the maturity of higher education and research sectors; and the lack of participation in, or access to, established forms of globalised scholarly and research communication. These various challenges, common in developing countries, result in isolation from the benefits of knowledge-based societies and the prevention of national progress (Harris, Donaldson, & Campbell, 2002; Green & Johnston, 2015).

In this study, the author has chosen to focus on one element of the global information gap: the disparities in access to the outputs of higher education and research, or the “scholarly communication gap”. The concept of scholarly communication has long been associated with particular communication methods and practices. Scholarly communication in academic settings is a system of exchange and the sharing of information is its main function (American Library Association, 2006, as cited in Khosrowjerdi & Alidousti, 2010, p. 818).

There are numerous definitions of the term *scholarly communication*, but in the context of this research the author uses the definition provided by University College London: “‘Scholarly communication’ is the method and route by which academic information is passed from author to reader, via various intermediaries such as libraries and publishers” (Mukherjee, 2009. p. 1).

Scholarly communication is not a new concept, but it has continued to evolve as an outcome of changes in communication technologies and scholarly practices over recent decades. An important underlying distinction is often made within scholarly communication channels and networks between formal and informal communication. As Garvey and Griffith (1972) identify in the original definition, formal scholarly communication consists of the standard communication channels that have been adapted to the specific needs of different disciplines (including books, journals, and published conference proceedings), whereas informal scholarly communication consists of channels adapted to the various personal discussions, written correspondence, and networking that occur between individuals and/or their wider disciplinary colleagues and associations. Informal scholarly communication also refers to the behaviour that scholars and researchers employ to obtain and utilise formal information through communication channels (Shehata, Ellis, & Foster, 2015) other than those that compose the “formal” means by which these outputs are usually made available.

Both formal and informal scholarly communications have been massively impacted by changes in technology, and specifically by the widespread use of the internet and other digital technologies. Shehata, Ellis, and Foster (2015) described how emerging methods of digitally enabled scholarly communication have developed in a manner that complements existing forms of communication, while also overlapping with the range of non-scholarly digital communication platforms that loosely make up what is widely referred to as social media.

Currently, the widespread use of digital repositories and open access publishing as a new form of formal scholarly publishing, scholars are using blogs, wiki, social academic networks and preprint repositories as an informal publishing media (Shehata, Ellis, & Foster, 2015). The critical element of scholarly communication that is explored in this research is the role academic libraries play in facilitating and supporting the transfer and exchange of information and knowledge, both nationally and internationally. Libraries have long been engaged in scholarly communication, but most commonly as passive collectors and keepers of the various formally published scholarly outputs. In recent years, however, the transformation of the scholarly communication landscape has increasingly required libraries to become more actively involved in the formal and informal distribution of scholarly materials.

The roots of this change can be found in the rapid increases in the cost of scholarly materials in the final decades of the 20th century, together with libraries' reduced budgets, caused by neoliberal policies. The constant price increases for scholarly publishing substantially impacted on the capacity of academic libraries to meet the information needs of users. This situation, which has been widely referred to as a "scholarly communication crisis", is summarised in the following quote:

Even though the typical research library spent almost 3 times more on journals in 2000 than in 1986, the number of titles purchased declined by 7%. Even more dramatically, as libraries diverted resources to support journal subscriptions, book purchases declined by 17%. Based on 1986 acquisition levels, this figure represents over 6,000 monograph volumes a year not purchased by the typical research library. With such drastic erosion in the market for books, publishers had no choice but to raise prices. By 2000, the unit cost of books had increased 66% over 1986 costs. (Thorin, 2006, p. 2)

As a result, academic libraries, particularly in developing countries, have been increasingly left behind in their ability to provide adequate coverage of scholarly publications in their collections. While this has long been the case, it is a problem that has been exacerbated for developing countries by the practice of

publishers developing business models that rely on the leasing of access to large-scale, aggregated databases that have been structured by the publishing industry for use by comparatively generously funded universities and research institutions in developed countries.

Libraries, in both developed and developing countries, have responded by trying to create alternative means of collecting content. The advent of new information and communication technologies provided part of the answer, with libraries globally promoting open access and becoming active participants in the open-access movement.

The movement is grounded in the idea of making scholarly information accessible to the widest possible readership, without price barriers or restrictions, while ensuring the information is valid, reliable, properly published, and used responsibly. It involves, among other practices, scholars being prepared to contribute their scholarly material as a means of formal communication and libraries supporting this development by implementing open-access communication channels, including open-access archives in the form of institutional repositories.

Importantly, the open-access movement has begun to create new alliances that resist the hegemonic practices of the global scholarly publishing businesses. These alliances include scholars from all countries of the world that have a shared interest in making scholarly material as available as possible at the lowest cost. And there are alliances between scholars and librarians who have a shared interest in an accessible and affordable scholarly publishing ecosystem. Bartunek (2007) provides an example of the structures that may foster academic–practitioner relationships:

Individuals and groups of academics and practitioners may find and follow many other creative and engaging paths to sharing their work and its meanings in ways that are evocative, invite response, and perhaps generate mutually beneficial and productive relationships. (Bartunek, 2007, p 1330)

For academic libraries in developing countries, communication technologies have also encouraged them to devise new methods by which they can participate in the open sharing of professional information and scholarly communication with their international colleagues, as a means of closing the scholarly communication gap.

The concept of the scholarly communication gap as discussed in this thesis can be described as resulting from the failure of higher education institutions to provide the necessary access to and updating of information resources and research infrastructure. This is the case in Iraq and some other Machreq (Arab Middle East) countries more broadly, which provides the context for the research.

According to the United Nations Development Programme (2014), the information gap is manifested in the Arab states, where the particular nature of the gap can be traced within the higher education system by identifying the factors that relate to the production and dissemination of knowledge:

Higher education is an important institution of the knowledge economy. It needs to foster and enhance the human capital in all respects. It needs to interact with the economic institutions, trade, agriculture, manufacture and service industries in order to make society run efficiently. (United Nations Development Programme, 2014, p. 34)

The universities of Iraq and other developing countries in the Arab Middle East have to become a central point for improved scholarly communication so they can optimise their contribution to the social, economic, and educational development of these countries. The universities are increasingly important as hubs to facilitate the advanced education and research that are necessary for supporting future development, and the libraries are an essential element of those universities.

Iraq, given its recent history, is a particularly challenging case of a developing country attempting to deal with the issues that plague higher education and information and knowledge production, as well as knowledge transfer. Any attempt to study this or any other social phenomenon in Iraq at present is inevitably contextualised by the continuing political upheavals and foreign interventions that are severely impacting all elements of Iraqi society.

For Iraq, during the post–Second World War period, the information resources necessary to enhance the wellbeing of the population, and the nation in general, expanded rapidly and became established in higher education institutions, libraries, archives, and other related government agencies. However, a period of comparative political stability and economic, social, and educational development was followed by three decades of war, internal political strife, foreign occupation,

and economic sanctions. As a consequence, an evaluation of the extent of information flow in various industries and professions, including specifically that of university-based research, reveals the creation of a very particular and localised “gap” in the flow of information (scholarly communications) to and from the nation’s research institutions. This recent history of massive disruption to Iraq’s institutions of governance and education, and the widespread degradation of its civic and civilian capital, means the nation has very particular needs in terms of its future development. Some of the particular issues this thesis will consider in terms of Iraq’s current status are:

- the devastation of national “cultural infrastructure”, including the destruction of libraries and their collections of literature and the collective historical and cultural memory
- the loss of highly skilled human resources and qualified labour, including the loss of an elite of scientists, scholars, and intellectuals
- the destruction of critical infrastructure, including buildings and communication technology
- the destruction of the education system, including a severe reduction in the capacity for research and knowledge production (Baker, Ismael, & Ismael 2010)

Identifying the nature and extent of the information gap and the scholarly communication gap in Iraq therefore has some urgency, as it has become apparent that the extent of these gaps will delay the country’s economic development and political stabilisation, and prevent improvement in living standards. Investigating the role that Iraqi academic libraries might play in improving scholarly communication will contribute to developing solutions to help bridge the information gap in Iraq. This research will investigate the extent to which academic librarians in Iraq are suffering from social, economic, technological, and cultural challenges; how this is impacting their capacity to deliver content and services; and to what extent the current shortfalls might be addressed.

This research takes place in an environment where there is a trend in libraries for librarians to build international networks to eliminate these challenges (Madon, 2000; Castells, 2011). In doing so, this study highlights the role that academic

libraries in all countries can play as an important component of national development for developing countries.

An important feature of the research is an assessment of the current and potential role of academic libraries and librarians in Iraq and Australia, with a view to identifying means of facilitating future improvements in scholarly communication between the two countries. Australia, as an example of a comparatively stable civil society with a higher education system and equipped with libraries that aspire to international best practice, provides the opportunity and a framework for both comparison and future development within Iraq. Other reasons for choosing Australia among all developed nations are firstly, due to the researcher being located in Australia which presented an ideal opportunity to study scholarly communication in academic libraries. In addition, from the researcher's experience as librarian and lecturer since 1990-2010 (the period of time when the researcher of this thesis was being in Iraq), there had not been any communication with Australian academic libraries. It was therefore important to show Iraqi librarians how the library system in Australia is working compared with Iraq to find a way for cooperate to then develop Iraqi libraries. A successful "connection" between Australian and Iraqi academic libraries and librarians and establishing cross-boundary information sharing (Gil-Garcia, Pardo, & Sutherland, 2016) will potentially open doors between the higher education sectors in the two countries and help reduce the scholarly communication gap experienced in Iraq.

Research Question and Objectives

With the above considerations and challenges in mind, it was determined that this research will investigate the nature and the extent of the information gap (including the scholarly communication gap) in Iraq, and the role that academic libraries might play in addressing this gap.

One method by which this can be achieved is to compare the current circumstances in Iraq with those in a country with a more developed and stable higher education and research sector. Australia was selected for this role, and the research therefore aims to develop a comprehensive understanding of issues that might potentially impact on the scholarly communication and collaboration between academic libraries in Iraq and Australia. Therefore, the research question and objectives were used to obtain and analyse data obtained from both Iraq and Australia.

The focus of the data collection is the search for an answer to the central research question: “What are the possibilities for collaboration between Australian and Iraqi academic libraries to address the information gap in Iraq?”

In order to address this research question, four objectives were determined:

1. Assess the extent and nature of the information gap in Iraq.

The objective of exploring the information gap in Iraq will be achieved by investigating domestic and international statistical data from sources including UNESCO and UNICEF reports, the Iraqi Physicians Union, the US Department of Commerce, Iraq Body Count, Baghdad: Central Organization for Statistics and Information Technology; the World Bank and Transparency International, and the International Telecommunications Union. The selected data is associated with higher education, information technology, standard of living, health care, income and employment, and the impact of recent war. This awareness will help to identify the information gap in Iraq resulting from the wars and ongoing blockades.

2. Assess the existing structures of scholarly communication and collaboration in academic libraries in Australia and Iraq.
3. Investigate the constraints and opportunities affecting scholarly communications between Australian and Iraqi academic librarians.
4. How could collaboration between Australian and Iraqi academic libraries address the information gap in Iraq?

The second, third, and fourth objectives investigate the current structures, constraints, and opportunities for scholarly collaboration between academic libraries and librarians in Iraq and Australia by interviewing librarians in the two countries as well as international research students from Iraq and three other developing countries who have been active within the last three decades. The foci of the interviews include national and corporate policy; management, planning, and decision-making procedures; networking strategies; and information and communications technologies that support library services and content.

The detail of the research method and the design of the associated instrument will be discussed in Chapter 4.

Research Significance

The significance of this research is found in the attempt to resolve practical issues and problems in scholarly communications in Iraq that are impacting on the country's prospects for sustained development. This study is significant in three particular areas.

First, it will establish the nature and extent of the information gap in Iraq, which will assist in determining the scope of the problem to be addressed and inform the development of future programs and strategies.

Second, this research will offer an innovative structure for scholarly communication between Australian and Iraqi academic libraries, which will provide a model for this bilateral relationship and will also be relevant to scholarly collaboration between other developed countries and countries in the developing world that are suffering from the same conditions as in Iraq.

A third area of significance is the potential for the facilitation of access to Iraqi research resources and information via new formats (including digital formats), thereby exposing material in Iraqi libraries that have not been disseminated due to the longstanding blockades and associated political and civil unrest. This research is likely to result in positive outcomes such as the identification of a new research culture and new academic norms and values, including fostering future collaboration between academic libraries in Iraq and developed countries.

Presentation of the Study

The description of the design, data collection, and results of this research project has been formulated into eight chapters.

Chapter 1 is an introduction, presenting an overview of this study. It identifies the practical problems and the related issues that have generated the research and frames the study with the research questions and associated objectives. It also determines the significance of the study and describes how the study outcomes are being presented.

Chapter 2 contains background information regarding the impact of war and political and social upheaval on Iraq. It includes an assessment of their impact on the higher education system in Iraq, with a particular focus on the effects of cultural cleansing on the information gap experienced by the country. In addition, the chapter provides an analysis, based on statistical evidence, of the devastating effects of the

ongoing deterioration of human resources, public institutions, and critical infrastructure, including the considerable loss of national cultural memory.

Chapter 3 reviews the literature relevant to the scope and purpose of this study. It provides professional knowledge of library and information science. The chapter focuses on developing a framework that contributes to professional knowledge at country level and how the information gap in Iraq can be reduced. This research derives a conceptual framework for scholarly collaboration between academic libraries in developed and developing countries from existing literature. It discusses the scope of this study in three concepts that relate to this study in three parts: the information gap, scholarly communication, and collaboration. It extracts comprehensive definitions of the three terms and their components. This chapter discusses those themes in line with the main research question and the four research objectives of this thesis. It highlights, in particular, the definition and components of the information gap, the history and background, country specific approaches, and the scholarly information gap in Iraq. It also reviews the literature that relates to the term *scholarly communication* and the role of academic libraries in Australia and Iraq. In addition, this chapter reviews the literature that relates to the term *collaboration*.

Chapter 4 describes the research methodology that was used in the course of this project. This chapter discusses the themes that emerged from interviews, employing thematic analysis as an appropriate methodology for the research phenomena in library and information sciences to identify the role of academic libraries in establishing the scholarly communication structure for collaboration. This chapter includes demographic data relevant to the respondents. It describes the instruments; the selection of research subjects; data collection and sampling procedures; data management and software analysis; and data storage and ethics. The methodological approach contributes to the scholarly knowledge by developing a theoretical framework of scholarly collaboration between academic libraries in Australia and Iraq, in order to contribute to the reduction of the information gap in Iraq.

Chapter 5 contains the results of interviews with participants and the primary analysis of the data, which was conducted in two parts. The first part reports the findings of interviews with Australian and Iraqi librarians in five universities and their associated academic libraries: the University of Baghdad, Baghdad;

Mustansiriyah University, Baghdad; and the University of Basrah, Basra; Curtin University, Perth, and the University of Western Australia, Perth. The second part reports the findings of international research students from developing countries, including Iraq, Indonesia, Iran, and Sudan.

Chapter 6 presents and discusses the findings of the analysis of the complete dataset, consisting of the Australian and Iraqi librarians and international research students' semi-structured interviews. This chapter presents and discusses the possibilities for collaboration between Australian and Iraqi academic librarians and libraries in association with relevant literature on the knowledge gap (or information gap), scholarly collaboration, and communication.

Chapter 7 is a conclusion, presenting a synthesis and discussion of the results of the research instrument that have been reported in the preceding chapters. Key findings are highlighted and considered in light of the research question and objectives determined at the outset of this project. This chapter includes recommendations derived from the research, indicating the areas of priority in the development of scholarly collaboration between academic libraries in Australia and Iraq. It considers the extent to which the contribution to professional knowledge and the results of this research can be generalised to academic libraries in developing countries that are suffering similar conditions to those in Iraq. Finally, it makes suggestions for further studies.

CHAPTER 2:

THE IMPACT OF WAR AND INVASION ON IRAQ, 1980–2015

This chapter provides an overview of recent factors that have shaped the current information gap in Iraq with respect to recent historical events and their detrimental impact on the human capital and critical infrastructure required to support a modern information or knowledge economy. In particular, it focuses on the succession of major upheavals since 1980 that have placed Iraq at the centre of tensions between the West and the Arab states, reducing the nation's capacity to sustain competitive higher education and research sectors.

The chapter considers Iraq's contemporary information gap as a form of "cognitive isolation" resulting in a severe lack of information resources and a weakened capacity to produce and share new knowledge.

From Ancient Mesopotamia to Modern Iraq

Iraq is one of the most important and strategically located countries in the Arab world. Lying between two rivers, the Euphrates and the Tigris, it is largely contiguous with the region originally known as Mesopotamia. Sumer, in southern Mesopotamia, was one of the world's dominant ancient civilisations, and it left an indelible imprint on numerous fields of human endeavour. Among just a few of the revolutionary achievements usually attributed to the Mesopotamians and Sumerians during the period 5000–3500 BCE are the first use of the wheel; the development of cursive script; the invention and implementation of a calendar based on a seven-day week; and significant innovations in mathematics, including elements that were crucial in the making of the earliest maps and the first plantings of cereal crops (Pollock, 1999). In addition, the Sumerians were responsible for critical breakthroughs in astrology, medicine, and philosophy (Ray, 1986). As a result of this rich record of intellectual and artistic achievement, the Sumerians were also among the first civilisations to systematise, record, and store information for the purpose of what we would now recognise as "scholarship".

After a period as an eastern frontier of the Roman Empire, and contested by the Romans and Parthians, Iraq became an Arab and Islamic region in the mid-7th century (Roux, 1992). By the 8th century, Baghdad was established as arguably the most powerful city of the Arab and Muslim worlds (Bennison, 2014)—a privilege it

would retain for some five centuries, during a period often referred to as the Golden Age of Islamic learning and art, which saw considerable advances in many branches of science, technology, theology, and jurisprudence. It was also a period of advances in education, including the establishment of madrasas (schools) as the centres of higher learning in the Islamic world. This Golden Age ended when Baghdad was largely destroyed and a sizeable proportion of its population slaughtered by invading Mongol forces in 1257 (May, 2003). Iraq then endured over six centuries of Mongol, Ottoman, Mamluk, and then again Ottoman rule. During this long period, borders between Iraq and neighbouring countries shifted with the flux of regional powers, but the population was systematically repressed, science and learning discouraged, and modernisation ruthlessly delayed. Despite its singular role and status as the birthplace of key disciplines of both science and the arts, by the beginning of the 20th century Iraq was impoverished and destitute of traditions of learning and intellectual achievement.

The Ottoman Empire was dissolved following the defeat of Turkey in the First World War, and Iraq was occupied by the British. Britain granted Iraq independence in 1932, which then became the Kingdom of Iraq. The country was again occupied by the British in 1941, as part of the regional geopolitics of the Second World War (Farouk-Sluglett & Sluglett, 1991). The British occupation lasted until October 1947 but the colonial power retained a military presence in Iraq until 1954. Civil disruptions and transitions of power occurred resulting in coups in 1958, 1963, and 1968, the last of which saw the installation of the Baath Party with Ahmed Hassan al-Bakr as president, who was succeeded by Saddam Hussein in 1979.

Iraq's importance in world affairs gradually grew in the second half of the 20th century, as its place at the heart of the oil-rich Gulf states became apparent. Oil revenues came to amount to over 90% of national income, and Iraq and its near neighbours emerged as crucial powers in the economics of the global oil and energy industries. The country also found in President Saddam Hussein a leader who was ambitious in his attempts to promote development and ensure that Iraq made use of its geographic position at the centre of a region of increasing international economic and political importance.

According to the Central Intelligence Agency (2013), the population of Iraq reached 36.4 million in 2015. Baghdad has remained the capital, with a population of 7.25 million in 2015. Iraq's population is linguistically and culturally diverse.

Languages spoken include Arabic, Kurdish, Assyrian, and Armenian, and ethnic groups include Arabs (75%–80%), Kurds (15%–20%), Turkomans, Assyrians, and others (Bradley, Brown, & Rubach, 2010).

The official religion of Iraq is Islam, comprising Shia (60%–65%) and Sunni (32%–37%) elements, with the remainder Christian or other minority religions (3%). Life expectancy in Iraq is relatively low, at 69 for males and 72 for females. Literacy rates are estimated at 86% for males and 74% for females (Central Intelligence Agency, 2013).

Figure 1

Current Map of Iraq



Iraq: War, Sanctions, and Occupation, 1980–2018

When the United Nations Development Programme produced the *Arab Knowledge Report 2009* in order to record the uncertain state of “knowledge societies” in the Arab world, it noted the impact that numerous regional wars and conflicts have had on attempts to build knowledge-based economies integrated with global wealth creation and development:

Occupation, wars, and internal conflicts have an overwhelmingly disruptive influence on the knowledge society. Not only do they affect its

mainstays, in the form of education, technology, and innovation, they also, through the economic destruction, disruption to development, suppression of freedoms, and restrictions on movement, strike at the heart of the enabling environments needed for the establishment of the knowledge society. (2009, p. 13)

Of the various Arab nations impacted by war and civil strife, perhaps none has suffered more with regard to its integration in international knowledge economies than Iraq. Since 1980, Iraq has experienced an ongoing series of wars and conflicts that have eroded its capacity to build a sustainable, high-quality education system that provides the necessary human capital for knowledge-rich industries and professions.

This period in Iraq history commenced with the Iran–Iraq War (1980–1988), also known as the First Gulf War, which was triggered when Iraq invaded neighbouring Iran Mojtahed-Zadeh (2007) in an attempt to establish its prominence among the Gulf powers. The war was one of the longest in the region’s history, fought with a brutal mixture of contemporary warfare and other methods that were seemingly medieval and prone to resulting in massive loss of life (Loewendorf, 2009). Operating with tacit support from the United States, Iraq eventually prevailed, but not before it had resorted to using chemical weapons. The war entrenched President Saddam as the dominant political strongman in the region.

The Iran–Iraq War had significant socio-economic impacts on both countries (Alnasrawi, 2010). Oil revenues, which formed the economic basis for both countries, were severely reduced, and the economic development that would underpin future prosperity stalled. Iraq finished the war with a substantial international debt, most of it to other Arab states. Iraq also incurred war reparations payments amounting to over US\$200 billion, enforced by the United Nations Compensation Commission by means of an international trade embargo. The war weakened Iraq’s economy, burdened it with debt, and left its international reputation in tatters.

On 2 August 1990, Iraq invaded its neighbour Kuwait. The motives were largely economic, in that Iraq had accused Kuwait of over-producing oil and thereby driving down international prices, and of “slant-drilling” in such a way that Kuwait was extracting oil that legitimately belonged to Iraq. The invasion was also justified

by the claim that Kuwait was historically part of Iraqi territory (Westing, 2013). Paanakker's (2009) historical analysis stated that Kuwait was, indeed a part of southern Iraq during the Ottoman Empire era, but became an independent nation after the First World War, when new boundaries of convenience were drawn by the British and French.

The invasion of Kuwait was an attempt by Iraq to re-establish pre-First World War borders. However, the UN Security Council decided it was a breach of international peace and security (Gibson, Taylor, Lamo, & Lackey, 2016). In response, the UN imposed a series of economic sanctions on Iraq (Westing, 2013). These sanctions were later linked to the removal of weapons of mass destruction. The second major reprisal came in the form of a US-led international coalition—including the United Kingdom, France, Canada, and Australia—which entered Kuwait and Iraq from Saudi Arabia in the final weeks of February 1991, in an operation called Desert Storm (Hiro, 2003). The operation was planned to destroy the Iraqi military, including vital facilities such as bridges, and therefore to disrupt Iraq's movement of arms and troops. The conflict as a whole, however, destroyed critical civilian infrastructure, including hospitals, the electricity supply, and lines of communication and transport (Alnasrawi, 2010).

Saddam Hussein remained president of a further-weakened Iraq. The various UN sanctions would, however, have a considerably longer-lasting impact. Alnasrawi (2010) has argued that the sanctions on oil trading, which lasted from 1990 to 2000, were especially damaging because of Iraq's reliance on the oil sector and oil exports. Loewendorf (2009) explains that the sanctions imposed on Iraq were catastrophic because they were the longest, most comprehensive, and most severe form of multilateral economic action, ever imposed on one country. The sanctions impacted significantly on the economic welfare of the Iraqi people yet failed to force conspicuous compliance from the regime.

The second phase of the US-led war against Iraq, sometimes called the Iraq War or the Second Gulf War, commenced on 19 March 2003, when the United States and a coalition of nations (Australia, the United Kingdom, and Poland) invaded and occupied Iraq with the aim of removing the Saddam regime and transforming the political system from a dictatorship to a democracy. Saddam went into hiding, before being captured on 13 December 2003. He was convicted of crimes against humanity and, in December 2006, executed.

In February 2005, as part of the program of establishing a democratic government in Iraq, national elections were held (Cogan, 2005). The US government policy at the time was that, by way of compensation, it would assist in improving and restoring the foundations needed for a stable civil and democratic society. The Iraqi government and population were therefore optimistic about the prospects of political stability and economic prosperity on the basis of US promises regarding reconstruction and the development of the various arms of civil society (Henderson, 2005).

This period of confidence was short-lived, however, as a result of the lack of development and reconstruction that was delayed by the continuing poor state of internal security, corruption and the misuse of resources. Many Iraqi citizens began to become disillusioned by the continued presence of the military from the US-led coalition (Emery, 2004). As internal resistance to the occupation and the foreign military presence steadily increased (Wimmer, 2003), internal conflicts between competing Islamic groups became more pronounced and the internal dislocation and personal suffering of the civilian population continued to worsen. The occupation that had promised the hope of improved living conditions and a better future became a humiliating repeat of former broken promises (Horowitz, 1985).

According to the World Bank and Transparency International, what eventuated was that Iraq became one of the world's most corrupt countries, with the wholesale misuse of international money that had been provided for rebuilding projects (Looney, 2008). The blame has been levelled not only at individuals but also at corrupt Iraqi government agencies (Chwastiak, 2013).

There has been a prolonged debate regarding the outcomes of the US invasion, given there were arguably both positive and negative consequences for Iraq. Some point to the potential for stable democratic processes that may make Iraq a regional leader, while others argue that the result will be a permanently weakened economy, and that the destruction of cultural infrastructure will threaten Iraq's identity and existence.

For the purpose of this thesis it is important to estimate the number of civilian deaths related to the war and unrest, to get an idea of how many educators and academics were involved. Iraq Body Count has researched the number of civilian deaths that occurred. Table 1 reports the annual numbers of civilian deaths following the US invasion of Iraq.

Table 1*Civilian Mortality in Iraq, 2003–2012 (Iraq Body Count, 2013)*

Year	Civilian Deaths
2003	14,007
2004	12,001
2005	17,026
2006	31,418
2007	20,930
2008	7,829
2009	4,747
2010	4,133
2011	4,433
2012	~4,250

Iraq's Higher Education System

One arm of Iraqi society that was severely impacted by war, sanctions, invasion and internal division after 1980 was education, and it is appropriate in the context of this thesis to provide an introduction to the higher education system in Iraq as part of the discussion of the country's information gap. In order to understand the way in which the information gap has formed in Iraq, and the extent to which it has been exacerbated by recent wars and conflicts, it is necessary to understand the recent history of Iraq's higher education and research sectors.

This section discusses three essential and interrelated issues. First, it discusses the issues that have detrimentally impacted the higher education system in Iraq as the result of the recent era of war, invasion, and internal conflict. Second, it identifies the emerging nature and extent of the information gap by noting both qualitative and quantitative elements of higher education in Iraq. Third, it provides an explanation of the postwar situation of the education system in Iraq on the basis of its two government systems (Baghdad and Kurdistan) and two types of educational sectors (public and private).

The generally delayed conditions of economic and social development, coupled with unstable political circumstances, have long inhibited the introduction of

a reliable system of education. Sitting outside the circle of developed countries also meant that Iraq's educators were poorly placed to benefit from developments in "Western" science and knowledge. It was not until the 1920s that the country was able to implement the beginnings of a national scheme of education.

The benefits of prioritising and investing in education were eventually felt, however, when Iraq's universities, and the country's higher education system generally, prospered during the 1960s and 1970s (Ranjan & Jain, 2009). The country's first university, the University of Baghdad, was established in 1957, and others soon followed, in cities such as Basra, Mosul, and Sulaymaniyah (Mahmud, 2013, p. 256). During the 1970s, in particular, rapidly rising oil revenues, coupled with the nationalisation of the oil industry, enabled vast resources to flow to various programs of national development—including education, from primary through to tertiary levels. Attempts were also made to enhance the accessibility of education, and participation by women and people living outside cities was also high by regional standards (Mahmud, 2013, p. 257). During this period Iraq also established a reputation for having one of the most advanced systems of higher education in the region and became a focus for students from neighbouring countries (UNESCO, 2004).

Much of this progress was achieved under the leadership of Saddam Hussein, who emerged as one of the most influential figure in Iraq's civic and political life during the period. Following Saddam's ascendancy to the presidency in 1979 and the entrenchment of the Baathist regime, the higher education sector gradually lost its independence as it became increasingly politicised in the service of the regime's objectives (Harb, 2008). Nonetheless, Iraq maintained universities and research institutions of an enviably high standard and reputation in the region throughout the ensuing decade, although the increasingly Baathist control of the country and higher education was disheartening for many educators, causing a wave of emigrations of senior academics.

The conditions for higher education in Iraq worsened during the First Gulf War and the UN sanctions imposed in the aftermath of Iraq's invasion of Kuwait in 1990. As the impacts of the sanctions began to be felt, Iraq's universities found they "had to cope with poorly maintained facilities and buildings, dilapidating equipment, outdated journals and books, and low salaries. Corruption and isolation affected morale, further damaging performance at all levels of education" (Harb, 2008, p. 3).

Local demand for university education remained strong in this period despite the deteriorating standards; the number of enrolments continued to grow. The country had entered a phase which has been described the “de-development of education” (De Santisteban, 2005).

One outcome of the stress placed on Iraq’s higher education system by the sanctions was the disruption of the normal channels of scholarly communication, including access to new research data and information. The result was an increasing lack of new information resources necessary for teaching, learning, and research; a lack of good-quality library and information collections; the deprivation of access to international academic institutions and scholarly communities (Moore & Brunskell-Evans, 2012); and a failure to contribute to research, scholarship, and associated academic activities. This marks the beginning of Iraq’s information gap.

When the sanctions were lifted in May 2003, Iraq was in no state to resume normal educational services in an environment where educational institutions of all types had become the focus of targeted violence. As the *Arab Knowledge Report 2009* noted:

With regard to Iraq, it cannot be claimed that education prior to the US intervention in 2003 was devoid of the problems known to other Arab countries. However, many studies and indicators confirm that the standard of education has declined after 2003, and that educational problems have been exacerbated and have accumulated as a result of the conflicts that broke out. (United Nations Development Programme, 2009, p. 14)

From a personal perspective, I faced the problems of academia while doing research in Baghdad, finding that teaching materials were mostly out of date. Academics like me were hampered by a lack of domestic and international journals; unable to attend conferences, especially international ones; unable to update curricula (which is normal practice in the West) and a lack of modern resources and equipment in university libraries.

The higher education system in Iraq did, however, enter a period of reform following the formation of the new Iraqi democratic government. The US political plan in Iraq required the election of an interim government in the form of a multi-party Constituent Assembly in December 2004 as the basis for the “restoration” of

Iraqi sovereignty (Robinson, 2004). Consequently, the governance of the nation has in effect been undertaken by two governments. One is based in Baghdad and administers all 18 Iraqi provinces, and the other is the Regional Assembly of the independent state of Kurdistan (Hamilakis, 2009).

The Ministry of Higher Education and Scientific Research, in Baghdad, has resumed responsibility for overseeing all higher education institutions—public and private—in Iraq. This consists of some 39 universities and other institutions (the latter operating under the Foundation of Technical Education for non-degree-awarding higher education), and 77 research centres. The number of students attending all institutions (public and private) has exceeded 400,000 (Harb 2008). The higher education system in the Kurdistan region is responsible for 13 public and 10 private universities (Tobenkin, 2013) and two technical institutions, and the number of student registrations is approximately 70,000 (Hamilakis, 2009). Baker, Ismael & Ismael (2010) state that there are particular complexities and challenges in the higher education system in Kurdistan, as the newly established representative regional government has struggled to adapt its higher education system to meet the country's changed circumstances.

It is also relevant that Iraq supports two broadly different education systems, public and private (Al-Husseini & Elbeltagi, 2014). Accordingly, there is a disparity in educational quality. Public universities are financed by the government, whereas private institutions rely totally on non-state funding and are inconsistently supported by their sponsors (Al-Husseini & Elbeltagi, 2016). Also, the number of students is limited in the private sector (Wakil, Akram, Kamal, & Safi, 2014). Although students in private universities pay for their studies, their qualifications often get less recognition than those of students in the public sector (government) universities. Every year the Ministry of Higher Education in Iraq publishes of recognised private universities.

Cultural Cleansing

In understanding the currently diminished state of higher education, research, and the knowledge society in Iraq, it is also important to appreciate the impact of the “cultural cleansing” that has occurred in recent years (Ismael & Perry, 2013, p. 49). Cultural cleansing, understood to be the deliberate erasure of cultural identity and knowledge, has been experienced in a number of forms in Iraq since 1990 and has

had a catastrophic impact on the country's knowledge base, producing a form of national cognitive isolation. It has also widened the information gap.

Iraq's higher education system has suffered a catastrophic deterioration. First, between 1990 and 2003, embargoes and UN sanctions reduced participation in higher education and reinforced the information gap in Iraq through the lack of engagement with the international education and scientific communities; a lack of new information resources; a failure to acquire new technology; restrictions on social, political, and intellectual freedom (Moore & Brunskell-Evans, 2012); a lack of library and information services; poor access to scholarly publishing outlets; and a shortage of scholarships and academic training programs.

Second, from 2003 to 2013, the period of the US-led invasion and military occupation was marked by war and internal conflicts. It widened the information gap as a result of the burning and looting of universities and libraries; the devastation of existing infrastructure; and the assassination of academic experts, professionals, and students. (Paanakker, 2009). According to UNESCO, during this period 61 Iraqi universities and college buildings were damaged and 101 college buildings were looted. This devastation in particular targeted research facilities such as laboratories, workshops, and libraries. Bentham (2006) concluded that some 175,000 books and manuscripts were looted from the College of Arts at the University of Baghdad, while the University of Mosul Library lost 900,000 volumes of books and serials (English, 2005). Jean-Marie Arnoult's (2003, p. 23) report to UNESCO in 2003 stated that the Central Public Library in Basra lost everything.

The Islamic State of Iraq and Syria (ISIS) played a significant role in destroying the local culture.

ISIS has destroyed priceless architecture and antiquities in northern Iraq. This damage to local culture was meant to prevent education, and to maintain a distance between the caliphate and what these areas were like before. It was an attack on memory, society and civilization all at once." (Singer, 2015, p. 2)

Cultural cleansing is described by Baker, Ismael, and Ismael (2010) as a policy targeting society with the intention of causing massive destruction to cultural infrastructure. They claim that cultural cleansing was practised in Iraq by the United

States and its allies in order to undermine existing Iraqi identity, as a prelude to introducing newly aligned political and social orders:

The cultural cleansing of Iraq was achieved in large part by inaction, the occupiers fostered and legitimated a climate of lawlessness with the wholly predictable consequence of weakening a unifying culture and eliminating an intelligentsia that had staffed Iraq's public infrastructure. (Baker, Ismael, & Ismael, 2010, p.6)

The forms of weakening of the "unifying culture" included the calculated erasure of important components of collective cultural memory, including the destruction of artefacts and materials that were essential to national identity and heritage (Al-Tikriti, 2010; Stone & Bajjal, 2008).

It has been argued (Al-Tikriti, 2010) that the goal was "mnemonicide", or the murder of memory, not only of individuals but of the society as a whole. As Lambourne (2001) has argued, destruction of this type, in which libraries and archives are specifically targeted, has been a characteristic of 20th-century warfare, often with the goal of suppressing or replacing certain cultural or ideological characteristics of the nation or society under attack.

The debate will rage for years as to how much of the damage was by (Western) design to control Iraq, its resources, and its political system, and how much of it was done by ISIS and subsequent militants for the same ideological reasons. What is not disputed is the extent of the destruction that resulted directly from the period of war and during the aftermath of the invasion. For instance, the damage to the Iraqi National Library and Archive in Baghdad was estimated to involve 25% of all materials, mostly as the result of fire (Johnson, 2005, p. 32).

Speaking to a journalist in July 2004, shortly after the National Library reopened, the head of the library, Dr Saad Eskander, is reported to have claimed that:

We lost about 60 percent of our state records and documents—they were either burned or damaged by water. [The lost documents belonged] to all the ministries, all departments of the state from the late 19th century up to Saddam's period. As concerns books, I think we lost some 25 percent of

them, mostly rare books, the most valuable books. (Eskander, reported by Mite, 2004b)

Awqaf Public Library, holding some of Iraq's oldest known Islamic manuscript materials. According to staff members, it suffered well-organised burning and looting as a direct result of the foreign intervention. The facility itself was destroyed by the fire (Baker et al., 2010, p. 101).

In addition, the National Museum of Iraq was largely destroyed, with the loss of invaluable national heritage that included ancient Sumerian tablets and other precious objects recording Mesopotamian, Babylonian, and Persian civilisation. In addition to the irreplaceable cultural artefacts and records of the utmost importance to Iraq and the world that suffered damage, a large number of artefacts were removed from the museum. Bogdanos (2005) estimates that somewhere between 14,000 and 15,000 of the museum's finest antiquities were stolen. Some have since been recovered, and the question of exactly who was responsible for the worst of the looting remains a matter of contention. It has been argued, however, that despite the known importance and location of these prime antiquities, the US government and its forces displayed little interest in protecting key sites during either the war or the invasion (Baker et al., 2010).

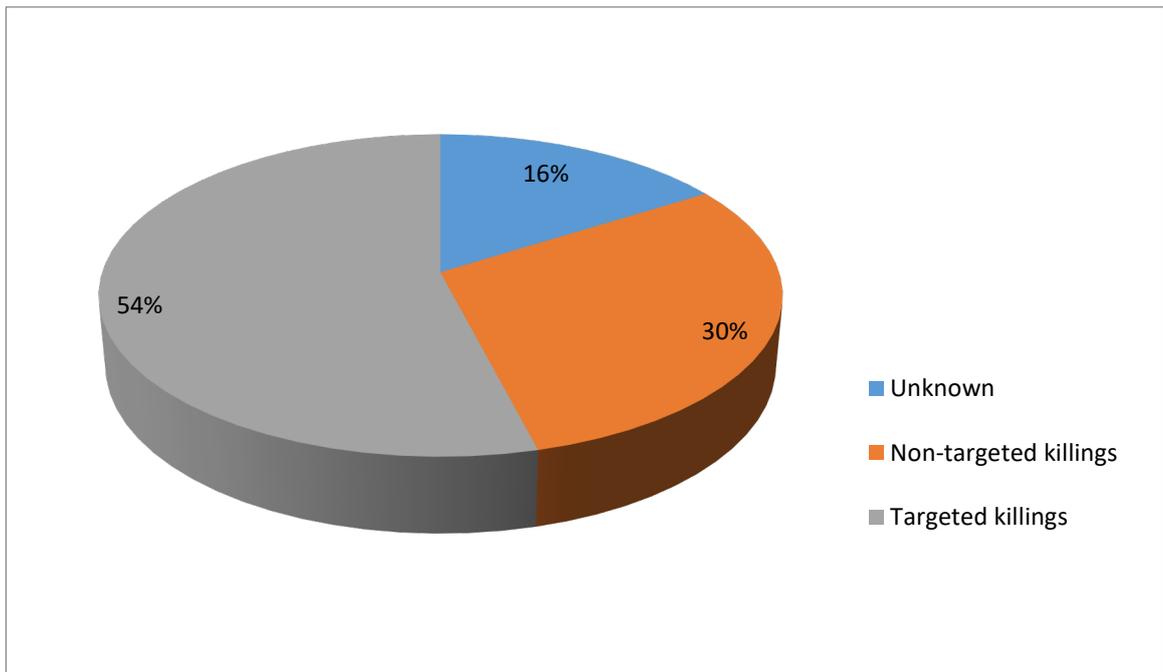
An excessively negative impact from the targeting of civilians was felt in the area of higher education and research, as the universities and their staff were specifically targeted as part of the process of cultural cleansing. The case of Mustansiriyah University in Baghdad is an example; "frequent bombing and blasts killed or maimed more than 335 students and staff members in 2007" (Jawad & Al-Assaf, 2014, p. 61).

As one female professor said, "I was obliged to flee because I was threatened to be killed. When I ignored these threats one of my sons was kidnapped and tortured. Finally, I had to heed these serious threats and leave my job and Iraq altogether" (Al-Azzawi 2013, p. 66). Another example, the case of the University of Baghdad, under US occupation, up to November 2008, 83 academics and researchers teaching at the University of Baghdad had been murdered and several thousand of their colleagues, students and family members were forced to flee (Petras, 2009, p. 5).

Figures 2–5, adopted from the work of Fuller and Adriaensens (2010, p. 154), record the extent of the crimes that have been committed against Iraqi academics, and therefore the decline in quality of personnel engaged in higher education and research in Iraq. Figure 2 shows that more than a half of Iraqi academics and professors were killed in an organized plan, with 30 per cent of these killed randomly e.g. bombing, and 16 per cent from unknown sources. Figure 3 details distribution of murders by discipline showing that most of the deceased academics were from science (31%), followed by medicine (23%). Academics in Humanities and Social Sciences were also targeted with 33 per cent of these discipline killed (21% and 12% respectively). Killing academics creates a climate of fear. Academics living under threat would cause real problems and changes such as, brain drain or stop going to their jobs, or the quality of teaching. Universities were the most targeted institution and as Figure 4 shows 80 per cent of the universities were damaged. Whereas, other institutions such as civil service (9%), health sector (7%) and other teaching (3%) sustained less damage. Based on this data, the higher education sector was the most affected by the wars. Within the education sector itself, all academic positions were targeted but at different rates. Figure 5 demonstrates that most targeted academic positions were professors and assistance professors (59%).

Figure 2

Murdered Iraqi Academics and Professionals, March 2003–December 2007

**Figure 3**

Distribution of Murders by Discipline

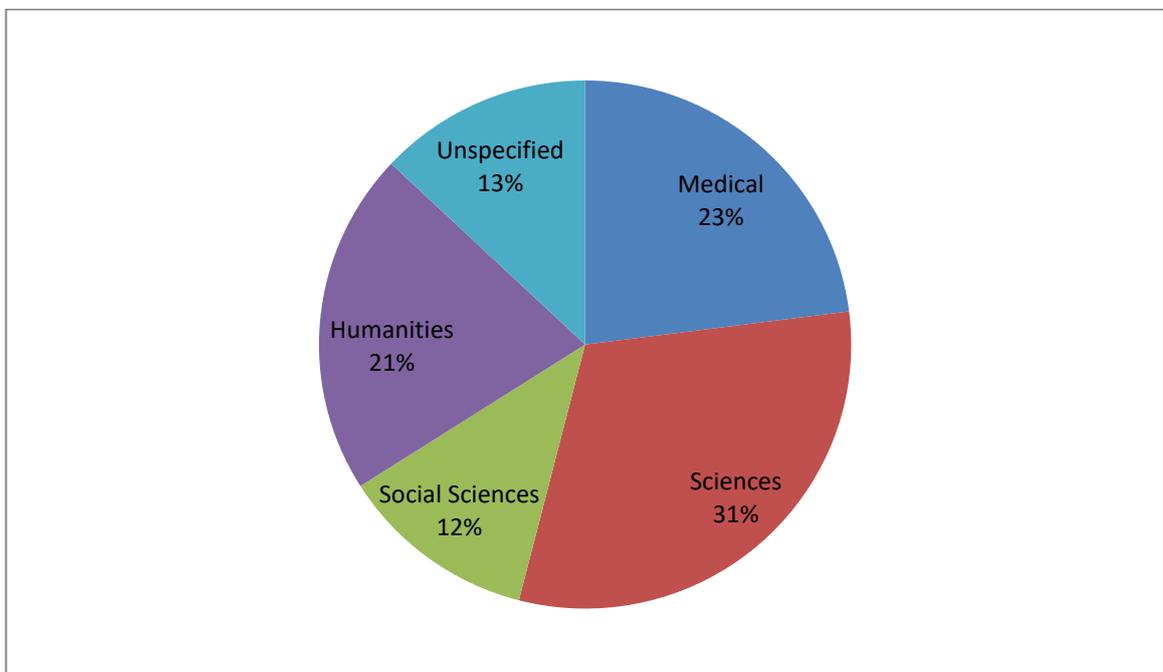


Figure 4

Distribution of Murders by Type of Institution

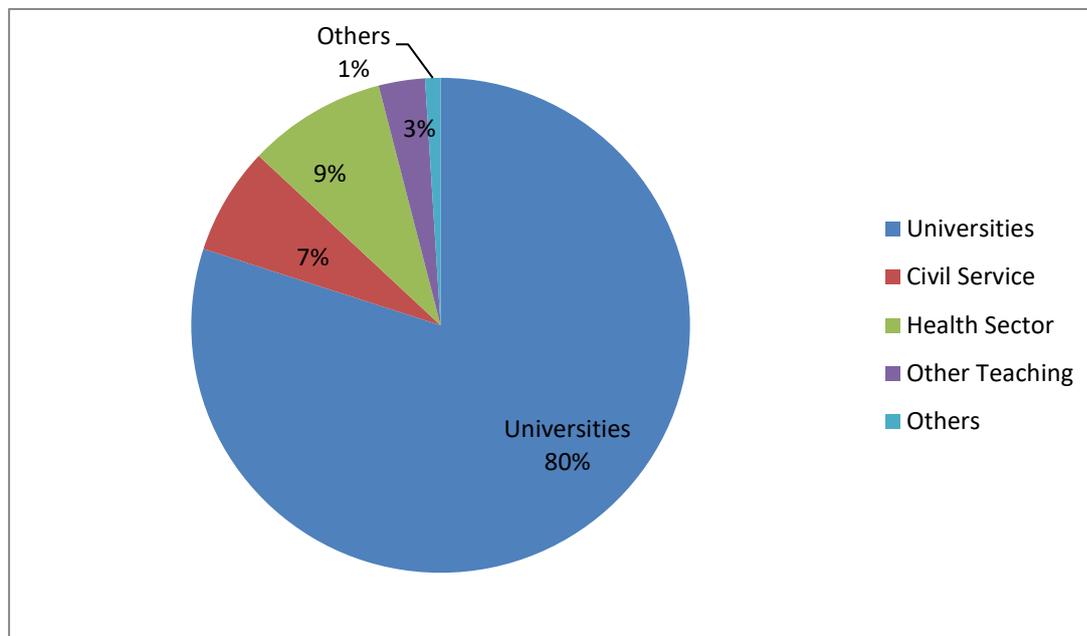
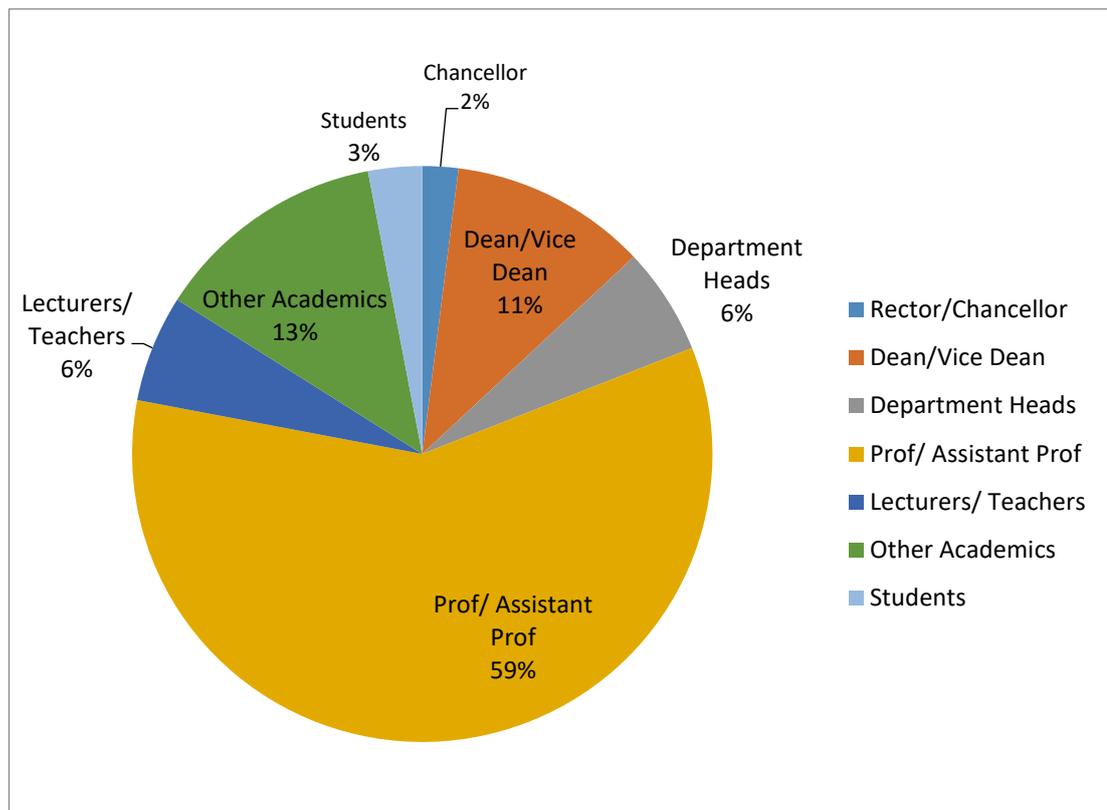


Figure 5*Murdered Iraqi Academics and University Staff, by Position*

Jalili (2012) noted that the number of Iraqi academics has declined not only as a result of assassinations but also due to non-fatal incidents, arrests, kidnapping, threats of violence, assaults, and house raids. Many experienced and skilled educators and researchers chose to flee with their families in order to escape the uncertain fate of those who were even loosely associated with the deposed regime of Saddam Hussein and the Baath Party. UNESCO summarised the situation in 2007, stating that “since the beginning of [2006], militants have stepped up efforts to drive out Baghdad’s remaining intellectuals and middle classes with a wave of death threats, intimidation, bombings and assassinations,” (UNESCO, 2007, pp. 30–31). UNESCO also went on to point out the extent to which students were being targeted in “violent crime and sectarian killings” in the major cities of Baghdad and Mosul (p. 32).

The “cleansing” of the educated classes in Iraq was not limited to university-based academics and students. As Jalili (2007) concludes, there was also the killing, kidnapping, and abuse of lawyers and judges, journalists and media workers, and

medical practitioners, all of which increased after 2003 and saw educated Iraqi citizens being resettled in the United States and a number of European countries. In a survey, more than 2000 Iraqi doctors have been killed since 2003. According to Gilbert Burnham and two colleagues' study, 22% decrease has occurred in the number of medical specialists in the capital Baghdad between 2004 and 2007 (Burnham, Lafta, and Doocy, 2009, p. 176). Many doctors left Iraq during the height of the conflict or were killed. This outflow has now lessened, although of the 1500–1800 new medical graduates each year, about a quarter leave, mainly to go to the UK, USA, and Australia (Al Hilfi, Lafta, and Burnham, 2013 p. 944).

The phenomenon of cultural cleansing within Iraq has therefore resulted in what has been referred to as a flight of human capital (Baker et al., 2010), or “brain drain”. Brain drain occurs when scholars and other educated people are forced by circumstances to work or study abroad and do not return to their home country. Circumstances, such as political conflicts, lack of opportunity, poor economic conditions, health hazards, or other reasons. Threats to personal safety are not the only reason for academics and professionals to choose to leave their home country. Biygautane and Al Yahya (2014) report that, in many cases, whether in Europe or in developing countries, the main reason for skilled human resources to expatriate or migrate is a lack of economic opportunity that prevents them pursuing further education or looking for better job opportunities.

While brain drain from developing countries in favour of the West has been a phenomenon of the 20th and 21st centuries, it has particularly impacted Iraq. Not only has enforced migration depleted the country's capacity for higher education and research, but thousands of academics, professionals, and state employees have been discharged from their positions due to their association with the Baath Party. In the wake of the invasion there was a purge of Baathist supporters who dominated the senior academic and management positions within the universities. While many of these individuals had benefited from the patronage of the Saddam regime, they nonetheless constituted a generation of the country's most experienced academic leadership. Jawad and Al-Assaf (2014) state that due to the “De-Ba'athification” program inspired by the military invasion and undertaken between 2002 and 2004, some 2,000 senior staff of the University of Baghdad resigned (Baker et al., 2010, p. 57).

Paanakker (2009) studied the impact of migration by Iraqi academics during 2003–2007. Her study revolved around the impact of conflicts and wars on migration and concluded there were four main reasons for academics to leave Iraq. These were, in order of significance, the specific targeting of academics resulting in death or physical injury; the country's general security situation; the rising rate of joblessness; and, finally, the overall deterioration of standards of education. While it is difficult to obtain accurate statistics on the number of Iraqi academics who fled the country during this period, one estimate is that between 2003 and mid-2008 there were approximately 1,500 Iraqi academics living in Syria, Jordan, and Egypt (Sassoon, 2008).

In addition to the human toll on Iraq's intellectual capital that resulted from assassination and forced migration, much of the devastation inflicted on higher education institutions substantially degraded the research facilities essential for knowledge generation. According to Zangna (as cited in Jawad & Al-Assaf, 2014, p. 59), reporting on the destruction of Iraq's higher education and research capacity in the wake of the invasion, 84% of the country's higher education institutions suffered from burning, looting, and general destruction. In many cases this damage resulted from educational buildings being used by the US forces or emerging political parties and their militias (Jawad & Al-Assaf, 2014, p. 68). But ordinary vandalism also played a part—in the targeted theft of internationally important manuscripts, books, documents, and objects—as did student-on-student violence. Watenpaugh (2004) claims that postwar looting damaged the whole higher education infrastructure, including teaching facilities, administration buildings, libraries, and research centres, destroying not only teaching and research materials and facilities but also the administrative records of universities, such as student and staff records.

Writing about the state of Iraqi higher education in 2008, Harb concluded that “the situation is in many ways worse today than before the invasion, with pre-existing structural problems exacerbated by the disruption, violence, and shortages of the post-invasion years” (2008, p. 4). Harb also went on to note the profound impact of the “unchecked looting of state institutions, including universities, research centres, museums, and libraries, that occurred in the immediate aftermath of the invasion” and that, at the time, “few universities had functioning websites” (p. 4). The associated loss in Iraq's universities, and in the professional classes more broadly, depleted an educated generation and resulted in a critical shortage of

scholars, experts, and scientists, thereby reducing the nation's capacity to support higher education and research.

In evaluating the quality of education in Iraq and Kurdistan, Kaghed and Dezaye (2009) conducted research at the University of Babylon, in Iraq, and Exeter University, in the United Kingdom. They applied criteria such as consultations with well-recognised universities and ISO (International Organization for Standardization) guidelines.

The results, according to ISO rules, found that other issues have contributed to the low quality of higher education, such as a lack of kept records and documentation; the centralisation of authority; poor technical and administrative skills; poor planning for continuous improvement; and a lack of standards for some lab equipment.

A general problem in the higher education system in Iraq is the centralization of authority or the problem of centralized government. Centralization refers to control all the government matters from the capital city where approval for citizen comes from the ministry first. An example from Kurdistan region in Iraq explains the effect of centralization of authority on the quality of higher education. The process of education reform has been undertaken by the Ministry of Higher Education of Kurdistan Regional Government since 2009. The main reason behind the proposed reform was to introduce standard quality of education to Kurdistan universities (Ali, Mustafa and Azeez, 2019). However, Mohammed (2016) studied the effects of centralization in higher education sector in Iraq. The study concludes that there are negative effects of centralization and benefits of shifting into decentralized government. What is relevant to this study is that university decision makers have limited authority over their respective universities. For instance, the university president and the dean are not always authorized to make decisions (De Santistbanand, 2005). In this sense, the project of scholarly collaboration between libraries in Australia and Iraq which is the focus of this study could be restricted by centralized administrative structure that restricts originality and elasticity (Yousif, 2012). Apart from the cited sources, there are few other examples critiquing the quality of education, therefore it appears important to gain a greater understanding of the extent that centralization of authority and other associated factors affecting the quality of the higher education system and the scholarly information gap.

Following these evaluations, the Iraqi education system adopted measures including the continuous updating of syllabi, standardised admission criteria for undergraduate students, quality control by each school, and centralised recording of students' results.

According to the UNESCO assessments (Al-Kubaisi, 2012), Iraqi academics have been severely hampered by their lack of access to adequate scholarly infrastructure. This is because the government has funding priorities that favour of economic development.

Damage to Libraries, Library Collections, and Research Facilities

Iraq's libraries and archive services were exposed to widespread destruction and looting during the post-1980 warfare in the country. The contents of a number of the largest university and public libraries and national collections were destroyed, including the comprehensive documented record of the history of Iraq across different periods, as well as essential works of literature and science. The destruction and loss included widespread and targeted looting of books and periodicals, the theft of furniture and equipment, and the vandalising and burning of library, archive, and museum buildings.

While Iraq's major libraries retained the bulk of the nationally important items they held prior to 2003, most of the collections were no longer adequate to the demands made of modern library systems. As a direct consequence of the economic embargo that had been imposed on the country since 1990 (over a decade before to the US occupation), libraries were unable to obtain current resources, especially in sciences and technology. The remaining books, journals, and research materials required for education rapidly became dated or redundant (Ahmed, 2003, as cited in Johnson, 2005, p. 236). Despite the initiatives and efforts of governments and bodies such as the American Library Association, and attempts by the World Health Organization to establish a rehabilitation plan, Iraqi libraries were unable to meet the needs of students and educators, due to the lack of up-to-date materials (Johnson, 2005). The resources that remained were in increasingly poor physical condition and unavailable in sufficient quantities (Johnson, 2005, p. 219).

The destruction of important Iraqi library collections during the Second Gulf War and, from April 2003, the postwar invasion was largely associated with the devastation of the main three major academic libraries, at the University of Baghdad, University of Mosul, and University of Basrah. These critically important library

collections were exposed to looting and arson and suffered irreversible consequences, including the permanent loss of documents of local and national importance. Johnson (2005, p 38) states that the Central Library of the University of Baghdad was primarily damaged not by fire but by looting, with equipment, furniture, doors and windows, and air conditioning systems all being stolen. A significant part of the collection was also stolen, although some volumes were later returned or recovered. Van Ess (2008) states that 175,000 books and manuscripts were stolen from the university's College of Arts, while Arnoult's 2003 report to UNESCO claimed that the Central Public Library in Basra lost all of its holdings. Further, the University of Mosul Library lost 900,000 volumes of books and periodicals.

One of the most respected and lucid descriptions of the destruction of Iraq's libraries and its impact is provided by distinguished archaeologist Zainab Bahrani. Bahrani shared her story under the title "Amnesia in Mesopotamia", and it is worth quoting at length as a compelling personal account of both the extent of the destruction and the heroic efforts made by some individuals to minimise the permanent damage.

In 2003 and 2004 while working on the preservation of cultural heritage in Iraq, I first encountered the destroyed remains of the National Library and State Archives, an institution which is equivalent to the Library of Congress in the United States. The war had induced in me a fixation, a type of archive fever that led me to Iraq in the first two years of occupation, where I had hoped to do whatever I could to save what remained of monuments, archaeological sites and museum collections after the destruction of the 2003 ground war. When I arrived in Iraq I quickly realized that I shared this archive fever with the head of the National Library, Dr. Saad Eskander, and with a number of other Iraqi intellectuals, students and museum professionals, each of whom applied her or himself as if driven by some Medieval genie let out of a bottle from the *One Thousand and One Nights*. We had in common a reckless obsession with preserving history, things and documents. Many told us we were misguided, that we should not focus on inanimate things when

people were dying, but we saw these forms of annihilation as two sides of the same coin.

The first two years of war and occupation were a violent time of horrendous destruction. I remember driving through the streets of Baghdad searching for any buildings still standing that we might re-appropriate for housing what remained of the collections of the library, since the library building itself had turned to ruins. At one point, the remains of mildewing historical papers had to be kept frozen so that continuing damage could be stalled until conservators could come, and proper paper conservation methods applied. Dr. Eskander had found an abandoned freezer in the kitchen of bombed-out remains of the private club where formerly the Baathist elite officers had gathered for an evening's entertainment. There was of course no electricity, so he acquired a generator to keep the freezer going, and hired a guard to stand in front of the generator. The remains of the Ottoman archive, the history of Iraq for over 400 years, were for a time stored in this bombed building, held together by an old kitchen freezer. This is the kind of bricolage and creative thinking that went into the conservation work of people like the director of the National Library, when little help came from the outside world and from the occupying authority. There are many such stories to tell about heroic efforts by what remained of the Iraqi scholars and intellectuals in the first years of the war. Hundreds of university professors and intellectuals were also assassinated in those years, and, like other Iraqi War dead, no official record has been kept of their deaths.

The Baathist secret police archive was airlifted out of Iraq by U.S. forces, and is now housed in the Hoover Institute at Stanford University.

Destruction of archives incites a collective amnesia, an eradication of memory by means of erasing its documentary and historical apparatus, consigning it to the flames. Because of the destruction of documents and the record of the history of kinship and ties to place that all the peoples and religions of Iraq have, those who wish to incite ethnic hatred and religious intolerance can rewrite history as they please. When documents

are confiscated by foreign powers the result is similar; without them there can be no reconciliation for Iraq, and there can be no peace.

(<http://www.documentjournal.com/2003/05/in-2003-baghdads-nationallibrary-wars-reduce-to-rubble-changing-my-life-and-Iraqi-society/forever.>)

Bahrani's personal testimony is supported by the more objective account resulting from independent attempts to record, estimate, and report the extent and impact of the damage suffered by Iraq's libraries. Estimates of the losses provide an idea of the severity of the damage that took place and could therefore potentially assist in shaping responses that might go some way to remediating the damage. The first group after the initial conflict was sent to Iraq by UNESCO, and that was in 2003 (Johnson, 2005).

Johnson concluded that some of the initial "knowledge" regarding the extent of damage done to libraries and other cultural institutions was distorted by the heightened rhetoric surrounding the war and occupation in 2003. As he claimed:

Partisan reports by those supportive of the Coalition and emotive commentaries by those attributing blame to the occupation forces have both obscured the facts. Other, occasional reports by academics and others who had not verified, or qualified, the statements that they were repeating have also shaped the public and professional response. (Johnson, 2005, p. 210)

Johnson methodically reported the extent of the destruction based on the best available evidence, covering all of the major categories of Iraq's libraries and archives as well as highlighting the extensive damage done to the nation's research and higher education sectors and its civic and historical records. Johnson acknowledged the difficulty not only of assessing the true extent of the losses but also of ascertaining who was responsible:

This paper has been primarily concerned to identify the extent to which theft and damage from looting have affected Iraq's libraries and archives. It is not the purpose of the paper to enter into a debate about who was responsible, or whether it might have been prevented, as those are

particularly difficult issues to resolve when they take place during a period of conflict and disorder such as occurred in Iraq in 2003. (Johnson, 2005, p. 249)

Johnson has argued that the impact of the wars on Iraq's libraries occurred in four categories—buildings, collections, personnel, and management—all of which require substantial reconstruction (2005, p. 258). In particular, Johnson focused on the reduced capacity of the library and information professions in Iraq to lead such a program of recovery. As a result of the recent decades of war and a demotivating climate for achieving international best practice, the library and information professions were largely moribund and with a membership that was inadequate for the task in terms of numbers, training, skills, and morale. Johnson concluded that, despite the poorly prepared state of Iraq's library and information professions and professionals,

Libraries, archives and manuscripts must be preserved as essential parts of the rich heritage of Iraq. ... Measures must be taken to protect governmental records that are held by archives, since they are vital for the functioning of public administration after the war, for example, to protect the legal, financial and contractual rights of Iraqi citizens. (Johnson, 2005, p. 2)

Telecommunications in Post-Invasion Iraq

One of the factors that shapes and determines national or regional information flows is a reliable and high-quality telecommunications infrastructure. Johnson (2005, p. 259) recognised, however, that “in Iraq's case, the problems of reconstructing its libraries and archives services are probably further complicated by its isolation from the increasing application of Communication and Information Technologies to information work”. The period of sanctions, coupled with a generally conservative and even repressive political environment, had meant that Iraq was slow to receive many of the benefits of both analogue and digital communication technologies.

The *Arab Knowledge Report 2009* traced the complex array of factors that had slowed the adoption of basic information and telecommunication services in the Arab states. Iraq was missing from much of the state-based statistical data included in the report, due to the challenges of collecting accurate data during the preceding period, and it was also among the group of countries described as “suffering from difficult conditions represented by political crises, security disturbances, or severe lack of resources, which limit the role of governments in the implementation of ICT policies and strategies” (United Nations Development Programme, 2009, p. 308).

Some important elements of Iraq’s telecommunications infrastructure were destroyed or severely damaged during this period. Yet very little of what was destroyed was state-of-the-art, or even reliable, and much of what was targeted during the invasion had largely been made available by the government for the benefit of the military (Fonow, 2009). While some supporting infrastructure was slow to be repaired—normalising regular electricity supply proved to be difficult—when it came to the telecommunications hardware it was not so much a case of rebuilding lost infrastructure as of transitioning to new-generation technologies. Iraq’s first mobile network was made accessible only in 2004, and it proved to be a precursor of an improved era of communications for the country. By 2009, Iraq’s success in transitioning to a new era of communications was being reported:

The telecommunications sector in Iraq today is widely considered to be a reconstruction success and a foundation of national stability ... Today, a variety of services are available to every Iraqi citizen. More than 10 million Iraqis have access to mobile phone services. Internet access provided by small private entrepreneurs is available throughout the country. Fixed wireless voice and data services by larger private operating companies are available in the larger cities. (Fonow, 2009)

The *Arab Knowledge Report 2009* was cautiously optimistic about the future of Arab engagement with a globalised and networked world, also noting the rapid uptake of mobile technologies and the sharp increase in the use of Arabic for internet-based communication. A recent study by Mohammed, Belal, and Ibrahim (2016) reported that 95% of the selected sample of the Iraqi population own smartphones, which are used for the standard purposes of making calls and text

messaging, accessing social networking applications, and using various internet-based services. Indeed, in looking forward to a world where penetration of mobile devices would reach the point of ubiquity, the *Arab Knowledge Report 2009* focused mainly on language and culture as the major impediments to the use of telecommunications technologies in Arab states, while continuing to point to Iraq as one of a small number of states facing particular local security and development problems.

Among the most pressing such problems are those related to broader and smarter uses of the Arabic language on the net, development of interactive digital content in the various branches of knowledge and broadening the scope of Arabic content in the fields of education [and] scientific research (United Nations Development Programme, 2009, p. 172)

The report was concerned about Arab participation in globalised, internet-based telecommunications as a critical determining factor in the future cultural autonomy of Arab nations and Arabic-speaking peoples. In a world where international political forces had been buffeting Arab independence constantly for over a century, the shape of Arab engagement with the internet has the capacity to determine the future forms of Arab culture. As the report asked:

Will current and future technologies lead to a decline in the status of Arab cultural identity? Or will they provide opportunities that enable its preservation and the consolidation of its position on the map of human civilisation? A positive answer is conditional upon the digital presence of the Arab countries and their citizens on the current and future internet. (*Arab Knowledge Report*, 2009, pp. 174–175)

Social Networking

The various Iraqi wars and their profound political, economic, and social aftermaths would be deeply felt throughout what might be loosely described as the “Arab world” or “Arab region”. Due to the complexities of international relations, regional politics, and global development dynamics, events in Iraq unfolded at the hub of a region where there were numerous tensions resulting from the clash of interests between entrenched theocratic and sometimes dictatorial regimes and liberal

forces being unleashed by the impacts of modernising forces that were becoming increasingly felt in a part of the world where many forms of development had been long delayed.

One outcome of the period in the region was the increased access to Western technologies by the region's populations, and this included the many digital communication and information technologies that became (in terms of consumer demand) the global phenomenon of the final years of the 20th century and the start of the 21st. Within a startlingly short few years, social networking, utilising various social media technologies, became an essential tool of communication on both local and global scales.

The international prevalence and potential impact of social media was starkly demonstrated in the context of the so-called Arab Spring, a revolutionary wave of protests and demonstrations that spread throughout North Africa and the Arab Middle East from late 2010. Commencing in Tunisia, the movement soon spread to nearby countries, including Egypt, Libya, Yemen, Jordan, Kuwait, Bahrain, and others (Howard & Hussain, 2013). Despite the comparatively recent regime change in Iraq, the country also became the focus for a new cycle of civil unrest. Impacts included the resignation of a number of provincial governors and administrators, culminating in Prime Minister Nouri al-Maliki's decision not to seek re-election in August 2014. More significantly, the unrest gave impetus to the ISIS insurgency, and from 2012 onwards the country was enmeshed in yet another internal war, as a coalition struck between international forces and the Iraqi government and military fought first to contain ISIS militants and then to win back surrendered territory and cities.

It is still unresolved whether mobile phone technologies and social networking are forces for peace or for disruption, particularly in the Arab Middle East. The Arab Spring focused international attention on mobile technologies not only as a form of internal communication to either promote or deter insurrection and violence, but also as a tool with global reach that could bypass means of gatekeeping information and power. Activists use the prevailing forms of social media (Facebook, YouTube, blogs, Twitter) to communicate with each other and to organise protests and spread information, but they also see it as the means by which they can communicate directly and immediately with international media and a near-global audience. Social media has become the "weapon of choice" for young, educated,

tech-savvy and liberally minded members of Middle Eastern populations who were widely recognised as being both the drivers of the Arab Spring and the most attuned to the values of the liberal and development-focused West.

The result has been an upsurge in interest in the possibility of further social-media-based interactions and collaborations between the West and the Arab region. As DeLong-Bas (2011) concluded about this intersection of new media technologies and the Arab world, the only thing that is known for certain is that the use of modern technology and new social media has opened the door to new and creative thinking about how to assemble, organize, plan, and strategize activities ranging from political to social change that are immediately conveyed at a global level.

It is inevitable that as the dust of war and internal strife once again settles in Iraq, both Iraqis and citizens of other Arab states will look to other innovative uses of this powerful new form of “informal” communication in order to bridge some of the various “gaps” and “divides” that isolate Arab states from the developed West.

Conclusion

In reviewing the literature related to the history of Iraq and the higher education system and cultural cleansing, this chapter established the extent and nature of information gap in Iraq. First, the scope of the information gap in Iraq has been conceptualized within consequences of the historical events of destruction, since 1980-up to present. Second, the nature of the gap has incorporated dual concepts: material and intellectual. In the sense of material gap, the chapter has categorized the devastation of infrastructure, such as telecommunication, networking, looting and burning universities, libraries, museums and research facilities. Further, the second concept intellectual gap or brain drain is through intellectual assassinations and cultural cleansing. In the other words information gap as a concept includes a lack of access information resources, isolation from globalization and cultural cleansing. The next chapter discusses the professional knowledge of the concepts of information gap, scholarly communication, and collaboration which are the focus of this thesis.

CHAPTER 3: PROFESSIONAL KNOWLEDGE (LIBRARY AND INFORMATION SCIENCE)

Chapters 1 and 2 introduced a number of concepts whose relevance to this study needs to be explained:

- *Information gap*, created by the disruption of access to new research data and information. The purpose of this thesis is to suggest ways that the damaged channels and storage of information in Iraq may be repaired.
- *Scholarly communication* is official communication among academics and other professionals, both in country and inter-country. This thesis suggests that the lines of communication in Iraq have been badly damaged and aims to find ways to repair them.
- *Scholarly collaboration* is a way to achieve the aim of this thesis.

This chapter discusses these concepts in line with the main research question and the four research objectives of this thesis. For example, in addressing the first objective, which is to assess the extent and nature of the information gap in Iraq, it discusses the term *information gap*. In addressing the second and third research objectives, which are to assess the existing structures of scholarly communication and collaboration in academic libraries in Australia and Iraq and to investigate the constraints and opportunities affecting scholarly communications between Australian and Iraqi academic librarians, it discusses the term *scholarly communication*. In addressing the fourth objective of this thesis, which is to determine how the development of structures for scholarly collaboration between academic librarians can address the information gap in Iraq, it discusses the term *scholarly collaboration*. These discussions all revolve around the main research question: What are the possibilities for collaboration between Australian and Iraqi academic libraries to address the information gap in Iraq?

Information Gap

First, this section defines and discusses the concept of the information gap as understood in existing literature. It reviews the literature that relates to the general components of the concept, such as socio-economic and technological issues, as well

as age, gender, income, occupation, and race. The section also discusses the criteria for evaluating the information gap and interventions to reduce it. Second, it gives a historical overview of the information gap in Iraq. Third, it clarifies the concept of the information gap from a global perspective, with a particular focus on developing countries and the Arab world. Fourth, it discusses the information gap to be studied in this thesis, including the scholarly information gap in Iraq.

The following four sections represent structured formats that show qualitative variables on the concept and terminology of the information gap.

Definition and Components

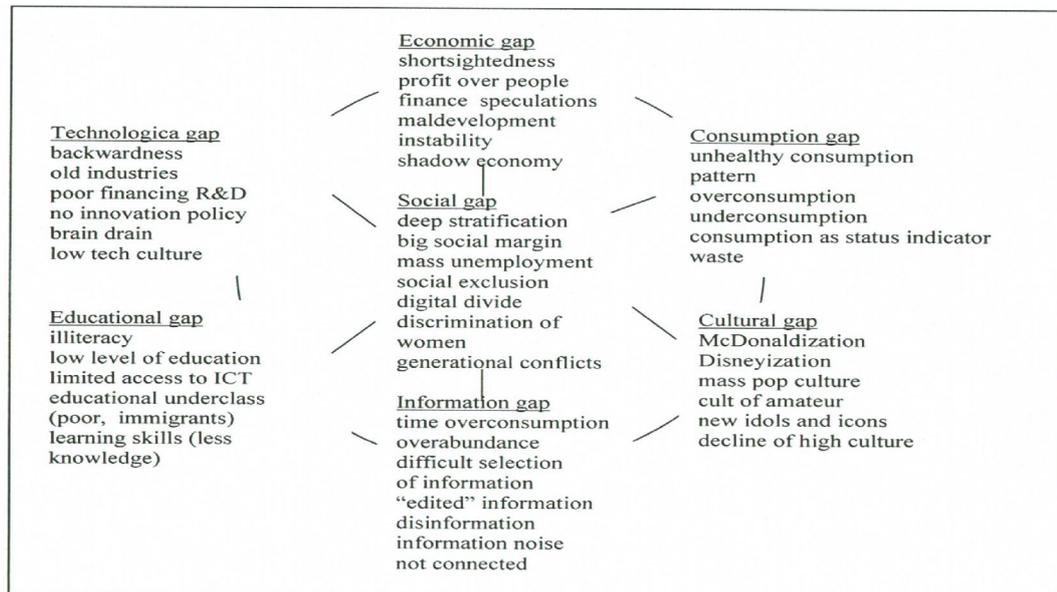
This section examines the concept of the information gap from different points of view in existing literature. It also reviews the literature that relates to the general components of the concept. Therefore, this section provides arguments about the concept of the information gap, to extract a comprehensive definition of it and its components.

The term ‘information gap’ is defined differently by different communities or areas of study. The term can be defined and understood in various ways, depending on the professional or disciplinary background from which it is approached. In general, the term information is associated with a human perception, social behaviour, changing technologies, and issue of trust (Buckland, 2017). In the twenty first century, the importance of information has increased and requiring different communication and medium. In this sense, communications experts (including librarians) often understand the term information gap as a lack of access to information and communication technologies (Makori, 2012). Other examples are for instance, politicians talk about the term of information gap as a problematic social issue to be addressed by national development. This view refers to the second era of development of the information gap which in this thesis is called digital divide; economists define it in terms of the marketing of information services and global economic imbalances; educators identify an imbalance in access to educational opportunity and attainment; sociologists understand it as an inequality expressed through demographic factors such as differentials of gender, age and income. It is important to understand what the term “information” means in library field so we can understand what the term information gap means in library studies and in this thesis.

Buckland (2017) states that as librarians we used terms such as data, record, document, or knowledge imparted, and each of those terms has a principle meaning of the term information depending on the behaviour of using the information. Practically, the definition of the term information can be described in its cultural context rather than the formal information science described and discussed elsewhere and this is called a realistic definition, and this is the focus of this thesis.

The term has become part of the information revolution (Zacher, 2012). Along with the rapid growth of information and communication technologies (ICTs), the information revolution has influenced all areas of human activity, such as politics, business, and civil society. Societies have different cultural views on information change. Also, using ICTs depends on demand (defined by money and preferences). Societies have been transforming, particularly advanced societies (Zacher, 2012). Thus, cultural differentiation, the marketing of ICTs, and the rapid adoption of them by developed countries are creating a digital divide between developed and developing countries.

Zacher (2012) calls this the “development gap”, which has many components, including technological, educational, economic, social, information, consumption, and cultural. The information gap is one of its components and interrelates with all other components. These components are variable, creating a gap between developed and developing countries.

Figure 6*Components of the Development Gap between Developed and Developing Countries*

Note. Reprinted from Zacher (2012).

The concept of the information gap is becoming more and more complex because of the inequality in access to ICTs (Selwyn, Gorard, & Furlong, 2004). The inequality in socio-economic factors is contributing to a gap between individuals within society. The digital divide, when it first emerged, revolved around access to computers and related technologies. For example, the high cost of technical devices created a large divide between people who could afford them, and had access to all the advances of technology, and those who could not (James, 2009).

The developments are occurring in industrial companies such as IT industry, computer industry, software services industry, data- driven smart manufacturing (Tao, Qi, Liu, & Kusiak 2018), and industrial wireless sensor networks (Gungor & Hancke 2009). Those developments led to growing several technical and digital devices such as computers, software programs and the internet services.

The development of technologies and government regulations have driven down the cost of ICTs (Balasubramanian, Clarke-Okah, & Danie, 2009), resulting in more individuals gaining access to some form of information technology. As more people gain the necessary access to computers and mobile devices, the term

information gap has grown to include other technical barriers such as information literacy and the total cost of running a network.

Another perspective of the information gap is discussed by Lievrouw and Farb (2003). Their study indicates that socio-economic inequality is playing a crucial role in creating the information gap in terms of access to and gaining information. For example, inequality of income can lead to great differences in access to ICTs. Also, because of demographical factors and differences among individuals, the information gap is assumed to be occurring even in wealthy countries. The variable factors such as income, gender, age, language, ethnicity, education level, and geographic location contribute to dividing people into two groups.

People who are wealthy, educated, and young are likely to have good access to all kinds of information and technologies—unlike those who are poorer, less educated, older and live in rural regions, who have fewer opportunities to access ICTs. Lievrouw and Farb (2003) conclude that the three most important socio-economic factors—economic, linguistic, and generational issues—are creating digital disparities not only in developing countries but also in economically advanced countries where those various communities face barriers to accessing information.

History and Background

This section explores the history and background of the concept of the information gap through changes in terminology. The concept has gone through several phases over the years, due to innovation and developments occurring in the information society. For instance, in the 1920s the concept of the “knowledge gap” referred to the difference between educated and non-educated people in terms of knowledge possession (Jencks & Phillips, 2011).

In the information revolution age, which is considered the second phase of knowledge movement, the concept changed to “information gap”. The differences between groups include people who have the ability to gain information and those who do not. Hence, the concept altered yet again to the “digital divide”, as the new technological revolution and ICT innovations occurred. Finally, in a global environment—that is, in the contemporary era, the concept can be formulated and called the globalisation gap, or cultural difference (Wood & Wilberger, 2015).

First Phase: Knowledge Gap

The term knowledge gap appeared in the middle of the twentieth century. A piece of knowledge is composed of a series of the proposition. Information as knowledge, meaning the knowledge imparted, and information as a thing, meaning the information which is in physical forms such as books and documents.

“Knowledge” is a common term referring to a particular understanding gained through experience or education (Oxford English Dictionary, 2019). The term can also be defined as “information that has been comprehended and evaluated in the light of experience and incorporated into the knower’s intellectual understanding of the subject” (Online Dictionary for Library and Information Science, 2019). Knowledge encompasses multiple factors such as information, learning, education, and awareness. Librarians define knowledge largely as a collection of documents. A knowledgeable scholar or librarian’s role is to identify the resources and their purposes, so librarians can recommend the most suitable documents for any purposes (Buckland, 2017). Some experts in the field of knowledge argue that there are many other resources for getting information. For example, van Daal, de Haas, and Weggeman (1998) state that knowledge is an individual’s capacity to create a new or a particular subject. This study objectively determines two indicators on how to acquire the knowledge. First, that this knowledge came through information channels such as media, culture, and social activities. Second, from the interaction of this information with the individual’s character, experience, skill, and attitude.

The knowledge gap theory was developed in the 1970s by Tichenor, Donohue, and Olin at the University of Minnesota (Donohue, Tichenor, and Olin, 1975). Their study defines the term knowledge and measures the gaps in the knowledge of subjects. According to this study, knowledge indicates how new information enters the social life system and changes life’s quality. The study also measures the knowledge gap through focusing on educational levels as it is a convenient way to acquire information. The study determines three levels of education: grade school, high school, and university. It proposes that there is a gap between individuals with different levels of schooling. Additionally, the study

reports that people with a higher level of education are more likely to be knowledgeable than those with a lower level (Wang, 2003).

Within the context of knowledge, the term information gap first occurred in 1920 and was called knowledge differences. The terms knowledge and information are different. Information leads to knowledge. As librarians, knowledge is tangible materials, and the information or data are intangible materials. Education plays an important role in developing individual's capacity and gaining reliable information and developing knowledge usually through official education. The disparity among people in gaining information leads to create a gap.

Second Phase: Information Gap

The second period, which involved the concept of information gap occurred in the 1990s. The term was used together with the already discussed knowledge gap accompanied by words such as information inequality and information literacy (Van Dijk, 2006). The concept refers to common social phenomenon, namely, that it is essential to understand the social barriers that can cause inequality in gaining information and create a gap.

Some studies such as Sung (2016) argue that the term "information gap" occurs in the information age, which is the twenty first century. Sung (2016) evaluates the digital divide in Korea, where most people have their own smartphones. Due to variable factored used in the study such as age, gender, income, education, and employment situation, the study concludes that smartphone use reduces the information gap across all participants, irrespective of variable factors, and has suggested the increased usage of smartphones.

In fact, smartphones as a moderate device is associated with socioeconomic status. According to Castells (1999), the primary factor that causes the information gap in the twenty first century is the educational inequalities that are associated with socio-economic status. Charbonneau (2008) considered that social inequalities cause many other complex problems. The disparity in social indicators has an impact on the ability to acquire and invest in information (Lusardi, Michaud, & Mitchell, 2017). The social indicators for this study were socio-economic, cultural, political positions, languages, information literacy, and geographical barriers. These factors

they argue extend the gap among individuals. The social indicators are socio-economic, cultural, political positions, languages, information literacy, and geographical barriers.

Socio-economic factors are some of the most important issues that are associated with the information gap. One of the most important socio-economic issues that causes the information gap in the information age is education. According to the United Nations Research Institution for Social Development (Castells, 1999), the concept of education has turned from merely reducing a country's illiteracy, to investing in the further education of the entire society. However, budget pressures tend to concentrate the investment towards the people who are already educated, thereby widening the gap (Serenko & Bontis, 2017).

The differences in attitude have changed from era to era. For instance, education inequality in the past meant something that is different to what became known in the next era. Educational inequalities have divided people into two groups, educated and non-educated. In other words, literacy and illiteracy matter (Wang, 2003). Education has altered to become the source of power and productivity (Castells, 1999). Some studies find that something new has been discovered in the information age such as the capacity to create new knowledge and process appropriate information efficiently.

In the information revolution, information and the knowledge-based economy have been vital factors for creative power (Ștefănescu-Mihăilă, 2015) and have positive impacts on the quality of life. The following aspects show the role of education in developing this notion:

Firstly, at individual levels, education has effects on improving people's quality of life. One of these improvements, for example, is employment. Educated people are more likely to have job opportunities than those who are not so well educated (Coomans, 2005). Investing in education leads to firms finding skilled people and thus solving the problem of unemployment and providing job opportunities to the youth (Cioban & Neamtu, 2014).

Secondly, at an institutional level, an educated labour force generally provides more productivity than its opposite (Castells, 1999). Globally, the investment in human capital has a significant impact on the economic growth of every country (Cioban & Neamtu 2014). Thus, in the information era, education played a significant role in improving the lives of people and their nations. However,

at the same time it created a gap between various individuals due to the educational disparity.

In summary, the information gap is growing because of the unequal developments of societies over the years. The next phase is in the twentieth century, which is associated with the growing of the information technology industry. This period has led to a new stage of the concept of information gap to become an even bigger problem referred to as the “digital divide”.

Third Phase: Digital Divide

The third period of the historical movement of the notion of the information gap happens in the second half of the 1990s, through the advent of the internet (Van Dijk, 2006). Also, other components occur associated with computers such as software, hardware, and networks. This latest turning point of the concept of the information gap occurred because of the digital environment. The phenomenon has been changed and has come to be known as the “digital divide”.

In general, Charbonneau (2008) quotes the gap in this sense as a “digital inequality”. For instance, people who can afford a computer and its related paraphernalia in their home in contrast to those who cannot. In other words, digital divide means the lack of access to computer communications. However, much of the debate surrounding the digital technology environment has impacts on the term.

The following paragraphs are structured around three main issues to provide a definition to the notion of digital divide and how it impacts on people and societies. The section includes a historical review of the developments in information technologies and innovations. Also, empirical examples are involved in supporting the perceptions.

A conceptual definition of digital divide does not apply to all groups of people. Warschauer (2003) argues that the concept of digital divide assumes to apply to the countries that have at least one of the elements of modernisation. However, the concept may not exist in some groups like remote rural towns or slums. Also, the concept does not exist in the fourth world communities, which means the extremely isolated or nomadic groups (Donner, 2008).

For a better understanding, Warschauer (2003) investigates the concept of the digital divide by introducing some community problems associated with technology access. Warschauer (2003) assumes that the idea of the digital divide in the literature had not provided a thoughtful framework to what is going on in the digital age. He

states that there are two sides of the concept: social analysis and technology view. He concludes that the idea involved social inclusion issues rather than technological matter. The following two different perspectives provide arguments for the idea of rethinking of the digital divide concept.

Some researchers such as Warschauer (2003) believe that the stratification of individuals and societies is a significant cause of the digital divide. Others such as Abu-Shanab and Al-Quraan (2015) believe that access to electronic information should not be seen as a technical issue in itself unless it has delinked from other social factors such as economic, political, cultural, infrastructure, and linguistics matters.

However, Gunkel's (2003) study confines the concept of the digital divide to technical incompatibility. Thus, the concept has involved considerable debate.

Although there are several approaches to measuring digital divide, a study by Mardikyan, Yildiz, Ordu, & Simsek (2015) concluded that variables related to the development levels, income levels, Organization for Economic Co-operation and Development (OECD) membership and continental differences are strongly associated with the concept.

In summary, the notion of digital divide involves two points of view. One highlights the gap as a social inequality; the other is based on technological determinism.

For more understanding of the central idea of digital divide and how the concept has grown over the years, the following section reviews the definition of the notion through the development of information technology.

Computer Divide. It is hard to determine when the first computer was invented. The computers of today were preceded by many different industrial developments. However, the 1970s and 1980s are considered the first phase of the invention of the digital device (Sharples, 2000). The study by Sharples (2000) highlights that the innovations of information technology led to inequality and resulted in the beginning of the digital divide.

Robertson (2000) states that the take-up of new technology has often been dictated by the individual's financial capacity, specifically income. Amiel (2006) demonstrates that the personal computer (PC) is an essential tool to anyone living in the 21st century, whether in developed or developing countries. Also, because using PCs requires the necessary skills, an information literacy gap develops between

people. Luckily, the cost of computer hardware and software has reduced, and may lead to some equality of digitalisation between rich and poor countries (James, 2001). Of course, in present times, many more people own smartphones with much computing power.

Internet Divide. As stated above, information technology has two sides. In one instance, it has improved the quality of life for nearly everybody. However, it has also led to a widening knowledge gap. The internet tends to widen this divide even more. The explosion of new technology, hardware and software and the difference between various groups of people being able- or allowed to take up the new technology, increases the divide.

This section discusses the definition of the concept of “internet digital divide” and discusses four factors associated: psychological, generational, racial, and geographical.

The internet divide can be defined as a socio-technological gap. The idea of the difference came from social inequalities in digital technology opportunities. The essential of this divide is the internet penetration. The rates of the subscription to the internet may vary among individuals, institutions or even among countries. Also, other demographic factors could affect the internet penetration such as social class, education, gender, and generation (Büchi, Just, & Latze, 2016)

Chinn and Fairlie (2007), however, state that income disparity contributes to the internet gap, and causes the reinforcing of it. The study aims to find out the extent of the digital divide, and its association with the computer and internet penetration. The study analyses the data of 161 countries from 1991 to 2001. It examines different variables such as socio-economic progress, demographic and urbanisation change, and telecommunication infrastructure. Chin and Fairlie conclude that the per capita income is dictating computer and internet use, and that it is causing an internet gap. Also, the survey results indicate that national income disparity is a factor in creating the digital divide. For example, while 53.4% of the difference in internet use between the United States and sub-Saharan Africa is accounted for by personal income differentials, 40.7% of the gap can be attributed to the disparity in telecommunications infrastructure.

The following section discusses four components of the “internet digital divide”. The first component is psychology. Psychological divide can be defined as “an individual judgment of one’s capability to use a computer” (Hsu & Chiu, 2004,

p. 261). The perception of one's capacity and experience of using the internet and a computer. The study points out that social cognitive theory provides another aspect to the digital divide idea rather than the socio-economic view. The central point of this study is that it reveals the importance of people's satisfaction in employing the computer and the internet for their own benefit. Experience, Mastery (Wang, Jackson, Wang, & Gaskin, 2015) is the most important factor determining an individual's self-efficacy. Therefore, some people will achieve their success more easily than others. Also, the study by Hsu and Chiu (2004) confirms that the elements of internet self-efficiency come from the efficiency of utilising the electronic services and resources via the internet. To sum up, the psychological effect involves several factors and plays a significant role in reinforcing the digital divide.

The second component is generational and involves age groups that have another perception of the internet digital divide. Some propose that there is a gap between old and young in internet use (Loges & Jung, 2001). For example, according to the US Department of Commerce, an internet gap exists between young and old Americans. The study reports that there is an association between internet access and age. For example, among 18,439 Americans, only 13% of those older than 65 had access to the internet. In contrast, the percentage for the younger than 30 years was 65%.

The study also reports that age plays a significant role to set the goals for use of the internet. For example, and as the internet digital divide can be defined as an access or lack of access to the internet between old and young people, the study investigates the reasons why people use the internet. It concludes that the internet as a source of life integration is viewed differently by old and young people in terms of achieving the targeted goals (Ball-Rokeach, Kim, & Matei, 2001).

The third factor is ethnicity. Some argue that there is a high correlation between the internet digital divide and income along with race. Hoffman and Novak (2000) claim that there is no doubt that "whites" are more likely to have own computers at home than African-Americans do. Also, whites are more likely to use the web at home and work. It is possible that ethnicity is contributing to the internet digital divide.

The fourth factor is the combination of gender and geography. Two demographic factors may contribute to determining the notion of the internet digital divide in the sense of demography: gender and location. Ono and Zavodny (2003)

highlight how until the mid-1990s an inequality existed between men and women in accessing and using computers and the internet. Their study shows that men are more likely to use and access the internet than women. Meanwhile, they found that the gender gap in the sense of computer use has disappeared gradually since 1993.

Bimber (2000) is one of the rare studies that focuses on internet use regardless of any other demographic factors. It concludes that females were less frequent users of the internet than males. Also, it found that the gender gap intensity peak was between 1996 and 1999. Additionally, it reports that the internet was not the only medium as a source of information being interplayed and causing inequality, but there are other resources such as regularity in watching TV news and particular programs, reading newspapers and magazines. The study records that women are more likely to gain information from different media than men.

It can be argued that the gender gap as an independent factor does not tend to be a grave concern in the internet divide matter, but what makes it an issue is that when gender links with other demographic elements such as age, generation, attainment, location, ethnicity, racial and minority groups (Ono & Zavodny, 2003).

The geographic issue (remote, regional, and urban) may lead to reinforcing the effect of the information gap. It seems that a new dimension emerges which shifts the concept of the internet digital divide into a wider area of the environment and universal access. The term remote access may lead to enlarging the scope of the information gap because it requires telecommunications infrastructure. Weiser, Scheider, Bucher, Kiefer and Raubal (2016) state that location-aware ICT can be utilised in two ways: for direct support in mobile decision-making and for evaluating various aspects of people's mobile behaviour.

Although there is a collaborative endeavour to improve the role of the internet as a communication medium to remote areas, the interrelated factors such as digitalisation, information systems, methodological and structural communications, may be factors that enlarge the telecommunications divide. Thus, the concept has changed from the internet digital divide to a new shape is that the information communication technologies divide.

ICT Divide, or Cyber Divide. This section sheds light on international communication that is relevant to the concept of the information gap.

The explosion of digitalisation has contributed to change the digital divide into new trends. The term *information gap* means more than just a lack of e-

information services. It represents a significant challenge to employing the ICTs' infrastructure properly and efficiently (Ndou, 2004). This challenge results in the cyber divide.

It can be argued that there are five issues and terminologies that are associated with the cyber phenomenon and have an impact on the digital divide. They are quantity and quality of information, the cost, security, credibility, and location of information services.

Quality and Quantity of Information

Some believe that the total amount of information retrieved via the internet may vary. They claim that to acquire an accurate and exact amount of information depends on the process of searching resources. Also, Salvador-Oliván, Marco-Cuenca, and Arquero-Avilés (2019) report that the evaluation of the related material may vary among individuals because of the difference in the way they use the information that is contained in there.

In all fields of knowledge, such as the sciences, the quality of the information resource is very essential. The quality can be defined as “the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs” (Eysenbach & Diepgen, 1998). Eysenbach and Diepgen (1988) propose that a user's needs must be defined by either qualitative or quantitative specifications. For example, Russell (2001) states that the quality of medical information is crucial and that any shortage of information can affect people's lives. The study also confirms that reliable information can save people's lives. Other studies demonstrate that because of financial and copyright issues, some scholars in the field of science tend to publish their works in different traditional forms such as individual papers, journals, newsletters, bibliographic databases, and legislations. Russell (2001) claims that publishing articles in various sites and forms leads to a scattering of knowledge, and reduces the amount of reliable information.

Cost of Information Services. The ability to take full advantages of the information depends not only on the quality and the quantity of the information obtained, but includes material cost (Wangari Mwai, Kiplang'at, & Gichoya, 2014). The study mentions three elements associated with library services such as e-resources, the internet and library management systems. However, other studies ensure the cost of the materials in determining the required information services. For example, the study by Abels, Kantor, and Saracevic (1996) concludes that libraries

are diverging in determining the type of service and the cost of each service based on three elements: quality of service, policies and procedures use, and variations due to the miss-match between capacity and demand.

Security and Credibility of the Transformation of Information. There is no doubt that not all the sites on the internet are secure. Some of the researchers such as Dutton and Shepherd (2006) believe that the term “trust” in the internet or cyber trust means a “confident expectation”; a low potential of risk; the existence of uncertainty; the reliability, reliance ... etc. to people, information, products, or things online.

Dutton and Shepherd (2006) point out that trust in the internet with regards to remote communication plays a significant role, contributes to success and develops the exchange of electronic services such as e-commerce, e-government, e-learning, and e-research. Their study indicates that the internet is an “experience” technological tool for the individual user. For example, the study conducted in the United States reports that people who are literate and have experience in the use of the internet are more likely to trust the outcomes without examination. In contrast, those who are illiterate and have no or less internet experience are more likely to distrust the internet outcomes. For example, the online shopping, and banking.

Location Scope. Different zones—such as local, regional, urban, or remote areas—may cause a geographical gap. Governments are challenged to overcome the geographical gap.

Regional gaps can be defined as inequalities in access to information and telecommunication technologies among different areas. This includes issues such as tribal conflicts, political instability, and the lack of infrastructure. For example, Adam (2004) states that information gaps occur in some African countries because of tribal conflicts. Another study claims that the gap occurs because of the lack of the government strategy. For example, some claim that in the United States, governments neglecting to service some remote or rural areas contribute to increasing inequality to access ICTs, and that results in information gap affected regions (Wilson, Wallin, & Reiser 2003).

Accordingly, areas that have an opportunity to harness ICTs at local networking levels are more likely to have a chance to improve their communications globally. Unlike the remote areas that don’t have access to this service.

To sum up, the concept of digital divide exists because of two aspects: access to information and access to telecommunications infrastructure, whether locally or

internationally. That leads to an emerging trend of information gap in the form of a global digital divide or cultural divide.

Fourth Phase: Globalisation and the Cultural Divide

Globalisation has been a worldwide economic phenomenon since the end of the 20th century, largely as a result of neoliberal policies. It has gone together with the massive explosion of the information and telecommunication technologies. Globalisation leads to a new debate as to its influence on the notion of the information and culture gaps.

Some argue that there are three main issues contributing to the concept of a global digital divide in the contemporary era. The thoughts are politics (Held & McGrew, 2003), economics (Thapisa, 2000), and culture. For example, some researchers believe that globalisation has a positive influence on society because it leads to access integration (Wang, 1997). However, Ravi (2012) claims that globalisation has negative impacts on society and causes a gap. The presence of the social and individual's disparities of "access" may increase and widen the gap.

Andreatos (2009) states that the use of the internet as a universal communication media has increased. Statistically, Amant (2011) found that there are two billion users around the world who can access the internet. Virtual communities occur because of the wide range of use of the internet. E-communities, say Romm, Pliskin, & Clarke (1997), can be defined as "groups of people who communicate with each other via electronic media, is relatively new, describing an emerging and not yet well-established social phenomenon" (p. 261).

Other studies argue that virtual communities are a form of personal communication which relies on the sharing of knowledge, exchange of ideas, experiences and skills among members who have similar interests but a different level of knowledge (Lee & Valderrama, 2003). For instance, holding individual dialogues through popular social networks (Tafu, 2010) such as Facebook and Twitter. This connection helps to acquire knowledge and often leads to an exchange of ideas and a levelling out of knowledge within societies (Koh & Kim, 2004).

Some argue that the knowledge-sharing model across cultural boundaries has three significant limitations (Dulaimi, 2007): cultural (Meyer, 2009), political, and economic. This section discusses these limitations on the basis of the knowledge-sharing model across cultural boundaries that are relevant to the focus of this thesis.

The first limitation is cultural. Cultural barriers play a dramatic role and can cause gaps in knowledge. This section discusses two aspects of the cultural issues such as an individual's background and language. The other dimensions of the cultural issue such as the education barriers are discussed in Chapter 2.

Additionally, it is crucial to talk about cultural issues and individuals' behaviour when we talk about knowledge management. Damian and Zowghi (2003) note that knowledge sharing between developed and developing countries is influenced by cultural diversity, differences in communication methods and different ways of handling knowledge. King, Kruger and Pretorius (2007) conclude that differences between cultures have an impact on the processing of experiences. Lauring and Selmer (2012) conducted a study of 16 departments in Denmark within three universities and found that sharing knowledge is more effective when students are of similar cultural and linguistic backgrounds. Similarly, they found that differences in personal characteristics such as age and gender can have a negative influence on the sharing of knowledge. Michailova and Hutchings (2006) state that converging cultures—for instance, those of China and Russia—lead to common behaviour by individuals from the two cultures, which in turn helps to facilitate the exchange and sharing of knowledge. De Long and Fahey (2000) identify four barriers to effective knowledge exchange between different cultures. Identifying who is responsible for sharing the knowledge; the manner in which knowledge is created and adopted in its cultural context; the cultural mediation of various levels of experience; and the degree to which cultural norms allow a framework for social interaction.

The standards of knowledge interplay (or sharing) are crucial for the development of academic library systems, which have been found to differ according to the cultural context in which they function. The information and knowledge needs of the Arab-world states are particularly challenging, including the underdeveloped situation of the commercial aspects of scholarly communication. As Horton (2000) notes, the information, research, and publication capacities of nations are interrelated, and they make up the ecosystem of scholarship and scholarly communication in which academic libraries function. Also, the focus of this thesis is in the interests of optimising the value generated by scholarly communication the flow of knowledge between Australia and Iraq needs to be two-way. Exchange of knowledge and efficient communication should, in turn, encourage research and

collaboration between developed and less developed Arab-world countries, and between the Arab world and other nations.

It is therefore important that the variety of cultural backgrounds, attitudes and views among nations are understood and considered if developing countries are to overcome the existing information and knowledge gaps and share the benefits of the highly digitised and globalised information economy.

Language Issue. Another cultural issue that occurs and has an association with global access and may cause a universal gap is the language issue. Dominelli (2007) argues that language is a critical factor for global communication among people, groups, institutions, organisations, and countries. Language plays a significant role to facilitate scholarly communications among scholars. For example, promoting academic research and publications among scholars who have the same interests.

Across the course of the 20th century, English became established as the preferred language of international scholarly communication. This dominance of English as the basis for knowledge sharing was further entrenched late in the century by the advent of the internet, which is also dominated by English. A national lack of familiarity with the English language has a detrimental impact on effective international communication and in turn reinforces the digital divide.

The fact that English is used internationally for research communication raises concerns for non-English-speaking and English-speaking researchers alike. Those without English risk being unaware of mainstream international research unless they learn to read, write, and publish in English, while those who are native English speakers may be unaware of what has been written and published in non-English languages. In addition it is unlikely that material not written in English will be represented in major international scholarly journals and databases (Garfield & Welljams-Dorof, 1990).

In addition, Internet World Statistics (2013) reported on the top 10 languages in use on the internet in 2013, and English was ranked first, with more than 800 million users, followed by Chinese, Spanish, Arabic, and others. In summary, the variety of cultural elements such as the background, attitudes, and views among nations result in a cultural gap and causes a lack of sharing knowledge. Also, the English language plays a significant role in facilitating scholarly communication within countries while it results in a gap with non-English-speaking countries.

The second limitation of the global divide is political boundaries. The two major issues associated with global communication that are based on politics are terrorism and UN sanctions. This section discusses the impacts of terrorism on international communications.

Sanctions are a tool for humanitarian intervention used by the United Nations (Reisman, 1994), when a particular country's government violates international human rights and is deemed to need foreign intervention to resolve it. The purpose of this international law is to encourage the government to change its policies or it may be used for punishment. For example the UN sanctions against Libya 1992–2003 (Hurd, 2005); North Korea (Noland, 2009), Iraq from 1990–2003 (Halliday, 1999).

The fight against terrorism, as a cause of reduced access to international communication channels, thereby widening the information gaps, started after the events of 9/11 (Janbek, 2011). It prevents some countries from access to electronic resources (Hamilton, 2004).

It can be argued that terrorist issues cause changes and concerns in the world library policies as well. They resulted in much stronger internet censorship in the United States, such as applying online restrictions. This results in preventing libraries in some countries from communication (Wang, 2003) and widens the information gap.

There is a debate about the components that associate with the political issues in the sense of scholarly communication. For example, Michel (1982) believes that international transformation of information is determined by linguistic and political barriers. However, Woolcock and Narayan (2000) states that the information policy in each country plays a role in communication and depends on the social, economic, and political conditions of that country. Wiley (1998) adds that some of the higher education institutions may be affected by the political conflicts and that can lead to them making restricted decisions about global communication. For instance, the design of certain web pages that hamper international communication.

Some argue that the internet as a global communication medium contributes to emerging terrorism. For example, terrorists may use the internet to create terrorist networks and encourage extremist groups to join. Qin, Zhou, Reid, Lai, and Chen (2007) state that the terrorist groups use the internet to distribute their beliefs over the world by creating harmful web pages. For instance Jihad websites (Qin, et al., 2007), hate websites (Taylor, 2006), and hate messages (Rajagopal & Bojin, 2002).

Further, Qin et al. (2007) report that the groups of the terrorists in Middle Eastern countries distribute more than 200,000 multimedia web documents. That number was collected from 86 Middle Eastern multilingual terrorist or extremist websites.

Also, some believe that the lack of active legal control over such terrorist sites in countries contributes to a (international) blocking of those countries from global communication altogether, which creates additional isolation and more information gaps.

To sum up, political conflicts have an impact on international communications. The internet may contribute to promoting terrorism issues. The inherent lack of censorship of the internet makes this possible. On the other hand, attempts to force censorship causes information gaps. And thereby hinder global scholarly communication. It must be considered by the international community that closing the knowledge gaps between countries may be far more effective than censoring the internet, in its effort to fight terrorism (Warf, 2011).

There are other political issues that must be resisted in order to keep communication channels between scholars open. Many governments try to control certain aspects of (digital) communication for ideological reasons. Unfortunately, this also leads to increased censorship, and therefore, widening information gaps.

The third global limitation is economic disparity which include internet access and telecommunication infrastructure. Akindes (2000) argues that the economy plays a significant role in creating a gap between wealthy and poor countries. Some states can provide information technology, offering the expensive materials, sophisticated and modern equipment, maintenance and personal training needed for an efficient system. While other, less affluent countries cannot afford to do this. However, another study believes that the economics associated with the cost of information is not the only issue that affects international access: tremendous amounts of electronic resources are available online at low cost or free of charge. But the problem also lies in the reliability of the resources (Smart, 2004).

It can be concluded that the three global issues contribute to change the concept of the information gap to a new idea. Cultural, political, and economic barriers in the contemporary era lead to building new terminology to the concept such as, sanction, isolation, information hamper, or maybe information obstacle, because of the conflicts, terrorism, and restricted laws.

Country Approaches

The previous section gives an overview of the concepts of information gap from national and global perspectives. This section covers the ideas of the notion of information gap within different countries. It provides examples of developed and developing countries. Iraq is an example of a developing country. It is important to determine the main factors that cause the information gap within countries, with some examples of developing countries, and then, reviewing the history of the Arab-world countries.

According to Ogunsola (2005), the revolution in ICTs is one of the main factors widening the gap between developed and developing countries. Jarrahi and Thomson (2017) argue that one of the main obstacles of the interplay between developed and developing countries is open access. For example, there is a disparity among countries to have access to e-resources. Also, the study above argues that the problem of dealing with electronic resources contributes to emerging two issues whether in terms of infrastructure or the use.

The information gap emerges even in advanced countries. For example, Dutta and Jain (2006) report that, statistically, and according to the latest Networked Readiness Index, the top 10 countries for bridging the digital divide at the global rank are, respectively, Singapore, Finland, Sweden, the Netherlands, Norway, Switzerland, the United States, the United Kingdom, Luxembourg, and Japan.

The ICTs that associate with global access contribute to providing opportunities to countries for global communication. However, some think that making use of the ICTs may vary among countries and that depends on the national economy (Zuhdi, Mori, & Kamegai, 2012). Thus, the central issue that creates gaps between countries is the technology that can be supported by the economy. Also, because of disparity in national economies, gaps occur even in developed countries.

Information Gap in Developing Countries

This section discusses two essential issues that have an impact on the concept of the scholarly communication that is the primary focus of this research: employing ICTs and information literacy. This section also reviews some examples of developing countries to visualise the concept of the information gap in countries such as Chile and those in sub-Saharan Africa. Further, the section provides a brief review of the history of the Arab world, and the concept of knowledge-building because it

has an impact on the information gap in Iraq, which will be discussed in detail in the next chapter.

According to Archibugi and Coco (2004), three main indicators determine the concept of the information gap in developing countries: geographical, cultural, and economic. Other studies argue that ICTs in the digital environment are the essential factors that cause information gaps. For example, there is a disparity in employing the ICTs in developing countries, and that affects the communication and leads to gaps (Gresham, 1994).

It is important to know the subscriptions to ICTs in developing countries in comparison with developed countries, and that contribute to determining the scope of the gap. For example, identify the latest factors such as mobile, mobile broadband, a household with a computer, a household with internet access, and individual using the internet, with correspondence to the population of the country.

In 2015, the International Telecommunications Union reported that the number of active mobile-broadband subscriptions per 100 inhabitants was 86.7 in developed countries and 39.1 in developing countries (Neogi and Jain, 2016). The number of households (per 100) with internet access from home was 81.3 in advanced and 34.1 in developing countries; and individuals using the internet was 82.2 in advanced and 35.3 in developing countries. Jain (2019) identifies that China and India are the largest and second largest mobile markets in the world, with some 1.3 billion and 1.2 billion mobile subscriptions respectively. These developing countries have leap-frogged directly into ubiquitous mobile communications networks, although an urban-rural gap remains in the deployment and use of broadband mobile communications networks.

There is no doubt that ICTs contribute to facilitating communications among scholars all over the world. However, the methods and quality of the communications among scholars may vary in developed and developing countries (Prendergast, Quinn, & Lawton, 1999). There are disparities in academic knowledge, access to e-resources, and differences between research studies. Other studies confirm that ICTs have positive impacts on the scholarly communication such as changing the pattern of research among the scholars; productivity of knowledge; sharing research outcomes; exchange of information and interactions among scholars (Al-Harrasi, 2012).

However, Gulati (2008) claims that the disparity in the use of networking by scholars from different countries may cause gaps. For example, the academics in developed countries are more likely to use scholarly networking channels for scholarly communication purposes such as academic and governor webpages, while scholars in developing countries tend to use social networking for both formal and informal communication such as Facebook and Twitter (Al-Aufi & Genoni, 2010).

The second important factor that causes the gaps in developing countries is that of information literacy. Information literacy can be defined as a set of personal attitudes (Doyle as cited in Webber & Johnston, 2000) in the approach to dealing with the information required. Such as analytical and critical skills; gaining of adequate, relevant, and accurate information; using an appropriate approach for seeking information; evaluating and weighing the value of retrieval information and the ability of using software programs.

Goodman (1991) argues that the personal capabilities that relate to information technology may influence communication among individuals, either locally or globally. In addition, Goodman claims that the world is divided into two groups: “fast” and “slow” ICTs. Goodman argues that one of the essential features to categorise a fast country is a first-rate telecommunication system that connects to the global markets, which requires professional skills of IT to deal with.

The History of the Arab World

It is important to review the history of the Arab states, because Iraq is one of them. The ideas from the history of knowledge may contribute to having a better understanding of how Arabs have built up their knowledge base, and how the information gap was created. In reviewing the era of the Arab history, it is observable that the Arab world has built up a significant body of knowledge that reflects its peoples' thinking, skills, literary works, and inventions.

In much of the Arab world, inadequate budgets and low levels of educational development have resulted in standards that are below international norms and a consequent widening of the information gap. Government institutions in the Arab world and most parts of the Middle East struggle to support and develop literacy and education. A recent study, *The Arab Knowledge Report: Youth and Localisation of Knowledge 2014*, reported that despite progress in illiteracy eradication, the number of people who are illiterate in the Arab region remains high. In 2012, it was

estimated there were around 51.8 million illiterate people (aged 15 years and above), of which 66% were females.

The issues that have been reported as barriers to acquiring basic literacy skills include families that can't afford school expenses for their children; families where children have to work instead of attend school; and an unwillingness to send girls to schools. As a consequence, the educational participation level in the Arab world is low in comparison to many other regions. For instance, enrolment in secondary education in 2012 was reported by UNESCO to be 74.2%, which is less than the rates reported for East Asia and Pacific (84.5%); Central and Eastern Europe (93%); and Central Asia (98.6%), although close to the global rate of 72.9% (Arab Knowledge Report 2014).

With regard to research and development, the highest proportion of funding for most Arab research centres comes from the state. However, most research institutions in the Arab world are limited by a lack of appropriately qualified staff; weakness of administrative structures; and a lack of government support. In 2009 Egypt had the largest number of research centres: 14 specialised government research centres; 219 research centres under the auspices of ministries, and 114 centres at universities. Next was Tunisia, which had 33 research centres containing 139 laboratories and 643 branch research units (United Nations Development Programme, 2009).

The Information Gap to Be Studied in This Thesis

As discussed in Chapter 1, in this thesis the term *information gap* specifically refers to the gap between developed and developing countries in terms of their access to the information and knowledge necessary for the development, security, and cohesive governance of a nation. The context here is that the purpose of this thesis is to suggest ways the damaged channels and storage of information in Iraq may be repaired. There are few studies undertaken on Iraqi libraries except for Johnson (2001). Johnson finds that there is a lack of three areas that contribute to establish the scholarly information gap in Iraq. First, there is a lack of follow-up of international development programs. In Iraq, there is a confusion between the roles of academic libraries and those of research centres in higher education institutions.

The study by Johnson (2001) considers the activities that have been undertaken to establish and develop Schools of Librarianship and Information Science. Also, it discusses the real and imaginary obstacles to research and to

international cooperation and outlines the benefits to individuals and institutions of engaging in this type of international collaborative research.

Unfortunately, neither libraries nor scholarly centres are undertaking the suggestions that have been made by missions to Iraq. For example, when undertaking a UNESCO mission to Iraq in the 1970s, Ahmed Helal (later a university librarian in Bielefeld, Germany) expressed his frustration at “the impossibility of finding the reports or knowing the recommendations which had been written by other consultants who recently visited” (Johnson, 2001, p. 4).

A second perception of the scholarly information gap is that there is a shortcoming in the qualification of the librarians in line with the basics of scholarly research. This was confirmed by Johnson’s (2001) study of the reality of Iraqi libraries, looking at the qualifications of Iraqi librarians. Johnson recommends that a concerted effort be made to take advantage of the current global interest in information transfer to persuade the development agencies to support research efforts in the applications of librarianship and information sciences.

The third concept of the scholarly information gap in Iraq is that the philosophy of scholarly research is established in a way that does not take into account the basics of specialisation in disciplines. There is no clear strategy to distribute research subjects’ needs among the disciplines. The government in Iraq and in most developing countries struggle to understand the concept of specialisation, not only in library studies but also in most fields of knowledge, whereas academics have more awareness about their subjects. Therefore, the academics themselves are readier to initiate and develop scholarly communication. Academics may also have ideas on how to develop and enhance that communication. Government policies are mostly applied to general issues; therefore, it may not be that efficient in the realm of scholarly communication that is based on specialisation”

Academic libraries in Iraq also lack the opportunity to communicate with their peers in academic libraries in other countries. This is the scholarly communication gap. This area really needs to get attention from the Iraqi government and higher education institutions to start to reduce the information gap in Iraq.

In Australia, the situation is very different to Iraq. Academic libraries in Australia are communicating with each other and there is not a lack of academic libraries in Australia at local and national levels. However, a review of literature revealed that academic libraries in Australia have no communication with academic

libraries in Iraq currently. There are no studies being undertaken to establish such scholarly communication between academic libraries in Australia and Iraq. This lack of communication is the focus of this thesis.

This research focuses on the collaboration between academic libraries in Australia and Iraq in order to reduce the information gap in Iraq by establishing a structure of scholarly communication.

Scholarly Communication

The idea of scholarly communication in general is to bring people and ideas together in ways that develop science and innovation. Scholarly communication includes the creation, evaluation, dissemination, and preservation of research findings. Cronin (2003) defines it as consisting of five components: institutional management of resources; electronic and online publishing; publishing in the digital age; the impacts of ICTs; and electronic publishing.

In this thesis, the examination of scholarly communication will be confined to academic libraries. Thomas (2013) concludes that there are three areas of scholarly communication in academic libraries. The first is open access: to help authors make their works available to everyone and understand a variety of publishing models. Second is copyright and publishing agreements: to help patrons use copyrighted materials fairly and legally and consult with authors on their publishing agreement. Third, research support: to help users evaluate open access resources for their literature reviews and authors to comply with funding mandates. In general, academic libraries focus on three areas: research services, cataloguing and metadata, and acquisitions (Thomas, 2013).

Through reviewing the literature, we learn that scholarly communication is all about the visibility and exposure of scholarly material. This is the challenge of scholarly communication. Discussing the components and the challenges that are faced by libraries and scholars in scholarly communication matters is an objectives of this thesis. As the goal of the scholars is to share their experiences and the research findings in a visible way, this thesis adopts the idea that scholarly communication in general is informal in nature. Information diffusion depends on the conductivity of socio-cognitive networks, sometimes referred to as “invisible colleges” (Cronin, 2003).

Holmberg (2016) defines scholarly communication as the process that starts with a research idea that may be acquired from reading the work of other researchers

and then builds upon that work. This includes research work and writing of a manuscript, and ends with a formal scientific publication that, through peer review, is accepted as an “extension of certified knowledge” (Holmberg, 2016, p. 11). Further, Evans and Baker (2011) consider scholarly communication to be the process that covers a wide spectrum of activity, broadly focused on two areas: publishing and disseminating the results of research and providing access to the published material. These activities are central to this thesis, specifically the sharing of research resources between academic libraries in Australia and Iraq, particularly in the electronic environment. This is the role of academic libraries consortia and the evolving role of electronic resources and technology (Elguindi & Schmidt, 2012).

Scholarly communication has been defined in different ways. In one frequently cited example from within the field of library and information science, the US-based Association of College and Research Libraries (2003) defines the term as:

the system through which research and other scholarly writings are created, evaluated for quality, disseminated by the scholarly community, and preserved for future use. The system includes both formal means of communication such as publications, peer-reviewed documents, journals, and informal channels such as electronic listservs.

Definitions and discussion of scholarly communication also frequently consider its transformation as a result of the widespread adoption of various digital and communication information technologies in recent decades. This includes the part played by electronic/digital publishing, digital libraries, personal computers, laptops, mobile phones, the internet, email, social networking, and the multiple research-oriented software programs. Most of these technologies both enable research itself and facilitate the communication and consumption of research outputs.

The term *scholarly communication* in this research therefore describes the manifold interactions that occur between scholars, researchers, scholarly societies, publishers, librarians, funding agencies, and readers and other parties engaged in the production, distribution, and consumption of scholarly content.

Throughout the second half of the 20th century and into the 21st century, the rapid development of technology and the growing economy associated with scholarly journals has increased the importance of scholarly communication matters. The

scholarly communication environment is facing another challenge in addressing the commercial challenges especially in science and medical areas (Bartling & Friesike, 2014).

Lawal (2002) states that scholarly communication is about the use and non-use of e-print archives for the dissemination of scholarly materials. E-print archives are mainly for rapid and wide dissemination of scholarly information. Lawal concludes that reasons for use include dissemination of research results, visibility, and exposure of authors, and the reasons for non-use including publishers' policies and technology constraints. Understanding these possibilities and constraints related to scholarly communication in academic libraries will be important contexts for this study.

Two issues have a significant impact upon the scholarly communication matters in terms of open access and sharing knowledge. Harris (2018) identifies two aspects, namely licences and copyright issues for printed materials and contract law for digital materials. Morrison (2009) views copyright issues or "authors rights and intellectual property" (p. 6) as a crucial area in scholarly communication. As creators, scholars have rights to their work. An author can grant a publisher the right to publish, or otherwise make work available. A study by Wirth and Chadwell (2010) shows that the training of librarians as authors can contribute to their understanding of the possibilities of changing copyright issues. The study also emphasises the importance of educating faculty members and administrators in academic institutions about open access and issues of authorship related to the dissemination of their research. This is especially true for academic libraries, and as mentioned above, in particular academic libraries in Iraq that are administered at the highest level by the Ministry of Higher Education and Scientific Research (MOHESR). It is important that all faculty members, librarians, academics, and administrators communicate and collaborate to achieve the objectives of academic libraries.

Many stakeholders take part in the lifecycle of scholarly communication, including: researchers, governments, funders, peer reviewers, publishers, libraries, non-governmental organisations, and scholarly societies. These are the longer standing stakeholders. As research communication has changed, new groups, organisations and projects have appeared to solve problems and fill gaps (Neylon,

2018). However, the scope of this thesis is not to attempt to cover the role of all the stakeholders involved in scholarly communication, this is explored later in the thesis.

Several national organisations are working to support librarians as they develop new skills (Brown, Wolski, and Richardson 2015). As an example, the International Federation of Library Associations and Institutions (IFLA) is the leading international body representing the interests of people who rely on libraries and information professionals. The IFLA aims to establish international guidelines for digital reference services. The purpose of these guidelines is to promote best practices on an international basis, and attempt to create some common standards from diverse traditions in the hope that this will allow the worldwide community of librarians to freely explore the possibilities (IFLA, 2008).

A study by Laakso, Lindman, Shen, Nyman, and Björk (2017) shows that there are four avenues in which to publish the scholarly materials freely and globally: Academic social networks, Academia.edu, ResearchGate, and open access. For example, use of web 2.0 tools in academic libraries in Iraq is currently the way that scholars use scholarly communication. In overcoming barriers to scholarly communication, a study by Tripathi and Kumar (2010) also recommends the use of web 2.0 tools to overcome communication and the distance issues between the libraries and users.

Web 2.0 applications encourage patrons to be an integral part of the virtual community by sharing their ideas, thoughts, feelings, and other content. They allow patrons to contribute to the maintenance of catalogues, review resources, locate and share relevant information with other patrons and society (Farkas, 2007, p. 195). This will be helpful when looking at communication between academic libraries in Australia and Iraq and to overcome the geographical gap in scholarly communication matters.

Before discussing how to develop scholarly communication between academic libraries in Australia and Iraq it is important to understand the role of academic libraries in scholarly communication in general. Also, it is important to understand the current situation of the scholarly communication in Australia and Iraq. The next section discusses the role of academic libraries and the scholarly communication in general before narrowing the focus on the two countries.

The Role of Academic Libraries in Scholarly Communication

There are many roles that academic libraries can play in order to achieve the goals of scholarly communication locally and globally. For example, activate, and develop the subject of scholarly communications, but what concerns us here is the role of academic libraries and their communication through networks and overcoming geographical, economic, cultural and even political boundaries in order to succeed in their role as an effective means in delivering information to all beneficiaries in all parts of the world. The United Nations International Scientific Information System (UNISIST) model of scientific and technical communication is an example of a proposed universal international communication structure, Kruesi, Tanner, and Burstein (2019). The model describes the transfer of information communication from knowledge producers to knowledge users as a socio-technical system consisting of diverse units, each contributing to the process of scholarly communication (Hjørland, Søndergaard, & Andersen, 2005). Academic libraries in Australia and Iraq can adopt this model for scholarly communication.

In general, academic libraries and scholars can play a major role to further improve the status of higher education (Murthy, Chauhan, Cholin, & Patil, 2005). The first place for researchers to conduct their research is the library. Academic libraries may keep in direct contact with researchers through their invitations to attend workshops related to the results of their research. And if it is possible to offer better ways to publish their research, such as in institutional repositories. Institutional repositories, specifically those of academic libraries, are an obvious archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution (Crow, 2006). Since researchers and authors are proprietors of their work, it is better for academic libraries to seek their cooperation in order to secure the benefit of their research for all academics in the world. So, an important role for academic libraries in the matter of scholarly communication is to develop institutional repositories. As an example, in the case study of the Digital Repository of the University of Ljubljana in Slovenia, Koler-Povh, Mikoš, and Turk (2014) found that 89% of all users are from public domains, while only 11 per cent are from the university's home domain.

Academic libraries in Iraq could start with developing their institutional repositories step by step with unpublished materials such as theses and other sources of information. They have started to develop the Iraqi Union Catalogue (IUC) with

materials in all academic libraries in Iraq such as books, journals, manuscripts, theses, and dissertations. However, due to the technological and economic challenges such as copy right issues, academic libraries are facing pressure from stakeholders to change the policy of libraries to be more flexible to adopt new ideas for development. Technological literacy has been a main concern of Australian academic libraries over the past decade. Also, there is a concern about money and the amount of time being invested in the library services, expecting a satisfactory return. The study by Nimon (2001) found that there is a lack of understanding of the technology. Nimon recommended that the staff of academic libraries and students work together to foster information technology literacy.

Academic libraries adopt different approaches to address the issues of scholarly communication and that depends on the strategies and the needs of the libraries. For example, social networking platforms by organisations to foster better team communication and collaboration (Nentwich & König, 2014). Other libraries adopt sister library cooperation and promote cross-cultural capability for librarians (Onifade & Bridges, 2018). Also, five academic libraries in Canada established a project for sharing a print management process (Horava, Rykse, Smithers, Tillman, & Wyckoff, 2017).

Academic libraries in Australia and Iraq must understand and acknowledge the motives and specific needs of the individual institutions. This thesis adopts the concept which suggests the academic libraries in Australia and Iraq working together. Thus, collaboration is the main focus of this thesis. Atkinson (2018) describes the collaboration in academic libraries as internal and external, local and regional, national and international and explores the considerable change that has affected universities and academic libraries in recent years. Therefore, it is important to understand the concept of collaboration and all the associated concepts such as consortia, partnerships, cooperation, networking, and memoranda of understanding. The concept of collaboration is discussed later in this chapter. However, it is important to distinguish among other related concepts. A library consortium is a group of libraries which work together to coordinate activities, share resources, and combine expertise. The International Coalition of Library Consortia is an informal discussion group of such consortia. Library consortia offer significant advantages to increasingly cash strapped libraries. The sharing of resources, and collaboration on shared goals often enable libraries to deliver higher-quality services than they would

be able to deliver on their own (Mark, 2007). An example of a partnership is the electronic reference partnership between academic libraries in Australia/New Zealand and the United States (Truelson, 2004).

The need for guidelines and standards that have been established by IFLA 2019 becomes even more important as consortium-wide virtual reference continues to evolve. According to these guidelines, collaborative partnerships must establish a common service vision for the new entity, develop common guidelines for practices and procedures, build trust and establish accountability, and think through the practical considerations that may constrain delivery of shared resources, such as licensing agreements and multiple languages.

As the term cooperation describes the joint action of two or more parties for mutual benefit then library cooperation includes both the sharing of bibliographic data and the sharing of library materials. It is a means by which libraries in developing countries can provide users access to information when resources are scarce. Cooperation can consist of voluntary agreements among libraries, or it can be imposed on libraries by library laws or by responsible ministries that fund libraries (Zaucer, 1996).

Academic Libraries in Australia and Scholarly Communication

The Council of Australian University Librarians (CAUL) is a representation body and peak organisation for Australia's 39 university libraries. It was established in 1965 as the Committee of Australian University Librarians (Australian Library and Information Association, 1998). CAUL, as a national representative body describes its development as continuous in its efforts to apply modern standards and best practice to its management and operations (Council of Australian University Librarians, 2019a).

Academic libraries in Australia provide a wider range of activities to support their users globally. CAUL has worked to provide access to Australian higher degree theses, both electronic and otherwise, which are searchable via the Trove service of the National Library of Australia. Trove has acquired a number of important Western and Asian language scholarly collections from researchers and bibliophiles, Asian collections, and the collection of National Library of Australia. These collections include many languages—for example Portuguese, Sri Lankan, Chinese, Korean, Filipino, Burmese, Japanese, and East Asian. However, Trove does not support

literature in Arabic language which is questionable given that Arabic language is cited as the sixth most used business language in the global market. Others in the top 10 include: English, Mandarin, Spanish, German, Portuguese, French, Japanese, Russia and Hindi. The absence of Arabic scholarly communication is an important consideration for this study.

According to the latest CAUL report of academic libraries in Australia, libraries support the sustainable development goals by:

promoting literacy...closing gaps in access to information...communicating knowledge created in our universities, serving as the heart of the research and academic community, building global partnerships and collaborations that provide greater access to digital collections and information capability programs, preserving and providing access to the world's culture and heritage... (Council of Australian University Librarians, 2019a, p. 4)

The current situation of academic libraries in Australia is that CAUL maintains close working relationships with a range of government instrumentalities, including the Australian Department of Education, Department of Industry, the Australian Research Council, the National Health and Medical Research Council, Universities Australia, the Australian National Data Service and other relevant bodies in order to accomplish its mission.

The number of medical science journals is increasing rapidly, and this puts pressure on academic libraries in Australia that have limited budgets. Advancing scholarly publishing through open access biomedical repositories the study by Kruesi, Tanner and Burstein (2019) promotes an Australasian open access biomedical repository and explores the opportunities for future open access biomedical repositories.

Another important role that academic libraries in Australia play is in engaging with their research community is to develop new roles to address changes in academic communication. Griffith University, Queensland, provides a good example of this with the development of a data librarian. The data librarian position is responsible for investigating and assisting with implementation of library support

services relating to description, storage, and sharing of research metadata and datasets.

Academic Libraries in Iraq and Scholarly Communication

According to the American Library Association (ALA) (2006), despite the efforts and progress that has been made recently to Iraqi academic libraries and the financial support to support Iraqi libraries in war, little has been written about it. This section presents and discusses the projects that have been established in academic libraries in Iraq in the 21st century.

As discussed in Chapter 2, even the three largest academic libraries in Iraq have been affected by wars and financial limitations and are not able to subscribe to the number of journals required for research and other academic activities. There are 80 academic libraries in Iraq: 35 public and 45 private.

Academic libraries in Iraq are administered at the highest level by MOHESR. While acknowledging the situation of academic libraries in Iraq, MOHESR is subscribing to journals from well-known publishers such as Springer and Wiley. The Central Library of the University of Baghdad initiated the Iraqi Virtual Science Library (IVSL) project, aimed at providing free, full-text access to thousands of scientific journals. The virtual library acts as a gatekeeper to information and a number of electronic resources to faculties and research scholars working in Iraqi universities. To make people aware of the use of e-resources, training programs have been established. This project signals progress, but it addresses few of the issues that relate to scholarly research in Baghdad. More studies and wider prospective need to be involved to make the IVSL project works as a basic form for scholarly communication in Iraq (Kazem, Abdulla, Raouf, Colin, & Levine, 2010).

Also, it is important to mention the latest efforts that Iraqi academic libraries have done which is the project of the IUC in 2018. This project established a common framework for the collective work of Iraqi libraries (university, public and specialised) in order to achieve resource participation, reduce costs, and standardise rules and techniques in indexing and classification processes. Yet, the IUC aims to create a scientific mechanism for the inventory, control, and preservation of the published and unpublished Arab and Islamic heritage, which is widely distributed in Arab and non-Arab libraries around the world. It includes 320,000 books, 25,000 journals, 30,000 manuscripts, and 50,000 theses and dissertations iuc.org (Arabic

site). This could commence the next step of scholarly communication on a global scale.

Many international institutions endeavour to support devastated academic libraries in Iraq, such as UNESCO, ALA, Simmons, and Harvard University teams. And the Middle East Librarian Association Committee on Iraqi Libraries, and the European Association for Library and Information Education and Research (EUCLID). For example, ALA was able to connect with the staff at the Basra Central Library in 2012 and transfer U\$13,000 in donations from members and library supporters to help the library add more than 600 new titles, and to contribute to the education for librarianship and information sciences in Iraq (ALA, 2006).

Again, despite these understanding there is not much published information about Iraqi libraries in the last decade. The professional schools remain weak and underdeveloped, with limited human and material resources, and teaching being out of date and possibly using an irrelevant curriculum (Johnson, 2001). Also, scholars in Iraq are struggling in conducting their research in a standard manner because of the lack of library services.

Many academic libraries or university libraries in Iraq are suffering from a lack of access to scholarly materials to offer to their users. This lack of available material causes the scholarly information gap, discussed earlier in this chapter. Scholarly communication sits side by side with scholarly collaboration.

Scholarly Collaboration

This section discusses the fourth research objective of this thesis: how the development of structures for scholarly collaboration between academic librarians can address the information gap in Iraq. Emerging from the literature are three main aspects that relate to the term collaboration to shed light on the concepts that contribute to scholarly collaboration in academic libraries particularly from librarians' and researchers' perspectives. First, this section presents the general definition of collaboration and what scholarly collaboration means in particular, including concepts and components. Second, it presents the meaning of the structure for scholarly collaboration and discusses the structure for scholarly collaboration in academic libraries. It also provides examples about the structure of scholarly collaboration in developed and developing countries in general and in academic libraries in Australia and Iraq specifically. Third, it discusses how the scholarly structure contributes to reducing the information gap in Iraq.

Collaboration is a broad term including concepts such as cooperation, consortia, networking, partnership, alliance, participation, combination, association, liaison, concert, teamwork, joint effort, working together, and scholarly collaboration networks. These terms are used interchangeably in literature. In library science, collaboration is usually associated with cooperation and coordination. Mattessich and Monsey (1992) define collaboration as "a mutually beneficial and well-defined relationship entered into by two or more organizations to achieve common goals" (p. 7). Many factors impact on collaboration such as personal compatibility, internal and external connections such as distance, and infrastructure (Hara, Solomon, Kim, & Sonnenwald, 2003). Collaboration for this thesis means the process of academic libraries in Australia and Iraq working together to facilitate the goal of reducing the information gap in Iraq.

The diversity and complexity of sciences along with the rapid development of telecommunication technologies led to developing the idea of collaboration among scholars to keep up with the fast pace of innovation and advance knowledge, hence the term *scholarly collaboration* (He & Jeng, 2016).

He and Jeng (2016) argue that scholarly collaboration by students and others includes sharing academic resources, exchanging opinions, following each other's research, keeping up with current research trends, and most importantly, building up their professional networks. The authors recommend social scholarly collaboration to

facilitate information exchange and participation. In addition, Knight and de Wit (2018) expand the term to include international relations and cooperation in higher education. Dewey (2005) claims that librarians play a central role in advancing colleges' and universities' strategic priorities through constant collaboration.

Because of the need to develop channels for scholarly collaboration at a global level, an international symposium was held in October 2018 to develop a forum for North American librarians who specialise in European studies to share insights with and learn from librarians and archivists from Europe and elsewhere (Vetruba, 2019). Vetruba (2019) noted the trend to new directions for libraries, scholars, and partnerships to share, collaborate, and learn. Discussions during the symposium suggested developing new models for global scholarly collaboration including building collections in a shared environment, increasing awareness of the changing trends in the European publishing landscape, open access and its effects on scholarly communication, and the potential for onsite research for North American scholars in European libraries and archives. For Atkinson (2018), an examination of scholarly collaboration also involves understanding, context and drivers, benefits, constraints and barriers, collaborative activities, and participant attributes. These provide useful concepts for planning or implementing a structure for collaborative initiative in this thesis. Further studies have recommended extending the range of collaboration to involve external parties.

As an example, Haddow, Xia, and Willson (2017) note that the scholarly collaborative networks in Australia are defined based on the collaborative interactions in co-authorship of research. The study investigates the research collaboration in Australia in the humanities, the arts, and social sciences. In addition, a report into these disciplines in Australia by Turner and Brass (2014) found that "in an era when collaboration is encouraged by initiatives and funding mechanisms, the pattern of collaboration is becoming an important consideration" (cited in Haddow, Xia, and Willson, 2017). Also, Turner and Brass (2014) investigates national and international collaboration and finds that international collaboration is growing at a higher rate than national collaboration, and this contributes to developing ideas about international collaboration relevant to examining the Iraqi-Australian contexts.

In Iraq, as stated before, academic libraries are structurally linked to their universities. Academic librarians believe that the future depends on effective collaboration and the creation of an international community focused on the

improvement of the higher education in the public interest (Hussain, Talib, & Shah, 2014).

Scholarly collaboration in Australia promotes co-authoring and collaborative publishing, which contributes to a reduction of publishing costs. There is also scholarly collaboration between authors in Australia and their peers in neighbouring countries such as Singapore, Malaysia, Laos, Thailand, and Indonesia.

However, the practice of scholarly collaboration in Iraq is different. Since the researchers and authors in Iraq are limited by their academic institutions and academic leaderships, at present there is a lack of international collaboration and co-authoring.

This thesis contributes to shed light on the stakeholders—academic librarians in Australia and Iraq—in order to activate the subject of scholarly collaboration globally.

Perspectives from Australia and Iraq along with newly emerging approaches as discussed by Vetruba (2019) are considered complementary to the current study.

Structures for Scholarly Collaboration in Academic Libraries in Developed and Developing Countries

Structural patterns in collaborative networks are essential for understanding how new ideas, research practices, innovation or cooperation circulate and develop within academic communities and between and within university departments (Hâncean, Perc, & Vlăsceanu, 2014). The public standing of academic knowledge depends on which economic model will prevail. That is, on the publishing decisions that scholars and scholarly associations and “no less than related organizations such as foundations, think tanks, institutes, government agencies and other non-profits” make over the next decade (Willinsky, 2018, p. 2).

It is important to understand what collaboration in academic libraries means. Therefore, this section discusses this concept in the context of Australian and Iraqi academic libraries. Representative academic institutions, of which there are four: IVSL and IUC in Iraq, and CAUL and the Library Consortium in Australia. These organisations are already collaborating at a local level, but not yet internationally.

This part seeks to establish what opportunities for scholarly collaboration are available in academic libraries in Australia and Iraq. In addition, it examines how these opportunities can be used to help reduce the information gap in Iraq.

Researchers use scholarly collaboration network (SCNs) to interact, collaborate, and share their results online across institutional and geographical boundaries. Sharing of journal content can involve the copying and distribution of copyrighted material. The publisher Wiley (2019) believes that sharing of SCNs should be simple and seamless for researchers while upholding the principles of copyright.

An example of a scholarly collaboration structure in the study by Yun and Long (2019) constructs a community model of international cooperation of higher education between Yunnan and ASEAN countries. Promoting China-ASEAN Common Destiny educational cooperation. Another example of scholarly collaboration in academic libraries in developing countries is that of the establishment of a faculty-librarian partnership in Mexico City (Lau, 2001).

The commercial model of publishing information continues. It carries the familiar practice of subscription fees for journals into the online environment. It is adhered to by both the non-profit sector, represented by the scholarly societies and university presses for the most part, and by corporate publishers. Many scholarly societies have turned their publications over to the corporate sector, in part, out of a demand for electronic editions. There have also been cooperative efforts within this commercial framework. Perhaps best represented by the innovative Crossref, which is a “collaborative reference linking service” that enables a reader to move from a bibliographic entry in an article to the work cited, for a fee (Willinsky, 2018, p. 2).

The structure of scholarly collaboration as stated in the Newman (2001) study is that whenever there are two scholars or two academic institutions working together and publishing a paper, they are considered connected. If two academic libraries, one each in Australia and Iraq have developed a plan for scholarly collaboration and they have co-authored a paper they are considered connected according to Newman (2001). However, Sullivan and Skelcher (2017) have suggested that the structure for scholarly collaboration refers to the cooperation to find common areas of interests between the two academic libraries. This thesis attempts to start structuring a framework for future collaboration in both instances.

Development of Structures for Scholarly Collaboration between Academic Libraries in Australia and Iraq

The research question of this thesis is as follows: What are the possibilities for collaboration between Australian and Iraqi academic libraries to address the information gap in Iraq?

In Iraq there is a Department of Coordination and Scientific Cooperation. The task of this department is to promote the scientific and practical level of information management in all ministries to achieve full electronic governance. And to link higher education with its beneficiaries and to establish conferences that contribute to the advancement of all areas of sustainable development and the labour market of the country <https://rddlib.rdd.edu.iq/>

It will, in the future, establish an integrated electronic system through which the application for the establishment of scientific societies will be submitted and which contains the names of scientific societies and their activities.

Academic libraries in Australia are focusing on sharing knowledge and using social networking between them. These approaches offer potential to develop a structure for scholarly collaboration in academic libraries in Australia and Iraq.

Regardless of the differences in the process of scholarly collaboration in Australia and Iraq, the focus of this thesis is to establish an effective collaborative network in the two countries. Bodin, Sandström, and Crona (2017) state that where there are divergent views, backgrounds, and interests among actors, they can be overcome through facilitation, i.e., when a central actor takes on the responsibility to promote and steer a multi-actor collaborative process towards cross-boundary exchange. Their study considers the social relations and the legal framework availability between the two parties which can affect the success of the collaborative network.

The study finds that the role of libraries in a global collaborative network is to focus on information literacy, digital literacy, and information fluency. This challenge can be achieved through informed and educated communication between empowered individuals. The awareness of needs is important to acknowledge, including the need to seek information and support from diverse sources. A first step would be to note the diversity that may contribute towards a holistic view of a global problem to which libraries can contribute.

Burkard and Geyer-Schulz (2016) studied the collaborative literature work in the research publication process and the cogeneration of citation networks as example.

More details are discussed in the next three chapters (Chapters 4, 5, and 6), which explore the methodology and the perspectives of Australian and Iraqi academic librarians and researchers respectively. To generate ideas about the collaboration between academic libraries in Australia and Iraq to develop recommendations to address the information gap in Iraq.

In sum, scholarly communication in this thesis is the aim to bring together librarians and ideas. This chapter focuses on the role of academic libraries, librarians, and researchers as a first hand to the original work to share and in turn to contribution to reduce the information gap in Iraq. This chapter finds that there are four possible areas to establish collaboration between the academic libraries in Australia and Iraq. Also, the chapter reports that there are other areas that constrain scholarly communication, such as economic and technological issues.

Collaborative work contributes to establishing scholarly communication in academic libraries in Australia and Iraq. The scholarly structure could involve library management developing the policy of institutional repositories and in the case of Australia could include Arabic language in literature in Trove. Second, economic and technology which is the responsibility of MOHESR in Iraq but is somewhat outside of the scope of this thesis. Third, geographic boundaries could be overcome by developing the awareness and the use of web 2.0 as a social networking tool, and Iraqi academic libraries should be encouraged to take the next step in developing their institutional repositories. Whatever approach a library takes, there will be opportunities for it to respond to a rapidly changing environment through collaboration, especially in providing support networks. National bodies such as CAUL (Australia) and IVSL and IFLA (Iraq) will continue to have an important role to play in developing scholarly communication.

Conclusion

This chapter covers the literature of three main concepts of knowledge: information gap, scholarly communication, and scholarly collaboration. It encapsulates the comprehensive understanding of the concept of information gap

through the definition and the component of the term, reviewing the history and background of the concept through four phases, and giving a point of view to the concept from developing countries included the literature of the Arab World. Finally, it discusses the term of information gap. The second part of this chapter explores the concept of scholarly communication. It reviews the literature about the role of academic libraries in scholarly communication in Australia and Iraq. The last part explores the term of scholarly collaboration. It reviews the structure of scholarly collaboration in academic libraries in developed and developing countries, before providing ideas about developing the structure for scholarly collaboration between academic libraries in Australia and Iraq.

CHAPTER 4: RESEARCH METHODOLOGY

This chapter provides an in-depth review of the methodology underpinning this exploratory research into using collaboration between academic libraries in Australia and Iraq to reduce the scholarly information gap in Iraq. It starts with an outline of the research procedure, illustrating the steps taken to address the research question according to the four research objectives. This is followed by a detailed, step-by-step discussion, depicted in Figure 7, showing the research methods and the ways collaboration between academic libraries in Australia and Iraq can reduce the information gap in Iraq.

To understand the information gap in Iraq, a theoretical framework involving collaboration and facilitating scholarly communication matter between academic libraries in Australia and Iraq was distilled. The first step in the theoretical framework is a review of the literature, in which three key points are constructed: the nature and scope of the information gap in Iraq, scholarly communication, and collaboration between academic libraries. The next step is the development of a semi-structured interview schedule involving librarians and international research students, contributing to an understanding of collaboration between academic libraries in Australia and Iraq. Finally, a thematic analysis of interviews, using NVivo software, explores the research question in more depth and includes discussions on collaboration between academic libraries in developed and developing countries.

Finally, the thesis aims to develop a theoretical framework in which concepts from literature and interview comes together to better understand the knowledge gaps.

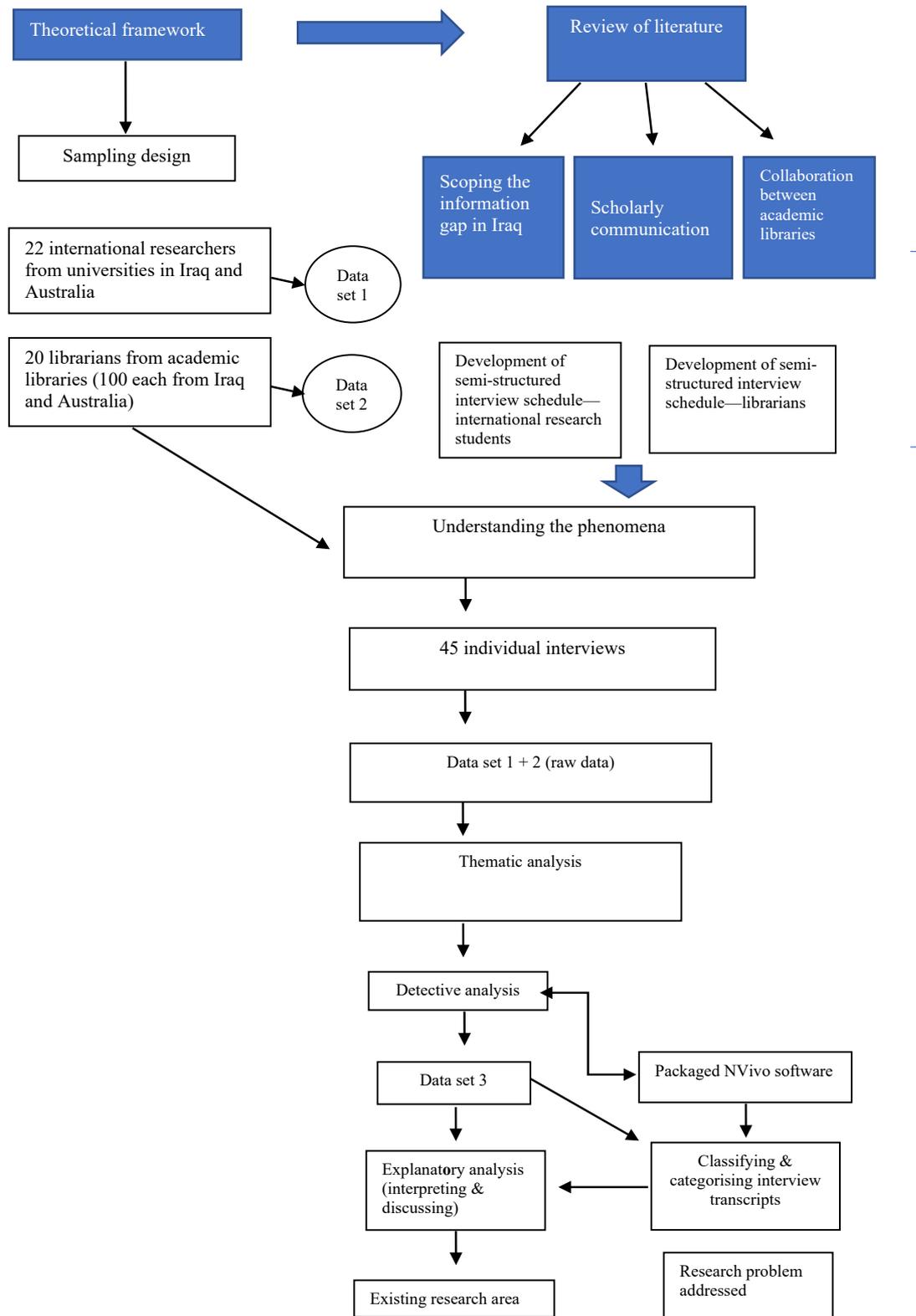
The theoretical framework comprises five components:

- a review of the existing literature, to help assess the nature and extent of the information gap in Iraq and to identify key concepts (Objective 1)
- 20 semi-structured interviews with equal numbers of Iraqi and Australian academic librarians, to understand the existing structures of scholarly communication in academic libraries in the two countries, and to explore the

constraints and opportunities affecting scholarly communication between academic libraries in Australia and Iraq. (Objectives 2 and 3)

- 22 semi-structured interviews with 15 Iraqi researchers and seven international researchers representing other developing nations, to understand the research problem of scholarly collaboration in depth
- an analysis of the interview data to construct themes establishing the similarities and differences between the themes emerged from the all interviewees (Australian and Iraqi librarians and international research students) with regard to their experiences of, and attitudes towards, scholarly communication and collaboration in different contexts of national development with a focus on Iraq and Australia). (Objectives 2 and 3)
- an interpretative thematic analysis of the complete data, to achieve meaningful outcomes that address the research question with a view to helping overcome the information gap in Iraq

The research procedure is represented in Figure 7. The figure also shows details of the methodology and indicates the relationship between the different stages of the research.

Figure 7*Relationships between Research Stages*

It is important to understand what the problem of the current research means in library and information studies, as well as it is important to understand the research design and how the methods used in this research can address the research question. The lack of collaboration between academic libraries in Australia and Iraq is the research problem. The interview questions as a method designed according to the theoretical framework which included the themes that have been constructed from the literature. Other themes came from the interview questions. The set of the themes require qualitative data analysis to make sense of the meaning then address the research problem.

The study is exploratory, and there is no prior hypothesis to direct the research problem. The research is fundamentally qualitative. Vaismoradi, Jones, Turunen, and Snelgrove (2016) define qualitative research “as a group of approaches for the collection and analysis of data aims to provide an in-depth, socio-contextual and detailed description and interpretation of the research topic” (p. 100). There are number of approaches to data analysis that have been taken in library and information science research. Thematic analysis is widely used in library studies. Wildemuth (2016) states that the information and library studies field is still young in comparison with other disciplines and therefore still in the process of developing theories and phenomena of interest related to the field. Thematic analysis is an umbrella term for a variety of different approaches, and it is examining themes of meaning within data) which in this research means analysing, and making sense of a set of data from the interview questions. Thematic analysis approach is beyond the content analysis. This research adopts thematic analysis approach to explore explicit and implicit meanings within the data. The procedure aims to identify the themes that are related to the scholarly collaboration matter from Australian and Iraqi academic librarians, and international research students from developing countries. Also, the procedure includes examine and analyse the themes that have already mentioned in the literature as well as analyse the texts generated through the interviews. The procedure of this research starts with inductive approach where there is no theory at the beginning of the research, and theories develop and evolve as a result of research (Babbie, 2014). The approach of this research suggests applying old solutions to the new problem and this is called inductive approach (Graham and Carmichael, 2012).

While this thesis emphasises on convergence and divergence of experiences of librarians in developed and developing countries, some may argue that

phenomenology is the best qualitative method for understanding the issue of collaboration between the two academic libraries in the two countries: Australia and Iraq and then address the research question underpinning this study. However, applying phenomenology means focusing on subjective human experience and analysis is typically thematic in nature, whereas, the aim of this research is to study a topic other than individual experience. Also, the procedure of this research focuses on identify key themes in text, and themes suggested to transformed into codes (data condensation), and construction of thematic framework, then sensemaking (Guest, MacQueen, and Namey, 2012).

Language issue is also a problem in applying grounded theory as a qualitative research method. In particular, this research has participants from two countries and use English and Arabic language, it's a criticism of meaning making and the perception of the meaning. However, grounded theory approach is used in library studies but it is notoriously hard for first time researcher, so it is not surprise to notes some researchers in library and information studies are pick it up. When researchers see that someone used grounded theory in dissertation, they will think about how could they do that or how do they do that! I originally started with grounded theory. The limitation I found is that it is difficult to use it in this research because this research uses more than one language. The most common procedure used within library and information studies is thematic analysis. This research develop categorizations and I find that thematic analysis is the best method for this research.

This study was conducted in five universities and their associated libraries, including three universities in Iraq (the University of Baghdad; Mustansiriyah University, in Baghdad; and the University of Basra) and two universities in Australia (Curtin University, and the University of Western Australia, both in Perth). The subjects were researchers and academic librarians associated with these institutions.

Research Design

This section outlines the research design. It starts with sampling design, adopting snowball sampling to identify qualified informants, then it discusses the establish criteria and recruitment for sample into the study. Also, it covers interview methods and discusses semi-structured interview. Finally, it covers data analysis and discusses thematic analysis associated with NVivo data management tool from initial

coding, and sub-coding to enable the establishment of themes and their interpretation.

Snowball Sampling to Identify Qualified Informants: Sampling Design

The sampling approach selected for this research can be categorised as *purposeful* or *subjective*. These terms, often used interchangeably in the literature (Draucker, Martsof, Ross, & Rusk 2007), indicate a method of sampling in which the researcher selects a sample for data collection in the belief that they can identify a representative sample without the need for randomised sampling (Suri, 2011; Morse, 2007).

Purposeful (Theoretical) Sampling

Kuper, Lingard, and Levinson (2008) state that the decision regarding sample selection is based on the research questions, theoretical perspectives, and evidence informing the study. There are several aspects of the theoretical framework for this study that justify the choice of purposeful sampling, with individual participants eventually selected by the use of the “snowball” method. While consideration was initially given to the use of random sampling of populations in order to identify interview participants, it was eventually determined that some form of purposeful sampling was more appropriate for this particular research study. The reasons for this decision include that the study addresses a practical problem for which there are advantages in selecting participants who are known or believed to have expertise in the phenomenon under investigation. For the interviewing stage it was therefore decided to identify potential participants who could offer a deeper understanding and knowledge of the research topic based on their qualifications or experience. As the study investigates the potential for cross-cultural collaboration, this kind of knowledge is likely to be found among librarians and researchers who have experienced how scholarly communication can impact on the information gap in different international contexts.

It is also the case that the issue of interest in this study, namely the lack of effective scholarly communication in Iraq, is one that likely impacts all members of the scholarly community, including researchers and academic librarians. In these circumstances there was no reason to believe that any one individual’s response was more (or less) representative than any other. Random sampling was also problematic, as the unstable political situation in Iraq and privacy issues due to the war-torn condition of the country made random sampling a matter of considerable difficulty.

The potentially dangerous context of the phenomenon under study resulted in what has been described as a “hard to reach” population (Mawhinney & Rinke, 2019, p. 503), making it difficult to obtain a complete sampling frame. This is frequently the case with populations in dangerous conditions, such as contemporary Iraq, where there is daily violence, detention, kidnapping, threats, and intimidation, which would be sufficient to deter individuals from participating in the research— or indeed make it impossible for them to do so. One of the characteristics of hidden populations, which applied to this study, is that the sampling frame involves strong privacy concerns, driving individuals to restrict unnecessary social or professional contact in order to protect their privacy (Heckathorn, 1997). Travelling personally to Iraq in order to ensure a truly random sample for the relevant interviews was also deemed to be unsafe. It was therefore decided to rely upon personal contacts in Iraq who then undertook to identify and initiate contact with potential interview participants. This initiated a form of commonly used purposeful sampling referred to as *snowballing*. Snowball sampling is a form of purposeful sampling process whereby the researcher accesses participants using personal contact information that is provided by other informants (Noy, 2008).

In this sense, the term collaboration in academic libraries is not limited to a particular category or group that can be defined by a set of variables such as age, gender, title, or occupation, place, and date. This makes it difficult to select an appropriate sampling framework. Indeed, where there is no sampling framework to determine the number and characteristics of a sample for use in qualitative research, purposeful sampling is a very useful strategy (Ritchie, Lewis, & Elam, 2003). As Coyne (1997) has noted, the terms *purposeful sampling* and *theoretical sampling* are often used synonymously, and as Suri (2011) pointed out, the logic and power of purposeful sampling in qualitative research depends on the quality of information gained before sample selection. Suri (2011) also states that there are three main elements for enhancing the findings in qualitative research where there is no decision to be made as to the sample size; these are (a) the aim of the sampling, (b) the type of theoretical (purposeful) sampling used, and (c) the analysis technique employed.

Morse (2002, p. 129) states that “when obtaining a purposeful (or theoretical) sample, the researcher selects a participant according to the needs of the study”.

It can be concluded that examining scholarly communication issues and practices associated with selected demographic factors contributes to developing a

theoretical structure of scholarly communication in this research, because studying demographic factors contributes to the evaluation of the library services and research facilities, and those two factors are important in promoting scholarly communication. In this thesis, the researcher utilises demographic factors such as age, gender, title, occupation, and the location of the interviews.

Although demographic factors are statistically measurable, this research cannot rely on identified factors to develop semantic concepts about scholarly communication structure. For instance, the application of the demographic factor “occupation” will demand a larger number of libraries, ranging from eight to 10, for data collection, as each library has only one director. In addition, the research focuses not only on the directors of the libraries but also on all staff working in them. So, again it wasn’t feasible to collect data from all staff working in 8–10 libraries. Given that there was only a limited population of libraries to choose from, adopting a purposeful sampling technique allows the use of a smaller number of libraries, while at the same time obtaining different points of view on the issue under investigation. Hennink, Kaiser and Marconi (2017) note that purposive sample sizes are often determined by theoretical saturation, namely the point in data collection when new data no longer adds additional insights to the theory development process and the research enquiry. Determining a sample size or sample size range need to take into account what is ideal and practical. In this research project, the researcher finds that themes have emerged from the related research questions (interviews with academic librarians and international research students), which can contribute to the development of the theoretical structure of collaboration between academic libraries in Australia and Iraq. Also, the repetition of the themes generated from the participants in the interviews showed that data begin to repeat, and further data collection becomes redundant (Kerr, Nixon & Wild, 2010).

One of the outcomes related to the sampling technique is where there is no way to determine an appropriate sampling framework—in other words, the sample cannot be selected according to a set of variables, and the rational theoretical concept can be used as the criterion for sampling. There were particular challenges involved in approaching and/or recruiting interview participants. For example, due to the political situation in Iraq, the researcher had to overcome a number of practical

obstacles in approaching the Iraq-based respondents. When recruiting from the Australian community, the researcher faced a social problem in accessing a professional cohort from a different cultural background because of her appearance as a Muslim woman from a non-English-language background. Sands, Bourjolly, and Roer-Strier (2007) have described the extent to which cross-cultural interviews inevitably involve communication barriers that require the interviewer to adopt appropriate strategies by creating a safe and considerate space in which to conduct interviews that support basic characteristics of effective human communication such as respect, understanding, and caring.

As mentioned earlier, after deciding it was necessary to undertake purposeful rather than random sampling, the choice was then made to use a snowball sampling technique. Bailey (1994, p. 520) defines snowball sampling as “a non-probabilistic form of sampling in which persons initially chosen for the sample are used as informants to locate other persons having necessary characteristics making them eligible for the sample”. Noy (2008) notes that when other contact avenues have dried up, snowball sampling provides a technique for accessing scattered participants. Snowball sampling is also a convenient sampling technique for use with sensitive topics where the researcher is constrained by limited resources and time (Davis & Wagner, 2003). Other studies find that snowballing is well suited for accessing difficult-to-locate populations (Watters & Biemacki, 1989) as well as research involving some medical issues, drug use, prostitution and other “moral” issues (Atkinson & Flint, 2001). This research adds another dimension to the use of snowball sampling in the form of the challenging political circumstances prevailing in Iraq.

Snowball sampling is one of the dominant techniques used to study hidden populations in that that additional research subjects are located after finding the initial subject randomly (Atkinson & Flint, 2001). The first subject nominates a second (and perhaps other) subject, who in turn provides the names of further subjects, and this process continues throughout the relevant and expanding personal networks (attached copies of the correspondence emails in Arabic with Iraqi librarians) in Appendixes A–C. It is also relevant that snowball sampling is a technique that suits the gathering of qualitative data within networked populations (Onwuegbuzie & Leech, 2007). Snowball sampling for this study was conducted

from two major groups: librarians from two nationalities Australia and Iraq, and international research students from developing countries including Iraq.

Recruitment Methods for Participants in Iraq (Librarians and Researchers)

It appeared there would be significant challenges in recruiting Iraqi participants, because of the prevailing security conditions in the country. Therefore, the researcher's existing connections with relevant Iraqi communities, both in Iraq and Australia, were important for the completion of the research task. The researcher is a bilingual (Arabic and English) faculty member in a department of library and information science in Iraq and has professional experience as a librarian. Established relationships, therefore, proved useful in facilitating the recruitment of Iraqi researchers, and in turn researchers from developing countries, for the interviews. Wherever it was found that participants were difficult to identify and access, snowball sampling was used to recruit participants. One of the main challenges with snowball sampling is initiating the chains of referral (Biernacki & Waldorf, 1981). In this case, the researcher needed to identify and locate the first informant and obtain consent for conducting an interview. As noted above, it was not easy to find contact details of individuals in Iraq at the time. The researcher's approach to the first informant was not incidental, but came following a carefully managed approach, using publicly available details from the General Secretary of the Central Library of the University of Baghdad (CLBU), the oldest and largest academic library in Iraq.

Contact was established with the potential participant by using the library's webpage and its Ask a Librarian service. Three days later, an email response came from the General Secretary of CLBU, advising that the library had received the message, and following a series of official procedures the researcher received the approval necessary to make a personal contact. This single connection created the starting point for the snowballing used to recruit Iraqi participants. From this point on, the initial participant nominated other potential participants known through shared professional and social networks; alongside this the researcher independently identified other pathways to locate potential participants.

One of the significant factors that affects the success of the snowball sampling procedures is the strength of existing relationships between the researcher and the participants, and between the participants themselves. As the demographic attribute "occupation" was sought as part of the study design, it eventuated that

individuals occupying senior positions were more likely to nominate more than one participant, in comparison to those who held general administrative/ technical positions. A similar finding was noted by Noy (2008) in relation to occupation. For instance, the General Secretary of the Central Library of the University of Baghdad (GS/CLBY) contributed by nominating five librarians. Also, the Head of Department of the Library and Information Science at the University of Basra nominated two more participants.

Additional challenges arose during interviews with the Iraqi participants, including the lack of a reliable power supply; non-existent or poor internet connections; the unstable security situation, which frequently closed main roads and delayed participants' travel. These matters meant that participants were in some cases feeling stressed and under pressure and had difficulty adjusting to the mood and tempo of the interview. In addition, private internet cafes were often busy, with a resulting high volume of background noise making communication difficult. It was also the case that several potential participants were reluctant to attend interviews in these venues.

Despite these constraints, the strong relationships, professional camaraderie, and influential positions held by senior professionals among the academic librarians resulted in the nomination of other librarians as interviewees. However, the situation differed somewhat with the recruitment of the Iraqi researchers, because they were generally equal in terms of their occupational status. It was the case that they were all engaged in full-time postgraduate studies, even though they may have previously occupied different status positions such as managers or employees. As the researchers do not currently exercise seniority or direct influence over their colleagues it was more difficult to impact their decision to participate in the research. For this reason, it was eventually found necessary to resample the Iraqi researchers.

In some instances of qualitative research, where a study attempts to understand a particular problem, the sampling size may be less critical than the sampling technique used in targeting a particular group within a population (Matthews, 2003). Some issues can affect sample size in qualitative research, such as time, energy, and the accessibility of the participants. While Mason (2010) finds that the sample size in qualitative research should fall between 25 and 50. At the initial stage of this study, the sample size was notionally set to 60 participants, as the researcher attempted to maximise the possibilities of obtaining data. Because

theoretical sampling is an inexact technique (Sandelowski, 2000), the researcher initially decided on 60 participants in total in two groups of 30: librarians and researchers.

Of the librarians there were to be 15 each from Iraq and Australia. However, after conducting initial interviews the number required to adequately complete the research and provide a reasonably exhaustive range of views on the subject was reassessed. This review was also influenced by the difficulties in continuing to make new contacts in Iraq in the limited circle of professional librarians and given the reluctance of some individuals to participate. As it was thought preferable to retain an equal number of interviewees from both countries, the number of interviews with librarians was reduced to 20 in total—10 from each country.

For similar reasons, it was also decided to reduce the number of international research students from 30 to 20. Whereas some thought was given to creating two comparative groups similar to those used for the librarians (i.e., equal numbers from Iraq and Australia), the decision was also taken to “reshape” the purposeful sampling technique by creating instead a group of “international research students”. This group would be formed by snowball sampling in such a way that it identified researchers who were able to make comparative reflections regarding the state of scholarly publishing, communication and research support in developing and developed country contexts. This decision was also a pragmatic response to the problems in recruiting sufficient researchers in Iraq. While several contacts were made and interviews conducted, it became apparent that snowballing was unlikely to be effective in a situation where individuals were scared for the own safety, and reluctant to provide contacts within their network. (Three interviews with Australian researchers had been completed by this point. These were discarded when the decision was made to have a single group of international research students).

While it was determined that this group would be designated “international research students”, it was also thought preferable to include as many Iraqis as possible. As a result, the researcher decided to change the sampling recruitments and shift from Iraq-based scholars to Iraqi researchers in Australia, as snowball sampling is sufficiently flexible in order to be modified to suit changes in the conditions of the research. Ultimately the group of international research students consisted of 15 Iraqi researchers. Three of these were located in Iraq when interviewed, the remaining 12 were higher-degree-by-research (PhD and master’s) students at Curtin University,

Edith Cowan University, the University of Southern Queensland, and the University of Baghdad. They were supplemented by a further seven (all PhD) higher-degree-by-research students from other developing countries, who were also studying at Curtin University. These consisted of four from Indonesia, two from Iran, and one from Sudan. There were therefore eventually 22 researchers interviewed in all.

The changes made to the recruitment process for the Iraqi researchers—from an anticipated 15 living in Iraq, to three living in Iraq, supplemented by a further 19 from Iraq and other developing countries currently undertaking research in Australia—produced the following advantages in terms of completing the study. They were easily located, and the researcher could access and interview them personally. It was far easier to make preliminary contact and arrange a suitable day, time, place for an interview, and easy to change and reschedule an interview if necessary. Facilities and services such as the internet, printers, scanners, and quiet locations were readily available, at all times in some cases. Some of the interviewees were able to conduct the interview in English, thereby reducing the researcher's workload in translation. Without any sound-level fluctuations or breaks associated with telecommunication, interviews could be conducted without interruption, and the interviewees had an opportunity to think more clearly and deeply, and to prepare their answers more logically.

It was also anticipated that the participation of researchers from countries other than Iraq may produce richer and more varied input and responses that could further inform the research. Janesick (2003) suggests that researchers need to locate within the personal experience, or self-story, key phrases and statements that directly address the questions relating to the phenomenon under investigation.

Recruitment Methods for Australian Academic Librarians

The researcher benefited by contacting Australian interviewees from her supervisor's professional networks to locate the first participant in order to initiate the snowball sampling (See Appendix D, "A copy of the Correspondence Email—Australians"). Snowball sampling (or chain referral) was also used to identify the Australian academic librarian participants for interviewing. Unlike the problems faced in identifying individuals in Iraq, potential Australian participants were comparatively easy to identify. Two universities and their libraries were selected: Curtin University and the University of Western Australia (UWA), both in Perth.

Biernacki and Waldorf (1981) state that “chain referral uses multiple networks as strategic access points enabling the sample that more closely approximates a representative sample, thus overcoming the main concern with snowballing that it has the potential to sample people from limited social networks”. Australian librarians have restricted socio-professional networks, as there was no evidence of a single professional group, association or forum aggregating all Australian librarians, and Australian academic librarians. The use of snowball sampling therefore provides the researcher with potential access to multiple networks.

In the recruitment process of the Australian academic librarians, no problems were encountered in recruiting Curtin University participants, but recruiting the initial UWA participant was problematic. In this case there were no established contacts between the researcher and the librarians from UWA, creating a problem in that the researcher has no basis on which to trust or accept at face value the potential participants that may be referred. The researcher’s academic supervisor therefore made a referral (sending an emailed letter) to a librarian colleague at UWA, the first librarian agreed to be interviewed, and she, in turn, initiated the chain referral by nominating several other potential participants. In this case the senior-ranking Associate Director of Research and Learning Support at UWA contributed by nominating more than one participant. (See Appendix D for a copy of the original email.)

Establishing Criteria for Samples

Following purposeful sampling, interviews were conducted with academic librarians from Iraq and Australia as well as international research students from developing countries. In order to help address the research question and Objectives 2, 3, and 4, interviewees were selected from three groups: academic librarians from universities engaged in teaching and research in Iraq, similar academics in Australia, and international research students (Table 2).

Table 2*Study Participants in Iraq and Australia*

Iraq	
Librarians	Central Library of the University of Baghdad (CLBU), on the Jadriya campus, as well as academic libraries on different campuses affiliated with the University of Baghdad, but in different locations in the same city
	Department of Information and Library Sciences, College of Arts, Mustansiriyah University, Baghdad
	Department of Information and Library Sciences, College of Arts, University of Basrah
Australia	
Librarians	Curtin University Library and the UWA Library, both in Perth
International research students	Higher-degree-by-research students, Curtin University, Perth

The interviewees consisted of the following three groups:

- Australian academic librarians, all with appropriate professional qualifications and experience from the department of information and library sciences.

- Iraqi librarians, selected from professionally qualified librarians and library technicians working at the three institutions listed above. Professional with information and library science qualifications are not encountered as frequently in Iraq as Australia, and the challenges of recruiting participants (described below) made a more flexible approach to qualifications necessary. All of these participants have extensive experience working in academic libraries, although at the time of the interviews several were working as lecturers (it is common in Iraq for academic librarians to spend periods of time seconded to teaching roles).
- International research students, included in order to get the most informed reflections on the similarities and differences between undertaking scholarship in a developing country and a developed country. Interviews were conducted with higher-degree-by-research students affiliated with Curtin University, in Western Australia. Of the 22 selected for interview, 15 were Iraqi; the seven others, from other developing countries, were recommended during sampling.

Recruitment involved academic librarians from Australia and Iraq international research students.

Recruitment Technique of Academic Librarians from Australia and Iraq

Of the 20 academic librarians recruited for the study, 14 were female and six were male. Their ages ranged from 23 to 63, with a mean age of 40. As previously stated, 10 were from Iraq and 10 were from Australia. Ten spoke Arabic and 10 spoke English. (Interviews were conducted in Arabic for the Iraqi librarians and in English for the Australian librarians). Eight Iraqi librarians were from Baghdad and two were from Basra; the 10 Australians were from Perth. Ten were interviewed face-to-face: eight using Yahoo Messenger, and two by email. The librarians' positions and professionals included library technicians, practitioners, lecturers, and managers. Qualified librarians are not different between Australia and Iraq. Those with Bachelor Degree, Master Degree, and Doctorate are considered qualified librarians in both countries. The only difference is that in Iraq a staff member with a Diploma Librarian Degree could work in a technician librarian position which is still considered a librarian while this is not the case in Australia, the diploma librarian is considered a professional librarian. The themes that emerged from academic

librarians in Australia and Iraq related to the solutions available in the face of information gaps. These will be reported in more detail in Chapter 5. Table 3 outlines the demographic factors of recruited librarians.

Table 3*Demographic Factors of Recruited Librarians*

Number	Gender	Age	Nationality	Language	Place	Means	Position
IL1	M	47	Iraqi	Arabic	Baghdad	Yahoo Messenger	Lecturer
IL 2	F	48	Iraqi	Arabic	Baghdad	Yahoo Messenger	General Secretary, Central Library of the University of Baghdad
IL 3	F	57	Iraqi	Arabic	Baghdad	Yahoo Messenger	Assistant Director of the General Secretary, Central Library of the University of Baghdad
IL 4	M	38	Iraqi	Arabic	Baghdad	Yahoo Messenger	Lecturer
IL 5	F	57	Iraqi	Arabic	Baghdad	Yahoo Messenger	Expert in Library and Information Science
IL 6	F	33	Iraqi	Arabic	Baghdad	Yahoo Messenger	Director of Permanent Education

IL 7	F	23	Iraqi	Arabic	Baghdad	Yahoo Messenger	Librarian Assistant
IL 8	M	63	Iraqi	Arabic	Basra	Email	Head of Information Science
IL 9	M	46	Iraqi	Arabic	Basra	Email	Assistant Professor
IL 10	M	46	Iraqi	Arabic	Baghdad	Yahoo Messenger	Head of Information Science
AL 1	F	-	Australian	English	Perth (CU)	Face-to-face	Librarian
AL 2	F	45	Australian	English	Perth (CU)	Face-to-face	Librarian
AL 3	F	59	Australian	English	Perth (CU)	Face-to-face	Faculty librarian
AL 4	F	34	Australian	English	Perth (CU)	Face-to-face	Team leader for subscriptions
AL 5	F	56	Australian	English	Perth (CU)	Face-to-face	Librarian
AL 6	M	53	Australian	English	Perth (CU)	Face-to-face	Librarian
AL 7	F	45	Australian	English	Perth (CU)	Face-to-face	Manager, learning services
AL 8	F	55	Australian	English	Perth (UWA)	Face-to-face	Assistant Director, research and learning support
AL 9	F	48	Australian	English	Perth (UWA)	Face-to-face	Assistant Director, research and learning support

AL 10	F	34	Australian	English	Perth (UWA)	Face-to-face	Associate Director, research and learning support
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Note. CU = Curtin University; UWA = the University of Western Australia.

Recruiting International Research Students

In general, this study recruited international research students because they use academic libraries in Australia and other developing countries in their research and so therefore have direct experience. The rationale for their inclusion is to explore and understand in depth the new phenomenon of collaboration between academic libraries specifically between Australia and Iraq and more generally between developed and developing countries. Wildmuth (2016, p. 28) has suggested to study a new phenomenon that you don't know anything about, it is useful to know "who participated in it". Second, this research recruits international research students who are doing their research in Australia—namely from Iraq and other developing countries—to collect ideas about their behaviours in doing their research and to understand the current structure of academic research. This includes understanding strengths and weakness in current library offerings, from their experience with libraries in their own country compared with Australia. So, the researcher engaged international research students from Australian academic universities to have better understanding about the current structure of research and academic to develop suggestions to facilitate the scholarly communication matter and then develop ideas about better collaboration.

This thesis recruits international research students from Curtin University, Edith Cowan University, the University of Southern Queensland (Toowoomba), and the University of Baghdad. Table 4 illustrates the demographic factors for the international research students (IR: international research students at Australian and Iraqi universities). The themes constructed from the interview questions from international research students schedule (Appendix D) contributes to the conceptual framework of this study. More details and quotes can be found in Chapter 5.

Few problems were encountered in the recruitment process of the international research students (postgraduate students from Iraq and other developing countries).

Snowball sampling was again used in identifying potential participants for this sample of international research students.

A summary of attributes or demographic factors for international research students. There were 22 in total. There were 10 females and 12 males. Their ages ranged from 23 to 59 with the mean age being 40. As previously stated, 15 were from Iraq and seven were from developing countries, including

three from Indonesia, three from Iran, and one from Sudan. Twelve spoke Arabic and 10 spoke English. (Interviews were conducted in the relevant language Arabic for Iraqi research students except 10 in English for international research students from developing countries). At the time of interviews participants location, because the researcher's location is in Perth. Three were from Baghdad, three were from Queensland, and 16 were from Perth, including 14 from Curtin University, one was from the Queensland State Library, and one was from the researcher's home. Seven were interviewed face-to-face, and 15 by using Yahoo Messenger. They all were research students from the Faculty of Humanities and Science, although some of them had previously worked in different jobs.

Some of these researchers provided their title position and their areas of research areas, collected according to discipline area (e.g. science or humanities) rather than their specific area of research. Table 4 outlines both their substantive position, and/or discipline area including five undertaking engineering research, one medicine, one medical science, the participants specifying their discipline from Humanities, included two from interior design two from literature studies, two from education (English teachers). The remainder did not specify apart from a general area within Humanities and Science.

Table 4*Demographic Factors for the Sampling Recruitment of International Research Students*

Number	Gender	Age	Nationality	Language	Place	Means	Position
IR 1	F	42	Iraqi	Arabic	Participant's workstation (QLD)	Yahoo Messenger	PhD (engineering [mechatronic]), USQ, Toowoomba, Australia; Lecturer, University of Technology, Baghdad)
IR 2	F	36	Iraqi	Arabic	Curtin	Yahoo Messenger	PhD student (humanities)
IR 3	M	59	Iraqi	Arabic	Curtin	Yahoo Messenger	PhD student (humanities)
IR 4	M	37	Iraqi	Arabic	Curtin	Yahoo Messenger	PhD student- Science/ Company of Samara Drug Industry-Iraq
IR 5	M	59	Iraqi	Arabic	Curtin	Yahoo Messenger	PhD student/ lecturer/ College of Education/ Deewaniya University, Iraq
IR 6	F	28	Iraqi	Arabic	Curtin	Yahoo Messenger	PhD student- Humanities/ Assist lecturer/ College of Fine Arts/ Interior Design/ the University of Baghdad

IR 7	F	44	Iraqi	Arabic	Researcher's home / Perth	Yahoo Messenger	PhD student (humanities)
IR 8	M	42	Iraqi	Arabic	Curtin	Yahoo Messenger	PhD student- Science/ Chemical Engineering/
IR 9	F	40	Iraqi	Arabic	Curtin	Yahoo Messenger	MPhil/ Curtin University/ Electronic and Computer Engineering ECE/ Sciences
IR 10	F	45	Iraqi	English	State Library of WA /City	Yahoo Messenger	MPhil/ ECU/ School of Management
IR 11	M	38	Iraqi	English	Participant's workstation (QLD)	Yahoo Messenger	PhD/ Engineering Surveying/ USQ Toowoomba/ Australia
IR 12	M	29	Iraqi	English	Participant's workstation (QLD)	Yahoo Messenger	PhD Student/ Faculty of Engineering and Surveying/ USQ / Toowoomba
IR 13	F	24	Iraqi	Arabic	Baghdad	Yahoo Messenger	Researcher/ Department of Medical Physics/ / College of Science/ Baghdad
IR 14	F	23	Iraqi	Arabic	Baghdad	Yahoo Messenger	Postgraduate student/ College of Medicine/ Doctor
IR 15	M	50	Iraqi	Arabic	Baghdad	Yahoo Messenger	PhD (Engineering)/ Lecturer/ Foundation of Technical

IR 16	M	41	Persian	English	Curtin	Face-to-Face	Education/ / Institute of Technology/ Baghdad PhD student (humanities)
IR 17	M	32	Persian	English	Curtin	Face-to-Face	Diplomat /Ministry of foreign affairs/ PhD student (humanities)
IR 18	M	44	Indonesian	English	Curtin	Face-to-Face	PhD student (science)
IR 19	F	42	Indonesian	English	Curtin	Face-to-Face	PhD student at the school of built environment
IR 20	F	46	Indonesian	English	Curtin	Face-to-Face	PhD student (humanities)
IR 21	M	36	Persian	English	Curtin	Face-to-Face	PhD student (humanities)
IR 22	M	37	Sudanese	English	Curtin	Face-to-Face	PhD student (humanities)

Interview Method

In total, 42 semi-structured one-on-one interviews were conducted with 20 academic librarians from Australia and Iraq and 22 international research students from developing countries.

Research Ethics

Prior to commencing the research, the project obtained full ethical approval from Curtin University's Human Research Ethics Committee (approval number MCCA-16-12). The research was conducted in compliance with the guidelines of the National Health and Medical Research Council's National Statement on Ethical Conduct in Human Research.

To maintain participants' confidentiality, there is no mention of the names of the participants at any stage in the reporting of the findings in this thesis, or in other publications arising from the results of this research. Participants in this study were fully informed of the research process and outcomes, and were required to sign a consent form prior to the interviews. The consent form detailed the scope and purpose of the research and was provided personally to all participants, either in person or via email, as appropriate.

All participants were asked to read the information sheet (Appendix E) and to sign a consent form (Appendix F), including permission to record, before interviews were conducted. For Australian participants, the researcher personally collected participants' signatures before carrying out the interview, while for Iraqi participants the signed consent forms were sent and returned via email.

Two interview schedules were designed: one for librarians (Appendix C) and one for researchers (Appendix D). For Iraqi participants, the interview schedules and questions were translated into Arabic initially by the researcher and then revised and edited by an experienced and qualified translator from the Australian Institute of Interpreters and Translators (AUSIT), which is the National Association for the translating and interpreting profession. The selected translator is fluent in both English and Arabic. Appendix G shows samples about the process of constructing the themes from Arabic interviews after translation the Arabic transcripts into English.

The interview schedule for librarians consisted of three main subject areas with 14 questions. The three key areas were: scholarly communication (Questions 1–5); infrastructure and resources, addressing such issues as library and information

services, database availability, social networking tools, and open access (Questions 6–10); and strategies and solutions (Questions 11–14). This research focuses on the questions being asked and the rationale for those questions. The main questions and ideas were raised from practice literature and other questions originated from personal experience of the researcher. Questions were designed to obtain participants' experiences, thoughts and opinions relevant to a number of topics including information related to understanding of key scholarly communication concepts, the value and necessity of collaboration and collaborative tools, the role of government and/or higher education institutions in supporting scholarly communication, copyright, licensing, and other issues related to intellectual property, the role of library and information services supporting scholarship and scholarly communication consortia; and the use and value of social networking to support formal and informal scholarly communication.

The interview schedule for the researchers consisted of three main subject areas and nine questions. The three key areas were the role of scholars to improve scholarly communication within their research communities; the preferred scholarly activities and the channels they use for communication; and solutions to address the information gap experienced in academic library use Iraq or other relevant developing country. Also, the questions were designed to give the participants opportunities to talk generally about their experiences in academic libraries in developing countries. For example, Question 5, which is related to comparisons between library services, generates comments regarding difficulties that researchers face in academic libraries in developing countries, and this in turn led to suggestions for solutions to address these difficulties.

Interview Protocol

The researcher commenced the interview process with the Australian academic librarians at Curtin University Library. The researcher did not face any difficulties in approaching and locating the librarians at Curtin University, because as a PhD candidate in the same university, she has existing relationships with some of the librarians. Pilot study provides a useful direction to the researcher in examining the interview questions. In this thesis, the experimental phase in conducting the first interview contributes to the research questions were reordered and subject areas or headings were specifically added (Appendix C). The first interviewee also played a role in the chain referral by nominating another potential interviewee.

There were, however, some additional challenges encountered in recruiting librarians from UWA. The researcher followed the same methodological sampling technique to identify the potential UWA librarians as participants. The university has a distributed library system with discipline-based libraries serving staff and students across the campus. Librarians from two of these libraries were interviewed: the Reid Library, which is the main campus library and serves the humanities and social sciences broadly; and the Medical and Dental Library, which provides collections and services for those health-based disciplines.

The use of interview and observation processes alone does not complete a qualitative research study—the qualitative researcher must also interpret the beliefs and behaviours of the participants (Janesick, 2003). In this case the researcher found that some participants were talking with a degree of intensity sufficient to indicate they were not satisfied with the current situation. Also, some participants appeared hesitant to provide relevant facts and details, and this could be interpreted as being due to several reasons, including the exercise of dictatorial powers in Iraq for more than three decades. Makiya's book *Republic of Fear* (1998) argues that the reaction of many ordinary Iraqis to the new laws was unprecedented in their polarisation. Therefore, some participants may have preferred to remain neutral in their responses in order to protect their personal opinions.

Interviews with the international research students (except Iraqis) subjects were conducted face-to-face by the researcher, during which all the details were recorded via a digital audio recorder. Due to the distance constraints and security problems in Iraq, the Iraqi subjects were interviewed by the researcher via Yahoo Messenger tool, using a secondary device for recording the interviews.

Although this research is intrinsically cross-cultural and qualitative in that it selects individuals from different nationalities to compare their experiences and opinions in addressing the same set of questions, some cross-cultural issues emerged and potentially impacted participant's responses. These included differences in language and politics; variations in exposure to and understanding of key concepts related to scholarly communication; and personal experience of national internal stress and conflicts and exposure to situations that threatened individual safety. The researcher took these factors into consideration in the research process by relying on "common sense" (Blanc, 2003) in the conduct of the interviews and the interpretation of the resulting data. For instance, the terms *scholarly communication* and

information gap have different meanings in Australia and Iraq. The researcher provided participants with further explanations of the intended meaning of these terms in order to elicit responses which were consistent in their understanding of the concept. In addition, the term *consortia* is not used in Iraq and it does not have an exact equivalent. As a result, the researcher had to explicate the meaning to Iraqi participants to achieve more accuracy in responses.

The surveillance conditions in Iraq also played a significant role in the way the Iraqi participants were interviewed, and notably impacted on their responses and expressions, with emotions such as fear, anger, agitation and confusion all being displayed. The researcher attempted to address these responses by assuring participants that their anonymity would be strictly respected (Wallace, 1999). This was particularly the case with participants with higher employment status, who might be recognised because of the profile of their role in the wider community.

Data Analysis: Thematic Analysis Using NVivo

Following data collection from the interviews, the researcher transcribed the recordings and translated the Arabic responses into English with the assistance of a qualified translator. The transcripts were then analysed with the assistance of QSR NVivo software. Three steps were used for analysing the data generated from the interview.

Phase 1: Coding and Categorising in Thematic Analysis

Thematic analysis provides the opportunity to code and categorise data into themes (Connelly & Peltzer, 2016). This step presents a detailed pattern of the staged process of data-coding and identification of themes. The process demonstrates how analysis of the raw data from interview transcripts progressed towards the identification of all-encompassing themes that captured the issue of collaboration between academic libraries in Australia and Iraq. Fereday and Muir-Cochrane (2006) study the approach of inductive and deductive coding in thematic analysis for theme development. The study above, combined technique of inductive and deductive thematic analysis in analysing the data, however, this study commenced with inductive coding to explore the issue of collaboration between academic libraries in Australia and Iraq. As stated in Chapter 3, the review of literature, highlighted limited research to support the phenomena under study. But also, it's reported that there are studies about collaboration in Australian libraries with other developed countries, as well as there are studies about collaboration in academic libraries in

Iraq. Alhojailan's (2012) study shows that "in basic terms, thematic analysis provides a comprehensive process for a researcher to identify numerous cross-references between the evolving themes and the entire data" (Hayes 1997, p. 45).

Initial coding starts with using QSR NVivo software for data management, but NVivo is not always used in qualitative research; some researchers use traditional (manual) methods for data analysis. NVivo is also widely used to support qualitative research associated with the following seven analyses are presented: constant comparison analysis, classical content analysis, keyword-in-context, word count, domain analysis, taxonomic analysis, and componential analysis (Leech and Onwuegbuzie, 2011). In the case of this study, it specifically facilitates textual analysis in the process of identifying and clustering interview responses and gathering all the main themes and sub-themes and grouping it into similar themes or ideas (Alhojailan, 2012). This research employs NVivo for the first step (initial coding) as well as for storage, coding, retrieval, comparison, and linking of the data. Gibbs (2007) calls this procedure line-by-line coding of an interview statement. By taking those points further, three forms of codes are used: open, theoretical, and constant comparative (Fram, 2013). Open coding is the initial step which means developing the codes from the data. This technique of coding ended when a core theme was established. An example for the initial step of thematic analysis shows in the table below:

Table 5*Line-by-Line Coding (Open Coding) of an Interview Statement*

Line-by-line coding (open coding)	Interview statement
Open access	“I think the concept of open access doesn’t really lie with the library itself. It lies more with the people who own the information—so that would be the creators, vendors and publishers. Those with the financial interest who can impose legal restrictions. So we can only share when it’s our own academic resource.” —Quote from an Australian academic librarian
Role of stakeholders	
Collaboration (knowledge-sharing)	
Publisher’s access	
Financial issues	

Phase 2: Construction of thematic framework

After categorising the ideas into main themes and sub-themes, the coded themes or conceptual codes were the first step that coding contributed to the development of a conceptual framework regarding the role of academic libraries in supporting scholarly communication in both countries. The following step of thematic analysis is reviewing the coded themes to establish the relationship codes that identify links between conceptual codes (Cruzes and Dyba, 2011). The data is also used as the basis for making comparisons between the applied policies in academic libraries in both countries in support of scholarship and scholarly communication. This stage produces a better understanding of the ideas or the themes constructed from the previous step. The researcher began coding the data in order to be able to analyse and develop the initial ideas as the foundations for the newer ideas at later stages of interpretation. These ideas led to the development of potential framework underpinned further analysis. This iterative approach of systematic of data analysis facilitated the construction of a conceptual framework relevant to addressing the research question review (Lavalley, Robillard, & Mirsalari,

2013). In this stage, the data forms the basis for an investigation of the factors in Iraq and Australia that enhance or constrain scholarly and academic collaboration. For example, the participants identify the collaborative preferences of the participants in both countries for structures to be put in place to help sustain interaction between Iraq and Australia, and between developing and developed countries more generally, with regard to scholarship.

Theoretical codes were conceptual connectors which developed the relationship between the themes that associated with the main thought. Constant comparative coding identified the potential conceptual framework created by both steps: open and theoretical coding.

For instance, polices in Australian libraries are encouraging the open access and institutional repositories movements to enhance sharing knowledge; however, the policies in Iraqi libraries are currently focusing on utilising social networking for exchange experiences and knowledge.

This second phase of thematic analysis leads to establishing a conceptual framework. As illustrated in Table 6 the researcher selected one of the main categories that emerged from Phase 1—the role of stakeholders—and gathered and listed all the related ideas constructed from all the resources (interviews) under that category. Table 6 illustrates how the conceptual framework is building from the main theme and other sub-themes.

Table 6

Second Phase of Thematic Analysis (Conceptual Framework)

Main category	Related or associated themes
Role of stakeholders	Librarianship, library management, role of higher institutions, role of government, role of libraries, role of academics and faculty, role of individuals, and role of organisations

Phase 3: Data Interpretation

The last stage in thematic analysis is making sense, interpretation, and meaning to the sets of themes included as a potential conceptual framework. In thematic analysis, the main part of data analysis process is the interpretation. Javadi and Zarea (2016, p. 39) state that “it is necessary that the data interpretations match theoretical framework in a performing a good thematic analysis. Even if an analysis is good and interesting but does not explain what its theoretical presumption or purpose is, it will lack crucial information and thus it is defective in one aspect”. This stage provides interpreting deeper meaning in discourse and understanding the phenomena. Data interpretation consists of the constant comparison of thematic analysis.

Interpretation in thematic analysis involves different points of view. In this study, this means (a) comparing views (Joffe, 2012) of different stakeholders such as the role of higher education institutions in Iraq and in Australia; and (b) comparing data from the same individuals with themselves at different points in time (Bailey & Jackson, 2003). At this stage, data interpretation includes comparing the attitude among the participants themselves about one or more themes. to understand the participant’s attitudes about the theme information services, participants researchers from Iraq provide details about information services in academic libraries in different locations such as Baghdad, Basra, Samarra, and Karbala. This comparison contributes to develop ideas about which location is the most important to start the collaboration with (which in this thesis is Baghdad), (c) comparing incident with incident (Bailey, and Jackson, 2003, p. 62) which is not applicable in this study, (d) comparing data with category for example, “sharing knowledge base” as a category has been compared with the selective data from different sources (participant’s speech) to construct the perception and its implications on the phenomena (this is discussed in Chapter 6), and (e) comparing category with other categories such as comparing the role of stakeholders with each other to construct the most powerful place for making decisions.

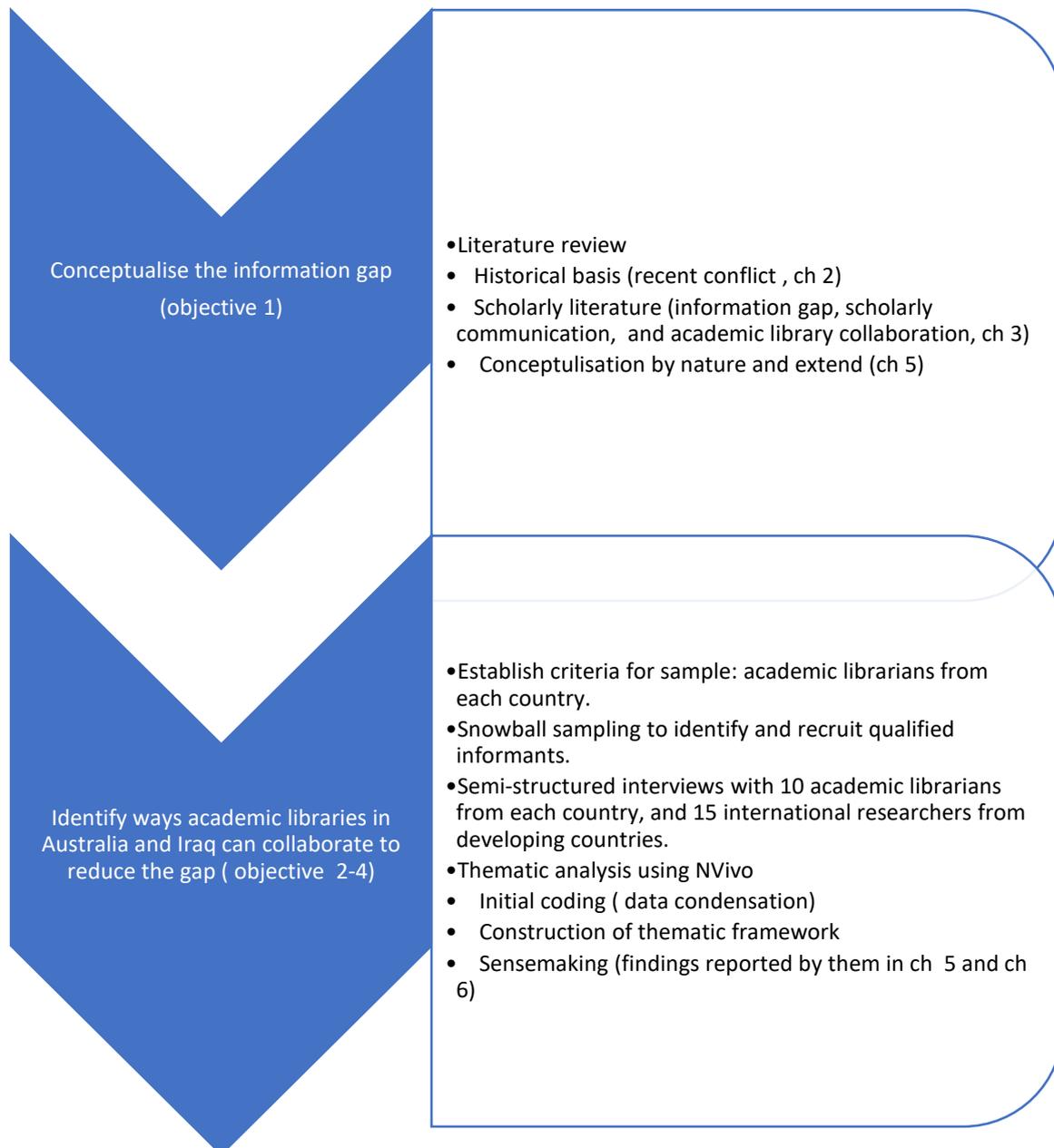
Thus, the information was used to develop a theoretical structure for the facilitation of scholarly communication and collaboration between academic libraries in Australia and Iraq

As shown above, at this stage, the themes become more than just some coherent, patterned meaning across a dataset (Braun, Clarke, & Weate, 2016) but the themes also reveal important aspects of the data, relevant to the research question.

Figure 8 shows the research methods starting from the review of literature to the last stage of thematic analysis. Chapter 5 reports the research findings in details in two sections: academic librarians' findings and international research students' findings.

Figure 8

Research Methods and How Collaboration between Academic Libraries in Australia and Iraq Can Reduce the Information Gap in Iraq



Validity and Reliability of the Data

Morse (2002) finds the terms *validity* and *credibility* to be central concepts when collecting, analysing and reporting qualitative research data. Lincoln and Guba (1994) state four trustworthiness criteria for qualitative research: credibility, transferability, dependability, and confirmability. Dean and Whyte (2003) note that assessing reliability in the context of interviews depends on several tests of the reliability of individual participants. These tests relate to “implausibility”, “unreliability of the informant”, “knowledge of an informant’s mental state”, and “comparing an informant’s account with the accounts given by other informants” (p. 356).

Given the nature of the interviews and the status and expertise of the participants, it was not anticipated that the first two of these tests would be relevant in the context of the current research. As noted previously, however, given the state of political and social turmoil in Iraq in the years immediately preceding the interviews, the researcher was acutely aware of the possible fragile “mental state” of some participants. Indeed, it was found that some Iraqi participants responded to questions with a degree of intensity that was revealing of the mental pressure of living in a country under highly stressful security circumstances. It was also deduced that some of the researcher participants were hesitant to speak openly or perhaps tell the “truth” with regard to some questions. This could be due to several reasons associated with the climate of fear and persecution currently prevailing among university-based workers and academics, which is in turn grounded in the ideologically repressive regime that had ruled the country for more than three decades. In such circumstances it is understandable that some participants preferred to be neutral in their responses in order to protect their personal opinions—a response that did not serve the purpose of this research.

All the data have been retained in accordance with the guidelines of joint National Health and Medical Research Council (NHMRC)/AVCC Statement and Guidelines on Research Practice Section 2 Data Storage and Retention

All the materials are retained on CDs and DVDs and stored in a locked cabinet. This includes topic guides, field notes, audio files/tapes, consent forms, enrolment forms, and any other records.

Conclusion

This chapter encapsulates the research design. It identified the recruitment processes to the study and that semi-structured interviews were selected as the method for data collection. The chapter also discusses difficulties encountered with data collection in recruiting Iraqi participants successfully, and obtaining sufficient involvement from librarians. These challenges are outlined and solutions addressed within the chapter. Interviews were recorded and transcripts were transcribed. For Arabic interviews, translation and transcription into English occurred. Interview materials were managed using NVivo to better comprehend the emergent findings. The chapter outlines the approach used for analysis, namely thematic analysis, a qualitative method that identifies patterns within data. The chapter concludes with a discussion about the validity and reliability of the data collected and ethical considerations. The following chapter outlines the findings of the study.

CHAPTER 5: INTERVIEWS WITH LIBRARIANS AND INTERNATIONAL RESEARCH STUDENTS

This chapter elaborates the findings of the interviews with Australian and Iraqi librarians and international research students. The first section reports the findings according to the themes that emerged from the interviews with librarians, while the second does the same for the interviews with international research students (see Appendixes C and D for the interview schedules).

The findings reported in this chapter address the central research question: What are the possibilities of collaboration between Australian and Iraqi academic libraries to address the information gap in Iraq? The interviews also address research objectives 2–4:

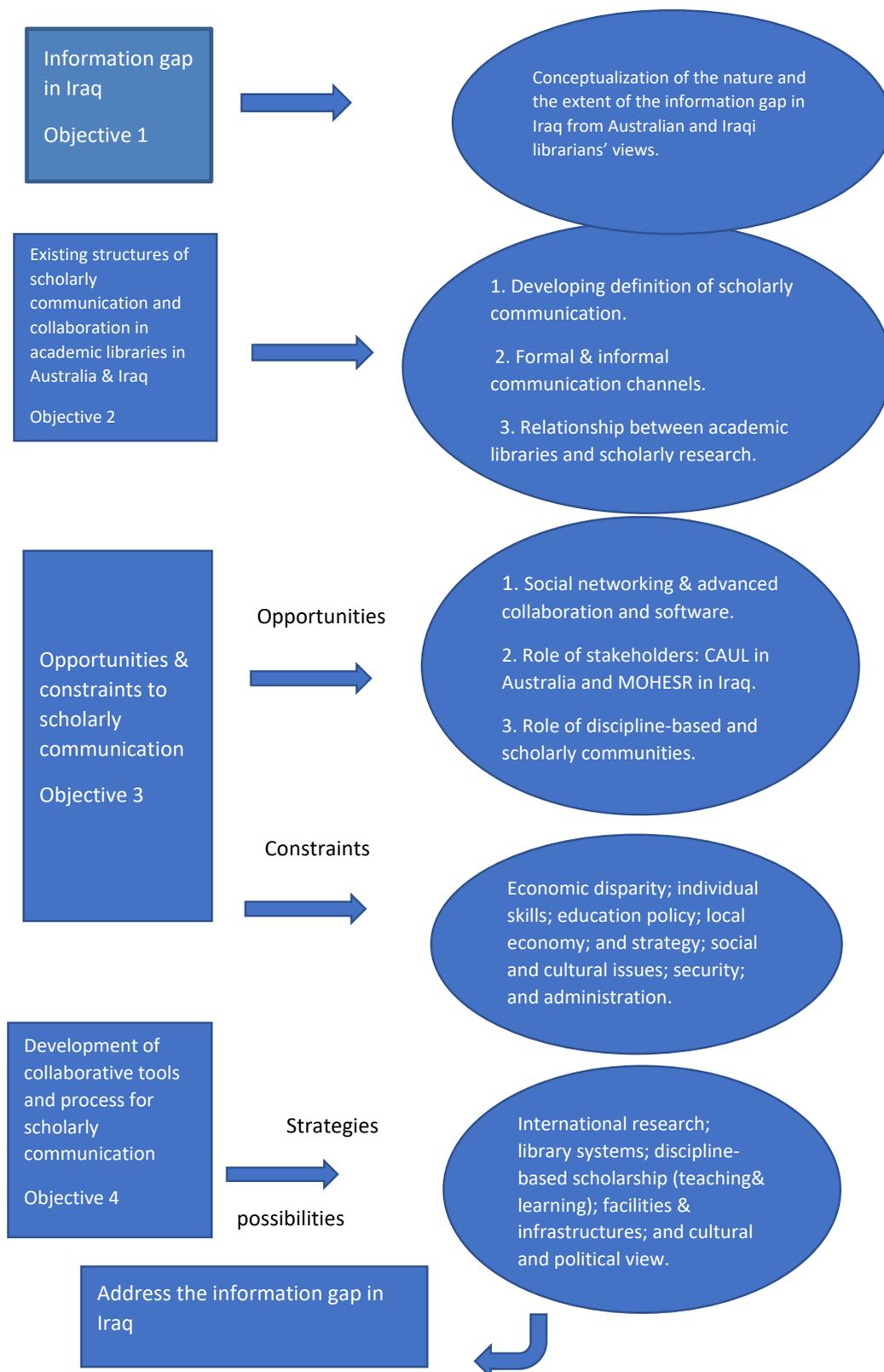
2. What are the existing structures of scholarly communication in academic libraries in Australia and Iraq?
3. What are the constraints and opportunities affecting scholarly communications between Australian and Iraqi libraries?
4. How can the development of structures for scholarly collaboration address the information gap in Iraq?

Each interview participant was given a code, which for librarians consisted of two letters and a number to distinguish them: *AL* (1–10) for Australian librarians and *IL* (1–10) for Iraqi librarians. For the purposes of reporting the data, the international research students were given the common code *Int. R* and a number (1–22).

Figure 9 shows the theoretical framework that was built to address the objectives of this research and to highlight the findings. The remainder of this chapter discusses these findings in greater detail. As discussed in Methodology section the themes emerged first from the literature review and has then outlined through an inductive approach as illustrated in Figure 9 (Theoretical Framework for Scholarly Collaboration between Academic Libraries in Australia and Iraq). These questions and themes from the literature establish the interpretative framework for laying out the findings for further analysis.

Figure 9

Theoretical Framework for Scholarly Collaboration between Academic Libraries in Australia and Iraq



Interviews with Librarians

This section presents the findings of the analysis of the complete dataset, consisting of semi-structured interviews with Australian and Iraqi librarians. The aim of this part is to present and discuss the possibility of collaboration between Australian and Iraqi academic librarians (and libraries) in order to address the information gap in Iraq, and in doing so looks to answer the research question and meet the objectives described in Chapter 1.

The theoretical framework of this study is based on exploring the types of international scholarly communication that different individuals and cultures employ in response to different local practices and traditions. These include the availability and nature of research infrastructure and information and communication technologies (ICTs), as well as the language and sociocultural practices and circumstances of the interviewees.

This section starts by examining demographic factors, main themes, and sub-themes. It presents and discusses the concept of the information gap from the viewpoints of Australian and Iraqi librarians. Further to Chapter 2, it also addresses the nature and scope of the information gap from Australian and Iraqi librarians' viewpoints in relation to the current political and social situation in Iraq. It then focuses on the key components of the limitations and challenges from Australian and Iraqi viewpoints. It discusses in detail the limitations associated with Iraqi history, wars, and sanctions, as well as other limitations associated with the new political system in Iraq: democracy.

This section then examines scholarly communication and channels from the viewpoints of Australian librarians. (The views of the Iraqi librarians were the same as those of the Iraqi and international research students, as discussed later in this chapter.) The role of stakeholders is also discussed on the basis of Australian librarians' viewpoints only. Last, this section reports strategies and solutions for developing scholarly communication structures from Australian and Iraqi viewpoints.

The research highlighted a variety of ages and genders. The Australian librarians were aged between 30 and 59, while the Iraqi librarians were aged between 20 and 69. With regard to gender, the results suggested that most Australian librarians are female (there were nine females and one male in the study). Among Iraqi librarians it was more equal, with five females and five males.

Five main themes emerged from the interviews conducted with the sample of Australian librarians: the information gap, limitations and challenges, scholarly communication and channels, stakeholders' roles, and strategies and solutions.

In developing the theoretical structures of international scholarly communication via academic libraries, Iraqi librarians presented their points of view according to the historical circumstances in Iraq within the last three decades. The themes that emerged were the information gap, limitations and challenges, stakeholders' roles, and strategies and solutions.

Four similar themes emerged in the two groups of Australians and Iraqis. However, the differences were in their perspectives on constructing the notion and the ideas. The theoretical framework that follows shows the objectives of the research questions and the key components of the findings.

The amount of qualitative data generated by the Australian and Iraqi librarians' individual interviews was extensive and offered more than a superficial understanding of the phenomenon being studied. (A discussion of the data is presented in the next chapter. The findings presented in this chapter focus on the various constructs.) The interviews were structured to encourage participants to explore meaning making as a lived experience and to identify themes in this experience that impacted on their meaning-making processes.

Information Gap

Australian Librarians' Perspectives

Generally speaking, the Australian librarians reported that there are several issues creating the information gap between developed and developing countries. Where the term *information gap* in this thesis emerges from the lack of access to information and knowledge necessary to build nations, most of the issues are common, and similar to the themes discussed in the literature overviews in Chapters 2 and 3. They include a lack of communication, an inadequate education system, and disparities in ICTs and economic status.

Lack of Communication. Most of the Australian librarians stated that there is a lack of communication between academic libraries in Iraq and Australia, a lack of ongoing dialogue, infrequent visits, a lack of ongoing relationships and personal contact, and inadequate collaboration on research projects.

It is a challenge for Iraqi libraries to provide up-to-date materials and adequate databases, both of which are necessary for doing academic research and

sharing knowledge, so academics and students alike face difficulties in research. In most cases, in developed countries, databases and academic resources are easily available for sharing knowledge. This is not the case in Iraq, especially in the sciences, which require the latest academic materials. One of the participants explained her view on the incidence of an information gap in academic libraries in the developed world:

I think there is a lack of collaboration between the developed world and developing countries. There is a lot of collaboration between libraries in the developed world. Therefore, in those countries there is no information gap. (AL 1)

This view was expanded by another librarian, who suggested the following:

Maybe more networking and collaboration between libraries in different countries will help to reduce the information gap in developing countries. (AL 7)

There is no substantial scholarly communication between Australian and Iraqi libraries. Most of the studies that have taken place in developing countries found that there is a lack of exchanging scholarly ideas, even among local scholars. In this study the Australian librarians confirmed, from their own experience, that there is a lack of communication between the two countries and that this is causing inequality in the producing and transforming of knowledge.

Participants believe that, where there is a platform to exchange knowledge in two countries, there is be a high possibility of exchanging scholarly materials between them. Some of the Australian librarians mention that there is no information gap within Australian academic libraries, because they participate and collaborate with their colleagues in other libraries. That leads to some developing countries being isolated and causes an information gap. For example:

I would never think of approaching a developing country in terms of looking for ideas. I think we tend to stick much more with the United States, the United Kingdom, and to some extent Southeast Asia. I think a lot of it is actually knowing what's happening in those countries and

therefore what would be the potential to actually collaborate to close that information gap somehow. (AL 9)

Another example suggests that academic libraries in developed countries are adopting many ways to collaborate among themselves in order to keep in touch, avoid isolation, and prevent the emergence of a knowledge gap:

I think we can certainly help others to do that. We continue to participate and to collaborate with our colleagues, so there is always participation in international groups. We have a commitment to sharing our knowledge and skills, and we're happy to promote this within our profession. (AL 2)

Inadequate Education System. While the education system in developed countries uses a range of modern technologies and communication methods, and continually updates teaching programs, the education system in some developing countries, such as Iraq, is associated with political, military, and ideological alliances. From 1980 onwards, the Baath Party ideology dominated almost all the teaching programs in Iraq and, together with the sanctions and wars, affected the creating and sharing of knowledge and caused an information gap. The Australian librarians interviewed for this thesis argued that the economic priorities are different in Australia and Iraq and that this affects both education policies and the gap itself.

In comparing education systems in developed and developing countries, several of the Australian librarians said that higher education institutions in developing countries need to be improved, particularly in their teaching quality. Also, they mentioned that all knowledge requires the continuous updating of teaching programs, as in developed countries.

The librarians suggest providing free training programs in teaching and learning, updating the skills of teachers and academics, and enhancing "open access" systems. They saw these as the main issues affecting the exchange of knowledge and causing the information gap. In particular, they suggested using distance or online learning courses, employing social networking, and developing the education model in developing countries.

Higher education in Australia is primarily funded by government. But it's also funded in part by commercial organisations. Both sources of funds

may be available in developing countries. In addition, development agencies like Oxfam, AusAid [now the Australian Government Department of Foreign Affairs and Trade], and UNESCO provide funding, teachers, and other resources. This could facilitate links between developed and developing countries. Some of the large databases, such as ScienceDirect, provide their resources to developing countries at low cost. (AL 6)

Disparity in Information and Communication Technologies. A knowledge divide exists between developed and developing countries, as discussed in Chapters 2 and 3. Local policies in some developing countries do not prioritise investment in this sector. Since knowledge sharing in the digital age requires adequate communication technologies, the lack of infrastructure in some countries affects international scholarly communications and creates a gap.

Australian librarians reported that ICTs do affect knowledge sharing between the two countries and can contribute to an information gap. For example, several interviewees expressed the opinion that knowledge sharing requires a common communication technology and some common ground on which to formulate the exchange of opinion and ideas. Quality of technology is also a factor:

I think there is a huge information explosion in developed countries because of technology (AL 8).

Another example concerns the disparity in communication technology and infrastructure, and how that disparity prevents interaction and contributes to the information gap:

If developing countries don't have the necessary infrastructure, making resources available online is not helpful. We could only really provide paper-based resources and skills from within our profession. (AL 2)

Disparity in Economic Status. In developing countries, cognitive delay is a problem not only of politics but of planning, methodology, and material support in the scholarly research sector. According to the *Arab Knowledge Report*, cited in Chapters 1 and 2, Arab governments allocate relatively little money to the scholarly

research sectors compared with governments in developed countries, and that difference contributes to the information gap.

Many of the respondents in this study understood that the information gap is based on the economic and educational circumstances of developing countries. They expressed the view that some key scholarly activities require financial support to enhance the level of higher education and engagement with the transfer of knowledge. They also believed that only some scholars in developing countries have the financial support to participate in international conferences and travel associated with research and learning.

Most of the Australian librarians argued that the information gap occurs because of the progress of ICTs in developed countries and their delay in developing countries. The concern was that the disparity in the economic situation may be widening the information gap between Australia and Iraq. Academics need to use the latest scholarly materials and databases to keep abreast of developments in their field and then be able to produce and share knowledge with other academics. All these factors require strong economic support from the state, from academic institutions, and from individuals.

This research found that there was a disparity in the extent of the information gap between developing countries. There were differences related to free access to information, as well as to economic factors and the adoption of technology and factors related to the country's resources and investment in different sectors.

Some participants expressed the view that countries such as Iraq may have censorship-related restrictions that prevent free access to information, and that other countries may be limited by different rules regarding access to materials. Some developing countries lag considerably with regard to the availability of information and communication technology, while others are comparatively advanced.

Overall, the Australian librarians reported that there are four issues causing the information gap between Iraq and Australia. Education institutions in Australia are diverse and do not depend solely on the government sector; their educational programs, too, are diverse; the country is politically and economically stable; and investment in the technology sector has contributed to cognitive growth. Iraq, on the other hand, has been unstable for some 40 years and has been isolated from the world. Its educational institutions are therefore lagging far behind.

Iraqi Librarians' Perspectives

Generally, the Iraqi librarians interviewed presented the concept of the information gap as a knowledge gap, indicated mainly by the lack of free access to information. They mentioned that inequality in knowledge is creating or expanding the gap between the two countries.

The Iraqi librarians believed that communicating among academic libraries in developed countries is easy, because these libraries have convergent ideas and the same base of knowledge and culture. They thought that building communication channels with academic libraries in developing countries is a valid goal. Study respondents explained the lack of communication within Iraq as a result of the current policies of the country, the educational level, the cultural and traditional norms, a certain level of government censorship, and the financial circumstances.

Setting up a scholarly communication structure may be difficult for the third world in general, as it depends on the overall condition of the state, the living standards, and academic competency. Unfortunately, the situation is made worse in Iraq when we add the special adverse factors of security issues, poor general services, and poor infrastructure (e.g., unreliable electricity). (IL 4)

Most of the Iraqi librarians referred to the information gap and knowledge sharing in the context of current social, political, and cultural events. Some believed that it is impossible to achieve the level of scholarly communication needed to close the gap, unless some political and economic balance develops between the two countries.

Iraqi study participants mentioned four issues that affect scholarly communication: the role of government as the basis of local and state structures and its reflection in scholarly communication; library legislation related to electronic resources; copyright licensing; and library management. Locally, higher education institutions must be allowed to address this issue.

The government in Iraq, and in most developing countries, struggles to understand the importance of specialisation, not only in library studies but also in most fields of knowledge. Academics have more awareness about

their subjects and are more ready to initiate and develop scholarly communication. (IL 4)

However, other respondents claimed that the government in Iraq has the power to act in many aspects that are required to establish scholarly communication. It is difficult for a small institution to adopt big projects without support from the government.

The government is principal player for all institutions. The government has the power to establish scholarly communication through the provision of financial resources, human resources, technology, and equipment. A small library or institution cannot communicate successfully without the support of the government. (IL 2)

Thus, if the Iraqi government adopts the project of building scholarly communication with other countries, it will give the scholars and academics an opportunity to do their research at an international level and share their experience with international academics. This will start addressing the information gap.

Another factor is the absence of regulations to protect intellectual property or copyright of written and digital resources. For instance:

There is a lack of a legal framework in the form of a set of laws that protect intellectual property or copyright of the digital resources. This represents a big obstacle, because we have a tremendous number of theses in an electronic format, but we are unable to make them available to users without the authors' permission. A legal structure is needed to fix this. (IL 1)

If the electronic resources used in scholarly research are not accepted as equal to printed material, this may reduce the rigour of scholarly research and thus negatively affect the process of publishing, impeding the participation and exchange of information on a local or international scale and creating an information gap.

The other issue is the hesitance of research institutions to recognise electronic audio and/or video resources when they assess work completed or published by researchers. In my opinion, any electronic source should

be recognised as credible as long as the material included meets the quality norms of a publication. (IL 1)

Centralisation in library management is another issue that worried the Iraqi librarians. They claimed that library bureaucracies do not consult with other local institutions or academic parties (such as associations, universities, private colleges, and societies) when making organisational and structural decisions. This often produces the wrong outcome.

Because the heads of any academic institution are the only people who have the right to communicate with the government, there is no chance to hear from other academics working in the same institution. For example, people working for a small institution are not allowed to establish communication with any party without getting permission from the authorities.

Such was the case with this research: to develop any academic connections between Australian and Iraqi libraries, one has to go through a long process to get approval from the highest level of the relevant ministry, whether it be the Ministry of Higher Education, the Iraqi Ministry of Communications, or another ministry.

The centralisation of decision-making has an effect on efficient communication and therefore contributes to the growth of the information gap. Making decisions without involving the librarians could delay, if not prevent, the processing of scholarly communication. For example:

The lack of rules or legislation regarding communication among institutions is a major problem. Academic institutions are not independent. There is a higher authority in the organisation which organises everything, including programs, curriculums, activities, and staff. The organisational structure is still traditional. (IL 10)

The view of centralisation of management is similar to the Australian librarians' view that the heads of the departments are the only people who have the right to make publication decisions. Other Iraqi librarians, however, said that developing libraries is the responsibility of their managers:

Library managers are responsible for suggesting improvements to their libraries, since they have inside knowledge of their systems and are aware

of their staff's potential. An active manager can really make a difference.
(IL 3)

Several respondents agreed that one of the problems that could impede collaboration between the two countries is copyright and licensing. They reported that scholarly communication requires collaborative agreements to access materials or services, as well as the databases. Copyright hinders this process.

Some Iraqi librarians argued that the information gap is very wide and impossible to close, but it could be reduced. Others had a more positive view and said that the information gap is already being reduced faster than ever before because of the internet.

Limitations and Challenges

Australian Views

Despite the many issues, this discussion will be limited to the top two key factors that are commonly expressed by the respondents: technology challenges and social, cultural, and political issues.

Technology challenges in libraries have already been discussed in relation to the information gap; however, the Australian librarians thought that infrastructure is a critical factor in encouraging interaction among countries. They claimed that there is an imbalance in terms of the type of communication infrastructure used in developed and developing countries. They also claimed that the use of open-access material and services, such as e-products or e-programs, depends on the quality of communication infrastructure in the developing country. An assistant director of research and learning support in a medical library expressed this when she said, "I am going back to a point I made earlier about reliable and fast internet access. I think that's fundamental to scholarly communication now."

Australian participants mentioned other issues related to the infrastructure that the libraries in developing countries are challenged by, including the cost of accessing the internet and scholarly materials such as journals.

When discussing concerns about costs, an assistant director stated that "I think that the cost of journal subscriptions is another issue and that the publishers have a very strong hold on scholarly information."

Furthermore, there were concerns about digital literacy. The librarians thought that even though information may be available, using it may be difficult for some users. A managing librarian had this to say:

I suppose there is the issue of digital literacy, where some people may not know how to access information, or how to evaluate the information that they find. (AL 9)

Australian study participants also mentioned other issues related to e-resources and licensing. One interviewee summed this up as follows:

We are talking about e-resources. They can be an issue, because sometimes publishers have a lot of licensing restrictions and this may cause problems if you have users who are in a different country or in a location outside of the university. (AL 1)

The second theme is social, cultural, and political issues. Even though some Australian librarians stressed their willingness to respect other cultures and their desire to build relationships and share information with developing countries, the concern about the actual interest, the sense of social responsibility, and the full awareness of what is going on in other parts of the world remain obstacles to the success of scholarly communication. Also, they claimed that the environment of scholarly communication has to be stable technically and politically. For example:

Scholarly communication needs a stable environment politically and technically—internet access; guaranteed power; reasonable and reliable services; open lines of communications through internet, email, and post; awareness in developed countries about the needs of developing countries; social responsibility in that area in terms of obligation; and awareness of database needs and what's going on in other places. (AL 6)

Language is another lamentable barrier. Australian librarians indicated that developed countries are missing out on a lot of research that has been done in non-English-speaking countries—largely because many foreign-language materials are not translated—and that this may reduce integration in some research areas.

Time limitations are another issue. Working in Australia, with a Western work culture, the respondents claimed that time is a problem. Because there is a business approach to learning, Australian library respondents said that they don't get a chance to participate in scholarly activities outside of their coursework—for example, participating in international conferences, arranging training programs, doing short surveys, and performing translation services.

I think one challenge is that we are all very busy because of the pressure [and] I believe it is tough to find time to do anything outside of your current job description. (AL 10)

Another participant confirmed that time limitations are an issue when it comes to an organisational culture. For example:

I don't have time in my job to do it (*laughing*), so while in my brain I think it would be lovely for me to have a social media presence, to be on Twitter and Facebook and to post things publicly and interact with people, I really don't have time ... I think sometimes all the individuals in the organisation have time constraints, so they don't have a chance to engage with all the available information. Also, because they only feel they are doing their day jobs—maybe they are in technical services and don't have to know about other staff members' tasks, because they are not directly related to their own job. That's a cultural thing; it's an organisational cultural thing that needs to be addressed. (AL 4)

Time concerns were also raised by another participant:

We are trying to work very closely with the research group, because if we are just organising workshops, it's not necessarily at the time that the researchers need it. So we tend to work with the research group and ask if this is a good time for us to organise the workshop and be a part of the training program. (AL 9)

Iraqi Views

Most of the points raised are around the same themes that have emerged in discussions about the information gap, because the participants had already identified

the information gap as a collection of limitations and shortcomings. And any of those limitations could hinder communication. However, the Iraqi respondents detailed four main obstacles, related to security, finances, leadership, and technology. They also mention other obstacles, related to socio-economic, cultural, and psychological status.

In the first place, the Iraqi librarian participants identified communication difficulties in general, such as a lack of infrastructure and planning. They explained the lack of responsibility and the lack of the role of government in communications and telecommunications. Basically, Iraqi participants gave their views about the obstacle elements from historical phases; Iraq has suffered from a long history of wars, blockades, and UN sanctions. Then Iraqi participants added new elements, related to democracy.

Limitations Associated with Iraq's History (Wars, Blockades, and UN Sanctions). Participants claimed that Iraq has had a long history of wars and conflicts (three decades of which have influenced scholarly communication). They determined factors such as a lack of financial support for purchasing or subscribing to databases (abstracts or full-text journals); inadequate equipment and information technology services; information literacy in terms of searching for databases and subscribing to them; lack of training for staff, especially in e-products; dealing only with Arabic resources for acquisition, such as book fairs (exhibitions); and the lack of updated resources.

Also stressed was the impact of UN sanctions and security matters on scholarly communication.

One respondent (IL 4) summarised a list of the issues that delay scholarly communication and stated that these issues are mostly typical in developing countries:

- financial issues relating to purchasing or subscribing to databases
- inadequate budget to purchase full-text publications
- overall weak support
- instability of the State
- lack of infrastructure and power supply
- poor telecommunication technology
- inadequate equipment and devices

- lack of communication services
- poor information literacy, in terms of database searches and subscriptions

Another participant argued that Iraqi librarians prefer to be independent and self-sufficient. For example:

They prefer to get information from different places and publishers by themselves in easy and quick ways, but they are limited by the budget. In the case of the internet: we have an electronic union catalogue, which is available through the library website, but academics do not show an interest, due to its low speed and unstable power supply and the lack of infrastructure. (IL 7)

Limitations Associated with the New Political System (Democracy). Participants reported their impressions of the limitations of communication in the new era of the Iraqi democratic system. Librarians said that in spite of the attempts by the Iraqi government to set up scholarly projects to reduce the shortcomings due to the country's recent history, there are problems associated with those approaches. Iraqi study participants mentioned three main limitations that the librarians face: leadership roles and qualifications, the quality of imported IT products, and visa applications, aside from other current and historical limitations that persist in the country.

The first problem that the Iraqi librarians face is recruiting quality management. They said that the new democratic system intends to build an open government, however the still chaotic bureaucracy endures and affects appointments for leadership positions. Also, the lack of organisation and communication systems, together with systemic corruption, affects the proper governance of libraries.

Sometimes, democracy may be associated with drawbacks, especially in countries that do not have democratic foundations. In these countries, administrative chaos spreads and the role of the law diminishes, leaving the responsibility in the hands of incompetent individuals. This is exacerbated in Iraq by the prevalence of favouritism, bribery, and corruption. (IL8)

The second problem is the lack of information technology and equipment. The problem occurs in the line of rebuilding the academic libraries with substantial information technology. Iraqi librarian participants complained of the poor quality of imported products, which are not subject to standard specifications and are not serving academic researchers.

We can say that Iraq after 2003 is a country consuming large quantities of goods of mostly bad quality. Sometimes, these goods come from unknown sources. The unregulated importation of some devices is flooding the local market with poor-quality goods. This has led to the depletion of hard currency, which negatively affects the construction, building, production, and manufacturing sectors. (IL 8)

The third problem is obtaining an exit visa from Iraq since the opening up of the country to the world. Iraqi librarians claimed that there are always problems when applying for visas to visit libraries in other countries, especially developed countries. Those problems are associated with procedure, documentation, and other related requirements.

Communication with other institutions requires visa permission (or other approvals, depending on the channel of communication); this can incur costs for travel, plus the process involved, which can discourage communication or make it cumbersome. (IL 10)

The participants added other, constant limitations to scholarly communication, including a lack of infrastructure and reliable electricity, a lack of participation in scholarly workshops; the unintegrated electronic union catalogue; the lack of publication opportunities in MARC (a digital cataloguing system for libraries), the Customised Library Services, the British Library, and so on; the lack of standardisation in hardware, software, unintegrated manual and technical systems; and a lack of subsidised scholarly research. For example, what is paid to professors for delivering overseas lectures is only 30% of the total expenses, so the professors have to pay 70% of the expenses themselves.

Also, some participants believed that there may be psychological obstacles, such as an unwillingness by government to build infrastructure in the field of

information technology. Other Iraqi librarians believed that adopting a new technology may stand against people's preferences: some academics prefer to use printed resources rather than electronic ones because of their age, level of information literacy, and fear of what's new.

The academic community generally prefers printed resources over electronic ones. This leads us to the final obstacle—that the older generation of academics lack the digital skills and do not appreciate the importance of having access to the powerful information technology and its benefits in the academic field. It is quite difficult for those academics to learn the computer skills from scratch to benefit from available electronic resources. (IL 1)

Scholarly Communication and Channels

Australian Views

Australian librarian participants had a clear view of the scope of available communication channels and how to use them. For example, they provided examples of internal and external communication means, such as the library website, local mini-conferences, international conferences, Skype, blogs, other libraries, and social networking at the global level.

At the local level, I think a lot of the Australian librarians who have been working here for a long time do have friends working in other libraries, not only academic libraries but a mixture of community, state, academic and government libraries. They have very good networks, and just last week we had a sort of a mini conference at Edith Cowan University, where the five universities in Western Australia came together to share their ideas and that was a very positive experience. It happens every year, and everyone looks forward to it because it's a great chance to network. You meet your old friends and I think that's good because after events like this it's easier if you want to seek advice or get new ideas because you have someone that you know. (AL 1)

We have lots of different ways [of scholarly communication], through email, through the faculty, we distribute flyers, we put information on the

Higher Degree by Research channels on OASIS [the Curtin University portal] and we talk about it in the faculty meetings. (AL 3)

Also, Australian librarians described two patterns of communication within libraries: formal and informal. They stated that libraries could also employ external channels for informal communication or cross-cultural communication with other libraries.

Australian librarians thought that the internet is the most practical communication means because it provides access to all the academics in the world in various ways. They believed that the libraries could utilise the internet—via, for example, library blogs—because it has a huge influence on people who communicate around the world. Australian librarians added that there are two things required to establish global communication: infrastructure and an online environment.

Moreover, Australian librarian respondents mentioned examples from their life experiences about the benefits of utilising informal communication channels. For instance, they thought that although most of the libraries' management, such as the heads of the departments of library consortia, tend to use the formal communication at a strategic level, the librarians make a lot of friendships during conferences and make informal connections.

Also, Australian librarians thought that internet sites such as Wikipedia, Facebook, and library home pages and blogs provided ways for informal communication among their staff and students, and that this could develop to facilitate scholarly communication between Australia and Iraq.

The librarians believed that it's a good idea to collaborate worldwide but that any collaboration has to have a purpose. For example, one may ask, "Why do we have contact with this country? What are the benefits?" On the other hand, they supposed that engagement with people internationally via networks may enhance learning and teaching.

Besides this, the respondents stated that the scholarly communication channels in Australia aim to support research projects more than serve the libraries. For example, they think that through implementing the communication channels it would be possible to establish a platform to enable researchers across the world to discuss and share ideas. But the respondents added that for the library environment

between countries maybe this has yet to happen. And they acknowledged that the language barrier will be an issue.

To avoid duplication in the responses among the participants of Iraqi librarians and researchers, the researcher of this study refers to the scholarly communication channels in the section on international research students.

Stakeholders' Roles

Australian Views

The Australian librarian respondents indicated that there are two primary goals stakeholders could develop: scholarly communication between academic libraries locally or globally, and the roles and responsibilities of librarians, faculty and scholars, and individuals.

Role of Libraries. The participants agreed that librarians and staff working in the library have a significant role to play in developing scholarly communications. This could be through improving various aspects such as librarians' skills, library services, and international communication, as well as keeping up to date, implementing communication channels, and budgeting.

Most respondents constructed their ideas about the role of the library from their thinking about what they could do themselves. They mention the importance of working through consortia to reduce the cost of materials. Also, they discussed the influences of developing librarians' skills and library services on developing scholarly research.

For example, they said that improving librarians' skills in using new services and tools has an impact on facilitating research progression. Knowing the impact factor of academic journals would help to facilitate publishing. They said that the faculty librarians have a role to play by working with each faculty and discussing interesting matters; informing academics about new services; keeping up communication by producing online guides; discussing open-access matters with academics; preparing visits and meetings with researchers to know what interests them, and what they are publishing and teaching; responding to their queries; and lobbying publishers on behalf of all university libraries in terms of cost.

I suppose that one of the other factors for librarians is keeping our skills up to date so that we keep track of what's happening, so that when technology

changes we are aware of it, we know how to use it, and we know how to apply it. (AL 2)

They also said that some Western Australian libraries are developing their services by providing links to full-text journals regardless of databases, because they have identified that some people don't know which database they should be searching.

In regard to international communication, some respondents reported that although Australian librarians are very keen to build a strong network with developing countries and have a global perspective, they don't know too much about how to do it. On the other hand, they mention activities from their global perspectives, such as participating in international conferences, discussing with international groups, and learning and teaching with a variety of groups, as well as using the internet to develop global ideas such as reading blogs to see what other people are thinking; discussing or replacing existing rules or structures; thinking differently to build new things; establishing relationships with certain academics; and discussing difficulties with new users.

Some participants stated that there is a new trend of (and negotiations about) giving access to new users, and providing access to the Curtin Library catalogue for free to non-Curtin users, but they stated that there is a limit to what they can do internationally, because of limited funding.

There are always international conferences; there are always international groups learning and teaching (and various other groups) that Australian librarians have contact with. So I think we are fairly well developed with that issue and lots of work is being done between developing and developed countries, particularly with organisations like the IFLA (International Federation of Library Associations). (AL 2)

In addition, in regard to keeping up to date, they gave their perspectives on what they do, as well as what other libraries in developing countries have to do. For instance, they are keeping up to date with users and purchasing materials and new technology—in particular, using mobile applications, because most people own smartphones, check emails daily, and read newsletters online. In addition, Australian librarians said that they think about other libraries globally and focus on teaching

roles and information literacy roles, introducing people to this kind of collaborative technologies, teaching them how to use journal articles, databases, and the library guide online.

I would assume that they [librarians in developing countries] need to develop their academic research; they need to have perhaps some knowledge of library systems and how they work and how to put repositories together. (AL 5)

Another role of academic libraries is that of collaboration. The librarians gave four examples of the collaborative work they do: consortia, the Librarians of the Australian Technology Network, the Western Australian Information Network), and the Council of Australian University Librarians (CAUL).

The majority of librarians referred to CAUL, which they said has a lot of initiatives that facilitate scholarship between libraries. They also mentioned that consortia are part of CAUL, so that all the university libraries and members of CAUL negotiate issues, such as the price of journals. For example, they said that CAUL could negotiate with publishers to get suitable licence conditions or discounts as well as lobby with publishers to reduce the cost of resources. They thought that is a hard job, but they also said that the role of librarians includes balancing the user's needs and the information markets.

It's getting the balance between keeping the cost down for us and making that viable for the business selling products, so it's difficult. (AL 4)

Because we have 15–20 university library members, the price of publication can be cheaper than if everybody was negotiating for themselves, so that's one thing university libraries have been trying to do. (AL 9)

In addition, the participants mentioned the benefits of collaborative work on library budgets. This view is similar to that of the Iraqi librarians. While Australian librarians work collaboratively to put pressure on publishers to reduce the cost of materials, Iraqi librarians work together to reduce duplication in purchasing materials by sharing resources.

In addition, the participants repeatedly talked about managing budgets, and they said it's important because academic journals and databases are expensive but the library has to provide them. Libraries don't deal with ownership of intellectual property; the vendors and publishers do. Publishers have to maintain their revenue level to make their business viable, so libraries have little negotiating power on their own, but they can work together collaboratively to reduce the cost of publications.

Murdoch, Curtin, Edith Cowan University and the University of Western Australia pay millions and millions of dollars for the same stuff as all other universities [duplication] In America they've done a lot more about negotiating prices. We [the participant was previously working in the United States], have a consortium, or a buying group. The vendors and publishers have no real interest in this; they would lose money. They control the market by licensing. But I certainly think we should lobby them more. (AL 3)

Role of Faculty and Academics. The role of researchers and academics will discuss in constructing themes from the views of international research students. Australian librarians believed that the main role of academics comprises collaboration, creating open access, information literacy, and developing publications; whereas Iraqis' views revolved around infrastructure, library systems, and scholarly research.

The first element is collaboration. The participants thought that collaboration is the main thing that has to be done to facilitate scholarly communication. For example:

I think libraries, these type of services [scholarly communication] need to be working closely with the different schools of research within academic institutions to know what exactly the so-called strategic interest means. (AL 1)

There is a group of eight universities in Australia that try to collaborate: the University of Western Australia, the University of Queensland, the University of Melbourne, the University of New South Wales, Monash

University, the University of Sydney, the Australian National University, and the University of Adelaide. (AL 10)

The participants also thought that researchers have a role to play in collaboration, including translating their research into different languages for the greater good and having free and open communication with anyone around the world, both of which break down barriers. That role could be played by researchers and libraries together. Researchers have to start understanding scholarly communication issues by using formal networks and then collaborating, or by sharing their research. To achieve this, the participants said that faculties have to formulate disciplines to become a global player and discuss these with the heads of departments or with government.

The second element of the role is providing open access to published materials. Australian librarians thought that a current phenomenon in libraries is open access. They reported that open access has to be discussed with publishers, academics, and librarians together. Also, they supposed that librarians should negotiate related issues such as institutional repositories and intellectual properties. They focused on open access and the negotiation around it because some researchers do not want their work to be made open access, while others prefer to share with only specific groups, want to publish in important journals to get a greater publishing impact, or want to get paid.

It [open access] relies on the people who own the information—the creators, vendors, and publishers—to make their products publicly available, which brings in the financial interest and legal restrictions. (AL 5)

The respondents gave another version of open access: subject-based institutional repositories.

I think that academics can put their research into their own database or repository that is very specific to their discipline, which still encourages collaboration and the sharing of knowledge and research data. (AL 2)

The third element that relates to researchers, and that the participants thought has an impact on developing scholarly communication, is research skills. That is

similar to the Iraqis' views. The respondents thought that to develop research skills and information literacy it is important to participate in library workshops about new programs. They noted that academics can attend international conferences at their own expense if they can afford it.

The fourth element is publication. The librarians said that researchers have to be aware about what publishing entails and discuss it with publishers. They said that although the cost of subscribing to journals will continue to rise, researchers have to find a balance and have to work collaboratively to try and reduce this cost. Also, they supposed that academics have to take responsibility in encouraging the sharing of knowledge.

Role of Individuals. The Australian librarian respondents said that international communication may depend on individuals and their willingness to engage. It helps that people already know each other, because they use informal and social networks and ask questions about open they can be in a scholarly communication network. The respondents thought that the first step has to be taken by a specific discipline, and that view is similar to the Iraqi librarians' view:

Maybe it's not a role for the government or the higher educational institutions. Maybe it's broader than that. I think some individuals need to take that question to formal networks. (AL 4)

Strategies and Solutions

Australian Views

When Australian librarians talked about collaboration with librarians from developing countries such as Iraq, they thought from a global perspective. Thus, they suggested considering international connections with library organisations and associations. They suggested examples such as the IFLA, TROVE (the Australian National Library search engine), Oxfam, and the World Health Organization (WHO).

IFLA: The respondents suggested that librarians all over the world have to participate in IFLA activities such as international conferences, meetings during the year, and learning and teaching within international groups. They thought that participating in IFLA could help to create a platform between the two countries. They also suggested that librarians could implement IFLA facilities to promote

awareness, including circulating emails about conferences, reading the publications, and promoting awareness through working with the media.

International organisations: The participants suggested that in some disciplines, such as law, faculty librarians have to be involved in a related organisation. They thought that this would help to cover the particular discipline globally.

For example, the health library has strong networks, so the faculty library of health would know about international contacts—and so would the business librarian ... When I worked in law, there was an international law organisation that we were involved in ... We have an informal network of university libraries around Australia. There are international presidential libraries in various countries, so there is always some contact (AL 2).

Trove (National Library of Australia): The participants suggested that every library in Australia should participate in Trove. They say it is a database list about Australia and Australians. It provides integrated access to a range of the National Library's collaborative services (and those from elsewhere). Also, they suggested that academic librarians should contribute to it, because it holds the research results of Curtin academics and Australian archive collections.

Oxfam: The participants suggested that librarians in developing countries have to be aware of the help that Oxfam can provide. Oxfam is an independent international charitable organisation. They said that it runs many diverse aid programs in developing countries that could be of assistance to libraries.

WHO: The WHO is another possible avenue for getting access to resources. It promotes access to resources in developing countries. But for developing countries, its fees are relatively low. The WHO is in a position to buy a lot of resources that countries would otherwise pay hundreds of thousands of dollars for. Also, it teaches international groups of students how to purchase resources or access databases for free.

In regard to developing the partnership between academic libraries in Australia and Iraq, participants suggested that the libraries have to facilitate scholarly programs such as international projects, scholarships, international conferences, open access, research projects, sharing resources and services, sharing international

abstracts, translation services, implementing technology, and promoting virtual libraries.

In addition, they suggested that before starting a scholarly communication program between the two groups of libraries, the librarians have to think about developing some criteria, such as the standardisation of communication techniques or communication via consortia. They should also determine the factors of scholarly communication, like dialogue, online learning, and virtual teaching, and develop strategies for collaboration.

Iraqi Views

Most Iraqi librarian respondents talked about themes that revolve around two main ideas for developing the structure of scholarly communication between academic libraries in Iraq and Australia. First, they mentioned themes related to strategies and theoretical projects. Second, they mentioned those related to the solutions, practical procedures, and actions that should happen.

First, in regard to strategies (theoretical projects), participants constructed concepts that could lead to the way the libraries in the two countries could communicate. These strategies could be planned as short- or long-term projects.

Four themes emerged as part of the proposed solutions: collaborating, developing facilities and infrastructure, determining the communication's requirements, and discussing the funding policies.

Collaboration is the first idea that was generated by several of the Iraqi librarians. They mentioned that collaboration among libraries can address many issues to help reduce the information gap, including by purchasing affordable materials, widening the range of available services, and increasing accessibility to academic resources.

Iraqi librarians stated that collaboration helps to facilitate the management of libraries' budgets. They also mentioned that, by collaborating, the libraries can manage the ways of sharing resources, which can increase efficiency and reduce costs.

Collaboration and sharing resources will reduce costs and effort. If there is collaboration between three main central university libraries, each library can purchase resources that are different from the resources of the others. And through collaboration via their websites all resources will be available

to all those library users; this requires investigation of journal titles through indexes, bibliographic databases, and full-text or abstract databases. It also requires digital systems. (IL 3)

Different libraries can simply share the cost and usage of the various resources for the benefit of all academics in all disciplines. Subscribing to databases is very expensive, but through collective collaborations this can be very cost-effective for all institutions. (IL 4)

They also stated that there are a lot of advantages of collaboration globally, such as sharing and exchanging experiences, increasing awareness about other cultures through reviewing the international literature, and sharing difficulties and challenges among academic libraries.

Moreover, the participants indicated that collaboration contributes to research projects and develops the country. They said that there is an attempt to include in each academic library the required databases. They also said that if the library subscribes to the required databases that will assist the scholars to find the appropriate materials they need to do their research projects—in turn developing the country.

Also, they claimed that by establishing the project of databases, the production of local databases will ensue, and that this will contribute to making these databases accessible to all Iraqi academics as well as globally. The consequences will help to reduce the information gap. For instance, one of the ambitions is to develop the local databases project.

Locally, we have significant weaknesses relating to the availability or accessibility of databases. Currently there are some initiatives, yet they are simple projects and in their infancy. With sustained effort and collaborative work, it could be useful to take advantage of local databases and perhaps global ones through subscription. For example, higher education institutions associated with the academic libraries have attempted to create new projects such as the Iraqi Virtual Library Science project. Through this project, academics can benefit from international databases. This is a great project in the difficult circumstances of the country. (IL 4)

The participants also stated that collaboration in libraries could involve various services, such as the digitalisation of academic journals. The librarians gave an example:

It is possible to have cooperation in the digitisation process, whether or not there is a duplicate copy of a particular publication. For example, for a library with duplicate copies of 10 titles from different publications, each particular library would select a particular title then digitise that title and make it available across the network to other libraries. Similarly, a project has to be done for the theses. As you know, each university library has a centre for theses deposit. A great use would be available for each thesis if it is digitised by each library. (IL 5)

Most of the Iraqi librarians claimed that facilities and infrastructure are other factors that need to be involved in the strategic planning to promote collaboration between the academic libraries in the two countries.

The participants believed that it's important to support the basics of communication, such as telecommunications technologies, equipment, computers, software programs, the internet, and advanced library systems.

Through their experiences in office work, most of the participants identified that the internet is the base of communication, whether locally or globally. They mention other related means, such as landline phones and satellite broadcasts. They also highlighted the services that the librarians can obtain in the case of developing the infrastructure and policies of the internet.

For example, they said that using the internet as a communication means contributes to developing the structure of scholarly communication between the academic libraries. They also said that the means of internet access needs to be reviewed and developed constantly. They said that changing the internet connection from modem to fibre would contribute to facilitating library services locally and globally.

Iraqi librarians gave ideas about developing the library systems, such as purchasing new library systems online, developing training programs for the staff, adopting modern systems at work, making agreements between countries, and possibly getting free programs from other, more developed countries.

Moreover, the participants stated that through developing the availability of internet services in libraries, many academic services will be available, such as the electronic union catalogues, local and international databases, electronic services, and networking among libraries (locally or globally).

Communication requirements is the third theme that the participants identified. They stated that scholarly collaboration needs to meet certain requirements to be successful: one is related to the administration of the institution; the other is related to the availability of technical services. The participants identified the elements that should be included in establishing the strategies of international scholarly communication, such as a proper planning. For example, they stated that the strategy has to include applicable projects and adopt short-term actions, because they thought that academic libraries need to activate scholarly communications quickly.

Iraqi participants claim that Iraq's Ministry of Higher Education and Scientific Research (MOHESR) should have the task of employing qualified leaders to make the right decisions and agreements, and to increase the number of staff working in the main and central libraries. One Iraqi participants suggests that instead of planning for huge future projects, it should be implementing simple, practical and workable projects. They feel that the libraries are still at the beginning of their journey to international cooperation and communication.

They suggested that the strategies for developing the libraries should cover all the administrative and technical aspects of cooperation.

After getting approval by government, make a relationship and collaboration agreement with international academic libraries and institutions. These agreements have to include all aspects of the exchange of information and allow academics to use databases and information services. Also, agreements need to be set up for preparing and developing cooperative programs in order to develop services and staff training. (IL 9)

The participants identified more details about technical aspects to improve the strategy that could develop the academic libraries.

For example, they encouraged the use of standard and advanced technologies and switching to electronic systems and integrated library systems, with each library

on the same system. They mentioned the need for uniformity of technical procedures and for the adoption of a proper library system that fits all the academic libraries in Iraq, which then could be integrated into the global communication system. However, the librarians found that the Arabic language has special requirements, which should be aligned somehow with the systems used by developed countries for collaboration. For instance:

Now we are applying a new electronic software program in libraries: Greenstone-Koha Integrated LIVE CD v0.6. This system is useful for accessing shared electronic materials quickly and easily. This is a draft proposal, and it needs updated computer systems and good internet access. (IL 7)

Recently libraries have adopted Koha (library software). This software is free, simple to use, and supports the Arabic language. It encourages loan services to be electronic. Librarians have been sent to Beirut for training on this program and they are starting to apply it. This could facilitate collaboration between academics in developed and developing countries. (IL 10)

Funding strategies for scholarly collaboration is the fourth theme. Initially, the participants suggested that the plan for funding should incorporate four aspects. First, they said that the operating structure of the library and its association with the institution it forms part of (e.g., the university) must be clarified and that the library should have a separate budget to its institution.

They stated that the strategy has to identify the benefits that financial support can achieve in developing scholarly communications. In addition, they mentioned that the plan has to identify the issues that may occur if there is not enough funding. Finally, they identified the roles that the librarians and higher institutions have to play, with limited budgets, to achieve the aims of the library. For example, they claimed that higher institutions have much to contribute in developing scholarly communication and that librarians have limited resources to do so, apart from their work.

Also, they mentioned that, with some financial assistance, libraries can improve services by providing new systems and new programs, purchase the right

equipment, train staff, and subscribe to databases. The important role of librarians is to prepare a draft and present a convincing proposal, and the decisions will be made by the head of the organisation. Librarians have to convince the managers about the need to purchase databases, or access to them. Also, the librarians have to involve themselves in informing and educating their managers about the details of any projects they suggest.

All projects require financing. For example, running a video conference costs about US\$2,000–\$3,000. It requires us to convince the decision makers of its need and benefits. (IL 2)

The participants gave their views about the anticipated methods of establishing scholarly communication between academic libraries in the two countries, and in turn globally. They determined three aspects that need developing: technology applications, international projects, and the Iraqi Virtual Library Science project. Also, most of the participants stressed the role of social networking as the best means to develop scholarly communications locally and globally, as well as cross-cultural and political issues.

Iraqi researchers discussed social networking as a means to facilitate their research and scholarly activities; however, this section discusses social networking from different perspectives as a means of communication between two libraries in different countries. Also, this section discusses the most appropriate type of social networking suggested by Iraqi librarians in the current circumstances in Iraq.

In regard to technology applications, the participants stated that technology in general helps to set up telecommunication projects, provide library services through mobile phones, create opportunities to use advanced devices and equipment, provide collaborative equipment such as receiver's devices, establish high-speed networks, and provide library services to users in remote areas.

The participants also gave examples of how to improve library services, such as contacting foreign publishers to sign up or subscribe to e-resources. They said that librarians can educate themselves by searching for training programs, useful software, and other information related to information literacy.

In addition, the participants gave real examples of the use of technology applications—for example, networking through library webpages and establishing sites for blogs and abstracts.

Iraqi librarians said that, in their libraries, they use informal communication, such as personal relationships, more than academic or formal communication. Academics can befriend librarians through visits to the library, which can lead to excellent relationships that can improve services (e.g., through the selective dissemination of information); networks of acquaintances can emerge from the personal efforts and social media that eventually bring people up to date with developments in the world of academic libraries.

There is an attempt to apply the social network application web 2.0.

Unfortunately, most of the users are young people, rather than the targeted senior academics and librarians. Participation from libraries and their users is limited compared with the number of staff involved. (IL 4)

Another suggested solution is to encourage the creation of library webpages to facilitate communication. The participants said that librarians are preparing to create a webpage and student portal to facilitate electronic services through a library website. Also, those channels can be used to conduct library surveys and calculate the results electronically.

There is now a strong incentive for each library to have its own Facebook and /or Twitter page through which news and information can be delivered to users effectively. Every library user can become a member of these pages, so that they can interact with the library team by posting questions and answers, comments and suggestions. I believe that every library has to have its own official Facebook page via which it communicates not only with its members but also with other libraries. Personally, I greatly benefit from our library Facebook page and I strongly recommend that all librarians should use these social networks to remain connected. (IL 1)

The librarians suggested that the use of smartphone technology applications is important to develop their services. Mobile phones are used extensively for text

messages to library users to inform them about the services. IL 10 stated the following:

- We use mobile phones to text users about our services.
- We are creating a website, empowering the students to use it for library services.
- A study shows that 75% of academics and students have their own electronic devices, laptops and tablets.
- Using focus groups of researchers for conducting purposeful surveys and questionnaires regarding the provided services.
- We should encourage librarians to employ these devices for communication.

The second suggestion is to develop international projects. The participants identified two main ideas that relate to the international project and then enhance collaboration. First, they identified the aspects that contribute to scholarly communication projects, and the potential to achieve those projects.

Participants explained their views about international projects. They believed that some international projects, like conferences, workshops, and field visits, may contribute to a convergence of views between the two countries. Also, the librarians offered realistic solutions that could enhance international scholarly communications, which may suit the current conditions of a country like Iraq. They discussed many aspects of scholarly projects, such as developing social networking and video conferencing, exchanging field visits, inviting experts and professionals, adopting new training programs, offering scholarships, and exploring open-access issues. They also mentioned twinning universities, improving distance learning, and facilitating the procedures of working in foreign and developed libraries to transfer the latest trends, and donating resources and library materials. They concluded that those projects will achieve efficient levels of communication and reduce the information gap.

The third solution is the Iraqi Virtual Library Science project. The librarians defined the concept and then listed the advantages in applying and developing such a project. Most of the librarians pointed out that this is a unique project that provides access to international databases from well-known publishers like Springer and

Wiley. The project, and the registration of users, is under the control of the heads of the departments of higher education institutions.

The librarians said that the role of the department heads is to manage the process and to consider copyright and intellectual property issues, on the basis of the agreements with the publishers and the Iraq's MOHESR, which retains responsibility for e-publications.

The participants also mentioned that this project helps academics and scholars to do their research from home, via a login. The users then don't need to be in the Central Library to search its resources.

Several of the participants mentioned that the project is unique due to the ongoing circumstances of Iraq. This project is designed to support all Iraqi universities and colleges, as well as some research institutions. Also, as the Central Library of the University of Baghdad represents the main central library in Iraq, this project is funded by the government. The librarians thought that this will close the information gap, at least within Iraqi institutions.

In addition, the librarians were aware of the importance of digital resources. There is a project to digitise all Iraqi journals and to provide database access to all scholars. It started with all academic journals from 2005 up to now, and there is a plan to include archived sets of journals from earlier eras.

Interviews with International Research Students

This section presents the findings from the interviews conducted with 22 international researchers. The findings of the interviews highlight the continual structuring of meaning and understanding that emerged as participants considered the concept of international scholarly communication and the information gap in Iraq, reflecting their different circumstances, experiences, attitudes, cultures, and nationalities.

In recent years, scholars from the Arab region have begun to turn their attention to the issues of scholarly communication and research productivity, and to investigate the impact of the rapid uptake of digital content in all its forms. For example, Al-Aufi (2007), on the basis of a study undertaken of research and communication practices at the Sultan Qaboos University, in Oman, emphasised the importance of the internet and its role in transforming the patterns of both formal and informal scholarly communication. Al-Aufi also reported that reliance on the Arabic language has impeded the participation of Arab nations in global scholarly

communication, together with other factors, such as cultural, socio-economic, and political variations between developed economies (supporting mature research sectors) and the Arab Middle East. This section emphasises the state of research and scholarship in developing countries (with a focus on Iraq), and the importance of, and prospect of, collaboration between academic libraries in Australia and Iraq, with the aim of addressing the information gap in Iraq from the points of view of international research students from developing countries.

This section then reports the outcomes of interviews conducted with researchers from Iraq, Indonesia, Sudan, and Iran. The reasons that I included those countries and the value of them to this research is that there are similar circumstances in Indonesia and Sudan in academic libraries. Disasters management that have affected these libraries and the extent of damages has been studied by Choji (2017) which is similar to what happened to Iraqi libraries. It founds that the major disasters that have affected academic libraries in developing countries were pests, fire, roof leakage and data alteration (these disasters can cause great damages to the library collections and building). The current research adds another type of damage that has occurred in academic libraries namely looting the valuable collections and manuscripts that has happening during the wars. These are synthesised and discussed further in Chapter 6.

The interview results are presented according to the themes that emerged from the interviews themselves. When necessary, these questions were supplemented with additional questions in response to the interviewees' answers in order to invite additional comments. As a result, a number of themes have been generated and are used to group the data where appropriate and contribute to develop the conceptual framework of this study.

The international research students (Int. R) interviewed for this study were aged between 20 and 59, with a majority in the "mid-career" phase. There were 12 males and 10 females.

Themes Emerging from International Research Students' Comments

Definition of Scholarly Communication from International Researchers'

Perspective

In general terms, most of the international researchers described scholarly communication as a process for the exchange of concepts and ideas. Scholarly

communication was also frequently explained as being situated within a framework provided by a particular scholarly community or discipline:

Scholarly communication is a collection of means that can be endorsed by academics at universities and institutions. Its main purpose is to evaluate, publish research, and introduce new experiments based on teaching and research, both in science and in humanities subjects. (Int. R 5)

Interviewees consistently noted that scholarly communication could be enacted by formal means, such as publishing books, journal articles, and conference papers, while also reporting that scholarly communication could occur through the use of informal means, such as personal correspondence, conversations, and brainstorming between students, experts, authors, researchers, and academics. They also noted that the communication could be mediated in less formal modes by various technologies, such as telephone, email, or numerous internet-enabled means such as blogs, discussion lists, and forms of social media.

According to my studies and my information, scholarly communication is the process of academics, scholars, and researchers sharing and publishing their research findings so that they are available to a wider academic community. The way of communication can be face-to-face or by the internet, or both. For me I prefer to use both ways to make contact with other colleagues (Int. R 10)

Scholarly communication is everything relating to the university environment, conferences, and academic gatherings with people from the same field. The communication can be achieved via international conferences, the internet, and social media. It can also take place through informal channels or activities, such as galleries and social clubs, especially in the literature or art fields. (Int. R 6)

Interviewees commented that informal scholarly communication could be between two or more people, including substantial numbers in gatherings such as international conferences. They reported that these conversations could be helpful to all participants, through providing for the production and transmission of knowledge for scholars with shared disciplinary interests. An interviewee (Int. R 21) described

some of the complexity of informal scholarly communication, including the particular academic purpose that was being served, the level of knowledge or expertise of the individuals involved, and the nature of the relationship between them.

Generally, most international researchers said there is interaction, exchange of concepts and ideas, brainstorming, and conversation between students, experts, authors, researchers, and academics. This occurs either in person or via certain technologies such as the internet or telephone, thereby enabling both parties to communicate, or to establish means of permanent communication, such as journal articles or scholarly monographs. It was also noted that they thought scholarly communication enables both parties to benefit from one another through sharing and learning and through access to scholarly materials. The communicative process can involve two or more individuals or institutions, sharing ideas and thoughts informally through personal/private correspondence, or it can be widely broadcast and disseminated through public channels to a large international audience. Scholarly communication refers to interaction between two or more academic institutions. Such communication may be concerned with scientific, cultural, experience-related or pedagogical matters (e.g., books and curricula). This communication is necessary to benefit from the diversity in expertise and skills. (Int. R 13)

I used to be a lecturer and will return as a lecturer in my country, so I think it's very important to give students a support system like there because then we can reduce the gap between our knowledge, in a developing country, and the knowledge of those in the developed countries. (Int. R 5)

Unsurprisingly, a number of participants reflected on their own practices and, in doing so, highlighted their personal use of social media or social networking as a standard and preferred means of conducting their scholarly communication.

It is the process of communication to exchange knowledge and thoughts among academics, professors, researchers, and students. It is a critical aspect for all academics, whereby one can follow progress and research output from other countries and fields. The means via which scholarly communication can take place include the internet, online applications

such as Skype, email, and telephones. I personally consider emails the easiest means to use. (Int. R 1)

In discussing the concept of scholarly communication, some interviewees also began to reflect on their experience as a researcher in an under-resourced education system, where the research and higher education sectors are struggling to achieve levels of support and investment that are accepted as the norm elsewhere. As one Indonesian participant commented:

Developing countries have a lot of problems: poverty, health, education. Sometimes libraries are very expensive for developing countries. They are still busy with poverty, poor health conditions, and everything. People have very little education. One way to alleviate poverty is through education. Education is therefore very important. (Int. R 6)

This particular interviewee, likely aware of the wider context of the interview, also reflected on the role of academic libraries in higher education, noting that in his/her experience libraries have received little attention despite national efforts to improve other aspects of higher education.

And if we are talking about education, libraries would become a priority. For developing countries, the priority is not libraries. For example, from my personal experience, even in very prominent universities the library is not as sophisticated as the ones in the developed countries (Int. R 6)

In the process of discussing the meaning of scholarly communication, another international research student expressed the view that academic libraries have a crucial role to play in facilitating scholarly communication, because the library is the essential place for collecting and preserving the materials and documents that record the results of previous research.

Scholarly communication is the academic environment that researchers, students, supervisors, and professionals share; this includes seminars and workshops. It is a broad term. Libraries are considered to be the backbone of academic institutions and universities. They document and preserve the

research outcomes of the academic departments, in both hard- and soft-copy formats. (Int. R 4)

Several of the international research students from Iraq specifically mentioned the challenges the country faced. It was noted that economic sanctions had a major impact on the experience of scholarly communication in the country both during and after the 1990s. International research students 3 and 4 were two who singled out the disruption to normal communication that resulted from Iraq's experience with blockades and embargoes.

Unfortunately, Iraq is lacking severely on the technological and technical level. This is attributed to it being the subject of long periods of blockades and isolation from the world arena. Wars over 30 years have affected life in general and academic research in particular. Remember that, since the wars, we haven't have the discretion to communicate freely with the rest of the world. This has been done through mediators, which applies to commerce, knowledge, international relationships, and vital goods. This was imposed by the UN resolution in the 1990s. We use Jordan, Egypt, and other countries from the Gulf. This costs more money, takes more time, and reduces our discretion. (Int. R 3)

Due to the series of wars, blockades, and the troubling political situation in Iraq, universities have had no opportunity to develop research or learning systems. (Int. R 4)

Tools are required for everything—communication needs computers and phones, and computers are provided by the university, and the phones are provided by the economic sector of the country. The economic sector is provided by the wealth of the country ... so everything comes from the economy of the country ... the economic status of the country. (Int. R 21)

An example of financial corruption:

Iraq is a rich country. Small and medium-sized institutions can benefit from the information industry if they are well presented on the internet, as in the case of those big companies that have the power of advertising to

reach the ultimate consumer. But capital invested in projects is wasted as a result of the widespread administrative and financial corruption. Although we always hear about major infrastructure projects in Iraq, we see a very few of them being realised. (IL 8)

Another example of administrative corruption:

Decision makers in Iraq are thinking about their personal interests, and how to gain an advantage from the other side of communication. For example, working with an American team, Iraqi leaders were thinking about how to get benefits such as scholarships to their children or families in America; they were not focusing on how to develop research projects (Int. R 12).

A number of participants in this study appeared to display a low level of understanding of what constitutes scholarly research. It appeared that, to them, any document or communication sent between two educational bodies is formal scholarly communication, even when perhaps the communication is purely administrative. This lack of understanding leads to a generally low level of public debate, and lessens the chance of fresh, well-researched ideas entering circulation. In order for the situation to improve it is necessary for students to develop a better concept of what robust research is, and the ways in which it can contribute to development.

Three themes emerged from assessing the existing structure of scholarly communication in academic libraries in Australia and Iraq.

Scholarly Publishing

With regard to scholarly publishing, participants reported that collaboration with universities in more developed countries could increase the rate of scholarly publications in their own, developing countries.

In developing countries, we face many problems in regard to publishing and disseminating academic findings through articles, books, and conferences. Simultaneously, students in other developing countries (e.g., Indonesia, Sudan) complain about their limited access to academic articles from outside the country. (Int. R 16)

Indonesian universities can collaborate with Australian universities; they can share their publications and the results of research. Also [as part of the collaboration], Indonesian researchers can publish their research in Australian journals, and vice versa. (Int. R 20)

One critical element we are lacking is a financial motivation to publish our study and research outcomes. This applies across the board, including among students and professors. For example, we have to pay all the fees required to get published. We do this only for the sake of getting promoted, otherwise we would not make the effort. By way of comparison, during the 1970s, competition among scholars to get published was fierce because of the incentive. Publishing academics used to receive 150 US dollars equivalent per publication. (Int. R 3).

At postgraduate level, some universities provide instruction in research methodology. This helps students to recognise the difference between academic writing and other non-fiction writing. However, these courses are not always available at universities in developing countries.

Respondents argued that in order to solve this problem it is essential for departments of education in developing countries not only to fund the provision of more academic resources but also to introduce academic writing units as a mandatory course of study in the early undergraduate years of university. Furthermore, the academy must help to increase students' awareness of universal standards of academic writing and codes of ethical academic conduct.

In my country, which is a third-world country, it's still a very hard thing; for example, as a scholar you are not encouraged to write, basically, because there are already people who are actually doing it. Let's just say that it's not easy to publish, and governments don't really support that. It's not that they don't support it, but there's less money being poured into that field, [and] since there is no money there, people tend not to be interested in it; whereas here [Australia] there is a lot of money in writing and publishing and creating scientific publications—I think that's where people want to contribute more. (Int. R 17)

I think the academics have to begin their work in their own country, not on the international or global scale. You have to convince your government, the institutions of your government, because this global inequality cannot continue. It will eventually collapse everything. (Int. R 16)

Government Censorship and Academic Freedom. In many developing countries, censorship is a potential barrier inhibiting the development of the academic exchange between developed and developing countries. The motives behind this academic censorship differ between countries. These may include prohibiting academic material coming from the West that criticises religious affiliations or practices. This may apply in some Islamic countries, which suppress potentially critical material. Countries may also prohibit books that criticise the political regime in power (e.g., North Korea, China, Cuba, and Ethiopia) (Anonymous, 2018; Muchtar et al., 2017). While some Arab-world countries, particularly in the Arabian Gulf, appear sophisticated in economic terms and enjoy a high standard of living, they may still enforce restrictions on the study of some academic disciplines or the circulation of scholarly material that openly criticises religion or the political operations of the ruling elites (Aman, 1992; Mostyn, 2002). Among the Arab nations, only Lebanon enjoys a lesser level of censorship with respect to academic material that is produced in the West (Inhorn, 2018).

It may be in the best interests of the Arab-world countries and their citizens for an academic renaissance (Briggs, 2018) to take place, in which academics, their institutions, and disciplinary bodies persuade political and religious leaders of the benefits of allowing greater freedom for academic exchange, in order that individuals have the means to access a range of information and be encouraged to develop a more informed and critical response to the world (Ellis, 2018).

There are also some censorship issues, such as those involving some of the books that have been published in our country [Indonesia]. For example, when it comes to sensitive issues like human rights or religion, we are not that open, you know, whereas in the European or Western countries there are all kinds of books. Even for those who fully fight religion, who fully fight beliefs—the books are available yet we can't access them in my

country. In China they can't access any books or websites on democracy, for example, so that's the political side of it. (Int. R 17)

In addition, interviewees argued that academic institutions and universities in developing countries are more engaged in delivering degrees by coursework-based study rather than in providing higher degrees by research (master's and PhD). Therefore, they do not invest in developing the services required for independent research or the publication of scholarly material. And, due to the paucity of research, there is limited funding available not only for publishing but also for acquiring scholarly content produced elsewhere (Ziderman & Albrecht, 2013).

Regarding databases, in the beginning I faced some hardships in using them, in terms of research skills and credibility. Because some for-profit publishing organisations are trying to gain money by publishing research, regardless of the strength of the work. (Int. R 12)

Further, students themselves are less aware of the processes involved in the publication of scholarly content. They do not know how to contact journals, editors, or publishers and lack the skills to write and publish a book. This is particularly the case if their research has been conducted in a second language—for example, English, German, or French (Salager-Meyer, 2008).

Also, in order to publish research, I have asked the members of faculty to give advice about a company because some companies are not credible and the reputation of my research would suffer. (Int. R 12)

There are therefore many issues impacting the production, dissemination, and acquisition of research in developing countries. As a result, neither the academic community nor society more broadly is able to benefit fully from the research that is being undertaken inside, or outside, the country.

Academics complain that they cannot fully contribute to the welfare of the community and feel that they have no voice and influence on the process (which is now limited to officials). The means include conferences and other academic and cultural gatherings. They also suffer from the difficulty of getting published. There are unfounded obstacles to

publication. They need to have a loud voice and persistence to remove those obstacles. There is corruption (bribery, etc.). Add to this the limited number of publication venues. As for international publishers, we do not communicate with them. (Int. R 6)

Other researchers from developing countries focused on the need for better access to international literature associated with their research—research that is often conducted into the circumstances surrounding national or international development. They reported that international publications containing information related to development issues can be retrieved from the various reports and annual reports of the UN, UNESCO, and other international organisations, but they are often not conveniently available from the institutional libraries in their home countries.

Several interviewees made the association between scholarly publishing and open access, pointing out the importance of the open-access movement as a potential solution to challenges facing developing countries in accessing scholarly publications. Several recommended that scholars should elect to publish in open-access outlets to enable counterparts from developing countries to have toll-free access to what has been published and thereby benefit from it.

Software Programs

Software programs are considered useful supplementary tools that facilitate and assist researchers in all research phases (Rardin, 1998). For instance, for academic referencing researchers can use a variety of software programs designed for academic referencing—for example, EndNote and Mendeley. (Butros & Taylor, 2011). Furthermore there is software designed for qualitative and quantitative data analysis, such as ATLAS.ti, NVivo, MAXQDA, and one-way ANOVA (Gibbs, 2008; Neuman, 2013). Additionally, there are websites and software programs designed to assist with academic writing, such as wikis, MasterWriter, and EssayJack (Kuteeva, 2011).

In developed countries, all these tools are likely to be widely available, many provided for free by universities on an institutional licence. Moreover, in developed countries, libraries and institutions frequently provide training to support students in using these programs (Anunobi & Okoye, 2008; DiMaggio, 2013).

In developing countries, libraries and universities and academia in general face three main problems with accessing and using academic software. First, there is

a scarcity of software resources; second, there is difficulty in accessing these resources when they are available, due to deficiencies in institutional support; and, third, there is a low level of understanding about what these resources can contribute to the research process.

Developing countries therefore must use new strategies that assist academic institutions and libraries to adopt new software and associated technologies and to upskill their staff in their application to research.

Interviewees claimed that software programs are important supplementary research tools that should be provided by academic libraries. They suggested a variety of different types of programs and associated tools that are relevant to their disciplines and useful in enhancing the research process. Some of the examples specifically raised include EndNote, which is used for referencing, compiling abstracts, and recording related notes; NVivo, useful for qualitative data analysis; Dropbox, which assists researchers in sharing projects, ideas, and saving information, and helps in sharing ideas and social activities with other colleagues; SPSS (Statistical Program for Social Sciences), which enables quantitative data analysis; and Blackboard, for supporting contact with, and between, discipline experts and students.

Several interviewees mentioned other programs that are particularly related to a specific discipline or field of knowledge, such as MATLAB for mathematics; ArcGIS (geographic information services) for geography, and others. It was stressed, however, that:

Those software programs can only provide you with raw data; you need to analyse everything using your own thoughts. (Int. R 21)

I use SPSS to analyse data quantitatively. I use NVivo for qualitative data analysis. You can buy them, or the university can download them into your computer — the library allows you to download them onto the university computers that you use. You will be forced to pay for them by yourself if you are not connected to any educational institution. I use them here on campus for free. (Int. R 22)

Research Skills

In the absence of explicit instruction in the development of research skills, they are greatly determined by the individual's inherent ability and talent. In Australia today, many tertiary institutions have adopted an outcomes-based approach to education. According to this paradigm, an average person offered explicit instruction can develop research skills.

For the purpose of this discussion, research skills can be summarised as the skills necessary to explore new ideas; the efforts made to search for responses to questions and solutions for problems; the ability to hypothesise logical arguments or theories and justify them by proofs and evidence; and the steps taken to improve the state of knowledge in a specific academic field, and to increase understanding of life in general (Larkin & Pines, 2005). Explicit teaching of research skills requires instruction in the following subcategories: "defining the task," "gathering ideas", "brainstorming for assignments", "utilising graphic organisers", "employing search engines and websites", "developing an overview", "note taking", "constructing a bibliography", "timeline and life cycles", and "Cornell Notes" (Thomas, 2004).

According to respondents, the majority of students in developing countries (including Iraq) are not fully aware of the important differences between academic writing and non-academic or narrative writing. By contrast, students in developed countries have access to courses in which academic skills are taught. Skillen (2006) notes that in Australia academic writing is a unit taught to all students from many different fields of study in the undergraduate years.

Unfortunately, in many developing countries even talented students lack the knowledge of these elements of research skills and processes. They tend to adopt less than optimal research methodologies for designing their projects, collecting and analysing data, and presenting their findings. For instance, many students collect data and information from non-academic articles and use search engines that lack academic integrity or fail to prioritise access to high-quality academic sources. (Beel, Gipp, & Wilde, 2009). This lack of robust research skill among students is a key reason why universities in developing countries do not meet the criteria to be highly ranked among universities worldwide (Altbach & Salmi, 2011).

Several of the international research students described their basic methods for commencing research or undertaking literature reviews and, as noted above, they

tended to describe the use of freely available internet search engines (Google and/or Google Scholar) rather than library databases.

Almost 99% of the time, I rely on engineering journal articles. I have to continuously update my list of articles and make sure I add the most recent ones. Google Scholar can be used to refine the search period, type, and publisher, etc. This enables researchers to acquire resources of high impact factor and cover a wide area of the research conducted. In terms of references, some disciplines, such as the medical sciences, require many citations, while other research areas could be content with a fewer citations. Using Google Scholar, one can measure the quality of an article and whether it has been cited by two or 100 people within a two-year period, for example. (Int. R 4)

The means adopted depends on the nature of the subject or research ... The versatility of the internet now makes it very efficient in gathering information. Through the internet, I can get e-books and periodicals. I do not use databases much, as they need a subscription. I use the search engine at Curtin, which sometimes helps. I use Google Scholar sometimes. (Int. R 5)

Others reported using Wikipedia as a “starting point” for research, even though they are aware the information it provides is often not fully accurate, but they claim that they only read about a subject that they don’t know anything about. Other participants stressed the importance of selecting the appropriate tool for the research task and noted that freely available web-based resources are not always appropriate. For example:

There are many sites and search engines, but the most important thing is that the researchers choose an accurate site for searching. Choosing the correct site depends on the researcher’s skills, experiences, background, supervisor, experts, and guidelines. For instance, Wikipedia is not a reliable source, though it provides information on everything in life in a simple and easy way. (Int. R 13)

Academics don't trust that their libraries are providing good-quality services to support their research, so they prefer to go outside and get what they need personally through the internet cafes or from their home. (Int. R 10)

Another interviewee noted that he had specifically acquired his research habits from Iraq, but noted the lack of supporting services in providing access to scholarly publications.

Search engines such as Google are critical to locating research information. Search engines are accessible in Iraq. There are two issues in this regard: first, the internet resources such as full-text articles and theses may be available, but utilising them requires high-speed internet, which may not be available. Second, the resources may not be accessible in the first place. Accessibility of the resources depends on the location (Int. R 1).

Some interviewees noted that they use Google Scholar for searching for scholarly resources because it provides free access to scholarly materials, and because their academic libraries have access to a limited number of scholarly databases. Others report that they use Google Scholar even if they have free access to scholarly databases. They claim that Google Scholar refers them to the relevant databases.

It depends on the information you are looking for. The last database I used was Project MUSE. I can get what I want from there. Sometimes what I am searching for will direct me to the database. Or I go to a database like ScienceDirect and search for what I am looking for. At Curtin, I use the library catalogue. Around 90% of what I am looking for, I can get it from there. Apart from that, I use Google Scholar and databases like ScienceDirect. Any other database linked to that, I will follow it. (Int. R 22).

However, the variation in the quality of the information used by the researchers is affecting the quality of the research and introducing another component of an information gap.

Other interviewees noted that universities have to provide the academic journals and databases in each field of knowledge being studied at that university. This was necessary not only for supporting research but also for facilitating academic publishing (Int. R 15). Participants were generally of the view that an engagement with scholarly communication starts with developing an appropriate level of research skills. Also, they expressed the opinion that it is important to be knowledgeable regarding various search engines; research methodologies; and the status of particular journals, including impact factors and the frequency of citation. It was argued that it is vital that all universities empower their students to develop these crucial research skills.

Constraints and Opportunities Affecting Scholarly Communication

Employing Social Networking

Most of the international researchers expressed opinions indicating that social networking has influenced numerous issues related to scholarly communication.

In addition, they indicated that a number of social networking tools could be employed to facilitate both formal and informal scholarly communication. The participants noted the different channels that could be useful for both formal and informal communication, such as email, various social networking tools, links, and invitations to be part of a conversation.

Since there is a wide range and variety of communication tools, international researchers are utilising those tools for sharing scholarly activities and encouraging collaboration.

Information technology has been used to facilitate student resources and provide easy access to academic journals. Students in developing countries face challenges communicating with journals and online libraries, and even with some of their academic instructors (Saggi, Maskus, & Hoekman, 2004).

Moreover, Western academia is profiting from software programs by employing them in academia (Clements & Northrop, 2002), whereas this easy access may be missing in some developing countries. The countries getting access to this software will facilitate developing scholarly communication.

It is worth mentioning that what international research students experience, in terms of information technology, at Curtin University, is often far above the resources in their home-country universities and libraries.

The Curtin student portal, for example, is not just a means of sending and receiving emails; it's a complete academic communication channel for students. It includes official university communications and provides information regarding students' academic status, the latest academic and library news, careers information, and information about new and emerging courses. In addition, students can access official documents, put questions to the university, and engage with the university's financial management system. (Int. R 9)

Curtin provides students with individual email accounts as soon as they enrol as a Curtin student. This is great; email is the best communication channel, whether for scholarly communication or official communication. It provides a base for enhancing scholarly communication. (Int. R 21).

The interviewees noted other ways to gather scholars in one place, such as conferences, forums, seminars, or digital and social networking spaces such as Facebook, LinkedIn, WhatsApp, Blackboard, Dropbox, webinars (online seminars), and Skype. An example given of the use of social networking for crossing communication boundaries between international scholars was webinars (seminars conducted over the internet).

Maybe the presenter is in Melbourne, but the audience can be anywhere. They can be in the United States, Perth, Sydney—anywhere. They are able to communicate online; they have access to the presenter; they can make points, ask questions, and discuss issues. This is just one of the manifestations, one of the realisations, of scholarly communication. (Int. R 21)

Another example of the influence of social media on scholarly communication is Blackboard, a system for educational instruction, communication, and assessment (Bradford, Porciello, Balkon, & Backus, 2007). Several international researchers interviewed mentioned that Blackboard is useful for learning. Blackboard contains all the supplementary materials, including lecture notes, audio clips, photographs, and other digital content, that are needed to support learning.

Advantages and Disadvantages of Social Networking. The international researchers nominated both strengths and weaknesses of social networking as a means of scholarly communication. While they were able to point to some advantages, their responses frequently indicated a degree of scepticism. Indeed, they can be broadly categorised into those who were opposed to the use of social networking as a means of scholarly communication, and those who were supportive.

The researchers who were opposed to using social networking tools for scholarly communication were quick to point out the limitations. Some of the participants' responses were quite blunt:

In my opinion, social networks are not serious platforms that can benefit academia. This is why most academics forsake social networks when serious academic matters arise (Int. R 5).

Others acknowledged that social networking is useful to some extent, but they also pointed to the limitations, such as an unwillingness to use social networking for scientific disciplines and research; its lack of reliability as sources of information; and the unwillingness of some users to use social networks as a means of communicating new discoveries.

I think the contribution of social media [to academic work] is very limited, as it is intended for social engagement. (Int. R 6)

First, on the name—social means social, not academic, tools. It could be possible to use, depending on the person, but its use would be limited. Most academics don't prefer to publish their scientific or scholarly information via this tool. (Int. R 8).

Religious and cultural barriers are a significant issue for Iraq with regard to social networking. As in many other developing nations, citizens encounter deeply ingrained barriers that limit the academic improvements that may result from the use of educational and library systems and from scholarly exchanges between Iraq and the West. The issue of the embracing of Western knowledge was raised by several interviewees.

Scholarly communication often involves participating in conferences and forums. This makes it necessary for participants to travel and find out if the knowledge that has been deemed successful in other places can benefit their society and circumstances. Here social, cultural, and religious elements may play a role in the reluctance to adopt research methods imported from overseas. (Int. R 5—edited)

We have an Islamic culture in which many parents prevent their children from using electronic networking. Communication has to accept that there is censorship. (Int. R 3)

On the other hand, there were those international researchers who encouraged the use of social networking to facilitate scholarly communication. They described a number of social networking functions that assist scholarly communication, often with a view to stressing its capacity to support cross-cultural communication.

Several participants noted that there is always a topic for discussion and that scholars can participate by giving their opinion about topics or learning from the attitudes and opinions of others. They also pointed out that social networking applications such as Facebook or Twitter are useful tools for building awareness of emerging information or developments that may lead to the creation of new knowledge.

Social networks are a means of communication. For example, groups can be formed to discuss topics, events, and information. Forums can help in connecting academics to initiate discussion and invite feedback. (Int. R 1).

It helps a group of researchers to post an academic subject, then to get different opinions. That process can lead to building an idea or getting answers to what they've asked. Also, the researchers may provide links on a particular topic, and others could use those links to read or download papers or to get ideas (Int. R 13).

In addition, some researchers thought that social tools are helpful forms of communication that assist them in doing their research.

Social networks are very useful. For example, I needed to invite some students for an academic experiment in my field. I used social media to this effect, since I had no access to their telephone contacts or their addresses. I have also noticed that some of my colleagues run surveys and questionnaires via social media. It is easy and practical. (Int. R 2)

In regard to scholarly communication and the patterns of connection such as formal and informal communication, the international research students said they employ different types of communication channels that can assist them in communicating with other scholars or with libraries, or with scholars and experts, and/or with stakeholders and government.

Formal Procedure for Scholarly Communication

The Association of College and Research Libraries defines scholarly communication as the method through which academic investigations (research) and other scholarly writings are formed, assessed for excellence, disseminated to the scholarly public, and well maintained for forthcoming usage. Scholarly communication comprises “both formal means of communication, such as publication in peer-reviewed journals and informal channels, such as electronic list-servers”. Scholarly communication is similarly described in Chapter 3 as the formation, publication, distribution, and detection of a piece of scholarly research.

Utilising less formal channels such as Google Scholar has advantages and disadvantages. The key advantage is the ease of finding, using, downloading, and publishing academic materials. The disadvantage is that it may be unethical and even illegal to do so. The rights of publishers and academic writers can be breached, as may regulations governing publication, copyright, and ownership.

The participants first identified the formal channels and gave some empirical examples, and then they mentioned the purpose and the benefits of formal communication in developing scholarly communication. In spite of mentioning different ways of informal communication, most of the researchers agreed that formal communications are the better way.

A number of participants expressed the opinion that formal communication involves contact with governments and official sectors, and therefore that scholarly projects are usually associated with government investment, appropriate legislation, and licensing (after formal discussions with stakeholders). Furthermore, their concept

was that connection via formal networks is an approved method of communication, whereas informal communication is not always officially supported.

Participants, in presenting their ideas about developing countries such as Iraq, mentioned their government's domination of educational and scholarly communication and research agendas. While some responses by Iraqi researchers indicated their belief that scholarly communication is a process of connection among the scholars themselves, or among academic institutions, in this case the participants expressed the view that scholarly communication should be developed within the framework of the government's strategic plans for higher education, and that higher education institutions should contribute by providing feedback to the government about those plans. Interviewees mentioned examples of priority issues for government policy, including funding, non-government (industry) investment, legislation, and regulation, and also raised broader political issues. As one interviewee responded, with regard to industry-based investment:

What I have noticed in terms of the gap between developed and developing countries is that in developed countries there is a very strong link between universities and industry. The universities support the industry through research, while the industry supports funding of research work and development of research outcomes. This collaborative approach is working well in developed countries compared with in developing countries, where investment through this channel is inhibited. (Int. R 12)

Another example is a response to the issue of improved communication between universities and how this can help resolve academic problems and challenges.

Communication is a big problem in developing countries. I have noticed that in developed countries there are very strong lines of communication between the academics, the libraries, and the universities. They help each other, while in the developing countries each university works on its own. (Int. R 12)

Interviewees indicated that improved formal communication can contribute to new academic initiatives. Several mentioned that staff who are working in higher

education institutions can have a role in monitoring the scholars who have finished their studies in other countries and who benefit from the outcomes of their research, by ensuring that the research outcomes (whether from developed or developing countries) are applied and distributed widely.

Since the end of the war, since 2005, Iraq has experienced an unprecedented level of democracy. There are no longer any economic, political, or academic sanctions on Iraq, and the country is in a position to create bridges with the rest of world in all aspects of life—economically, socially, and academically. It is imperative that Iraq make the most of this opportunity to enhance its academia, and this goal will be significantly advanced by improved integration with international scholarly communication channels.

The postwar period, with its improved political situation and comparative economic stability, represents an opportunity for governments and academia to implement new strategies and policies to facilitate international communications between Western parties and Iraq. It will be beneficial to assist Western universities to open branches in Iraq, and to support the establishment of foreign-language institutions in order to facilitate the increased uptake of foreign-language learning. Offering scholarships for local students to study abroad and for international students to study in Iraq would also foster improved levels of scholarly communication. In addition, creating cross-cultural programs and projects, such as conferences and exhibitions, would assist Iraqis to better understand the West and assist Westerners to better understand Iraq. Introducing intercultural units in sociology would also assist Iraqi students to have a better intercultural understanding of other parts of the world.

All the initiatives described above would serve to foster mutual cultural respect. Respect for diversity is the cornerstone on which increased academic exchange can develop. Changing the view and perspective of Iraqis towards the wider world is a necessary precondition for enhancing Iraqi academia and improving scholarly communication (Giuliano & Nunn, 2017).

It is also worth noting that education—more specifically, scholarly communication—in Iraq still suffers from the influence of overt political interference. In other words, Iraq has not yet been able to fully recover from its past. It is imperative that Iraq's academic institutions remain free from political influence, as science and education should be implemented in order to help populations benefit

from objective, critical thinking, rather than for the purpose of imposing political indoctrination (Tikly & Bond, 2018).

Interviewees provided examples whereby matters that should have been the independent responsibility of universities were influenced by political pressure.

For example, when we speak with the head of the department or with the dean formally, we have to speak in a certain way. But, later, when we go out with them and talk informally we can talk with them properly and explain everything, and they understand what is going on. So politically we are not free to communicate what we want or what the scientific research requires. So if we want to formally improve the system, we need to change some people's actions in their positions. Because they may belong to a political party, or have different agendas. Some people have become deans in spite of their inappropriate qualifications, or are hoping to become ministers despite having no real interest in the communication process or the library system. (Int. R 11).

In addition, interviewees reported that government and academic parties have to communicate to address issues.

[Scholarly communication] can be addressed in formal communication channels. This is an academic issue that needs to be supported by the Ministry of Higher Education. (Int. R 12)

Informal Academic Communication

The focus of this section is a discussion of informal academic communication, with an emphasis on the emerging use of social networking as a form of scholarly communication.

Informal social networking can be defined simply as the use of social networks to communicate. In this sense it means the communication that results in the exchange of academic materials via social or traditional media (e.g., Facebook, email, television, and radio). This type of networking is usually not organised in nature (Kaplan & Haenlein, 2010). It provides informal opportunities that enable access to a variety of resources—in this case, academic ones. For example, informal social networking can support students in developing countries where they may have

limited or no access to formal scholarly communication. It can help them access jobs related to their academic field, enable them to download free materials, increase their awareness of academic developments and opportunities, and assist them to develop their research and writing skills. It therefore adopts new technologies to enhance their capacity to complete a variety of academic and related tasks (Uehara, 1990).

Some of the international researchers interviewed noted that another reason for using informal scholarly communication to find new academic sources is that depending on formal communications channels may take too long, or cost money.

If there are no funds you can't access some libraries. I know people who have money and they ask some libraries to give them membership. (Int. R 11)

It was also mentioned that some of those means of communication are unsecured, especially when they required payments.

The international researchers generally agreed that email is the most effective means of informally interacting with a group of related scholars. It was emphasised that informal communication by email is also a useful way to contact international scholars to exchange information and ideas. It was also reported that researchers choose to use an email as an adjunct to formal scholarly communication and use this informal means to contact authors of published papers for further information.

Interviewees commented on the extent to which they make use of informal communication channels, such as asking more senior academics for assistance with their research. Meanwhile, other researchers suggested that they utilise such informal communication methods to prepare the way for the establishment of more formal relations. Others suggested that relying on informal communication was often more effective, when establishing a long-term relationship, than attempting to establish a more formal arrangement, due to the likelihood of having to consult or seek approval from the government authority concerned.

At the same time, participants believed that formal channels for scholarly communication are secured and financially supported by governments. While they may be keen to develop their countries, only governments and possibly big commercial interests are able to facilitate the scholarly communication infrastructure.

The international researchers were well placed to compare the library services in Australia with those in their home countries. While comparing their experiences, they stated that library search systems in Australia are very efficient, compared with those in their countries of origin.

Academic Libraries in Developing Countries. The respondents stated that libraries serving researchers and higher education institutions have a significant impact on scholarly communication. They provide, for example, library information services, which are the basis for searching for scholarly resources and content and for checking the availability of a variety of established and reliable scholarly communication tools, including academic journals, books, e-books, theses, and government reports. Respondents frequently noted that it is the role of the library to enable access to this scholarly content and thereby save researchers the time and money needed to acquire it independently.

It was also reported that because of the lack of accessibility to academic resources and materials that students in the developing world suffer, they are ill-prepared to write academically themselves.

Academic libraries in Iraq are structured to belong to universities. Most of the respondents put the responsibility on the universities to develop their academic libraries.

In addition, the participants suggested various associated themes (or sub-themes) that highlight other important aspects of academic libraries that are important to the existing structures and state of scholarly communications. These include the quality of library management; the skills and role of individual librarians (particularly those responsible for liaising with nominated academic departments of disciplines) in supporting research; the comparative merit of particular library services and collections; and the impact of changes in the scholarly information and publishing industries on libraries and their services and collections.

Some of the international researchers responded in ways that suggest that they had acquired research habits from less well-resourced circumstances than they encounter in Australia—including relying on freely available internet services and search engines, such as Google or Google Scholar, as the first point of entry to a research task.

The international researchers also provided insight into how their research in Australia had been modified by their changed circumstances and the additional

resources at their disposal. In particular, they highlighted the ability to undertake research with speed and accuracy on the basis of having access to the latest scientific publications, and they noted that similar access in their home country would both reduce the information gap and assist development.

In comparing the services provided by academic libraries in Australia and Iraq, the view was expressed that the collections and services provided by Australian libraries do more to support individual scholars and enhance their research-related achievements.

At Curtin, the access to databases is available 24/7. Over two and a half years at Curtin, I have published three journal articles and six conference papers, which reflects the influence of the academic environment, facilities, and support at Curtin University compared with those in Iraq, where I was not personally able to publish any papers. (Int. R 4)

The international researchers were able to give their impressions of libraries in developing countries, and they also noted particular deficiencies they believed impacted on the quality of library services provided. Specific areas that were mentioned included poor-quality information services, lack of access to information resources, underdeveloped facilities and infrastructure, poor availability of international literature, and the need for enhanced online services such as open access. However, it is apparent that academic libraries differ in quality from one developing country to another, and this is reflected in the researchers' experiences and opinions. Depending on the individual researcher's background, the views expressed varied when describing academic libraries. While some described the quality of library services in their country as reasonable or good, others described theirs as average or poor. A number expressed the opinion that libraries in developing countries are in a stage of improvement and will continue to get better.

When discussing facilities and infrastructure, several interviewees were adamant that academic libraries in developing countries have to make a generational improvement in technology, with many still relying on modems and "dial-up" technologies, while most countries now have access to much higher-quality optical fibre and broadband technologies, which are the benchmark for digital library

services. Interviewees also noted the extent to which even standard internet connections are optimised by the latest developments in ICTs.

In Iraq the library is very poor, with no internet and a lack of new resources. But before I came to Australia the library was trying to convert material to CD-ROM. It was only for some fields. (Int. R 11)

Furthermore, interviewees reported that the lack of adequate infrastructure and technology included, in some cases, no access to electronic services, unreliable and even negligible internet connections, inadequate standards of information literacy, a lack of communication with other developed libraries, inadequate numbers of books for the numbers of researchers, limitations in training programs, and a lack of current resources. For example:

I was doing my research in [Iraq] in 2005, but I was using resources from the 1980s. It was a chemical engineering encyclopedia. (Int. R 12)

The level of services provided in my library in Iraq is average. Recently the virtual library has been introduced, and this can offer up-to-date resources; we receive training courses as to how to access and benefit from the virtual library. However, physical resources are in a very poor shape, with out-of-date materials and books. Resources from the 1990s are considered modern. All efforts and financial support are spent to update resources such as facilities for children, kitchens, and dream interpretations rather than science and research. (Int. R 6)

The overall services [in academic libraries] are acceptable to some extent, given that for most of the conditions in Iraq the country is still 50 years behind. (Int. R 15)

Interviewees also stated that the libraries in Iraq provide many services, such as automated catalogues, electronic services through library webpages, and notifications about new materials and the availability of local networking and internet workstations.

However, researchers also claimed that there is poor access to university libraries in Iraq due to the requirements that need to be met to gain access to their

services and collections. As one interviewee reported, there is no easy method whereby a student at one university can access the library collection of another.

There is no collaboration among the libraries of Iraqi universities; getting approval for access can be a long administrative process. (Int. R 4).

Academic Libraries in Australia. Most of the researchers described Australia's academic libraries as focused on quality and excellence. In relation to their level of information services and collections, most of the interviewees expressed their satisfaction with what Australian academic libraries provide, including books, journals, databases, and other digital resources. Many noted that when a library doesn't have the required resources that they, as users, can make requests for document delivery (interlibrary loan) services or purchasing, and the required items are obtained efficiently and at no cost to the requester.

In addition, the interviewees mentioned different services that Australian academic libraries provide, including access to major databases such as ProQuest and EBSCO; training opportunities in basic research skills and the use of databases and library catalogues; forms of online reference support that offered, in some cases, 24-hour assistance to users; Google Books, through Adobe Digital Editions 2.0; and support in the use of multimedia and software programs.

Actually, I evaluate it [the library] as satisfactory because almost everything I need I can reach through the library—for example, nearly all the articles or books I require. The most important thing is that when a book is not in the library, you can recommend buying it and in a reasonable time you can reach the resource. (Int. R 16)

It's very beautiful. It's great. I know that Curtin University fairly helps us with the capacity of its library, the number of books, the diversity of the books, the number of journals. We know that this would all be very expensive if we had to pay for it ourselves. The Curtin University Library is very helpful. (Int. R 18—edited)

I can't rate Curtin yet because I've been here for only a week. But the [University of Western Australia] Library I would rate nine out of 10. I believe Curtin will be the same. (Int. R 19)

[The library services] are excellent. I can find almost all journals, theses, some animated films, books, e-books and reports from the library. Maybe I can get about 80% of information from the library. I find the rest via Google Scholar. When I cannot find a book, the library will try to find a copy for me and let me know when I can collect it. I think this is excellent. (Int. R 20)

On the other hand, the opinion was expressed that information services could be improved to include translation services into Arabic, or other languages, to stop interrupted messages from the library system, to provide old hard copies of journals, to provide more international literature, and to extend the opening hours. Another shortcoming is the lack of hard copies available. For instance:

I guess most of the time they've got one copy of each book and that book is often recalled immediately after you borrow it. They need to have four or five copies of some books, and it would also be a good idea if they could provide students the electronic copies of even the old books, because I just heard that most of the old books are been converted into electronic copies. This would solve the problem of a book being recalled by another student, because you would be able to get access to [the content] anytime without being interrupted by a new user. (Int. R 21)

Iraqi respondents reported that being a university student at an Australian university with the appropriate identification card meant they had a right to full access to the services provided by that university's library. They stated that the information services provided by these libraries are fast and easy to use, and they often provided 24/7 access to the collections and to some services used by researchers.

Strategies and Solutions to Overcome the Information Gap

Open Access

Many participants expressed views to the effect that scholars could contribute to the development of better communication by encouraging open access to academic work. All students, both in developed and developing countries, should ideally be able to access the same range of high-quality scholarly resources, content, and publications. All students should be able to remain abreast of current issues and

research and reduce the challenges in locating information by having access to a large aggregated database with free access. Interviewees noted that open access assists scholars not only to consume knowledge but also to become producers of scholarly content. It was felt that there is a global responsibility of scholarly communities to support students in developing countries, given the high financial cost of access to scholarly content. The point was made that scholarly communication is a marketplace that responds to demand from more prosperous scholars, pushing up prices. The discussion of open access was focused on journals rather than books, as it was believed that research outcomes would be available more rapidly through journals.

Journals have scholarly articles that provide the latest analysis of current issues, and this is what we need. Whereas if you rely only on library books you get left behind, because a book takes ages to get into print and be published. Sometimes the issues they discuss are already outdated when the book becomes available. (Int. R 17)

The researchers also expressed the view that scholarly publishing is limited in developing countries due to the lack of easily accessible, recently produced material. Therefore, they thought that it was important to develop a structure for students and academics in developing countries, not only to be able to access all the outputs found in major international journals but also to make it easier for them to publish in these journals as the quality of their research improves.

Expand Digital Content in Academic Libraries

International research students from developing countries has shown that ensuring good availability of e-books (digital books) leads to quicker academic improvement. Also, they have suggested that material made available only in digital form creates a disadvantage for some students. They suggest that digital material must be available and accessible. Additionally, some students prefer to work with a hard copy. However, the relationship between readers and e-books is becoming more like the relationship between readers and solid materials (Mayer, Borges, & Simske, 2018; Suvarna, Layton, & Bancroft, 2018). This type of technology is not yet widely available to readers in Iraq, though student awareness of it is increasing

Taking into consideration the rapid development of technology and the accessibility of the internet in Iraq (Marr, 2018), it is believed that promoting the concept of e-books to academics and libraries, with a view to them further investigating this domain, would be very beneficial. One interviewee declared this a necessity.

The Curtin University Library service is very good because it has a catalogue of all of its contents, hard copy or electronic. Researchers can save or download articles or even books to their PC easily. In contrast, in Iraq there are no electronic library services yet. You can get hard copies from the library, but if the researcher is living far away he/she can't get the printed copies easily. (Int. R 8)

On the other hand, a different opinion regarding e-books was given when an interview participant claimed that some students and scholars find it difficult to use electronic data and prefer to use printed material.

Some participants suggested that libraries should consider developing different methods of communication, such as scholarly exchange programs, sister university programs, and training and translation services. A lack of effort in developing these areas contributes to a decline in libraries' ability to effectively resource students, thus negating the goal of accessing information.

Enhance Library Facilities and Infrastructure

Most international researchers believe that in order to address the information gap between academic libraries in developed and developing countries, it is necessary to substantially improve the facilities and infrastructure in developing countries. Local capital and foreign aid need to be available to develop improved library infrastructure. The provision of efficient networks and bandwidth to libraries must be ensured, outdated IT systems and cabling must be replaced, and the online purchase of goods and services (in this case, books) must be enabled.

Participants indicate that the economic situation of the country affects how much the government can support education and learning through the provision of basic infrastructure and facilities. Interviewees expressed the view that countries with less developed economies struggle to provide facilities that would support access to, and exchange of, scholarly information.

The tools needed for good scholarly communication are the computers, the networks, and the internet access of the university. A large part of the network is provided by the government sector of the country and is therefore dependent on its economic wealth. (Int. R 21)

Another view expressed is that developing information technology can be achieved by providing libraries with affordable access to new computers and other devices, as well as software programs. These acquisitions in turn need to be supported by training programs offered not only to librarians but also to students and academics. This training would focus on the technologies as well as on the research strategies and methods needed to optimise the benefits of these technologies.

In regard to helping libraries in developing countries to obtain new resources, participants made several points relating to the lack of best-practice financial services available in those countries. Online purchasing is not available in many developing countries, and librarians are not trained to make best use of it, even when they do have access.

With regard to the necessity of enhancing international networking, the participants argued that libraries in both developed and developing countries have an obligation to actively initiate and support direct collaboration. As things stand, Iraqi librarians and academics have to work through MOHESR before they can communicate with outside libraries and institutions:

There is currently a lack of direct communication among universities since developed countries communicate only with the Ministry of Higher Education. Academics are requested to secure approval and recommendations from the Ministry of Higher Education rather than from their own institutions. (Int. R 1)

Develop Government Strategies and Scholarly Projects

Researchers nominated two further issues that are important in addressing the information gap between academic libraries in developed and developing countries: government strategy and scholarly projects.

It has been suggested that in order to further advance the development of academia in developing countries, all governments should move towards “the internationalization of higher education” (Altbach & Knight, 2007, p. 3).

Governments must establish public scholarships for students to research, travel, and study abroad. This step would enable young researchers to improve their understanding of scholarly communication through overseas study, exposure to international conferences, and academic workshop training. At the same time, to assist countries that lack the resources for this, international academics can visit these countries, so that local students and researchers can learn from them without leaving home.

Because governments in developing countries tend to dominate the educational agenda and research sectors in order to stimulate growth and improvement, the participants gave examples of international projects that could facilitate scholarly communication. It was noted that in the Iraqi context these programs would require the support of the government and its relevant departments.

Mutual visits are very important, and should play an essential role in any twinning schemes. This can be designed so that Iraqi academics receive training in specific areas. Receiving scholars from developed countries could also be more effective in terms of outcomes; these scholars could provide insight into their skills and expertise via lectures and training workshops. I know of cases where 10 to 15 young Iraqi researchers spent some time at an international university and benefited themselves and their departments upon return. Sometimes this could be very cost-effective when the host university bears the cost of the visit. This normally is the case with programs aiming at supporting developing countries. Such activities can also help at cultural and injustice levels. (Int. R 3)

Participants provided examples of specific initiatives they believe could contribute to closing the information gap between Iraq and Australia. These included universities and libraries in Iraq subscribing to high-quality databases, publishing and sharing knowledge, setting up a website for each academic institution, developing infrastructure according to the International Organization for Standardization, improving dialogue and communication between international universities, and improving English-language skills for students at universities in developing countries.

It should be noted that English has been—and still is—part of the school curriculum in Iraq as a foreign language since Iraq was an English colony. However, the level of English has deteriorated in the last 20 years (Jukil & Beckett, 2016). The average level of English proficiency among Iraqis is a fundamental barrier that impacts on the reading and understanding of scholarly material. This linguistic barrier needs to be addressed directly through the implementation of new English-language policy within the Iraqi education system. The Ministry of Education could follow the steps that have been taken in Lebanon, where learning foreign languages such as French and English became an essential part of the curriculum (Shaaban & Ghaith, 1999).

Encouraging universities in developing countries to improve English-language skills could help to reduce the gap by enabling academics to understand research that has been published in English, and to communicate with other academics in developed countries. The academics could also then use databases effectively, because many are maintained by international publishers. (Int. R 12—edited)

At the same time:

On reflection, I remember a cooperation program between my college of fine arts and a private French organisation interested in art. The final outcome was very interesting, as they agreed to provide us with resources translated into Arabic in addition to English versions. This was back in 2005. For a two-way process, we need to improve the command of English among our academics, since it is a global language. (Int. R 2)

This raises an interesting point, which is also addressed in the recommendations. English is by no means the universal language, although it is essential that all scholars are at least able to read and understand all material in that language, for the time being. However, this researcher is of the opinion that Arabic-speaking students, in this case of Iraq, must be allowed to design their projects and writings in Arabic, so their thoughts will flow more freely. It is therefore more important for libraries and universities to provide excellent translating services than

for them to force students and scholars to learn English. This will also partly overcome problems of “political/religious correctness” persisting in some countries.

Other participants reported different aspects related to the government and its policies, such as establishing exchange programs involving students, scholars, and librarians; enhanced scholarship opportunities; and attendance by scholars from developing countries at international conferences. One goal of these various initiatives would be to improve the integration of scholars and those providing research support in developing countries into the standards associated with international best practice for research and scholarly communication.

Develop the Role of Stakeholders

Campbell and Rozsnyai (2002, p. 13) described educational stakeholders as “students, society, and government participating in or benefiting from the provision of education”. Internal university stakeholders can be described as the university’s board of representatives, deputies, director (president) and vice-president, deans and chairs, faculty heads, academic staff (researching and teaching), non-academic staff, and students. External stakeholders (Moraru, 2012) include government and public sectors, industry employers, communities, and individuals. The recognition and enhancement of scholarly communication rely on bringing these diverse stakeholders (internal and external) together in support of policy changes that will result in greater cross-connection between universities in developing nations and those in the West.

A number of the respondents reported that to develop scholarly communities requires enhancing the role and capacity of the various stakeholders who have the responsibility to develop international scholarly communication. These include governments, higher education institutions, international organisations, the private sector, librarians, individuals, and existing scholarly communities. Also, they focused on the role of academics, faculties, librarians and individuals, to provide ideas about cooperation among scholarly communities and the potential it has to reduce the information gap.

The researchers pointed at many factors, such as sharing knowledge, open access, publishing in international journals, interlibrary cooperation, and twinning universities. For example, on the subject of sharing knowledge:

I think it’s actually the scholarly communities that are helping, not the websites and not the journals. For example, take the interactions between

my professor, my supervisors, and me. Sometimes I can't access all of the materials I need, but they can, so what they can do is share. Actually it is these scholarly communities that can share knowledge faster than you can do the searching yourself. And some people have better access than others. (Int. R 17)

Another example regarding the benefits of sharing knowledge:

Developing countries have serious problems accessing scholarly information. For example, in my country, when I studied, it was difficult to get the most recent publications. The sources for my research would be very limited. Here in the West, it is very easy to get the most recent publications, whether journal articles or books. This will influence the results of my research. If researchers in developing countries had access to the most recent publications, the transfer of knowledge from developed to developing countries would be much better. This would narrow the knowledge gap. Students in developing countries would have better educations. The people would have better lives. If they had better lives, the problems of the environment and of crime would be solved. It is partly the responsibility of the international community to help developing countries solve their problems. (Int. R 20)

Some interviewees pointed to an interesting factor that determines whether published material is made accessible to users. In most developed countries, authors of the scholarly materials would be willing to have their materials made open access. However, this is not the same for authors in developing countries, whose intentions are to obtain benefits in cash or kind from what they produce. This attitude impedes access to potentially useful materials and is a factor widening the information gap.

Some people in the academic community live on what they write, what they produce. If I am a writer, I live on what I get from my books. I write books, you buy them, I get money. I cannot make everything available for free.

If libraries buy these books, everybody else will get them for free. Then they have reduced the struggle for looking for information. Libraries

can also cooperate. If developing countries and the developed world have interlibrary cooperation, it will allow developing countries and their academics to access to information quickly and freely. (Int. R 22)

Other researchers argued that universities everywhere can play a crucial role in developing scholarly communication. They may establish close ties with other universities for the purpose of enhanced international communication, keeping up to date with resources and exchanging scholarly academic materials. For example, the University of Baghdad and the University of Babylon, in Iraq, have a “twin” relationship with a UK and a US university, respectively. These relationships have proven especially beneficial with respect to training programs and joint research projects.

University twinning between Baghdad, Babylon and Exeter brought up-to-date resources, academic information, and easy communication (Int. R 8)

Interviewees expressed the view that academics can function only within the context of their institutions. As a result, they need to be able to identify the scholarly partnerships and collaboration that exists between researchers, lecturers, postgraduate students, other academic institutions, research centres, and disciplinary associations. They are also concerned about the low number of academics and their heavy work commitments, which reduce the time available for these other forms of scholarly engagement.

The community should embrace the notion that academics are specialised individuals who can educate the community and who should contribute to the planning and organising in communities. However, there are 10,000 academics in Iraq, serving a population of 30 million. This ratio (1:3,000) is not high enough to bring a rapid change in Iraq, in my opinion. (Int. R 4)

Iraq has brilliant scientists and academics who have produced great ideas for development strategies. But, unfortunately, most of them are too busy teaching or doing research to be able to effect much change in the systems. (Int. R 6).

Enhance Two-Way Communication between Academic Libraries in Developing and Developed Countries

Many of the interview respondents from developing countries noted that where two-way communication has been established between academic libraries in developing and developed countries, misunderstandings can arise as the relationship develops. Very often the developing nation institution comes to be seen as the junior partner in the relationship. Additionally, due to political and social dynamics (war, sanctions, civil conflict) academic libraries in developing nations cannot always progress the relationship as proactively as they might like.

Interviewees from developing countries expressed feeling a lack of confidence in these relationships and mentioned a range of activities that they believed might help them to engage more easily. They suggested that librarians and researchers interested in working more effectively together across national boundaries might use social media to stay in closer contact with their colleagues internationally, read published materials about other cultures, and take part in online chat and discussion groups.

The researchers believed that effective two-way scholarly communication can take place only within a governmental framework that supports the development of higher institutions and academic integrity.

Develop Cultural and Political Views

Since the cessation of war, many circumstances in Iraq have changed greatly. In the post-sanction period, Iraq can easily create more opportunities to normalise its relationships with other countries. The Iraqi government can facilitate international communication with Western universities and individual scholars and assist Western universities to open branches in Iraq. It can support the establishment of foreign-language institutions, offer scholarships for local students to study abroad, and offer international students the opportunity to study in Iraq. It can create cross-cultural activities, like visits to other countries and cultures; it can implement courses in sociology at public schools to help Iraqi students have a better intercultural, cross-cultural, and intracultural understanding. This will develop a better understanding of Western academic traditions and facilitate scholarly partnerships and communication. Understanding the cultures of the West will help Iraqi scholars to communicate better in an environment of mutual cultural respect and respect for diversity (Giuliano & Nunn, 2017).

Some Iraqi researchers think that after the lifting of UN sanctions in Iraq, there is no big problem in communication. Also, they believe that after the latest war, as Iraq becomes more open to the world, it will be increasingly important for Iraqi scholars to have an improved command of English.

There is the need to increase communication channels with the whole world by subscribing to international databases in all disciplines. This is possible, particularly now, after the war. I know of many international organisations that are interested in effective communication. They see mutual benefits in cooperating with Iraq, given its history and legacy. There is also the need to improve internal and external collaboration among academic institutions (Int. R 2).

As an Iranian, I have felt it very deeply because, in my country, you have limited access to resources. If you add political factors to that—for example, the sanctions—it becomes much worse. You cannot reach some information that is sensitive in some senses. (Int. R 16)

However, other interviewees believed that Iraq has been affected by the wars and conflicts to such an extent that effective two-way communication is difficult to achieve, as Iraq is unable to engage in such relationships with the same level of expertise and resources as its international counterparts. Without increased government support, Iraq will continue to require more support and advice than it can return.

In addition, some interviewees pointed to the importance of scholarly and cultural exchange in order to convey their own knowledge and beliefs, as well as to benefit from some ideas from other countries in order to resolve some of the pressing global problems.

I believe that embracing confidence in ourselves, our heritage, culture, civilisation, and values, is critical for scholarly communication. Our divine values are sublime. We can communicate our values and legacy in an effective way so that we can entertain a two-way relationship. An example of the values that we can offer emerged during the 2008 global financial crisis, when the subprime mortgage problem engulfed banks and financial

institutions. Scholars referred to the Islamic financial system as a possible alternative to avoid a recurrence of such a problem. Islamic finance does not rely on interest as a means to generate profit. It is interesting that Japan, for example, used an interest rate of zero to survive the crisis. Finally, I wonder if I personally and those who undertake postgraduate studies overseas will be able to transfer our knowledge to Iraq. There are issues that can hinder this process, due to differences in technology between overseas and Iraq. Another reason is cultural, due to the difference in the attitude of students here and in Iraq. (Int. R 3)

Indonesia has much experience with multiculturalism. We know that Indonesia is multireligious, with followers of, for example, Islam, Christianity, Hinduism, Buddhism, and Confucianism. It can share with Australia its experiences of multiculturalism and of how to accept people from different backgrounds. There are many projects that we could do between Australia and Indonesia. There are many experts in Australia doing research in Indonesia. (Int. R 18)

Develop the Role of Researchers

The respondents thought that researchers have a role to play in developing two-way communication, such as using the latest publications in a particular field of knowledge and encouraging open access to it. They thought that open access is critical to knowing what is going on in a field and determining what the next step should be. Sharing knowledge means that academics have to post new information about their theses, conference papers, and journal articles. In addition, the respondents thought that academics have to share their produced works, in both developed and developing countries, and to employ social media to enhance cross-cultural communication.

There are many new ideas that the participants suggested to improve scholarly communication.

Higher institutions, universities, and other organisations that employ academics could create an Iraqi researchers' site or a comprehensive database of all Iraqi academics. It should include profiles of every academic—his or her name, contact details, field of knowledge, interests,

conferences attended, list of publications, and important links. It has to be made available to all academics and it has to be updated regularly. It should gather all academics and may assist their collaboration to address the information gap. And it should be supervised by the Ministry of Higher Education, to have credibility. Academics should be able to exchange their ideas, get new ideas, arrange meetings, and send emails through the system. (Int. R 12)

Conclusion

This chapter presented and outlined themes and sentiments arising from research interviews. Five themes emerged from the interviews conducted with Australian and Iraqi librarians: the information gap, limitations and challenges, scholarly communication and channels, stakeholders' roles, and strategies and solutions. The themes arising from the international research students include their understanding of scholarly communication, scholarly publishing, government censorship and academic freedom, software programs, research skills, and the constraints and opportunities affecting scholarly communication. The opportunities include social networking with its advantages; formal procedures for scholarly communication; informal academic communication between academic libraries in developing countries and in Australia. The main constraints are lack of communication between the two countries, inadequate education system, lack of financial support, inadequate equipment and information technology services, and instability of the state (Iraq). Research participants discussed strategies and solutions to overcoming the information gap, such as promoting open access, increasing the amount of digital content in academic libraries, improving library facilities and infrastructure, developing government strategies and scholarly projects, developing the role of stakeholders, enhancing two-way communication between academic libraries in developing and developed countries, explaining cultural and political differences, and developing the role of researchers.

From the findings outlined above, this thesis through the established theoretical framework, analyses how these viewpoints can contribute to a better understanding of scholarly collaboration and its impact on the information gap in Iraq in the following chapter.

CHAPTER 6: ANALYSIS

This chapter presents and discusses the findings of the analysis of the complete dataset, consisting of Australian and Iraqi librarians' and international research students' semi-structured interviews. It does this in relation to what has been outlined previously, and develops recommendations in response to the research question and the four objectives described in Chapter 1. This chapter also aims to identify any similarities or differences in the way that Australian and Iraqi librarians think, as well as Iraqi international research students and those from other developing countries, about the information gap, scholarly communication, and collaboration between academic libraries.

Analysis of the dataset confirmed substantial differences in belief about the possibilities for scholarly communication among the three target groups of interest to this study—namely, Iraqi librarians, Australian librarians, and international research students. There were marked differences within groups as well as between them. These findings are presented and discussed in order to assist in the development of a theoretical framework for describing the differences in scholarly communication and collaboration between developed and developing countries, and to establish a basis for future developments undertaken in order to address the information gap as it impacts on Iraq and other developing countries.

This chapter is presented in four sections. The first section presents and discusses the concept of the information gap from the viewpoints of Australian and Iraqi librarians. It also discusses and conceptualises the nature and scope of the information gap in the context of the current political and social situation in Iraq. This section addresses the first research objective: What is the nature and extent of the information gap in Iraq?

The second section focuses on the key components of the existing structure of scholarly communication by defining it through visualising formal and informal communication patterns and describing the relationships between academic libraries and scholars. This section addresses the second research objective: What are the existing structures of scholarly communication in academic libraries in Australia and Iraq?

The third section focuses on the constraints and opportunities affecting scholarly communication between Iraqi and Australian libraries. The key component of this discussion is the use of social networking and advanced communication software, as well as the role of key stakeholders such as discipline-based scholarly communities. Other components related to limitations and challenges to the systems of scholarly communication, as well as the potential advantages and disadvantages of social networking, will be addressed in order to answer the third research objective: What are the constraints and opportunities affecting scholarly communications between Australian and Iraqi libraries?

The fourth section focuses on the development of future structures required for effective scholarly collaboration and to address the information gap in Iraq. The discussions in this section focus on the collaborative tools and processes needed to develop effective strategies for international research; collaborative library systems and tools; discipline-based scholarship, including teaching and learning; the enhancement of facilities and scholarly infrastructure; and cultural and political practices and circumstances. It addresses the fourth research objective: How can the development of structures for scholarly collaboration address the information gap in Iraq?

The Nature and Extent of the Information Gap in Iraq

The individual interviews provided extensive and useful information about how librarians conceptualise the nature and extent of the information gap. There was considerable diversity of opinion among participants as to the nature of, causes of, and reasons for the information gap. Australian librarians describe the gap from a global perspective. They believe that it results from systemic failures in local economic and educational systems, and that those failures reflect global inequalities in terms of the distribution of wealth and technology. Australian librarians also point to the lack of political stability in developing countries as a factor that reduces awareness of the value and power of information and scholarship. The Australian librarians believed that this potentially affects the extent to which developing nations invest in information and communications technology (ICT).

Iraqi librarians, on the other hand, frequently construct and express their views about the concept of the information gap by reference to a knowledge disparity that stems from local factors such as endemic social, cultural, political, and economic circumstances, including tribal differences that lead to inequalities in education. Iraqi

librarians also focus on the role of government and library management in creating the legislation and regulations to support electronic resource and copyright issues.

Socio-economic Gaps

There is much debate in the literature about the impact of socio-economic gaps. In her study of education and economic coordination, Vignoles (2014, p. 212) states that socio-economic gaps preventing access to higher education are “substantial, persistent and ubiquitous”.

The author of this thesis finds that these socio-economic gaps exist within both developed and developing countries. For example, there is socio-economic disparity in access to higher education in Ghana and Tanzania, as well as in Sweden, France, Spain, and the United States.

Despite the efforts of developed countries to make the quality of education in public schools comparable with that of private schools, private schools often provide a higher standard. This is certainly the case in many developing countries. It may be because public schools in those countries have fewer financial resources than private schools, as well as little access to modern technologies and up-to-date educational methods. It is also believed that some private schools demand a higher standard of training from their teachers and are able to pay for that.

In developing nations (e.g., Iraq and Lebanon), the socio-economic gap is vast and has a dramatic effect, because public schooling is failing to provide basic teaching. The majority of students in the public system fail to graduate, whereas in private schools the majority of students succeed. In Lebanon it is particularly apparent that private schools are more competitive academically than public schools. Private schooling in Lebanon produces the fourth-best results in science and maths, on the world scale (Spectator Index, 2018).

Global Issues

Iraqi participants in this study indicated that developing countries are frequently challenged by wider political events and lower levels of technological development.

Developing countries such as Iraq have censorship restrictions that prevent the free flow of information domestically as well as with the outside world. This was especially the case prior to 2015, when the global community treated Iraq as a pariah nation.

In addition, some Iraqi participants expressed the view that there is considerable technological inequality between developing countries. Some are moving only slowly towards adopting the necessary technologies, while others are already advanced. Iraqi participants also suggest that information gaps exist because there are limited opportunities, across all fields, to produce and share academic knowledge within Iraq. There is considerable variation and unpredictability, too, around already scarce research funding opportunities supported by the government or higher education institutions.

Australian librarians suggest that investment in the ICT sector is vital for progress. In other words, it is necessary to introduce advanced technology to modernise academia. These librarians report that there are various obstacles contributing to a knowledge gap between developed and developing countries. They believe the gap in knowledge production between developed and developing countries results from different factors, such as a lack of developed communication technologies, the costs of publishing, and disparities in experience and qualifications. Australian librarians in the study find that academics in developing countries lack access to new ICTs. Because of the expenses associated with copyright, licensing, and intellectual property issues, institutions in developing nations cannot always afford the levels of access that those in developed nations take for granted. It is also reported that academics in general, and librarians in developing countries, have little experience in library management and organisation. Additionally, Australian librarians believe that governments in developing countries do little to promote the development of scholarly communication through policy or funding support. They suggest that these variations will have a significant impact on the future academic situation in developing countries if adequate solutions and measures are not implemented.

Knowledge production pertains to many fields; it encompasses not only pure science, maths, physics, chemistry and biology (and other science, technology, engineering, and mathematics, or STEM, subjects) but also includes, for example, information studies and sciences as well as cultural and social studies. The development of new knowledge in all fields requires a cycle of questioning, research, and writing. The culmination of this work is the publication of new scholarly material. Zacher (2012) states that knowledge production requires effective management of information creation, processing, and sharing.

Inequality in Circumstances

Iraqi librarians reported that in developing countries there is greater inequality in circumstances than in developed nations. This inequality is related to many factors, such as differing levels of public funding, sociocultural circumstances, and technology and infrastructure matters. Iraqi participants emphasised inequality in technology. They reported that the information gap exists because of the lack of infrastructure required for communication—specifically, that the lack of basic communications infrastructure restricts the availability of the scholarly databases that are now the cornerstone of research, communication, and knowledge generation. Iraqi participants indicated that it is impossible to achieve effective scholarly communication between developed and developing nations unless the technology is equally matched between the two countries involved.

Significantly, Australian librarians reported that most of the developed countries share the commonalities of advanced technology and its implementations. They also share common methods and protocols for communication. The Australian librarians said that effective scholarly communication is based on the presence of collaborative agreements such as internal loaning services, sharing resources, and collaborative or consortia-based database access agreements. These agreements allow researchers in developed nations to benefit from shared experience and the easy exchange of ideas. These fundamental circumstances are absent in many developing countries.

Iraqi librarians believe that their research needs and rights are not sufficiently protected by local copyright and licensing laws. They say that even when students in developing countries overcome other inequalities in circumstances, they face the political, legislative, and regulatory problems of retaining ownership of their academic work—or even of getting acknowledgement for their work.

It is worth mentioning that participants in this study expressed similar views to what has come up in discussions between the International Federation of Library Associations and Institutions and the European Commission in their quest to accommodate and foster advances in research in the digital age. Reilly's (2014) study intended to initiate and launch a project to open a path of communication between libraries in order to make changes in their copyright systems. The commission concluded that the main barrier is the lack of suitable legislative structures in the countries concerned.

For example, Iraqi librarians in this study claimed that the absence of legislated financing for e-resources prevents them from purchasing electronic materials and subscribing to academic databases, thereby leading to a disparity. Solutions must be found and implemented. They suggest that, in order to reduce the existing gap, there is the need for a better implementation of learning programs about scholarly communication. This could include allowing staff and students to attend more international conferences in developed countries. In addition, Iraqi librarians suggested that the initiative must come from the state at the local level.

In summary, the Australian and Iraqi librarians conceptualised the nature and extent of the information gap from different perspectives. Furthermore, the Iraqis in general deconstructed the nature of the information gap as a variation in knowledge; they believe the gap is very wide and seemingly impossible to close. However, they state that the gap could be reduced by disseminating academic information via the internet.

Existing Structures of Scholarly Communication in Academic Libraries in Australia and Iraq

As mentioned in Chapter 1, the concept and definition of scholarly communication involves elements such as access to scholarly materials and the type of communication (formal or informal communication patterns). The definition also involves the association between academic libraries and scholarly research, because there have been impacts on the perceptions of the existing structure of scholarly communication in academic libraries in Australia and Iraq. Throughout this thesis, questions have been raised regarding Iraqi and international research students' perceptions towards various elements of scholarly communication. This included their experiences and attitudes towards both formal and informal communication patterns.

As discussed in Chapter 3, Thomas (2013) states that there are three areas of scholarly communication in academic libraries: open access, copyright and publishing agreements, and research support.

Definition of Scholarly Communication

In exploring the experience and opinions of international researchers and Iraqi librarians, this thesis constructs a definition of scholarly communication by determining its key factors. These factors are different from those suggested by Thomas (2013). This study creates a new definition of scholarly communication that

could be applicable to, and understood by, Iraqi academic librarians. It would be beneficial for Iraqi and Australian librarians alike to understand the structure and elements of scholarly communication expected from each other. As mentioned in Chapter 5, for example, scholarly communication in developing nations involves elements such as the interaction and exchange of scholarly ideas, as well as conversations between two or more parties. Those parties could be students, teachers, experts, or scientists, or representatives of academic institutions. Participants also suggested that the communication could occur through any platform, such as the internet, telephone, mail, email, or face-to-face—in other words, formal and informal communication patterns.

While the literature mentioned above focuses on the three factors presented by Thomas (2013)—and while academic libraries, in general, focus on research services, cataloguing and metadata, and acquisitions (Thomas, 2013)—this study focuses on scholarly materials, scholarly parties and the techniques of communication.

This research finds that the current structure of scholarly communication could be understood by determining two things: individual scholarly behaviour and characteristics, and the patterns of formal and informal communication.

A study by Rowley and Hartley (2017) defined scholarly communication as academics' behaviours and attitudes towards open access publishing (OAP) in scholarly journals. The aim was to understand current and future attitudes towards OAP. The study found that attitudes are relatively consistent across the academic community. Furthermore, this study considered the effect of differing levels of funding for article processing (open access) charges in different disciplinary areas. Rowley and Hartley concluded that one-third of articles were being published as gold open access, or permanently free to access, but that the process is undergoing development.

Some international research students taking part in the current study claim that researchers often have difficulty accessing the most up-to-date scholarly journals through the academic libraries of developing countries. Morrison (2009) stated that two issues: open access and sharing knowledge have a significant impact on scholarly communication. Harris (2018) identified two aspects—namely licences and copyright issues for printed materials, and contract law for digital materials. Other researchers have gone further, suggesting that there is a lack of new library databases

in developing countries. Participants in this study reported a similar problem. This study also found that the participants focused on a way or means of communicating with each other. They included the pattern of scholarly communication (formal or informal) from the definition. Furthermore, this research also found that the scholarly communication model requires implementation, as does legislation for digital resources, as outlined by Crow (2006) and Koler-Povh, Mikoš, and Turk (2014), because research on institutional repositories reveals low engagement by scholars.

The findings of the current study suggest that, first, on the basis of the experiences of both groups of participants, publication and participation in open access journals must take place. Scholars, researchers, other interested individuals, and institutions must collaborate to effectively develop OAP in order for it to be utilised efficiently. Second, researchers' perspectives are more focused on scholarly communication and its correlation with scholarly-based digital resources. These findings concur with those of Rowley and Hartley (2017).

Formal and Informal Communication: International Participants' Perspectives

The Iraqi librarians and international research students in this study (Iraqis and others) held substantially different opinions about what constitutes formal scholarly communication. According to the findings, Iraqi participants have different ideas about the concepts of formal and informal communication, compared with international participants (i.e., those from Africa or Asia). Iraqi participants interpreted formal communication as governmental. They expressed the notion that, in order to be formal, a document had to be issued by a government agency. Furthermore, Iraqi study participants tended to interpret formal or government material as being of "scholarly" quality.

On the other hand, participants from other developing countries defined informal communication as the type used between colleagues, friends, family members, or neighbours. These study participants defined formal communication as communication with experts, professionals, and other scholars.

Participants from developing countries, such as Indonesia, confirmed that formal communication is the best method to address scholarly communication issues. They tended to believe that "formal communication" derives from contact with the government, and its official sectors, in regard to the setting of legislation after formal discussions or dialogues. The government provides capital, information, management systems, and/or licence approvals, so it is seen as the dominant formal

communications body. It is evident from the findings that international research students prefer to use formal communications when dealing with experts in order to find resolutions to their problems, although this form of communication was noted as less frequent than desired.

In regard to the understanding of formal communication, this thesis defines it as “an interchange of information officially”. The flow of communication is controlled and is a deliberate effort. This makes it possible for the information to reach the desired place without any hindrance, at little cost, and in a proper way.

Furthermore, this study found that participants from developing countries prefer to use networking tools as part of their informal communication, involving more experts, professionals, or tutors than the type of communications that involve friends, husbands and wives, neighbours, or others not deemed scholars. Participants stated that they rely on disciplined experts, peers, or supervisors more than on the internet, due to the difficulties in accessing and verifying some resources, particularly original or primary resources.

Although international research students from the sciences and humanities prefer to use formal methods of disseminating their ideas and communications, commercial exploitation is a persistent problem. This influences the integrity and accessibility of the scholarly publications. Rowley and Hartley (2017) found that the academics reported strong views on the reuse of their work; they were relatively happy with non-commercial reuse but were opposed to commercial reuse, adaptations, and/or inclusion in anthologies.

It is worth mentioning that some participants from more remote provinces of Iraq (such as Karbala) preferred informal communication, due to the lack of access to formal communication, while others from relatively developed provinces (such as Baghdad) preferred formal communication.

During periods of upheaval (for example, the period when Iraq transitioned from a dictatorship to a democracy) Iraqi participants were forced to use informal communication as a temporary form over the formal means because the more formal methods, (such as scholarship, research and scholarly communication) would take considerably longer to develop and implement. The participants also stated that it is possible to conduct academic research by adopting the ideas acquired from academic libraries in developed countries. This could be done through the use of the foreign

library's webpage, where information about their systems, ways of thinking, method of communication, and the exchange of information could be gathered. Furthermore, in order to obtain services, students tended to build a personal affiliation with library staff rather than rely on a professional relationship. They believed that by developing this "friendship", they would have better access to what was available. In our libraries, we use informal communication, such as personal relationships, more than academic or formal communication. Academics can befriend librarians through visits to the library, which can lead to excellent relationships that improve services (e.g., the selective dissemination of information). (IL 4)

Moreover, other participants from developing countries who live in their own countries, such as in Indonesia, prefer to use formal communication. They are deterred by private companies that advertise scholarly products, believing them to be more fraudulent. The students had more faith in resources funded by the government or higher education institutions, as it was believed these would be more reliable and cheaper.

Participants believe that academic institutions are responsible for the production of scholarly communication and other scholarly matters through the development and updating of policy. Measures that have been suggested by the participants include calling on graduates who have completed their studies in developed countries, to be encouraged to apply the research outcomes when they return to their countries. Unfortunately, when students from developing countries return home after finishing their higher studies by research (master degree by research, or a PhD), they collide with the harsh reality that governments and educational institutions and societies are often not going to accept the contribution of constructive and progressive educational ideas.

Unfortunately, scholars, after finishing their studies, can't do anything but forget all they have learned. They have to follow the current system. It's a cultural issue—people don't like to change systems. (Int. R 11)

Iraqi participants on sponsored programs were inclined to agree that formal communication, one supported by the government, was the only available option. Therefore, despite the lack of free academic and material resources, they resort to

adopting and abiding by government-regulated institutions within their home countries, such as universities, schools, libraries and associations. Financially independent students are not limited to the resources dictated to them by the government. For instance, international students who have their own money can access resources on behalf of other students. Although this practice comes with some concerns such as about accuracy, bias, and lack of control by government organisations.

Although Australian librarians do not commonly use web 2.0 as a tool for professional communication, Iraqi participants found in web 2.0 a strategy to overcome the lack of formal scholarly communication. This strategy is an effective way to help those researchers from the developing countries to have access to academic material; the majority of Asian university libraries are using web 2.0 applications in their English websites. Balaj (2019) finds that most widely used web 2.0 applications are Facebook (62%), Rich Site Summary (RSS) (53%), Twitter (47%), and YouTube (37%). Libraries are providing RSS-rich sites for tracking events and news, search results and new arrivals, and this practically a tool has been used in Hong Kong, United Arab Emirates, and Singapore university libraries. Web 2.0 applications provide services that enable the creation of content through annotated review of the information/resources, these include help with organisation and/or evaluation. It also includes the activities of researchers, such as conducting research, developing ideas, and shaping and communications that are intended to be formal research outputs. In addition, Mahmood and Richardson (2011) state that web 2.0 applications contribute to enhancing the quality of library services. Through analysing the content of 55 libraries blogs from the United States, Canada, and the United Kingdom, among them, 21 related to academic libraries, and most of the blogs reviewed were about providing news or information for library users. This included information such as broadcasting news. Among all library activities, library resources were considered to be at a low level in terms of contributions by other libraries (Stuart, 2010).

In conclusion, the second idea of developing the definition of scholarly communication (as discussed) is imperative to understanding and defining the existing structure of scholarly communication. This study found that the factors impacting the choice of communication come down to the framed formal and informal patterns of communication, as well as to the geographic location of the

scholars. In addition to this, international researchers doing research in developed countries prefer to use formal communication, while it was found others preferred to use the informal means. This was believed to be due to the availability and reliability of resources, the cost of access, and the circumstances each of these researchers. This suggests that the definition of scholarly communication needs to involve both formal and informal patterns depending on the needs of connection, whether this be locally or globally.

Furthermore, international researchers determined the various channels for informal scholarly communication, as well as developing further literature on web 2.0 applications. Those informal channels are defined as purchasing resources and meeting with experts, international students, and relevant international associations and organisations.

Overall, this study added new elements of scholarly communication through understanding the existing structure in academic libraries in both Australia and Iraq. The new elements involving the definition of the term *scholarly communication* are digital resources (after the legislation had been approved); the geographic location of the scholars; the patterns of communication (formal or informal); and the newest application for informal communication, web 2.0.

Academic Libraries and Scholarly Research

This section discusses the international research students' thoughts about developing the understanding of the scholarly communication structure. International research students gave their views on the matter, revealing two main ideas that have impacts on the scholarly communication: academic libraries and scholarly research.

It is important to understand how international research students construct perceptions of their academic libraries through describing these two factors. Firstly, for academic libraries, this term involves ideas about: the role of libraries in the 21st century, the digital environment, library management, faculty librarians, the rating of library services, information industries, and materials and equipment. The second, scholarly research, involves ideas about scholarly publishing, software programs, and researchers' skills in using databases, journal articles, and academic resources. In addition, study participants also provided ideas that contributed to a better understanding of the structure of scholarly communication via online services, such as facilitating the online purchase of resources, updating resources and services, and the incorporation of international literature, and translation services.

Academic Libraries

Academic libraries in Australia, and in most developed countries, are facing challenges in developing the open-access movement. Also, academic libraries in developed countries have to play a role in developing the program of scholarship to meet the need of global communication. Lynch (2017) states that academic libraries need to develop appropriate, new genres of scholarly communication for the digital environment, first by recognising their emergence and then by collecting, organising, curating, and preserving them. The interviewees of this study confirmed that there are some ways to gather scholars in one place such, as conferences, forums, seminars, or digital and social networking spaces; and the participants also noted that academic libraries of most developing countries are facing problems related to their basic services, such as the availability of new resources; access to scholarly journals, internet services, and databases; and the digitalisation of literature.

International research students gave their opinions on the role of academic libraries, and whether they are satisfied or not, through rating the services of their libraries by the surveys. For example, a majority of the international research students complained about their academic libraries, and how dissatisfied they were with the services (e.g., the availability of databases, no access to e-resources). They also mentioned that poorer services have impacted on the nature of scholarly research. For example, on the lack of a resource's availability in libraries, a researcher from a developing country (Indonesia) said:

I am struggling to find proper material in the library when I am doing my research on my own country. There are often no adequate materials to support my research—especially for the methodology chapter. Whereas here in Australia I find there are plenty of resources and software programs that support researchers in doing their research at a standard level.

This dissatisfaction supports what study participants said about the knowledge gap being the main reason for causing an information deficiency in the literature (see Chapter 3). It also conceptualises the nature and the extent of the information gap in Iraq (see Chapter 2).

Iraqi respondents, as part of the group of international research students, gave their opinions about their academic libraries in different way. Iraqi respondents do not place blame on the quality of service or the provision of information resources available in their academic libraries, because they believe the libraries belong to higher institutions where there is no separate budget allocation for them. In contrast, the library services in Australia were described by Iraqi research students as more adequate, with the materials being current and available. Furthermore, Iraqi participants were aware that in most Arab countries, libraries and research centres are attached to higher education institutions rather than to the production and service sectors, unlike the cases seen in developed countries (United Nations Development Programme, 2009). In addition, the international research students were well aware of the academic libraries in developing countries. The identified ways that international researchers progress and develop their services to have positive impacts on the scholarly communication included the utilisation of social networking in order to develop and apply the newest versions of web 2.0 applications, and the creation of blogs. This finding supports that of Kim and Abbas's (2010) study. The international research students were also aware that in order to develop academic libraries, new trends such as digitalisation and information literacy, including indexing and abstracting and mobile library services, must be in place. This was previously illustrated by Pors and Johannsen (2003).

Scholarly Research

International participants reported that scholarly research encompasses five main subcategories: (a) software programs, (b) scholarly publishing, (c) conferences, (d) internet searches, and (e) private sector. This section will discuss what the views related to each are and compare these with published research.

Software Programs

Participants of this study believe that an important part of all libraries' functions should be to make software programs available for academic use. This is a complicated matter because it means that libraries have to own multi-licences for commercial software, or develop software themselves. Some libraries have complied with this issue because of the high demand of researchers wanting to use particular software programs as supplementary tools in research. Study participants give examples of the types of software programs they need and mention that each program is used for different purposes. Depending on different research disciplines

and the research methods being used, such as qualitative and quantitative. For instance, this study found that there are eight common software programs being used by researchers: EndNote, NVivo, Dropbox, WhatsApp, SPSS (statistical program for the social sciences), Blackboard, MATLAB (for mathematics), and ArcGIS (Geographic Information Services) for geography. Participants also reported the importance in using a range of technologies for creating and digitally presenting research ideas (e.g., PowerPoint and Prezi). The importance of software programs in collecting, organising, analysing, and presenting data for scholarly communication was acknowledged by the international participants. Their views are backed up by what researchers have discovered previously (e.g., Fisher, 2017; Lewis, 2015; Wolfe, 2002). Furthermore, during discussions on software, participants often referred to one of the open source software, the free, publishing platform the Public Knowledge Project (MacGregor, Stranack, & Willinsky, 2014; Sprout & Jordan, 2018), which first appeared in 1998, in Canada. It aimed to find out ways of increasing global access to peer-reviewed scholarly materials for free. This project is ongoing in its aims to develop the existing open access journals and to encourage more academics to contribute to the system (Sprout and Jordan, 2018).

Scholarly Publishing

Most international research participants declared that the deficiency in scholarly publishing is mainly due to governmental issues. The dearth of financial support and funding initiatives negatively impacts publications due to the lack of encouragement for greater scholarly research production. The participants' views were reflective of what was found in the *Arab Knowledge Report* (United Nations Development Programme, 2009). In terms of financial inequality, the gross domestic product reports that a comparison between Arab countries and developed countries, research funding as a share of gross domestic product is around 0.3% in Arab developing countries (Iraq, Palestine, Syria, Lebanon, etc.). The share is greater in non-Arab developed nations: 3.8% in Sweden (3.8%), 2.6% in the United States, 3.5% in Finland, and 3.2% in Japan (United Nations Development Programme, 2009).

International participants declared that there are many factors leading to the limited publication in the developing countries in comparison with developed countries, such as greater inequality in financial support, lack of modern technology, and limited research skills.

Additionally, international participants from Iraq stated that the situations in their country have changed dramatically. In the 1970s, for instance, researchers were intrinsically and extrinsically motivated to publish. Whether this was for the purpose of spreading knowledge or not, they received money as an incentive for their outputs. Today, however, many researchers pay to publish their work in order to be recognised academically.

Conferences

International researchers and Iraqi librarians believe that there are other non-web (offline) ways to collect resources, besides visiting libraries. These include seminars, workshops, exhibitions, TV programs, or even asking experts.

In addition to the aforementioned non-web-based methods of information gathering, international participants shared another related to scholarly research, namely conferences. They viewed these as the most reliable resource for getting new information and as a key factor in creating an academic network. Conferences were considered by interviewees to help in expanding findings, proposing and discussing new research questions, and finding academic solutions to problems. Further conferences assisted with sharing academic views and findings among other students, academics, and people of interest. They also help researchers to diversify by branching out beyond their field.

Moreover, international participants would like to invite specific academic experts to developing countries. These experts would be able to hold seminars and other presentations and answer questions directly. This would make the academic work more tangible for students. The question is whether the management and funding of these visits is the task of librarians or staff of another education department.

Furthermore, international participants suggested that if librarians were to attend the conferences they would then be able to collect the research ideas and findings, summarise them coherently. Then through the library make this information available to the students. The international participants held the view that the librarians were research experts. Yet, this is doubtful in most cases, as they are mainly experts in the cataloguing of academic knowledge. Despite this, participants reflected on what they considered would be a cheaper, more viable solution. This was to send the librarians instead of the students and researchers.

Internet Searches

As previously mentioned, most of the sample's researchers from developing countries complain about the services provided by their academic libraries, due to the lack of resources and services. Some mention alternative ways of doing their research through the internet and the use of the private sector resources. For example:

Most of the time, many academics, including me, will go to Google Scholar. I then look for scholarly articles that have been published in academic journals online. Sometimes I can subscribe to the journal to send me hard copies directly, rather than accessing them online, I get them sent to me. (Int. R 22)

Recent studies indicate that both science and humanities students prefer to use the internet for seeking information resources. The Mbabu, Bertram, and Varnum (2013) study reported that the percentages of students using the internet was 88% for biology, 70% for engineering, 60% for the humanities, and 78% for the social sciences. This prolificacy was also found in this study. Most of the international researchers used internet sites such as Google, Google Scholar, they accessed online databases, such as ScienceDirect, Iraqi Virtual Library of Science, and other library websites, Ask a Librarian and You Tube. They believed that Google and Google Scholar provided ample options, materials, services (translation) and variety of articles—not to mention the ability to download, save, print, and share these articles.

Google Scholar has plenty of resources on particular topics; it provides different options, reports, and up-to-date information on a wide variety of aspects, while the library can provide one single resource, and that would be based on the title. The library provides information in a very limited way. (Int. R 12)

However, both scholars and professional researchers have raised a common concern about online resources. In order to collect information through the internet, participants have to evaluate the reliability and credibility of the resources they find. This has an effect on the quality of the scholarly research conducted by them. Due to the fact that there is a lack of databases, a lack of open access, and a high cost of

electronic materials, a great division exists among researchers. Interpersonal skills, such as languages, socio-economic statures, and the qualifications and experiences of the individual, differ greatly. Researchers are facing a lot of difficulties, which inevitably affect the nature and therefore the credibility of their research. Although the researchers are aware of the importance and reliability of the resources collected through the internet, there seems to be an absence of a systematic methodology for conducting research or evaluating electronic resources. Despite there being no basis for it, this leads to the assessment that the resources taken from the internet are then considered weak when evaluating master's and PhD research in Iraq.

The most important things in any scholarly research are reliability and credibility. Anyone can publish anything through Google, Yahoo, and YouTube, so researchers have to be careful when looking up and using websites. They have to depend on credible resources only and use credible websites. (Int. R 13)

While recent studies consider the evaluation of the information as being a way to get through the semantic cues contained in each context, to reach cognitive integration (Brand-Gruwel & Stadtler, 2011), international research students are still trying to identify what sources are reliable regardless of the depth, context, and concepts contained within the texts. Thus, they are looking for reliable, credible, and/or at least published materials that have been through a peer-review process. Peer-review systems are used in most developed countries to determine the validity of the study. This means experts have read the information and decided it is accurate.

Private Sector

It is important to discuss the private sector as an alternative way of collecting resources through the internet when the services provided by the Iraqi institution-based sectors are inadequate. Other methods for conducting research are necessary. Participants' ideas for conducting scholarly research are constructed through the consideration of the private sectors and the roles they play in supporting scholarly research. For example, book markets, internet cafes, and markets of printing, copying, translation (even binding and calligraphy). Although it seems that there is a wide range of services provided by the private sectors, researchers claim that there is a lack in the quality and monitoring of imported products. They believe this due to

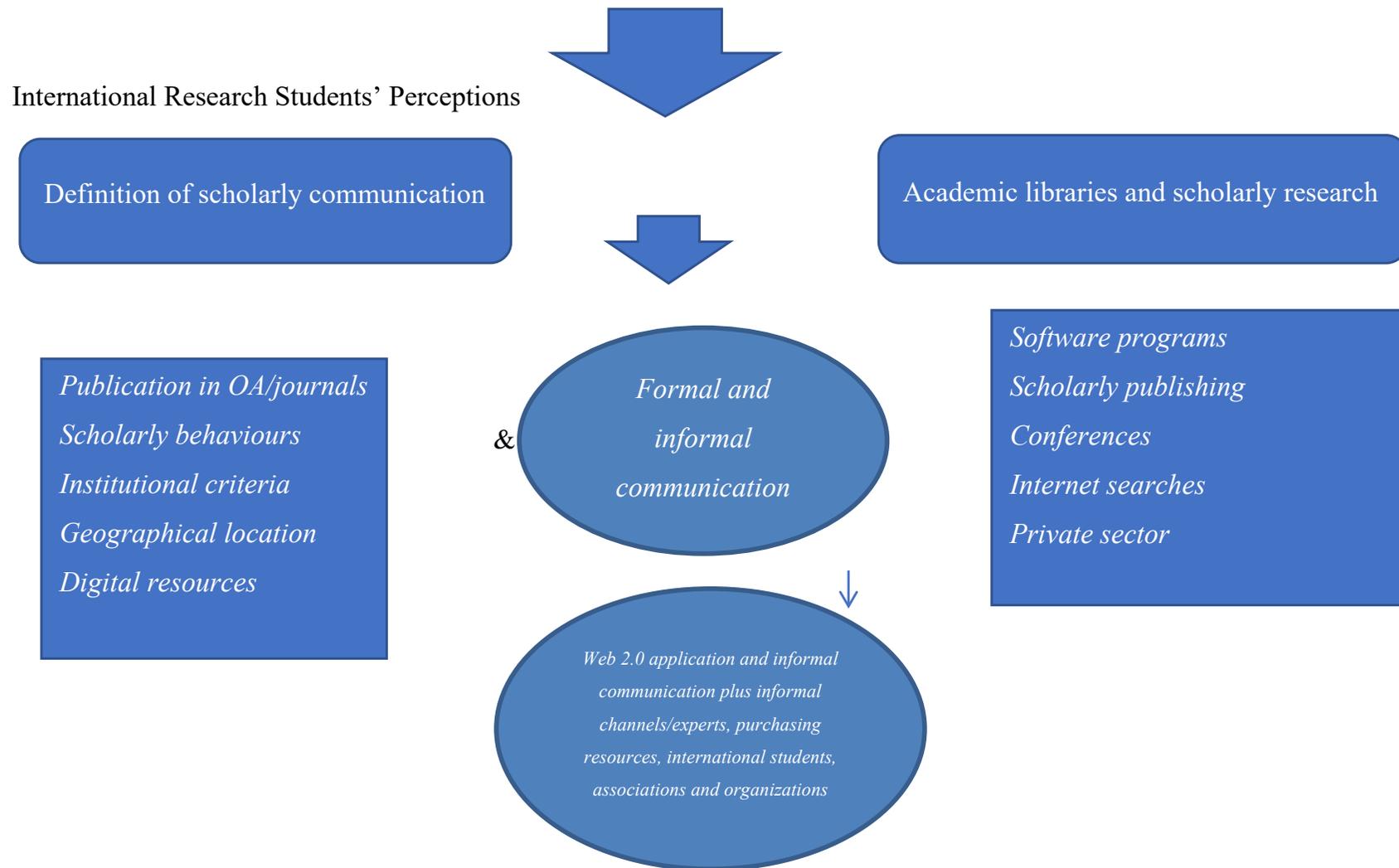
the lack of the following; organised strategy for the importation of information technology; social and socio-economic gaps (varying incomes among individuals); lack of international trading; and the strategies behind the use of the Iraqi natural resources (IL 8).

Those views confirm what Wilson, Velis, and Cheeseman (2006) found. They declared that there is a lack of coordination in purchasing books from book markets in developing countries, and that due to the required strategies for shopping and an appropriate way to choose book dealers, that it is not easy. In addition to this, participants claimed that private sectors are consuming researchers' money, time, and effort, with few benefits in return. Yet it is necessary for researchers to explore a range of options to develop their research.

Overall, a comprehensive definition of what is scholarly communication in the academic libraries of Australia and Iraq that conceptualises the formal and informal patterns of communication, that also include the geographic location of the scholars, the digital resources, and describing the association between academic libraries and scholarly research can be seen in Figure 10. This answers the secondary research objective: What are the existing structures of scholarly communication in academic libraries in Australia and Iraq?.

Figure 10

Structure of Scholarly Communication in Academic Libraries in Australia and Developing Countries



Opportunities for and Constraints to Scholarly Communication

The discussion in Chapters 2 and 3 of this thesis points to a number of opportunities and constraints that are collectively identified as possibilities and obstacles. These lead to the development of a conceptual structure of scholarly communication in academic libraries in Australia and Iraq that enables one to address the information gap in Iraq.

It was argued that the greatest opportunities identified by international research participants and librarians involve open access. Social networking, advanced software communicative programs, the roles of stakeholders, and of discipline-based scholarly communities play a significant function in the facilitation of scholarly communication in academic libraries in Australia and Iraq.

The current trend calls for the development of open access as a way to develop and improve scholarly communication worldwide. This is similar to what the author found in this study and accords with the current efforts being made in developing countries. Though the academic libraries in developing nations are still in the early stages and require more time to achieve the global aim. Some of the more promising steps are being taken in Indonesia, and other developing countries. These steps include initiating the development of Rich Site Summary (RSS). For example, Genoni and Liauw (2017) found that as many as 90% of the Indonesian researchers provide access points, within their research, in the form of standardised subject headings, and English is widely utilised.

At this stage, the author of this thesis believes open access is a new form of information studies and needs to be developed further. This needs to be done in collaboration with researchers and institutions—for example, through the revision of policy by decision makers, thereby enabling faculties to have a major responsibility in regard to the facilitation of the communication of information.

Open access has many layers; you can publish in open access in terms of journals, for example. Even then you have different types of open access; in some disciplines this is normal and the exchange of information is robust, but in certain other disciplines (maybe because of privacy issues or confidentiality) this idea of open access is still not widely accepted. So, we are at a stage where open access is becoming more prevalent and publishers are taking more notice of it. (AL 1)

In addition, this thesis discusses constraints such as social and cultural issues, security, financial, administrative, and technical issues as problems due to the impacts they have on scholarly communication. The framing of these potential benefits and problems between academic libraries in Iraq and Australia, along with discussions presented in previous literature, allow the development of a framework of possibilities between libraries in scholarly communication.

International research students believe that there are three common elements that may have an effect on scholarly communication at an international level and may be considered to be constraints. As outlined in Chapters 2 and 3, these include technological innovations (internet availability), economy (financial support), social issues (poor versus rich), and cultural issues (e.g., cross-cultural differences)

For instance, economic disparity between developed and developing countries is considered as one of the most important obstacles in the facilitation of communication. Transferring knowledge on an international scale requires financial support, as well as the necessary technical tools. In other words, it was discovered that both Australians and Iraqis believe that economic disparity impedes communication, respective to each but from different points of view. The Iraqi respondents saw the economic element as an integral part of living, as well as of infrastructure. However, the Australians argued that the economic issue is more about how it contributes to the development and extension of educational institutions, as well as of information services. From analysing the available literature, it seems there are two positions on what effect the economy has on communication—one in developed countries and one in developing countries. Dosi, Freeman, and Fabiani (1994) stated that the economy in relation to development is viewed mainly in one of two ways, depending on the country (developed or developing).

First, the emphases on economic terms is as the basic idea of people's wellbeing. That is similar to what citizens of developing nations such as Iraq tended to believe (see Trainer, 2011). While the second is to consider the economy as a way of funding. How it is used in the investment and employment of ICT for the development of the different aspects of life, including, though not limited to, the education sector (and, in particular, scholarly communication). That is more in line with what the Australian participants believe, as well as what this research discusses in Chapter 3.

In both cases, however, the standard of living and the sustainable development of a country depend on the economy of that state and the natural resources (water, oil, mining, etc.) available. This is in addition to the strategy of the government in managing those resources. For instance, a recent study found that on average there is a 10% increase in ICT investment leads to a 6% increase in economic growth. The same study also suggested that the growth impact of ICT has increased over time (Cardona et al., 2013).

Nonetheless, international participants were aware that the Iraqi economy is in poor shape, although this is not due to the lack of natural resources (e.g., oil). However, Iraqi librarians state that it is seen as being the fault of a lack in “true management” from the governing bodies, the absence of a sustainable economy, and the long period of war that has tormented the land. The Iraqi government sees education as a secondary necessity due to the hierarchical needs of their citizens (i.e., food and shelter). Regardless, some participants suggested the privatisation of the Iraqi economy under international companies will reduce the financial cost, as the problem is based on the country’s management. Iraqi study participants were also aware that the governing state will not support scholarly communication, or academia in general. This is in accordance with Ababio and Meyer (2012), who reported a link between the local economic developments and the level of poverty in the state. For instance, at any economic level, the strategy of the state has to take into consideration that there are some elements, such as the basic human needs in the community, job opportunities and provision, developing human resources and skills, safety, and security, are imperative.

One of the other constraints in the Arab world is the difficulties of using networked information (Ali, 2007). The findings of this study coincide with Ali’s illustration of the eight barriers: electronic literature; lack of adequate training; lack of confidence; lack of university encouragement; lack of essential software or hardware; lack of adequate network security; restricted and limited internet policies; and the complexity of the technology. The Iraqi librarian participants confirmed that there are other barriers that affect scholarly communication, such as the quality of information technology products that have been imported into Iraq, as well as administrative and financial corruption.

On the other hand, the economic issues that are reflective of what the Australian librarians appeared to believe include that any unfair economical support

for academia is an obstacle in the development of learning in general—and, more specifically, is an obstacle to the development of scholarly communication. The Australian librarians involved in the study stated that good economic policies can be created through investments that consider the availability of new technology in education. An example of the new kinds of technology ranges from something as simple as a computer and the internet to the more advanced modern technology used in learning such as Flashnotes (Yusof & Hassan, 2011) or hardware such as Google Chromebooks (Herold, 2014). The Australian librarians confirmed that any unfair financial support would lead to a decrease in the quality of the education system and thereby result in the development of the information gap mentioned in Chapter 2.

This study takes the approach that although there is evidence to suggest that the development of human capital is measured through cognitive skills, it may also have an impact on the development of the country's economy in the long term. Economic disparity among countries may lead to a variation in available resources and the development of human capital. It affects the quality of a country's economic institutions, the security of its intellectual property rights, and the openness of its economy, along with the regulations in its labour and product markets (Hanushek & Woessmann, 2011). International researchers indicated the belief that in order to develop human capital, the development and facilitation of basic technology and infrastructure requires an adequate economy. They believe that this will lead to the development of the education system and thereby bridge the information gap.

Differences in education policies between countries lead to a disparity in skills and qualifications, which therefore leads to the creation of the knowledge gap. For instance, Australia, as a developed, OECD country, has an economy that supports an education system that in turn supports the economy. Therefore, the standards of qualifications and skills, as well as the level of tertiary schooling, can be taken into consideration when defining the breadth of the knowledge gap between countries.

It could be concluded from the arguments presented that economic factors are not the only aspect that influences the knowledge gap between the two countries. Other elements that impede the achievement of effective scholarly communication matter, but these vary between individuals' skills and the higher education policy of the countries.

Another constraint to scholarly communication is that of social and cultural issues. It is necessary to understand the social and cultural influences and issues within each country in order to understand their views on what is an obstacle in regard to scholarly communication. This is an important element to understand as it is through this that we can overcome the different constraints. Vilhena, Foster, Rosval, West, Evans, and Bergstrom (2014) stated that culture is one of the most significant barriers that impacts scholarly communication. For example, the difference in interests, experts, and language adds to the complications of communication. In addition, Darling-Wolf and Mendelson (2008) analysed the cross-cultural production of *National Geographic* magazine through a cultural lens. They established that since 1995 the magazine has become more complex because it has required licensing agreements for publishing in different countries; with multiple publications and the needed to adhere to the different cultural and legal standards. Moreover, Garfinkel (1991), as cited in Mather and Tranby (2014), discovered that more work is required “to sustain an interaction when underlying cultural differences lead one or both parties to transmit a stream of unfamiliar and unexpected symbols of behaviour”.

In the context of the current social and political events, international respondents believe those elements have impeded the scholarly communication between developed and developing countries.

I think it has several dimensions. The political dimension, for example, is very important. I think it is the predominance of Western world. The system has been regulated so that the predominance of Western world continues. And, in that way, the Western world and the citizens of developed countries are dominant in knowledge as well. The access of others is very limited and controlled. (Int. R 16)

Iraqi respondents expanded on the social factors that have been constructed from three moral thoughts: “what they have”, “what they think”, and “how they act or behave”. For example, Iraqis mentioned Iraq’s ancient civilisation, historical heritage, Islamic religion, morals, and cultural norms. They also believed that there is a lack of awareness of other cultures (West and East), and that there are psychological barriers, such as low confidence with which to express their ideas—

whether to their course supervisors, heads of their institutions, or publish them in general. Furthermore, Iraqi interviewees think that there are some elements that have occurred since the last war. These aspects include clientelism or nepotism, non-transparency in working industries, unqualified leaders on big projects, and corruption—all of which have great impacts on people's actions and behaviour. This way of thinking leads to the neglect of the more important matters of efficiently running projects and communications between nations, as pointed out by one participant (Chapter 5).

Thus, according to the Australian librarians, the main obstacles that impede scholarly communication between libraries in Australia and Iraq are economic disparity, individuals' skills, and higher education policy. In addition, the local economy and economic strategy, as well as social and cultural issues such as security, moral values, and administration, have impacts on facilitating scholarly communication. These findings add new dimensions to what has been discussed in Chapters 2 and 3 in conceptualising the nature and the scope of the information gap in Iraq and in other developing countries.

Despite the difficulties with scholarly communication, participants in this study developed similar ideas about possible forms of communication. These included technological opportunities like social networking and advanced software communication programs, the role of stakeholders, and the role of discipline-based scholarly communities.

For both groups of participants this research focused largely on social networking. The academic publisher Taylor & Francis has published articles on the use of social media by libraries. It is encouraging that both Iraqi and Australian librarians make use of them.

In addition, one study found that social media has the potential to facilitate close relationships between libraries regardless of distance. It also helps to advertise the services and resources of the libraries and the people to contact within those libraries (Lan & Tuamsuk, 2018).

The international research students who participated in this study considered that, aside from utilising social networking to facilitate scholarly communication, there is another potential element that plays a significant role through technology opportunities. The facilitation of software communicative programs such as networking tools, emails, links/invitations, students' portal (university

account/email), forums, seminars, social media like Facebook and LinkedIn, discussion rooms for face-to-face interaction, conferences, library websites, official communication channels, workshops, Asian book markets, summer programs in both countries, WhatsApp, Blackboard, Dropbox, webinars (online seminars), and Skype, as well as open access, help enable avenues of communications.

The research participants provided the aforementioned examples of the kinds of channels through which scholarly communication can be achieved. These are similar to what the current technological trends are focusing on: an increase in mobile-device-based applications being adopted in a different way (Boase, 2013). For instance, to do the same activity different people are using multiple applications. This may lead to the divergence or convergence of communication capabilities.

Development Strategies

In order to understand the difference between potential and the development strategies, it is important to distinguish between the concepts of *potential*, and *strategy*. Potential can be defined as having or showing the capacity to develop into something in the future, whereas strategy can be defined as “a plan of action designed to achieve a long-term, or overall aim” (Collins English Dictionary, 2003)

The final step is to develop a conceptual framework to address the key components of the issue being studied. This is to address the fourth research objective: How can the development of structures for scholarly collaboration address the information gap in Iraq?

Five potential themes emerged from the respondents that could be incorporated into a long-term, or overall, aim for scholarly communication. In regard to Iraqi and Australian library systems, these are international research, discipline-based scholarship (teaching and learning), facilities and infrastructure, and cultural and political views. Of these, it could be argued that there are two main issues, as outlined by Lynch (2003) and Yiotis (2005), that have arisen in regard to the facilitation of scholarly communication. First, as pointed out by Lynch (2003), is the development of strategies in academic libraries such as institutional repositories: “a university-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members” (p. 328). Lynch further stated that “this can be done by changing the patterns of dissemination and access information which allow universities to apply scholarly communication. It is

most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution” (p. 328).

The second main issue, as stated by Yiotis (2005), is how to develop a strategy of scholarly communication through the creation of a new paradigm of open access. These include open-access archives or repositories, open-access journals (peer reviewed), local institutional repositories, e-print self-archiving software, cross-archive searching, metadata harvesting, and individuals’ roles to support the open-access movement.

A recent study by Ocasio, Laamanen, and Vaara (2018) stated that the attention-based view of the firm was proposed to explain firm strategic decision-making and adaptation—key topics in strategy research. The study states that one of the new strategies is the development of scholarly communications through social interactions within and between communication channels. This allows the participants to change through speech, gestures, texts, discourses, and other activities. This was also reflected through the following participant statement:

What I understand from communication is that it is a kind of reciprocation, an interaction between two parties; it is not a one-way discourse. So actually the most effective methods of communication are those that involve two equal parties—not those that are monologic. (Int. R 16)

Both Iraqi and Australian study participants support the open access movement and/or sharing of knowledge. For instance, they said that academics have to post new information about their research outputs (e.g., conference papers, journal articles) on the internet. Then questions can be asked and other academics will be able to interact and comment. This indicates there is the possibility of an optimistic future for the two countries’ library systems.

Australian librarians believe scholarly communication can be achieved through sharing their ideas, developing institutional repositories, and developing strategies of international scholarly communities, as well as improving facilities and infrastructure to meet current international standards. An example of the ideas Australian librarians shared include standardisation and communication, scholarly communication through consortia, factors of scholarly communication, interaction

requirements, relationship and/or librarianship, online learning, virtual teaching, and strategies for purchasing literature. Their overall view focused on developing strategies of scholarly research through human resources, individual agenda, open access, open mind, empathy and compassion, conferences, reading published materials, scholarly publishing, and visiting libraries.

Furthermore, international research students state that in order to develop strategies for library systems, the following are required: collaboration, commercial knowledge, communication and interaction, e-products, book industries, international communication projects, international scholarly communication possibilities, investment, model projects, reciprocation interaction and equality,, scholarly programs, scholarship,, sister universities, training programs, translation services, the building of relationships, the determination of scholarly communication requirements, the development of suggestions, and the sharing of knowledge and resources.

Other ways to enhance scholarly communication, as remarked on by Iraqi respondents, include the implementation or encouragement of international scholarly projects, scholarships, international conferences, international literature, research projects, sharing resources and services, sharing international abstracts, translation services, technology opportunities, and virtual libraries.

Scholarly communities have a significant role to play in this regard. This can be achieved through the activities attended by academics; such as gatherings; scientific forums and groups; special scientific committees concerned with science development (existing in Iraq). For example, in my Technology University (in Iraq) we have a committee dedicated to performing ongoing updates of curricula by following advances and developments in scholarly education research in other countries. Sometimes we take the initiative to connect with other institutes that may be driving advances in certain disciplines. This can result in useful cooperation when we receive copies of the studies and agreements made by these institutes. (Int. R 1)

Iraqi respondents included other elements, such as volunteers from developed countries going to developing countries. Either in the form of the exchange of

international students to enhance collaboration between cultures, or through working transparently, avoiding nepotism or clientelism.

In addition, ensuring the creation of profiles for every scholar and developing infrastructure and investments in Iraq were encouraged due to the changing landscapes of prewar and postwar Iraqi sentiments. These included becoming more open to the world, with more focus on the international organisations that are willing to visit and work in Iraq, offering their services and helping to set up projects. Moreover, international research student's perspectives focused on developing cultural and political understanding. Although some of the Iraqi participants were optimistic about their culture in terms of longevity, heritage, natural resources, attractive places for tourism, opening up to the world, development of the standard of the general populations' lives (no sanction), development of the education system and the English language, they also acknowledged its deficiencies. In some aspects of culture and political issues, the participants suggested a need to develop strategies for implementation. These included the need for new experts due to the instability in postwar Iraq, the need for more information resources, and the need to control the view of Iraqis towards their culture. A participant summed this up with the following statement:

I believe that embracing confidence in ourselves, in our heritage, culture, civilisation, and values, is critical for scholarly communication. Our divine values are sublime. It is amazing when you see countries with no divine references imposed on their culture in the world (e.g., Japan and China). We can communicate our values and legacy in an effective way so that we can entertain a two-way relationship. An example of the values that we can offer emerged during the global financial crisis in 2008, when the prime mortgage problem engulfed banks and financial institutions. Scholars referred to the Islamic financial system as a possible alternative to avoid a recurrence of such a problem. Islamic finance does not rely on interest as a means to generate profit. It is interesting that Japan, for example, used an interest rate of zero to survive the crisis.

Where I live, there is a dilemma about whether I personally and those who undertake postgraduate studies overseas will be able to transfer the knowledge to Iraq. There are issues that can hinder this process, due to

differences in technology between overseas and Iraq. Another reason is cultural, due to differences in the attitude of students here and those in Iraq. (Int. R 3)

In conclusion, the overarching element in developing communication strategies between Iraqi and Australian academic libraries is the development of a new pattern of institutional repositories that support the open access movement, in addition to using social media in academic library systems. This will enhance international scholarly projects through holding international conferences and developing international scholarly projects in cooperation with the government and higher institutions. It will also develop and expand the cultural and political understanding between the two cultures.

CHAPTER 7: CONCLUSION

This chapter summarises findings against the set of goals described in Chapter 1. It provides recommendations, summarises contributions, and points to future research.

The research reported in this thesis was conducted at a time when the destruction of the Iraqi knowledge base during the decades of conflict had impacted many institutions and sites of the state. This included the education sector, represented by universities and academic institutions, and cultural institutions such as libraries, galleries, and museums.

The primary purpose of this study—and the main research question—was therefore to investigate the possibilities of collaboration between Australian and Iraqi academic libraries to address the information gap in Iraq. This was achieved by addressing four objectives. First, the study sought to conceptualise the nature and the extent of the information gap in Iraq. Second, it sought to identify the existing structure of scholarly communication in academic libraries in Iraq and Australia to find potential points of convergence. This led to the third objective of this research: to identify potential for collaboration between academic libraries to exchange information and knowledge, while seeking to identify the constraints of scholarly communication. The fourth objective was to develop strategies between Iraqi and Australian academic libraries, with the aim of addressing the information gap in Iraq.

This chapter summarises the research process and provides concluding statements that address the research questions collectively. The first three objectives are part of a logical sequence that helped to understand the phenomena and develop solutions for the fourth objective. All the objectives address the research question.

For example, identifying the information gap led to the possibility of framing and conceptualising the nature and extent of that gap in Iraq. Then this research discussed how the information gap has an impact on the structure of scholarly communication in academic libraries in Australia and Iraq. Also, through discussing the structure of scholarly communication, the possibilities for collaboration—as well as the barriers to it—have been identified. Finally, in discussing the first three objectives of the research, the researcher was able to identify potential strategies of

collaboration between academic libraries in Iraq and Australia. The outcomes rely on developing strategies and providing recommendations to academic libraries in both countries. The following section presents and discusses the concluding statements to the research objectives in detail.

Statements Additional to the Research Objectives

The research findings indicate that the key components arising from the first three objectives are as follows: the nature and extent of the information gap in Iraq; the existing structure of scholarly communication in academic libraries in Australia and Iraq; and opportunities and constraints of scholarly communication. These were employed to build themes that developed the structures for scholarly collaboration to address the information gap in Iraq. These includes possible strategies for collaboration between academic libraries in Iraq and Australia.

In regard to the obstacles that these research findings show, there were no more than what has already been written about in the literature. The main obstacles causing the gap between developed and developing countries are economic disparity; differences in education systems; social issues, like language and culture; and the lack of technology.

Although academics and universities are at the front of making changes in scholarly communication, the role of government remains to support the achievement this goal. This research finds that librarians from both Australia and Iraq, as well as international research students from developing countries, are focusing on the collaborative efforts that should make the success of international scholarly communications matter. The research discusses that collaborative efforts involve a range of players, including the Council of Australian University Librarians, and Iran's Ministry of Higher Education and Scientific Research, academics, universities, libraries, publishers, vendors, authors, international organisations, and individuals.

The findings show that Iraqi librarians believe that scholarly communication should start in universities and other academic institutions. Since the academic institutions are aware of the subjects and disciplines, as this research discussed, the findings also show that the success of scholarly communication depends on management resources, availability, and government support. It requires further studies to investigate the barriers and then try to draw out what could be addressed through the intervention of organisations, or of institutions or research centres, as identified in this research.

However, other research findings show that it is possible to develop types of scholarly communication that contribute to scholarly collaboration between academic libraries in Iraq and Australia. These include library systems that create an arrangement of institutional repositories aiming to build an open-access movement. The findings also convey the necessity to develop a strategy of international scholarly projects, and to develop social and cultural views through employing social networking in academic libraries.

This research contributes to an understanding of the nature and the extent of the information gap in Iraq through different perspectives of Iraqis, Australians, and researchers from Iraq and other developing countries. The main components of the gap are the disparities in local economic and educational systems—these differences reflect global inequalities in the distribution of wealth and technology. Australian librarians also point to a lack of awareness about the value and power of information and scholarship in many developing countries. Iraqi librarians, on the other hand, construct their perspectives of the concept of the information gap by reference to local factors such as endemic social, cultural, political, and economic circumstances.

It is beyond the scope of this research to address structural inequalities relating to the socio-economic circumstances impacting on the education system in Iraq, global political issues, and disparity in circumstances between Iraq and Australia.

In exploring the existing structures of scholarly communication in academic libraries in Iraq and Australia, this research found that there are possibilities to address or reduce the information gap in Iraq. The discussions develop strategies of sharing knowledge and employing social networking for improving structures for scholarly collaboration.

This research identifies the barriers to scholarly communication between Australia and Iraq, as explained in Chapter 6. Most barriers are similar to those found in other studies. The findings discuss these similar barriers from international research students' views of other developing countries, such as Indonesia, Iran, and Sudan. This research identifies additional barriers that relate to the unique cultural and current political events in Iraq.

For example, this research discusses the difficulties of building relationships between institutions and academics in Iraq and those in other countries, as Iraqi institutions and academics lack the confidence to progress these relationships as

proactively as they might like. It develops recommendations to rebuild the awareness of Iraq as the cradle of civilisation and the birth of science, ancient philosophy, and knowledge, as well as of the home of the emergence of writing. This awareness, discussed in the literature, is reinforced by exploratory readings, social media, and field visits. Results of the research discussing the points of view of Australian librarians highlight little knowledge about the culture of Iraq. While the Australian librarians expressed a desire to cooperate with the Iraqi librarians, a major obstacle was that they don't know where to start in establishing a scholarly communications project. Recommendations to operationalise the process of scholarly communication between the two countries will be addressed later in this chapter. However, further research is needed to investigate the role of the relevant institutions, as this research focuses only on the role of academic libraries. Another barrier that this research discusses is that of language, especially when it comes to utilising social networking for collaboration.

Concluding Statements concerning the Research Objectives

First, the discussion of the findings further develops the definition of scholarly communication from Iraqi and Australian viewpoints. The research findings show that there are differences of perspective in the two countries. It would therefore be beneficial to Iraqi and Australian librarians to understand the structure and elements of scholarly communication expected from each other. Australians state that scholarly communication is all about scholarly publishing, open access, and institutional repositories, but it is these areas that are limited in Iraq and most developing countries. International researchers described scholarly communication as a process for the exchange of knowledge within a framework provided by a particular scholarly community or discipline.

The research discusses the concept of scholarly communication in terms of formal and informal methods to create possible means for communication between academic libraries in different countries. Australian librarians prefer scholarly communication to be created by formal means such as publishing books, journal articles, and conference papers. They also state that scholarly communication can occur using informal means, such as personal correspondence, conversations, and brainstorming between students, experts, authors, researchers, and academics.

The research findings show that because of the difficulties for Iraqis to access materials in academic libraries in developed countries, they prefer informal

communication paths. International researchers also prefer to use other informal means for scholarly communication, including conducting internet searches; holding private events such as book markets, seminars, and conferences; and inviting experts from developed countries, along with international students and representatives of specialist organisations and associations.

The discussion here tries to develop a useful definition (understanding) of scholarly communication between the various academic libraries in Australia and Iraq because of Iraq's unique circumstances. This may lead to the development of a structure of scholarly communication between the two countries.

Second, the research discusses the possibilities for collaboration between academic libraries in Australia and Iraq. This research examines the role that academic libraries play—and sheds light on the role that academic institutions play—in the two countries. The findings show that the Australian librarians' roles focus on the development of institutional repositories and open-access movements. They prefer to use formal communication patterns that lead to communication and the exchange of research by developing institutional repositories and open access corridors in Australia and Iraq. While access to this is still limited for Iraqi librarians, this research discusses the role that Australian librarians can play to benefit Iraqi librarians. For example, Australian librarians could share their institutional repositories with Iraqi libraries without cost and without copyright and licensing issues. Australian librarians would still retain ownership of the literature in their institutional repositories. Iraqi librarians could also follow the way that Australian librarians conduct their scholarly research, by subscribing to databases, by sharing the use of software programs, and by training in the development of research skills.

The research findings show that language will be a barrier and that there is a difference between Australians' and Iraqis' research skills. These will affect scholarly communication. The research develops recommendations to improve research skills and English and Arab language skills in order to facilitate scholarly communication.

Third, the research discusses a global phenomenon of the 21st century: social networking. Various social media technologies have become essential tools of communication in Arab and Asian countries, on both local and global scales. This provides a potential for social networking and facilitating the cross-cultural collaboration between academic libraries in Australia and Iraq.

It could be argued that employing social media in academic libraries has a practical implication due to the fact that it helps academic libraries to construct relationships with their peers and encourages cross-cultural communication. In addition, the characteristics of social media applications such as Facebook, and LinkedIn offer opportunities for cross-cultural communication because they allow for group discussion, professional links, and academic exchange. Further, internet access and social media use do not require a significant financial outlay for libraries. This research found that both Australian and Iraqi librarians are using social networking. Iraqi librarians prefer to use Facebook to interact with researchers regarding library research. Australian librarians prefer to use LinkedIn to communicate with their peers across the world.

Any communication can include social media, as well as create a joint official library web domain for libraries in Australia and Iraq. Librarians of both countries can then decide what should be included and enhanced in these library webpages to serve the scholarly communication process.

It is now timely to proceed to an examination of how these three elements can influence the fourth one which is to develop strategies of scholarly communication between the two academic libraries to address the information gap in Iraq.

Through discussing the themes from the three objectives of the research to develop strategies of scholarly communication between academic libraries in Iraq and Australia, the research findings show that one of the main recommendations is to develop structures of academic library systems, especially to create institutional repositories aimed at open access movement. Open access depends not only on the libraries making their collections available but also on the people who own the information. That would be creators, vendors, or publishers, and with that comes financial interests and possible legal restrictions. One role of libraries is to encourage and facilitate open access. For example, in Australia, for the last 10 years it has been compulsory for students who complete theses to put them in the library system (an institutional repository). Students are required to sign a copyright assignment when they submit their thesis. Even though publishers do not generally provide resources for free, universities have to encourage open access. Then, the information would become the resource of libraries which makes it possible to exchange and share with other libraries, such as those in Iraq, without interference from the publishers and intellectual property or copyright issues.

Another common comment from Iraqi perspectives is that Iraqi libraries need access to international scholarly projects through international conferences and scholarship programs. It is recommended to develop access to international scholarly projects by governments and higher institutions, and to develop cultural and political bonds among mixed cultures, alongside other factors (identified in the findings) to address the information gap in Iraq.

Recommendations

The recommendations put forward in this research are important because they address the deficient academic conditions in Iraq that are due to the country's social turmoil.

This research finds that there is a significant information gap in academic libraries in Iraq in terms of access to information, and the production of knowledge, because there is a lack of research facilities and infrastructure. In addition, there is a lack of scholarly strategies to communicate with academic libraries in developed countries.

For example, the research finds that the impact of the wars on Iraq's libraries occurred in four categories: information and communication technologies; the loss of library collections both in physical and in terms of digital content; social and cultural views; and management in the base of sharing knowledge. All these categories require substantial reconstruction. A particular problem is the reduced capacity of the library and information professions in Iraq to lead such a program of recovery. This is outside the scope of this research. However, what can be achieved as a result of this research is to rapidly develop the collections in academic libraries in digital format to meet international standards, which will develop the structures necessary to conduct reliable and scholarly research. Also, the research recommends developing English-language knowledge as a means of overcoming the language barrier. This would go together with a professional translation service, including offering quality translation software at all libraries. It recommends the development of courses for librarians to overcome the cultural and political differences between countries.

The research recommends addressing the information gap in Iraq through developing academic library systems in six ways:

- encouraging open access in library repositories in all countries
- providing and updating digital content

- encouraging social networking in academic libraries
- involving higher institutions—that is high schools and universities
- developing strategies for improving the academic infrastructure
- employing international scholarly projects

In order to develop the two main factors, international scholarly research projects and social and cultural views, the research findings show that there are differences between Australian and Iraqi researchers' perspectives of the information gap and scholarly communication; existing structure of scholarly communication; opportunities and constraints for scholarly communication; and suggestions to develop strategies for scholarly collaboration. In the opinion of this researcher this is due to the lack of awareness of cultural issues and historical facts. She combines and merges the ideas and constructs a new strategy for the benefit of Iraqi librarians and research students. For instance, to develop social and cultural views by employing social networking such as, Facebook, blogs, and web 2.0 applications such as Wikipedia.

In order to develop the recommended international scholarly projects, we need to combine the findings constructed from the two countries' participants (see Figure 10).

This diagram illustrates that there is a relationship between academic libraries and scholarly research. Also, through the evaluation of academic libraries by individuals in the two countries Iraq and Australia, it is obvious that there is a difference in scholarly research.

To develop the strategy of international scholarly research, and then facilitate scholarly communication between academic libraries of the two countries, we need to develop strategies for institutional repositories that promote open access and social media, as well as develop strategies by higher institutions and government in terms of setting rules around partnership and financial support.

For instance, in order to develop international scholarly research policy, we need to develop many factors, such as scholarly publishing, software programs, research skills.

The results of this research have pointed out the need for scholarly communication between academic libraries in Iraq and Australia, including the

central libraries of the University of Baghdad, Mustansiriyah University, and the University of Basrah, as well as the Australian university libraries.

Recommendations for Iraqi and Australian Academic Universities and Libraries

Encouraging Open Access

The research found that Australian and Iraqi librarians and researchers' perception of open access as a means of scholarly collaboration is that it is considered practical but not developed sufficiently. It is therefore recommended that systems of open access be considered, with the focus on the exchange of knowledge between academic libraries in Australia and Iraq.

Applying Social Networking in Academic Libraries—Australians and Iraqis

There appears to be the need for the development of a structure of scholarly communication between the libraries in the two countries. Australian and Iraqi librarians and researchers are considerably responsible for upholding cultural diversity and point out the lack of awareness between Eastern and Western cultures, which is well documented in the literature.

Also, this research finds that there is a rapid uptake of mobile technologies and the sharp increase in the use of Arabic for internet-based communication. This will all depend on the will of the people who use Arabic as an internet language. They need to develop an entire suite of apps such as Arabic Facebook.

It could be argued that employing social media in academic libraries can help to address cultural diversity in the West and East by understanding each other's culture; and assist libraries with scholarly collaboration by constructing relationships with their peers in the two hemispheres. The research found that both Australians and Iraqis (librarians and researchers) are using different social media applications and in different ways. For instance, Australian librarians in the study mostly use LinkedIn, while Iraqis mostly use Facebook. On the whole, however, Australian librarians seemed less motivated to use social media than did Iraqis.

A possible way to address the issues identified in this research related to the use of social media applications in academic libraries is of creating a common formula to communication. For instance, by creating official library sites in both countries, and by publishing activities or events about the libraries and scholars, each country will learn more about cultural issues of the other. In addition, by using social

media, libraries can invite experts, promote conferences, and publish a list of new publications in different disciplines.

It is therefore recommended that the strategy of using social media in academic libraries be reconsidered, with the focus placed on creating a united platform to exchange scholarly information in Australia and Iraq.

Developing Strategies of Libraries and Higher Institutions for Improving Research Facilities and Infrastructure

One of the most significant findings of this study is that of a lack of information technologies in Iraqi libraries. This includes databases, software programs, advanced equipment, and internet technologies like fibre optics that have an impact on conducting scholarly research. The recommendations also include developing explicit instruction in the learning of research skills, increasing the hours of English subject teaching in Iraqi universities, and updating the curriculums to keep up with international developments. Five potential themes emerged from the respondents that could be incorporated into a long-term, or overall, aim for scholarly communication. for more details please see page 238.

The vast body of literature that deals with the strategies of scholarly communication for the most part focuses attention on information technologies' role in scholarly communication and exchanging knowledge. The research findings show that both Australian and Iraqi librarians are encouraging the use of compatible equipment in various academic libraries to assist the scholarly projects.

Developing Strategies and Instruments to Overcome Language Barriers

Of great importance is the development of compatible library systems between Iraq and Australia. This necessitates adopting a common language, whether Arabic or English. Although it is acknowledged that English, for the time being, will be required.

In summary, this thesis provides significant contribution to theory, policy and practice. The main point is that the scholarly communication matter lies on the higher education department in Iraq. Decision makers can use the results of my project to start the project. Also, the practical suggestions for academic libraries in Australia and Iraq are to develop the library system and include Arabic literature in Trove and use social media for creating a website that both libraries can share their activities, posting a new arrival material, and new research in library and information field. Further, the practical points for scholars in developed and developing countries

specifically in Australia and Iraq they can learn from my research to develop their academic research and use all the advanced technologies and databases from academic libraries in Australia and transfer their knowledge to their countries and provide them with the information about the software programmes, library services, and electronic materials. Also, scholars can learn to share their cultural views through the scholarly communication. And exchanging knowledge.

This study suggests creating a road map towards scholarly communication between academic libraries in Australia and Iraq, as well as employing social networking and establishing library websites to share and cross boundaries to facilitate open access between the two countries.

Future Research

The study draws a picture of the current structure of scholarly communication in academic libraries in Iraq and Australia in regard to the nature and extent of the information gap in Iraq. The results indicate the possibilities of (and constraints to) scholarly communication across cultural boundaries. They also summarise the main findings of the research in regard to the strategies of academic library systems and higher institutions. In doing so, recommendations for future research and for the development of the academic library systems and government strategies is discussed.

This research does not, however, include specifics about improving academic library systems by developing institutional repositories that promote open access and by expanding social views by involving social networking, in collaboration between the two countries. The study therefore opens up avenues for future research to be conducted in both Iraqi and Australian academic libraries, as well as other academic libraries in developed and developing countries. One such suggestion is for research that focuses on investigating academic librarians' and researchers' use of two elements together: institutional repositories and social networking in scholarly collaboration. A list of research topics in this regard might, for example, be as follows:

- What academic materials would be suitable for sharing on social networks?
- What activities would enhance scholarly communication?
- What role should academics play in improving open access?

- To what extent can academic libraries contribute to developing strategies for institutional repositories?
- What role should politicians and governments play in terms of social environments and financing?

A benefit of future research is that of academic libraries and higher institutions and/or stakeholders developing the collaborative tools and processes for scholarly communication. Possible research questions might be as follows:

- What are the strengths and weaknesses of current international scholarly programs between developed and developing countries?
- What international programs could be useful in developing scholarly communication?
- Is there a need to review the allocation of scholarships, in order to promote library studies?
- Are there ways that higher institutions could improve their facilities and services to serve scholarly communication?

Final Comments

The study has addressed the fundamental questions and contributes to the comparative understanding of scholarly collaboration as it applies to academic libraries in Australia and Iraq. The findings provide a better understanding of the nature and extent of the information gap in Iraq—as well as describing the existing structure of scholarly communication in academic libraries in Australia and Iraq—and highlights the differences. The findings also provide an enhanced understanding of constraints of scholarly communication practice and how these differ from what has been discussed in the literature (specifically the educational, linguistic, and cultural barriers). In particular, this relates to the impact of economic disparity, individuals' skills, and higher education policy (Australians' views), as well as the local economy and spending policy (Iraqis' views). Moreover, the findings discuss views about social barriers such as security and administration, which have an impact on facilitating scholarly communication. That, in particular, adds a new dimension to what has been discussed in Chapters 2 and 3 in conceptualising the nature and the scope of the information gap in Iraq.

The three research objectives have been investigated and contributed to develop strategies of scholarly communication in the various academic libraries in Iraq and Australia to address the information gap in Iraq. In determining the main possibilities and applicable obstacles to address, as well as developing scholarly communication strategies, the study has broken new ground, being, to the best of the researcher's knowledge, the only study addressing strategies related to academic library systems in Iraq and Australia. However, other aspects of developing strategies have to be addressed by government and higher institutions. This researcher also stresses that Iraqi libraries must lobby UNESCO for greater assistance and funding to repair their collections and building infrastructure.

Governments in Iraq and Australia have a vital role to play in the development and maintenance of communication. This may come in the form of financial and physical assistance to libraries and academia. Cooperation between governments is important. As one interviewee from Indonesia said:

There are many coordination programs between Australia and Indonesia. I come from an Indonesian island, and I'm working as a government employee in the Ministry of Religions. Australia has special projects in Indonesia in the Ministry of Religions. They improve the Islamic school[s], they have special project in Indonesia to improve the curriculum, and to improve other things in the Ministry of Religions. (Int. R 18)

It is to be hoped that in some way this research has introduced new ideas to the understanding of how to produce better research outcomes through collaboration between academic libraries in developed and developing countries.

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APPENDIXES

Appendix A: Information Sheet

Dear Potential Participant

My name is Maysoon Saleem, and I am a Ph.D. student at Curtin University. My research project is looking at the possibilities for scholarly collaboration between Australia and Iraq via academic libraries to develop scholarly structures that can address the information gap in Iraq. The project is called “Collaboration between academic libraries in Australia and Iraq to address the information gap in Iraq.”

The research will collect information about how different groups of researchers and librarians in Australia and Iraq think about scholarly communication structures. This information will then be used to develop a theoretical structure for the facilitation of scholarly communications between Iraqi and Australian academic libraries.

I would like to interview two groups in Australia and Iraq:

- Librarians: Library technicians; Practitioners and Managers.
- Researchers: Humanities & Scientific.

For the individual interviews (Librarians), I ask you some questions about what you think about scholarly communication structures between Australian and Iraqi academic librarians, and this may involve corporate policy; planning and decision-making procedure; networking strategies; equipment of technical communications and library services which are based upon the internet. The interview will take about 1 hour.

For the individual interviews (Postgraduate Researchers), I will ask you some questions about how scholarly communication can address the information gap. The interview will take about 1 hour.

All interviews will be at a place that is convenient for you.

I will ask you some questions about yourself, such as your age, your gender, your title, and occupation. This information will only be used to give us an idea of the variety of the participants in the research and will not be used for any other

purposes. For the Iraqi interviews, I will translate the questions and conduct the interviews in Arabic via Skype or a similar tool.

Your identity will remain anonymous. This means that I will use a code to refer to you if the research is published.

The interview will be audio recorded so that I can refer to your comments. The tapes and any other records will be kept in a locked cabinet and destroyed five years after the research is completed.

Your interview will be transcribed and you will have an opportunity to review the transcription of your interview to make sure that you are happy with the way your interview has been recorded.

The contact details of the researcher should participants require further information:

Maysoon F. Saleem, Ph.D. candidate

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The contact details of my supervisor should participants require further information:

Dr. Anne Aly, Department of Social Sciences

Email: Anne.Aly@curtin.edu.au

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Appendix B: Consent Form

I (name) _____ have read the information letter on (date) _____ and any questions I have asked have been answered to my satisfaction.

I understand that I may also contact the researchers at any time if I have any more questions about the project.

I agree to participate in this research, realising that I may withdraw at any time and do not have to answer any questions that I do not feel comfortable with. I agree that the information from this research may be published provided that I am not identifiable.

I understand that the interview will be recorded and that the recording will be transcribed and that my identity will not be disclosed in any of the research publication.

I understand that the interview will take about 1 hour. I understand that I may be asked some personal questions regarding age, gender, title and occupation; and that these questions will only be used for the research and will not be used to identify me.

I understand that, if I wish, I can review the transcription of the interview.

Participant's
signature _____ Date _____

Researcher's
signature _____ Date _____

THANK YOU

Maysoon F Saleem Researcher	Dr. Anne Aly Supervisor	Ethics Committee
Local 0421866599	+61892667749	+61892669223

<p>International +61421866599 Email m.saleem1@curtin.edu.au</p>		
---	--	--

Appendix C: Interview Schedule—Librarians

Code-----

Age----- **Gender**-----

Title----- **Occupation**-----

Date----- **Place**-----

Scholarly communications

Q1 Could you express your opinion regarding the current state of scholarly communication between developed and developing countries?

Q2 What do you think are currently the major issues regarding the creation of an effective international system of scholarly communication?

Q3 In your opinion does the government, or higher educational institutions have more to contribute to develop scholarly communications? How?

Q4 What is the greatest obstacle to any change in the fundamental structure of Scholarly communication?

Q5 How do you believe that library & information services in academic libraries should be developed in order to support scholarly communication?

Strategies, infrastructures and resources.

Q6 What are the pressures that academic librarians face in providing electronic resources to their users?

Q7 Do you think that collaboration between academic libraries can address the issues related to the cost of scholarly journals?

Q8 How are libraries and research institutions currently organising their databases to support scholarly communication services?

Q9 What is the most commonly used medium for global communication in your library? How do you use it?

Q10 To what extent do you think that academic librarians have implemented support for social networking?

Solutions

Q11 How does the library measure the success of the services it provides in support of the communication process?

Q12 How the informal networks and collaboration between international academic libraries might be used to construct an institutional network of scholarly communications in academic libraries?

Q13 What steps can be taken to help close the information gap between academic and research libraries in developed and developing countries?

Q14 How do you think your library could improve international communication strategies to address the information gap occurring in academic libraries?

Appendix D: Interview Schedule—Researchers

Code-----

Age----- **Gender**-----

Title----- **Occupation**-----

Date----- **Place**-----

Q1 How would you define scholarly communication?

Q2 Would you describe the way you seek and search for scholarly information?

Q3 Do you think social networking tools and services—for example, Facebook, Twitter, software programs—are useful for scholarly communication?

Q4 How many networked information services (multiple search engines & databases, i.e. full-text aggregated journal) are you using for scholarly communication? How are you using them?

Q5 How would you rate the overall services of the search function and structures provided by your library in support of scholarly communication?

Q6 What aspect of scholarly communication could be improved in order to address the issues relating to the information gap between academic libraries in developed and developing countries?

Q7 To what extent do you think that scholarly communities are effectively contributing to finding solutions which might be help to overcome the information gap between academic libraries? What are these solutions?

Q8 Which of the scholarly communication channels (formal or informal) do you think could be improved to address the information gap occurring in academic libraries? How could this be achieved?

Q9 How do you think we could improve scholarly communication effectiveness as a two-way process?

Appendix E: Copy of Interview Schedule (Arabic)—Librarians

اسئلة مقابلة لامناء المكتبات العراقيين

اداريين-فنيين-تقنيين

الرمز-----

العمر-----الجنس-----

الحالة الاجتماعية-----عنوان الوظيفة-----

التاريخ-----المكان-----

الاتصالات الاكاديمية

س1 ممكن ان تعبر عن وجهة نظرك عن الحالة الراهنة للاتصالات الاكاديمية بين الدول المتطورة ودول العالم الثالث؟

س2 ماذا تعتقد حاليا القضايا الرئيسية المتعلقة بانشاء نظام دولي فعال للاتصالات الاكاديمية؟

س3 في رايك هل ان الحكومة ام مؤسسات التعليم العالي لديها اكثر امكانية للمساهمة في تطوير الاتصالات الاكاديمية؟ كيف؟

س4 ما هو اكبر عائق يقف امام اي تغيير في الهيكلية الاساسية للاتصالات الاكاديمية؟

س5 كيف تعتقد انه ينبغي ان تكون خدمات المكتبات و المعلومات في المكتبات الاكاديمية من اجل دعم التواصل الاكاديمي؟

الستراتيجيات والبنى التحتية والموارد

س6 ما هي الضغوط التي تواجه امناء المكتبات الاكاديمية في تقديم خدمات المصادر الالكترونية لمستخدميها؟

س7 هل تعتقد ان التعاون بين المكتبات الاكاديمية ممكن ان يساعد على حل بعض القضايا المتعلقة بتكاليف المجالات العلمية؟

س8 كيف تنظم المكتبات الاكاديمية ومؤسسات البحث العلمي قواعد بياناتها لدعم عملية التواصل الاكاديمي والعلمي؟

س9 ما هي الوسيلة الاكثر استخداما للاتصال الاكاديمي في مكتبك؟ كيف يتم استخدامها؟

س10 الى اي مدى تعتقد ان امناء المكتبات الاكاديمية لديها فعاليات في دعم شبكات التواصل الاجتماعي؟

الحلول

س11 كيف تقيس مستوى النجاح في الخدمات التي تقدمها مكتبك لدعم عملية الاتصال؟

س12 كيف يمكن استخدام قنوات الاتصال غير الرسمية او التعاون بين (المكتبات الاكاديمية العالمية) لانشاء تواصل اكاديمي بينهم؟

- س13 ما هي الخطوات التي يمكن اتخاذها من اجل سد فجوة المعلومات في المكتبات الاكاديمية
والبحثية بين الدول المتقدمة ودول العالم الثالث؟
- س14 كيف ترى مكتبك ممكن ان تحسن ستراتيجيات الاتصالات الدولية لمعالجة فجوة المعلومات
الحاصلة في المكتبات الاكاديمية؟

Appendix F: Copy of Interview Schedule (Arabic)—Researchers

اسئلة مقابلة الباحثين العراقيين-بغداد

الرمز-----

العمر-----الجنس-----

الحالة الاجتماعية-----عنوان الوظيفة-----

التاريخ-----المكان-----

س1 كيف تُعرف الاتصالات الاكاديمية؟

س2 هل لك ان تصف الوسيلة التي تعتمد عليها للبحث عن المعلومات العلمية والاكاديمية؟

س3 هل تعتقد ان شبكات التواصل الاجتماعي مثل الفيس بوك وتويتر واستخدام برامج الحاسب الالي (السوفت وير) مفيدة في الاتصالات الاكاديمية؟ كيف؟

س4 كيف تستفيد من خدمات المعلومات المتاحة عبر الشبكة؟ عدد انواع الخدمات التي تستخدمها مثل محركات البحث المتعددة، قواعد بيانات النصوص الكاملة لمقالات الدوريات، وغيرها.

س5 كيف يمكنك ان تقيم الخدمات العامة للمهام البحثية والهيكلية التي تقدمها مكتبك لدعم التواصل الاكاديمي؟

س6 ما هي مجالات الاتصالات الاكاديمية التي ممكن ان تُطور لحل مشكلة فجوة المعلومات الحاصلة بين الدول المتقدمة والدول النامية؟

س7 الى اي مدى تعتقد ان المجتمعات الاكاديمية ممكن ان تساهم بشكل فاعل في ايجاد الحلول التي من شأنها تساعد في التغلب على فجوة المعلومات بين المكتبات الاكاديمية؟ ما هي هذه الحلول؟

س8 اي من قنوات الاتصالات الاكاديمية (الرسمية مثل الحكومية او غير الرسمية مثل فردية او منظمات) تعتقد ممكن ان تُطور لحل فجوة المعلومات الحاصلة في المكتبات الاكاديمية؟ كيف يمكن تحقيق ذلك؟

س9 من وجهة نظرك كيف يمكن تطوير فاعلية الاتصالات الاكاديمية بوصفها عملية ذات اتجاهين؟

Appendix G: Examples of Themes Constructed from Arabic Interviews (Translated)

IL4

محليا، صراحة، يوجد ضعف كبير عندنا في مسألة قواعد البيانات وهي بالتأكيد لها تأثير على مسألة التواصل ومسألة إتاحة الفائدة منها بصورة عامة. حاليا توجد مشاريع ممكن ان نقول انها بسيطة لكن ممكن ان تكون كبدائية انشاء الله جيدة. مثل ما نقول تظافر الجهود والتعاون ومزيد من التواصل ممكن انه نستفاد من قواعد البيانات التي تنتج محليا او قواعد البيانات التي يتم استيرادها او الاشتراك بها. فالمكتبات والمؤسسات العلمية التي تحاول صراحة على سبيل المثال العراقية الافتراضية العلمية المكتبة مشروع مثلا. يوجد موقع جديد للمجلات الاكاديمية العراقية. وهو مشروع جيد يوفر النصوص الكاملة للمقالات في المجلات العراقية مجانا. حتى نعرف على الاقل ما ينتج محليا، البحوث المنتجة محليا لكي لا يحصل تكرار وضياع في الجهود وعمل دراسات متشابهة لا تحقق الفائدة. هذا يسهل عملية التواصل ومعرفة ما يقوم به الاخر في مجال التخصص.

Locally, we have significant weakness relating to availability or accessibility of databases.

Currently there are some initiative yet simple projects, although in their infancy. With sustained efforts and collaborative work it could be useful and take advantage of local databases and perhaps global ones through subscription.

Libraries and higher education institutions have attempted to new projects such as the Iraqi Virtual Library Science project. Through this project, academics can benefit from international databases. This is a great project in the difficult circumstances of the country.

Note also, that careful planning towards effective collaboration among the various local libraries can help academics to help from in a cost effective manner.

Another promising project is the Iraqi Academic Journals Project. It helps academics to know about the existing literature to avoid duplication in research studies. Further it provides previous sets of journal issues for free.

Constraints of scholarly communication

Database subscriptions

Open access

Possibilities for scholarly collaboration.

Role of libraries
 Role academic institutions
 Scholarly projects
 Local databases
 Iraqi Virtual Library Science
 Iraqi Academic Journals
 Scholarly research
 Academic knowledge

IL 1

الان بإمكان كل مكتبة ان تكون لها صفحة خاصة سواء على الفيس او تويتر او على اي شبكة اجتماعية، ممكن من خلال هذه الصفحة ان توظفها بشكل فاعل لايصال المعلومات لنشر بعض المعلومات الاعلامية والتعريفية والعلمية التي تصل للمكتبة وفي نفس الوقت هي عملية تجميع عدد من المستخدمين من خلال ربطهم بشبكة المكتبة لاطلاعهم على اخر التطورات. لذلك كل مكتبة، او كل امين مكتبة (او لا يجب ان تكون هناك صفحة رئيسية بتقديري رسمية للمكتبة)، لكن من حق كل مكتبي ان تكون له صفحة خاصة وممكن ان يكون جزء من هذه الصفحة لعملية التواصل مع المجتمع الذي تخدمه المكتبة. لكي يكون هناك تبادل في الخبرات والمعارف.

Certainly social networking is not limited to social use; it has become a very important gate for academic and scientific communication.

There is now a strong possibility for each library to have its own Facebook and/or Twitter page, through which effective delivery of news and information to users can be made; every library user can become a member of this Facebook page that it can interact through by posting questions and answers, comments and suggestions with the library team.

I believe that every library has to have its own official Facebook page via which it communicates not only with its members but also with other libraries.

Role of academic libraries
 Role of librarians
 Possibilities for scholarly communications.
 Social networking
 Facebook, Twitter

Appendix H: Correspondence Email (Arabic)—University of Baghdad

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Inbox (1) admin.web@uobaghdad.edu.iq 12/23/12 at 11:58 PM

Drafts (362)

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Archive

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Trash (120)

Smart views

Important

Unread

Starred

People

Social

Shopping

Travel

Finance

Folders (11)

Iraqi cultural Attachee

Notes

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untitled1

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Full Name: السيد ميسون فؤاد سليم
E-Mail : maysoonsady@yahoo.com

Message :
بسم الله الرحمن الرحيم تحية طيبة اتي طالبة الدكتوراه المتقدمة الى احدى الجامعات الاسترالية وبالتحديد في
اقوم حاليا بتعداد بحث Faculty of Humanities Dept of Media, Culture and Creativ eArts جامعة كيرتن غرب استراليا
في مجال التعاون العلمي والاكاديمي بين المكتبات الجامعة في استراليا والعراق من اجل سد فجوة المكتبات الاله
وكجزء من متطلبات بحثي هو اجراء مقابلات مع في جامعة بغداد وسبب عدم تمكيني من الزياره الى بلدي الحبيب العراق
لذلك وبالانفاق مع المشرف قريا ان تكون المقابلة عبر الانترنت كل الي ارجو منكم مساعدتي في اصال رسالتي هذه الي
امناء المكتبات في المكتبة المركزية -جامعة بغداد او ترشيح من تروبه مناسباً ولديه خلفية ثقافية في مجال المكتبات
الاكاديمية لاجراء المقابلة معهم علماً ان العدد يجب ان يتراوح بين 8-10 اشخاص مكتبيين، اداريين او فنيين وسأكون شاكراً
لكم جهودكم وتعاونكم مع البحث العلمي والذي اريد في الاخر تصب في مصلحة المواطن العراقي وأنا حاضرة لوضع اية
معلومات ترضون بتوضيحها وسارسل لكم كافة البيانات اللازمة لاجراء المقابلة ولكم جزيل الشكر والتقدير ميسون فؤاد سليم
طالبة دكتوراه جامعة كيرتن استراليا

Website Unit - University of Baghdad الموقع الالكتروني - جامعة بغداد

https://au-mg5.mail.yahoo.com/neo/launch?.rand=fk9h3dt9d09af#2602974605

1/1

Appendix I: Correspondence Email (Arabic)—GS/CLBU

17/06/2016

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Re: help People

Baghdad <maysoonsady@yahoo.com> 12/31/12 at 4:14 AM

To aieda mustafa

الست عائدة المحترمة تحية طيبة ومعتزة وبعد

اولا اود ان اشكركم على استجابكم الإيجابية والأهتمام الجاد في المساعدة من أجل خدمة للبحث العلمي
أكيد بسعدني وشرفني ان اتصل بكم ومن خلال إحدى الوسائل التي ذكرتها مشكورة طبعاً وهذا ان دل على شئة أكيد يدل على حسن أخلاق
أنا شخصياً وحالياً استخدم الياهو مسنجر ووجدت انه وسيلة مناسبة وحقق ما أصبو اليه اذا لم يكن عندك مانع طبعاً او اذا تحب ان ترشحني وسيلة اخرى ففضي
الرحب والسمة

من خلال خبرتي أدركت ان الوقت المناسب في العراق هو الساعة الثامنة مساءً والذي يقابل الساعة الواحد ليلاً في استراليا وهو وقت مناسب بالنسبة لي أيضاً
اذا لم يكن عندكم مانع من إجراء المقابلة عدأ وحسب الموعد المذكور او ممكن اقتراح وقت اخر او يوم اخر للمقابلة
وتقلو خالص شكرى وتقديرى
طلالة الكوراه
مسون
جامعة كيرتن استراليا

Sent from my iPhone - 2 -

On 31/12/2012, at 3:35 AM, aieda mustafa <aieda2003@yahoo.com> wrote:

الست ميسون المحترمة
تحية طيبة
أشارة الى رسالتكم الالكترونية بتاريخ 23/12/2012 والمرسلة الى موقع الجامعة وحسب توجيهات
السيد رئيس جامعة بغداد المحترميسعدنا من تقديم المساعدة والتعاون معك لإنهاء مشروع بحثك ومن خلال
قنوات التواصل الإلكتروني التي ترغبين بها
فالرجاء تحديد الوقت الملائم لكلينا للتواصل معك سواء من خلال موقع الأمانة العامة للمكتبة المركزية
أو gotomeeting وخدمة تحدثت مع امين المكتبة او من خلال المسكاي بي او الياهو ماسنجر او برنامج
اي خدمة تناسبك
تقبلي تحياتي

م.م عائدة مصطفى سلمان
الأمين العام للمكتبة المركزية
جامعة بغداد
website : www.clib.uobaghdad.edu.iq

Best regards

Aieda M. Saïman
General Secretary of the central library of Baghdad University
AC Director
Zain +9691-3802169369
Asia +969-7702776716
Iraqna +969-7901374319
Central Library Website <http://www.clib.uobaghdad.edu.iq>

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26

Appendix J: Correspondence Email (Arabic)

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Trash (120)

Smart views

- Important
- Unread
- Starred
- People
- Social
- Shopping
- Travel
- Finance

Folders (11)

- Iraqi cultural Attachee
- Notes
- Synced Messa... (11)
- untitled1
- Unwanted

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مساعدة طالبة دكتوراه

People

01/11/13 at 12:23 AM

To maieda al-falahi, hasan alhajar, Drikram, faiza.albayati@gmail.com, Latifhashim@yahoo.co.uk, and 5 more...

أساتذتي الأفاضل
تحية طيبة والسلام عليكم ورحمة الله وبركاته
ترغب طالبة الدكتوراه ميسون سمدي في إحدى الجامعات الأسترالية بإكمال أطروحة الدكتوراه خاصتها ومن ضمن محاور الأطروحة هي إجراء حوار من
الأساتذة المتخصصين في مجال المكتبات والمعلومات لاغناء بصرانكم في مجال الاتصال والتواصل الاجتماعي واستثمار تقنيات التواصل الاجتماعي في تبادل
المعرفة
ومن لديه الرغبة في مساعدة الطالبة تجدون أدناه الأيميل الخاص بها للتواصل
تقبلوا تحياتي
عايدة

Maysoonsady@yahoo.com

من جهاز ال iPad الخاص بي

Authorised by G.
5/9 Sydney

Appendix K: Correspondence Email (English)

17/06/2016 (1 unread) - maysoonsady - Yahoo7 Mail

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RE: Curtin PhD student

Jill Benn <jill.benn@uwa.edu.au> 02/04/13 at 8:32 AM
 To: Paul Genoni
 CC: Maysoon Saleem (maysoonsady@yahoo.com)

Hi Paul

Nice to hear from you. Yes I am okay to be interviewed and I could recommend a couple of others here at UWA.

I hope all is well.

Jill

Jill Benn | Associate Director (Research and Learning Support)
 Information Services
 The University of Western Australia M209
 Ph: +61 8 6488 2341
 jill.benn@uwa.edu.au

From: Paul Genoni [mailto:P.Genoni@curtin.edu.au]
Sent: Monday, 4 February 2013 8:21 AM
To: Jill Benn
Cc: Maysoon Saleem (maysoonsady@yahoo.com)
Subject: Curtin PhD student

Hi Jill,

I initially contacted Toby with this query but unfortunately he replied regarding his illness and therefore his inability to assist. I hope he has a full recovery!

I am currently co-supervising a PhD student from Iraq, Maysoon (copied in). She is doing research related to international collaboration between academic librarians and international scholarly communication. She is looking for some subjects to interview – preferably library staff who are engaged in research support. She would like to interview some staff (perhaps 3 or 4) from UWA who might be able to spare about 45 of their time.

I have suggested that she should contact you initially to see if (hopefully) you might be able to participate, but also to see if you could also provide her with some other contacts (snowballing!) in the library who would be able to assist.

Thanks for any help you are able to provide, and please get in touch with me if you have any questions.

Cheers

Paul

Paul Genoni
 Associate Professor
 Head, Department of Information Studies
 School of Media, Culture and Creative Arts
 Faculty of Humanities

Curtin University
 Tel | +61 8 9266 7256
 Fax | +61 8 9266 3152

Email | p.genoni@curtin.edu.au
 Web | <http://curtin.edu.au>

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