

**School of Media, Culture and Creative Arts**

**An investigation into the 'I can Google it' information seeking  
behaviour of the academic communities in the Maldives  
and Australia**

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**This thesis is presented for the Degree of  
Doctor of Philosophy  
of  
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## Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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Date: 3/11/2017

## Abstract

The purpose of this thesis is to: (a) understand the characteristics of the *I can Google it* information seeking behaviour of university students and academics; (b) investigate if, and how, this phenomenon impacts the provision of academic library services; and (c) examine the extent of the *googling* phenomenon across diverse economies. The theoretical framework adopted for this study is a combination of Wilson's (1999) and Knight and Spink's (2008) information behaviour models.

The research uses phenomenology as its underlying methodological approach, using mixed methods for data collection from two purposefully selected diverse countries; the Maldives as a developing country and Australia as a developed country. A tertiary education institution from Australia and two institutions from the Maldives were selected as the sample population for inquiry using a purposive sampling approach. In-depth interviews with 15 participants from the academic community of the Maldives gathered a detailed understanding on their perception of Google versus traditional library sources for information seeking, from a developing country perspective. The findings from these interviews, and existing literature guided the design of a survey questionnaire that was completed by 267 participants from the three institutions.

The findings offer empirical evidence to support the anecdotal high reliance on Google as an academic information source and the meaning associated to terms such as *googling* and *googled*. It is significant that at least 50% of the survey participants, both from the Maldives as well as Australia, interprets *googling* to mean the specific use of Google search engine, while the rest of the participants use the term interchangeably to mean any online searching including the use of online libraries.

The main difference across the two countries is that Australian academic community places a high reliance on their institutional library catalogue (or discovery tool) while the Maldivian academic community does not. Consequently, Google makes libraries more relevant for resource-rich countries through the "find it" link resolvers that link Google to library databases, and therefore Google is seen as a supplement to the library. In contrast, Google makes libraries less relevant and potentially redundant in resource-poor countries, therefore Google is seen as an alternative to the library.

The overarching characteristics of academic information seeking in the *googling* phenomenon can be categorised as: blurred online search boundaries; Google/Google Scholar as a ‘start’ search strategy; task-based simple keywords search queries; dominance of least effort and immediate gratification; an “I can figure it out” mindset that bypasses reference librarians; and, a perception that if it is not online it does not exist. The impacts of the *googling* phenomenon on academic library provisions are that: academic libraries no longer enjoy the monopoly as the academic information source; users nonetheless expect libraries to fulfil gaps in online full-text access; there is a greater need for innovative information literacy training; user expectations for Google-like library search interfaces is high; increased demands on the physical library as a communal hub with anytime-access; and, demand for eBooks and/or digitisation of reading material.

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## Explanatory Notes and Abbreviations

Throughout this thesis, the term academic community is used generally to refer to academic staff (including research staff) and students engaged in undergraduate or postgraduate education.

Unless specified, *library* in this thesis refers to academic libraries affiliated to a tertiary institution of education. Additionally, the terms university library and institutional library are used interchangeably to also refer to academic libraries.

The term *Google*, unless specified, denotes the suite of Google search platforms, namely: Google general search (google.com); Google Scholar (scholar.google.com); and, Google Books (books.google.com).

Terms *googled*, *to google*, and *googling* are utilised as a verb, and while it mostly refers to the use of Google search engine it is not necessarily exclusive of other online searching.

The term *participant(s)* is used to refer to the research participants from the interviews (Chapter 5) and the online survey (Chapter 6). The term *user(s)*, used mostly in the discussions (Chapter 7) and conclusions (Chapter 8), is used as a generalisation of information users in the academic community and is a generalised derivation of the research participants.

### **The following abbreviations have been used in the text:**

Ad	Advertisement
Adv. Dip.	Advanced Diploma
AHSTC	Allied Health Services Training Centre
AUD	Australian Dollars
CAM	Communications Authority of Maldives
CIS	College of Islamic Studies
COL	Centre for Open Learning
Curtin	Curtin University
DET	Department of Education and Training
DHE	Department of Higher Education (Maldives)
EDRMS	Electronic Document Records Management System
EDS	EBSCO™ Discovery Services
FB	Facebook

FMC	Faculty of Management and Computing
GER	Gross Enrolment Ratio
HDI	Human Development Index
HDR	Higher Degree by Research
ICT(s)	Information and Communication Technology (Technologies)
IP	Internet Protocol
IR	Information Retrieval
IRI	Institute for Research and Innovation
IT	Information Technology
IUM	Islamic University of Maldives
LIS	Library and Information Science
<i>m</i>	Notation to represent statistical mean
MCHE	Maldives College of Higher Education
MJHS	Maldives Journal of Health Sciences
MNU	The Maldives National University
MOE	Ministry of Education
MVR	Maldivian Rufiyaa (currency)
<i>n</i>	Notation to represent number (mostly in reference to research participants)
NBS	National Bureau of Statistics (Maldives)
ODL	Open and Distance Learning
OPAC	Open Public Access Catalogue
ORD	Office of Research and Development (Curtin)
OUM	Open University of Malaysia
PG	Postgraduate student participants
Postgrads	Postgraduate students
Q#	Reference to Question number on the online survey questionnaire
QR code	Quick Response Code (QR Code™)
RA	Research Assistants
UG	Undergraduate student participants
Undergrads	Undergraduate students
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific and Cultural Organisation
URL	Unique Resource Locator
VC	Villa College
WA	Western Australia
WAIT	Western Australian Institute of Technology
Web	World Wide Web (also WWW)
WWW	World Wide Web (also referred to as 'Web')

# Chapter 1: Introduction

This thesis presents a phenomenological study on the *I can Google it* information seeking behaviour of the academic community. This chapter introduces the topic, and presents the research questions and the objectives for the study. It also includes a brief introduction to the research methodology, and outlines the significance of the research. The delimitations and assumptions that were made in order to carry out the research are also identified. The final section provides an outline of the thesis.

## 1.1 Background to the research problem

Considerable research has been carried out on the use of Google as an information source by evaluating the relevancy of search results retrieved through Google compared to library sources (e.g. Agricola *et al.*, 2013; Georgas, 2013). The literature predominantly concludes that while library sources are superior in quality (e.g. Brophy & Bawden, 2005) Google has gained popularity because of its ease of use and reliability (Howland *et al.*, 2009). Moreover, with the Net generation's high reliance on online media, there are indications of an *I can Google it* mindset that results in users bypassing libraries as an information source (Nicholas & Clark, 2015; Rowlands *et al.*, 2008).

### 1.1.1 The Googling Phenomenon

According to Zimmer (2008), "Google has become the prevailing interface for searching and accessing virtually all information on the Web" (p. 82). As Webcertain (2014) reports, Google continues to be the most prominent search engine, generating 100 billion monthly searches, with over 90% market share in 70% of the countries studied.

Comparing Google with library databases, Brophy (2004) stated, "Google's overwhelming popularity has led to its usage as a verb, synonymous with Web searching and often for research itself" (p. 10). The earliest reference to Google used synonymously for the term *search* can be traced to an editorial in February 2002 by Quint (2002), where she offered the following definition: "Google: (v.) 1. to conduct

a search on a Web search engine...; 2. to phrase a search statement in a manner suiting...a typical Web search engine...” (p. 6).

The over popularity of Google has been loosely referred to as the “Googling phenomenon” (Price, 2003; Serjeant, 2004) with a variety of terminology evident in the literature. These include “Googlification” (Pogue, 2004; Quint, 2002), “Google Effect” (Brabazon, 2006), “Googling” (Brophy, 2004; Quint, 2002), and most recently “Googlization” (Miller & Pellen, 2009; Vaidhyanathan, 2011).

However, the existing research does not explicitly explain what the *googling* phenomenon entails and how it impacts the academic community’s information seeking behaviour.

### **1.1.2 Google in the information seeking discourse**

Google as a research tool in a similar context to the role of the library, appears to have started around 2003 and has attracted continued research over the years. Most similar studies appear to concentrate on students’ information seeking behaviour (eg. Amara, 2009; Asher, Duke, & Wilson, 2013; Brophy, 2004; Fast & Campbell, 2004; Georgas, 2013; Griffiths & Brophy, 2005; Murtagh & Williams, 2003; Shanahan, 2008), with the overwhelming conclusion that students prefer the use of Google compared to library use. While the prevalence of Google use amongst academics has not been studied at length, Jamali and Asadi (2010) report that scholars are increasingly turning to Google to meet their information needs.

The literature highlights a user information behaviour that favours reliability over authority of information sources, where Google is referred to as reliable while libraries are associated with authoritative information (Lankes, 2007; Rowlands *et al.*, 2008). Additionally, whilst not specific to *googling*, information behaviour models and theories are being re-visited to capture the changes in information seeking as a result of the online environment (e.g. Knight & Spink, 2008; Spink & Jansen, 2004).

Studies on Google have been predominantly carried out in places where library services are advanced with strong online library catalogues and/or offering federated search platforms across their subscribed databases, linked to Google's "find it" *resolver*. How this translates into the developing countries' scenario, where the library sector is largely underdeveloped (Ignatow, 2011; Riyaz, 2013) is not quite evident, as adequate research on information seeking behaviour has not been conducted in this context. Malik and Mahmood's (2009) analysis of Web search behaviour at the University of Punjab University revealed Google to be the most popular search engine. The study, however, was not an attempt on understanding how Web searching fared against their library use. A study in Jordan (Obeidat & Genoni, 2010) indicates that the Web overcomes the earlier restrictions of access to academic information in developing countries. This raises questions about whether academics from developing countries are reliant on freely available 'scholarly' material.

## **1.2 Research questions and objectives**

The aim of this research is to understand perceptions of Google as an information source in the users' information seeking strategy for their academic needs, and to highlight the role and place of academic libraries in the current online information environment, especially in the context of the Maldives. For the purpose of this research, the academic community is defined as students undertaking undergraduate or postgraduate studies, and academics teaching and/or researching at this level.

Anecdotally, the academic community, specifically from the Maldives, perceives a decreasing need for libraries as information can be sought through Google (termed *I can google it*). Therefore, the research questions for this study are:

1. How prevalent is the *I can google it* attitude among the academic community, and how does this phenomenon influence the academic community's information seeking behaviour?
2. What is the impact of this *googling* phenomenon on the provision of academic library services and are these similar across diverse economies?

The specific objectives of this study are to:

- Understand the characteristics of the *I can google it* information seeking behaviour of academic staff and students;
- Investigate if and how this phenomenon impacts on the provision of academic library services; and,
- Examine the similarities of this phenomenon across economically diverse nations.

## **1.3 The Research Design**

### **1.3.1 Philosophical foundations**

The researcher has worked in the Maldives' information sector for over sixteen years and has contributed to the establishment of the first academic library in the country. Based on this professional experience, the research was founded on the philosophical assumptions that: the overall hype of *I can Google it* has underlying meanings that need further exploration to unravel how libraries are more important today than ever before; libraries need a change of approach to be appreciated as relevant; and, libraries in developing countries, owing to resource limitations, have a higher chance of being considered obsolete in the face of the *googling* phenomenon.

As Creswell and Clark (2011, citing Thomas Kuhn, 1970) state, while the worldview of professional belief systems is bound to be ingrained in research assumptions and therefore prone to researcher bias, these subjectivisms can be counteracted through appropriate methodological approaches. Taking these into consideration, this research is approached from an interpretivist epistemology explored through both qualitative and quantitative data.

The *I can Google it* mindset is something that cannot be quantified easily as it is based on views, opinions, and thoughts of individuals interacting with information. Hence, for this study, phenomenology forms the basis of the qualitative research component, and it also underlies the quantitative data collection tool designed based on the qualitative component. As Lyotard (1991) and Creswell (2013) explain,

phenomenology leads to the examination and description of the essence of the phenomenon by people experiencing it.

### **1.3.2 Theoretical framework**

*Googling* as a means of interacting with information can be situated in theories of information behaviour. Information behaviour is an area of study that has been scrutinised for a long time from multiple angles, thereby, a number of theories and definitions, as well as categorisations, can be found in the literature (e.g. Bates, 2010; Ellis, 2005; Kuhlthau, 2005; Pettigrew, Fidel & Bruce, 2001; Wilson, 2000). At the core of these models, with relevance to the current study, are overlapping theories such as the *Principle of Least Effort* also known as “Zipf’s Law” (Case, 2005), and Mellon’s theory of *Library Anxiety* developed in 1986 (Katopol, 2005). Zipf’s law, tested and verified over time, hinges on user preference for convenience that yield “good enough” results (Bates, 2005). This basically manifests as the effort required to search through library stacks, unfamiliar online catalogues, and/or multi-platforms of different databases, in comparison to a one portal online search platform like Google.

Therefore, inquiry into the information behaviour of the academic community in the *googling* environment, informed by these two theories combined with the variables presented in information behaviour models by Wilson (1999) and Knight and Spink (2008) is believed to yield useful insights into the phenomenon under investigation.

### **1.3.3 Research Methods**

The research uses two cases from the Maldives as a developing country, and one case from Australia as a developed country. The first university in the Maldives, the Maldives National University (MNU); and, the most prominent private tertiary institution, Villa College (VC) were selected from the Maldives as representative sample institutions. Curtin University (Curtin) from Western Australia was selected as a representative sample institution of a developed country.

The methods employed for data collection were interviews with a small purposive sample of academics and students from the Maldives, and a survey of a larger

random sample from the Maldives and Australia. The use of a mix of these two qualitative and quantitative methods will enable data triangulation, thereby ensuring research validity and reliability.

Given limited research in this area, the interviews gathered a detailed understanding of the use of Google versus traditional library sources for information seeking from a developing country perspective. Accordingly, 15 interviews were conducted in the Maldives during December 2014 to January 2015. This constituted phase I and II of the data collection and contributes specifically to objectives 1 and 2 of this research.

The findings from these interviews and existing literature emanating from developed country settings informed the design of a survey questionnaire implemented in both the developing and developed country cases. This constituted phase III of the data collection conducted simultaneously at MNU, VC, and Curtin during October to November 2016. The analysis of the survey data addresses research objectives 1 and 3 specifically.

#### **1.4 Study Setting**

The Maldives is a small island developing state (SIDS) with a population of less than 400,000 people. The higher education sector of Maldives is still in its infancy with only two universities, the first established in 2011. Maldives is different to many comparable developing countries given its geographic dispersion, high per capita income, a historically high rate of literacy of its populace at above 90%, and universal primary education. As Shiuna and Sodiq (2013) outline:

National Gross Enrolment Ratios (GERs) for primary education in 2010 suggest that the Maldives has a participation rate (106%) comparable to the rest of the World, including high income countries. However, the Maldives GER for secondary education (69%), is considerably lower than the GER in High Income countries (101%). (p. 24)

The Maldives National University is the first of the two public universities to be established in the country and there are no privately owned universities as of yet.

Villa College is the most prominent private tertiary institution in the country and is known to be working towards attaining university status (Muna, 2014).

Contrary to the Maldives, Australia is a vast country with 24 million people (Australian Bureau of Statistics, 2016), and a well-established higher education sector, dating back to the 1850s, which holds competitive positions in international university rankings (Suri & Beckett, 2012). Curtin University is one of the, four public and one private, universities in the State of Western Australia. Curtin University is a public university and was established as the Western Australian Institute of Technology (WAIT) in 1966. WAIT was renamed Curtin University of Technology in 1987 (White, 1996), and from 2010 it operates as Curtin University (Hart, 2014).

## **1.5 Significance of the research**

This research investigates the prevalence within the academic community of the use of Google to find scholarly information, and the subsequent implications for the provision of services by academic libraries. The study is significant in a number of ways.

Firstly, the phenomenological research approach employed for this investigation provides in-depth information about users' perceptions, their experiences, and value judgments on Google versus library use. Earlier seminal studies have been more experimental and observatory in nature (e.g. Asher *et al.* 2013). Additionally, most studies on academic information seeking are predominantly focused on students' use of Google (e.g. Georgas, 2013), with limited research on academics and/or researchers (e.g. Jamali & Asadi, 2010). Therefore, this research is a timely extension of these, with an equal focus on academics and students from the same institutions on a horizontal time scale.

Secondly, this research focuses on information seeking behaviour of an academic community in a developing country with significantly inferior access to information resources. The number of similar studies is limited (e.g. Malik & Mahmood, 2009), and there is no other systematic investigation on the Maldives' academic information seeking context. Additionally, the comparison of a developed and developing

country, highlighting the digital divide debate with links to the *googling* phenomenon is a unique approach. Therefore, the findings will be significant for the advocacy of new directions in the information provision of academic libraries, especially in the developing countries.

Thirdly, the research findings contribute to the existing discourse on the shifting information behaviour of *digital immigrants* versus *digital natives*, thereby enabling further informed discourse on theorising/modelling information behaviour.

Finally, this research is of relevance to other interdisciplinary areas, such as library education, information literacy, and digital library initiatives.

## **1.6 Delimitations of scope and key assumptions**

The scope of this study is limited to the users of academic libraries, namely university students and academics, to situate the research within a narrow group so as to achieve a degree of precision in the generalisability of the results.

This research is not experimental and does not monitor the search behaviour of the academic community. Contrarily, phenomenology is adopted as the research approach, and thereby perceptions of the participants drive the findings. Establishing the quality of information sought from Google platforms, other online search interfaces, or information sought from the library, is outside the scope of this research.

Only two tertiary institutions from the Maldives, and one institution from Australia are included as sample institutions owing to time constraints and the scope of this project. This might have implications on the generalisability of the findings as a representation of the country, especially in the case of Australia.

Likewise, the disciplinary differences of the participants can be limiting. As summarised by Hsin, Ying-Hsueh, and Chin-Chung (2016, citing Bates, 1996 and Karobilit *et al.*, 2011), depending on the discipline as well as the expertise of the researcher “there may be considerable differences in the strategies and amount of effort required to seek information for specific research purposes” (p. 980). Nonetheless, given the exploratory nature of this research, these possible differences

have only been addressed within the three broad categories of academics, postgraduate, and undergraduate students.

## **1.7 Chapter outline**

This chapter is an overview of the research. It outlines the specific research questions and the objectives of the research. It also outlines the significance of the research as well as the scope and delimitations of the research project.

Chapter 2 explores the literature around the topic and addresses the revolution that has taken place in information seeking in the context of the Google search engine. It reviews how Google gained its value to be considered as a supplement, and lately an implied notion as an alternative, to that of a library as an academic information source. These have been presented through the review of research literature on information behaviour and related topics. The need for this research is also outlined in light of the identified research gaps.

Chapter 3 outlines the methodological approach utilised to study the *googling* phenomenon in academic information seeking. It includes the philosophical foundations underpinning the epistemology of the research paradigm and justifies the sample selection, and explains the execution of data collection.

Chapter 4 provides a background into the selected sample institutions from the Maldives (MNU and VC) and Australia (Curtin), and outlines their information provision context.

Chapter 5 presents the findings from the in-depth interviews conducted with the Maldives' academic community and library professionals, as Phase I and II of data collection.

Chapter 6 presents the findings from Phase III of data collection, the online survey implemented at MNU, VC, and Curtin University.

Chapter 7 discusses the findings presented in the earlier two chapters also drawing on the research literature that was presented in Chapter 2 in the literature review. The chapter also presents the issues in the research design that were not earlier anticipated.

Chapter 8 concludes this thesis and is a summary of the overall findings and contribution to the creation of knowledge. It addresses the research questions outlined at the beginning, in Chapter 1. It also offers recommendations for the information provision of academic libraries, with a special focus on the Maldives' context. Additionally, further areas of inquiry identified from this research are outlined.

## **Chapter 2: Literature Review**

The following literature review explores the revolution that has taken place in information seeking in the context of the Google search engine. The first section is a review on the proliferation of the Google search engine, and how it has replicated library values. This is followed by a discourse on the *googling* phenomenon contextualised in information seeking behaviour. Next is a review of the implications of the popularity of Google in academic libraries, including the shifting stance of Google from competitor to that of a supplementary resource, and some direct adaptations in library services as a result of these trends. The last section reviews information seeking in the context of the information divide in diverse economies. The need for the current research will also be addressed through the identified gaps in the literature.

In this thesis, unless specified otherwise, the term Google refers to the suite of Google search engine platforms in general terms, including the Google general search interface (google.com), Google Scholar (scholar.google.com), and Google Books (books.google.com). This review is confined to the academic community's information seeking behaviour. Information behaviour is broadly defined as how people interact with information, with special emphasis on information seeking to meet information needs.

### **2.1 Google as an information resource**

Libraries, in their many forms, are generally considered as the central information resource for academic research. However, advances in Information Communication Technologies (ICTs), including the introduction of Web search engines over the recent decades, have led to many prophecies about the diminishing role of libraries and the need to rebrand libraries to meet the shifting information environment. In this regard, the Google search engine and its continuous popularity have attracted considerable research and commentary regarding the status of Google as a competitor with library services (Bell, 2004; Caufield, 2005), as a supplementary and/or complementary source (Adriaanse & Rensleigh, 2011), and recently as an alternative for libraries (Nicholas & Clark, 2015).

### 2.1.1 A synopsis of time before Google

In an article titled “As We May Think”, Bush (1945) wrote about his vision of a seamless system for tracking and using scientific literature:

Consider a future device for individual use, which is a sort of mechanized private file and library. It needs a name, and, to coin one at random, “memex” will do. A memex is a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory. (p. 106)

The technology of the time made it difficult, if not impossible, to actually create a *memex*. However, over the years, Bush’s ideas inspired computer visionaries to push the technology toward that end (Ellis, 1991). The results of these early efforts were generally referred to as hyper-text because they allowed mostly textual information to be linked in nonlinear ways (Seyer, 1991). The 1980s and 1990s saw the development of a number of hypertext systems such as *NoteCards*, *Guide*, *HyperCard* and *Hyperties* (Berk & Delvin, 1991). All of this culminated in a massively pervasive information retrieval system known as the World Wide Web (*WWW-Web*), which uses the HyperText Transfer Protocol. Through the phenomenal growth of the Web, hypertext matured to an everyday technology, albeit in a different form than the original pioneers had envisaged (Spark-Jones & Willet, 1997).

According to Agosti and Smeaton (1996), information retrieval modalities provided by hypertext systems are different from those of conventional information retrieval systems in that information searching is conducted by browsing, navigation, and association through the information base, and not by direct search by means of a search language. Cox (1992) defined browsing as an interactive search activity in which the direction of the search is determined by the user on the basis of immediate feedback from the system being browsed. In those early evolutionary years of hypertext, most library and information related research around hypertext searching concentrated on drawbacks like user disorientation and cognitive overhead, owing to the multitude of pathways to which the hyperlinks took the user and also that of the unstructured nature of the information on the Web (Conklin, 1987). At the same time, a considerable amount of research was undertaken in order to address these

issues and also to find ways to improve information retrieval through hypertext (Khan & Locatis, 1998; Lucarella & Zanzi, 1996; Wolfram & Dimitroff, 1998). The most widely used examples of a contemporary hypertext environment are search engines such as Google.

### **2.1.2 The proliferation of Google search engine**

The Google search engine was introduced in 1996, and developed by Lawrence Page with cofounder Sergy Brin as a PhD research project (Brin & Page, 1998). Google gained popularity within a short period of time and was widely adopted by the early 2000s, redefining the features of a search engine. As Hillis, Petit and Jarrett (2013) state:

Those of us who *do* remember searching the Web before Google's emergence...will recall the frustration and tedium of scrolling multiple screens of spam in order to find a webpage relevant to our interests or, perhaps more fondly, recall the serendipity required to find information by surfing link threads or following directory lists. One might also recall the clutter of portal sites such as yahoo.com, the main goal of which at that time was to corral users within their 'sticky' confines or shepherd them to partner sites where they were bombarded with information for unrequested services ranging from stock quotes to horoscopes, from weather to movie reviews. (p. 23)

With a wide variety of innovative ways of getting Google into the hands of Web searchers through networked devices, Google has become ubiquitous worldwide. According to Zimmer (2008), "Google has become the prevailing interface for searching and accessing virtually all information on the Web" (p. 82), processing almost 3.6 billion search queries by 2008. According to the Webcertain (2014) report, Google continues to be the most prominent search engine, generating 100 billion monthly searches with over 90% market share in 70% of the countries studied. As such, it is not surprising that Google has become the subject of research in multidisciplinary areas of study.

Comparing Google with library databases, Brophy (2004) indicated Google was used as a verb synonymous with Web searching, and often for research itself, as early as 2003. This is profound given Google's short history from its inception in 1996 and public availability in 1997. Similarly, Walder (2003) in a note advising readers on how to locate his article, use *googling* to refer to searching. Analogous connotation is

found in an editorial by Quint (2002), predicting that Google was becoming a verb, and offering the following definition: “Google: (v.) 1. to conduct a search on a Web search engine...; 2. to phrase a search statement in a manner suiting the software of a typical Web search engine” (p. 6).

Quint (2002) further addressed information professionals, admonishing them to become more “Google-compliant” in their digital service delivery. Likewise, Carlson (2003) outlined educators’ concerns about undergraduate students’ lack of awareness about the difference between searching on the Web and searching in the library. One of the earliest mentions of Google as a vibrant phenomenon can be traced to Price (2003) who commented on the emergence of a “Google or bust” (para 11) mentality by people when it came to information searching on the web. Price’s rhetoric was critical of information professionals, stating that not enough was done to promote library services, which were better in quality compared to results retrieved through search engines. Price (2003) attributes Google’s success to its people-centred approach and system efficiency:

Google was in the right place at the right time. Other Web engines produced fair to mediocre results...In time, companies like AltaVista, Excite, and Terra Lycos retreated to "portal" strategies, seeking to become all things to all people, rather than focusing on the fact that the key to a good search engine is its underlying database... Google gave its users a sense that it was a "people" type of product. From day one, it created an image of being cool to use. Sad but true, libraries and librarians have quite the opposite effect on many people. (para 13-17)

*Googling* as a cultural phenomenon in an every-day information seeking context was briefly outlined by Serjeant (2004). She stated that “Google's the place people turn to in more than 80 languages more than 200 million times a day if they want to locate a long-lost friend, find a recipe...or research a business competitor on a different continent” (para 6). Systematic research into Google, from varying disciplines, emerged around 2004. One such research area concentrates on the narcissist attributes of self-*googling* (e.g. Marshall & Lindley, 2014; Nicolai *et al.*, 2009). Another area of research into *googling* deals with privacy and security issues, particularly given the amount of personal information captured on the internet that is easily accessible and thus susceptible to misuse (e.g. Andrejevic, 2007; Conti, 2009).

Studies investigating the function of Google as a research tool similar to the role of a library also followed (e.g. Agricola *et al.*, 2013; Brophy & Bawden, 2005; De Groote, Shultz, & Blecic, 2014; Georgas, 2013; Griffiths & Brophy, 2005; Jamali & Asadi, 2010; Martzoukou, 2013; Murtagh & Williams, 2003; Si, Chen & Hou, 2009). Additionally, information behaviour models and theories have been re-visited to capture the resulting changes on information seeking (e.g. Knight & Spink, 2008; Spink & Jansen, 2004). The findings from studies that investigate the use of the Google search interface as a research tool highlight information seeking hinges more on reliability than the authority of information sources (Lankes, 2007; Rowlands *et al.*, 2008).

### **2.1.3 Google replicating library values and qualities**

Research on Google in the context of information behaviour<sup>1</sup> from Library and Information Science (LIS) perspective is not surprising given Google's aim to accomplish what libraries have been striving to achieve for a long time. As reported on the *about-page* of Google's webpage (<http://www.google.com.au/intl/en/about/>), "Google's mission is to organise the world's information and make it universally accessible and useful." As Caufield (2005) suggests, Google gained its popularity by adopting certain library values.

This section outlines how these values and practices traditionally attributed to libraries and scholarly communication processes can be seen in: Google's mission on universal access to information; hypertext attributed to traditional card catalogues; relevancy of results using *PageRanks* attributed to citations and advanced searching features; customised search results attributed to specialised library services; Google Scholar attributed to scholarly databases; and, Google Books attributed to library monographic collections.

#### **2.1.3.1. *Universal access to information and user centred focus***

Google initially appealed to the user community as an information source through its promotion of universal access to information and user centred approach over immediate corporate profit, an attribute valued by libraries (Caufield, 2005).

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<sup>1</sup> Conceptualisation of information behaviour is addressed later in this Chapter, in section 2.2, and information behaviour as a theoretical framework is addressed in Chapter 3.

Libraries have long played a vital role in fulfilling the right to free and open access to information through their purchase of and subscription for reading materials for their specific clientele's requirements (Koren, 2000). The cost burden is not pushed on to the user and thereby the user community of the library as a whole is provided with the same level of information (Tucker, 2003). It follows that this access is in fact not universal across communities, particularly for digital content, but is limited to library membership owing to licensing restrictions. This inequality of access to information will be considered further in the section on the information divide (section 2.4).

Google endeavours to bridge this gap by capitalising on the free information on the Web by offering a seamless approach to locating research through Google search platforms. In addition to the benefit gained as a search engine that crawls the internet efficiently retrieving results almost immediately, Google gained its popularity by providing a clutter free interface without the distractions of advertisements and information push, unlike the standard practices of other search engines of that time (Caufield, 2005; Hillis *et al.*, 2013). As implied by Caufield (2005), Google reinvented the search engine business by embedding the revenue generation away from the direct view of the searcher, thereby replicating a *non-commercial* visibility that is typical of library operations.

#### **2.1.3.2. *Hypertext extending the library card index (catalogue)***

The library catalogue is the primary means to discover the contents held in a library. The traditional catalogue entries, through a uniform statement of responsibility allocation and controlled subject headings ensure systematic discoverability within collections. It does however have its shortcomings. According to Bush (1945), the retrieval systems of the time stored information in classificatory hierarchies and, typically, employed linear paths through these hierarchies to locate material. Furthermore, unless duplicates were made (e.g. alternative entry catalogue cards) the information could only be stored in one place.

In contrast, hypertext takes into account that the human mind works differently and utilises associational trials (Ellis, 1991). These differences became essential considerations for the development of online library catalogues and later in the conceptualisation of hypertext technology. The precursor to hypertext is attributed to Bush's (1945) MEMEX (memory extender). As briefly outlined earlier, *memex* was a

prodigious hypothetical device, with the potential to simplify information retrieval (Ellis, 1991). The principles behind Google search can be equated to the *memex*. In their seminal paper, Brin and Page (1998) state that Google makes heavy use of the structure present in hypertext to search through millions of webpages. The Google search interface extended the concept of the library catalogue and has become the new measure of the quality of the search experience. This is evidenced in library catalogues now increasingly replicating the Google search interface. This is discussed further in section 2.3.2.

### **2.1.3.3. Precision of search results**

Apart from facilitating universal access to information, Brin and Page (1998) state that the purpose of introducing Google was to overcome the shortcoming of the existing traditional search engines of the time. According to the authors, the reliance on keywords picked from the Web content, unlike the controlled subject headings assigned to library catalogues, were prone to spam. Brin and Page's emphasis was on precision and producing highly relevant items on top of the retrieved results through a sophisticated search algorithm. They believed, as also evidenced from other research (Malik & Mahmood, 2009; Nicholas & Clark, 2015; Spink & Jansen, 2004), users look at only the most highly 'ranked' (usually the first three pages) of the very extensive lists of retrieved results.

According to Brin and Page (1998), the algorithm behind Google, *PageRank*, works in a similar fashion to that of citations. The more articles that link to another article the higher the latter article's ranking. *PageRank* also uses the functionality of advanced search strategies such as Boolean and proximity searching (Brin & Page, 1998), thereby making the search process simpler for the user.

According to Caufield (2005), "Google brought to the Web a functional...analogue of the process of judging, filtering, and recommending materials that has traditionally been carried out by libraries, publishers, and educational institutions" (p. 560). Hillis *et al.* (2013) state that the Google search engine was founded around the concept of removing the subjectivity of traditional library indexing, and further explain that:

PageRank accords a keyword appearing in a headline a higher ranking than a keyword appearing in text marked up as a caption. Comments on blog posts are systematically

discounted in delivery of search results and in page ranking..., and Google routinely devalues the status of porn sites (Vaidhyanathan, 2011, p. 14). (p. 68)

Nonetheless, relevance ranking was seen as inferior by library professionals for the lack of conceptual categorisation offered through the traditional means of assigning subject headings. Mann (2008) contends that in the increasing online information environment, traditional cataloguing is even more important. Mann further states:

Google's keyword search mechanism, backed by the display of results in 'relevance ranked' order, is expressly designed and optimized for quick information-seeking rather than scholarship....Keyword searching fails to map the taxonomies that alert researchers to unanticipated aspects of their subjects. It fails to retrieve literature that uses keywords other than those the researcher can specify. (p. 159)

Despite these criticisms, scholars have concluded that users predominantly rely on a simple keyword search (Asher *et al.*, 2013; Hsin *et al.*, 2016), with “an average of 2.2 words per query” and scarce use of advanced search options (Nicholas & Clark, 2015, p. 22). Dalal, Kimura, and Hofmann (2015) report that their experimental research revealed the experienced undergraduates as well as graduate students in their study sample demonstrated that they were aware of advanced searches like Boolean operators. This was observed through their use of quotation as well as Boolean operators. Nonetheless, their findings also indicated that the students were not competent in using Boolean logic effectively, and frequently opted for keyword searching. The closed observatory research environment might have been the reason for the students to try to exhibit the use of advanced searches. As highlighted by Dalal *et al.*, the students had been taught these in prior information sessions as part of their studies. The underlying finding was that keyword searching is the most often used, and that keywords are continuously revised based on the perceived success of the results retrieved (Dalal *et al.*, 2015).

It follows that Google's enhancement on keyword searching through its sophisticated search algorithms coupled with customisation based on individual search history has been positively received by the users, thereby negating the need for further complicated search strategies.

#### 2.1.3.4. *Customised search results*

With the increase in the number of internet resources, with traditional publishers embracing electronic publishing, and increased self-publishing through personal/institutional websites/repositories, the challenge for the user is no longer physical access to information (Caulfield, 2005). As Obeidat and Genoni (2010) outline, the Web has given more sources of information to the user, thereby reducing the digital divide in some ways. Therefore, as Caulfield (2005) explains, the new challenge for the user is the “intellectual access” (p. 560) of sifting through the search results to ascertain the credibility of the information sought. Even in this aspect, Google has replicated traditional library values of offering customised results based on user needs. As Willson (2017) explains, Google’s algorithm has continuously improved to personalise search results based on aggregated data from other similar search history. This is done by depositing cookies on the user’s computer, which then reports their browser search history to Google<sup>2</sup>, thereby enabling Google to seamlessly offer individualised search results (Caulfield, 2005; Hillis *et al.*, 2013). In Hillis *et al.*’s (2013) critique of Google and the culture of search, the authors contend that “search engines ‘learn’ about [user] preferences...as algorithms come to ‘know’ more about [users’] search activities” (p. 16) and thereby retrieves results that users are more inclined to accept as relevant.

Even with these improvements over earlier search engines, LIS professionals and other commenters remained sceptical of the value of Google as a research tool when compared to scholarly databases. For example, Brabazon’s (2006) critical look at the over-dependence on Google by the academic population highlights a flattening of expertise, which she terms as the “google-effect”. The onus now to a large extent is on the user to filter the available information resources to ascertain their authority and credibility. This is the main point Mann (2008) raises when he points out that Google is optimised as a quick information fix. This sentiment is supported by Hillis *et al.* (2013) in their extensive work on “Google and the culture of search”. Their argument is that unlike the ‘related’ search results offered through traditional subject headings, Google’s relevance ranking and autocorrect on spellings and other relevant search term suggestions are based on prior search history by the individual searcher

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<sup>2</sup> This is enabled by Google mostly through other online portals that require a Google login. For example Gmail and YouTube.

or a collective search term by other similar searches. The results are thus skewed, and as Hillis *et al.* (2013) state, it creates an “individuated truthiness” (p. 159) rather than opening up for a wider access to knowledge. There are speculations as to whether these limitations outweigh the advantages of the extensive online information environment. For example, Fry, Virkar and Schroeder (2008) reporting on their investigation on UK academic researchers, state that researchers continue to rely on Google despite awareness about its limitations.

### **2.1.3.5. Google Scholar redefining scholarly databases**

Earlier studies have found that Google is superior for coverage and accessibility while library systems are superior for the quality of the results retrieved (Brophy & Bawden, 2005; Griffiths & Brophy, 2005; Hargittai, 2002). This weakness in Google’s results quality was possibly overcome with the introduction of Google Scholar in 2004 and its continued enhancements, coupled with the increasing availability of open source publications. In Howland *et al.*’s (2009) study of Google Scholar in comparison with traditional library resources, the authors summarise the literature as follows:

Google Scholar was initially met with curiosity and scepticism (Brophy & Bawden, 2005). This was followed by a period of systematic study (Bakkalbasi *et al.*, 2006; Neuhauser, *et al.*, 2006; Kousha & Thelwall, 2007; Robinson & Wuesteman, 2007). More recently, there has been optimism about Google Scholar’s potential to move us toward Kilgour’s goal of 100 percent availability of information (Pomerantz, 2006). Librarians now find themselves acknowledging users’ preferences for one-stop information shopping by giving Google Scholar ever-increasing visibility on their Web pages (Mullen & Hartman, 2006). (p. 227)

Google Scholar differs from the Google general search (google.com) in that it differentiates general information sources from information that “looks” academic. The exact distinctive criteria taken into account by Google Scholar has been critically debated in the literature (Gray *et al.*, 2012; Hartman & Mullen, 2008; Shultz, 2007). According to Google Scholar (2017) website, the chances of inclusion in the Google Scholar results are higher: if the paper is in portable document format (PDF), with *.pdf* as the file extension; if the title of the paper appears in a large font on top of

the first page; the authors of the paper are listed right below the title; and, if there is a bibliography or reference list at the end of the paper.

As Gray *et al.* (2012) describe, content found in academic repositories or scholarly databases goes through some form of editorial process; while self-published material on the web, even though it may look scholarly, may not have gone through any vetting, but could be highly ranked by Google Scholar based on its metadata. Studies comparing Google Scholar versus scholarly databases have been carried out quite widely (e.g. Adriaanse & Rensleigh, 2011; Bakkalbasi *et al.*, 2006; Howland *et al.*, 2009; Jamali & Nabavi, 2015; Kousha & Thelwall, 2007; Mullen & Hartman, 2006; Neuhaus *et al.*, 2006; Shultz, 2007).

Neuhaus *et al.* (2006) compared Google Scholar against 47 journal databases and found mixed results. Google Scholar's coverage for all databases examined in the study were 6%, with Google Scholar yielding 6% at the lowest end and 100% at the highest end. Likewise, Shultz's (2007) study compared Google Scholar against PubMed database, and did not make any conclusions as to the superiority of either, yet did not dismiss Google Scholar.

Interestingly, Howland *et al.* (2009) concluded Google Scholar to be more scholarly than a library database; noting that there were unique records to both, as well as sharing some overlapping citations. The search was conducted by librarians, on both Google Scholar and subject specific library databases, and evaluated for "scholarliness" of the retrieved documents. The librarians were not informed of the real reason behind the scoring. While there is no real basis to refute the conclusion, as highlighted by the authors, it should be noted that query formulation by information professionals versus general users could have some impact on these positive findings for Google Scholar.

Adriaanse and Rensleigh (2011) compared Google Scholar against two major citation databases: Web of Science and Scopus. They concluded that Google Scholar was not yet a substitute but a supplementary free citation source for the other two fee-based databases. Similar results emanated from Asher *et al.*'s (2013) investigation that conducted an experiment using university students' retrieved search results for an academic assignment. There were five groups of students, one using Google Scholar, two groups using a library discovery tool, a fourth group using a specific scholarly

database, and the fifth group were free to use any source. Asher *et al.* (2013) concluded that the reading material retrieved by the group using just Google Scholar were the least scholarly. The group who used Google Scholar along with any other sources were found to have yielded better results though, indicating the suitability of Google as a citation search tool rather than as a tool for quality full-text retrieval. The findings from Asher *et al.* (2013) in terms of the results from the discovery tool point of view will be examined further in section 2.3.2 on how libraries are adopting Google trends.

The use of Google as a citation tool as highlighted by Asher *et al.* (2013) is also seen in earlier literature. For instance, Howland *et al.* (2009) stated, “Google...is generally superior to individual databases in retrieving appropriate citations” (p. 232) and this is bound to get better with more publishers allowing Google Scholar to crawl their webpages. Conversely, even if the citation or abstract is searchable through Google, unless the document is made available from the publisher (on a pay basis or open access modality), or unless the document is online in another open repository, the user will have to go through a library in order to obtain the resource (Georgas, 2013).

Notably, Google Scholar in fact is proving to be increasingly retrieving more full-text content than it did a few years ago. A recent experimental study by Jamali and Nabavi (2015) found 61% (1428 articles) of the results retrieved through Google Scholar were freely accessible as full-text. The search queries were based on 277 subject categories of Scopus. The results retrieved on the first page of Google Scholar search (first ten hits for each query) were analysed. According to Jamali and Nabavi, a large proportion of the retrieved full-text articles were publisher versions (80.8%) with another 14.4% available as open access. Jamali and Nabavi (2015) also reported that the social media site, ResearchGate, sourced 10% of the full-text articles.

Based on the above review on comparison of Google Scholar to library resources, the research to date is not conclusive that Google Scholar replaces traditional library databases. As Burns (2014) states while recent studies suggest the strengths of Google Scholar, the coverage of openly accessible full-text material is not universal across disciplines. Nonetheless, there are indications that Google Scholar offers a

comprehensive coverage of the literature with a large number of readily accessible full-text resources, and has effectively come to be regarded as a citation index as well as a bibliographic database.

Anecdotally, it is common place that Google Scholar is thought of and referred to as an equivalent to a database. A supporting finding was reported by Dalal *et al.* (2015):

There seems to be a notion among some students, for example, that scholarly articles reside *in* Google or Google Scholar, or that a discovery tool is simply a very large database; they do not distinguish between a database and a search engine. (p. 674)

However, unlike traditional scholarly databases like PubMed, EBSCO, ABI/Inform etcetera, Google (including Google Scholar) is an aggregator tool, and not a database. Google search platforms collect information from the sources available on the web, and do not own or store the information content displayed in its search results except for the books scanned under the Google Book Library Project.

#### **2.1.3.6. *Google Books redefining the library monograph collection***

Google announced its intention to scan all known existing books before 2020, estimating that there are approximately 130 million unique books worldwide (Taycher, 2010). Google embarked on Google Books, previously known as Google Print in 2004 with partnerships between Google and five libraries: the University of Michigan; Stanford University; Harvard University; Oxford University; and, the New York City Public Library (Hillis *et al.*, 2013). As Hillis *et al.* further elaborate, Google also opened up to authors and publishers to join them in the Google Books Partner Program thereby eliminating the copyright hurdle. In Battelle's (2011) criticism of Google, he highlights that the original aim of Google had not been to build the Web, but to organise it and make it accessible through discovery. With the change in Google's direction, as Hillis *et al.* (2013) state, "Google's ambitious project to scan and index all the world's books leads the way in forcing a widespread cultural rethinking of what the library and the archives, as ideas and as institutions, now mean" (p. 146).

By 2012, Google had scanned more than 20 million books (Howard, 2012) and as Toobin (2007) outlines, Google aims to make all known books searchable on one

portal. This is a traditional attribute of library catalogues. It is stated on the Google Books (2014) website, that from its inception their “ultimate goal is to work with publishers and libraries to create a comprehensive, searchable, virtual card catalogue of all books”. Google Books display snippets for books that have not been copyright cleared but have been scanned. In cases where an author or publisher has joined the Google Books Partnership Program, a limited preview is shown with the option of searching inside the book (Vincent, 2007). For those books that have not been included in the Google Books Project, users are able to see basic bibliographic information that can be crawled from websites including libraries and publishers (Chen, 2011). This ensures that if a given book has any mention on a webpage it will be retrieved at least as a citation. Also, in cases where a given library is part of a union catalogue like OCLC’s Open WorldCat, which has partnered with Google’s Library Search, users will be directed to the availability of the book in those libraries.

Considerable research has been carried out to ascertain the usability and accessibility of the Google Books search over other comparable bibliographic databases. Chen’s (2011) comparison of Google Books to WorldCat (a federated search of major libraries throughout the world) revealed that out of the 500 random samples generated from WorldCat, citations for almost all the books catalogued in WorldCat can also be retrieved through Google Books; and the *find in a library* link on Google Books worked for 75% of the searches while about 10% of the books searched had free full views. An earlier study by Ludwig and Wells (2008) concluded that Google Books returned more hits than the library catalogue (BISON) of the University of Buffalo, and expressed the futility of investing in enhancing their library catalogue. It is reported that they selected search logs from BISON on a typical day, which contained 1,596 search queries. They ran the same set of searches on Google Books and reported that 295 of these searches yielded 0 hits on BISON while all searches yielded positive results on Google Books.

Apart from comparing catalogues, research has also been conducted to assess Google Books’ strength within disciplines. For example, Johnson (2009) assessed Google Books level of coverage of 87 minimal core clinical titles. It was found that Google indexed all the titles on the list and 64% of the most current editions were fully searchable.

In addition to Google Books, there has been a number of other similar projects aimed at digitising content, thereby increasing the number of eBooks on the web, which in turn can easily be searched from a central search engine like Google. Similar endeavours include Microsoft's Live Search Books which was later terminated with "its scans of public domain books transferred to the freely accessible database of the Internet Archive, a core member of the Open Book Alliance and an opponent of Google's private book digitization process" (Hillis *et al.*, 2013, p. 147).

Likewise, other similar projects exist around the world; while this list is not exhaustive, it includes Carnegie Mellon's million book project, the Open Content Alliance, HathiTrust, Internet Archive, Europeana, and Gallica (Hillis *et al.*, 2013; Toobin, 2007). A unified initiative in this direction is the World Digital Library conceptualised in 2006 and first launched in 2009 with contributions from 19 countries (World Digital Library, 2016). What is interesting is that Google Books can be seen as a driving force in enticing others to create similar projects either as market competition or to safeguard the public service notion of library provision. All of these initiatives eventually lead to Google's mission of providing an indexed book collection so as to facilitate a search across otherwise hidden content due to the limited nature of printed monographs. These changes are receptive to user preference for eBooks over physical books for the ease of searching and skim reading they offer (Mizrachi, 2015). Mizrachi further reported that print books, especially core textbooks, were still desired for concentrated reading.

In summary, in addition to enhancements over earlier search engines with improved control on spam and advertisement clutter, Google enhanced its value by replicating library services and values at many levels. The main enhancement is the ease of discovery of resources from the convenience of one interface compared to the earlier search constraints of individual library catalogues. Moreover, these enhancements have pushed libraries to examine their services and adapt some attributes from Google, so as to stay relevant as an information source in the face of the *googling* phenomenon.

Before we proceed to address the identified implications of the *googling* phenomenon on the academic library as an institution and its service provision, it is important to contextualise why the web, and by extension Google, has had so much

appeal over traditional library environments. This contextualisation lies within the discourse of how people seek information to meet their needs.

## 2.2 Information seeking behaviour

The first known attempt at evaluating what people read, how they access the material, including readings habits, was likely undertaken by Douglas Waples, Professor of the Graduate Library School of the University of Chicago in 1937 (Lynd, 1938). Waples's *People and Print* is among the first published work in library studies research that deals with the "sociology of reading" (cited in Lynd, 1938, p. 11). Through the scrutiny of literature it can be deduced that the sociology of reading branched out into the theories of *information behaviour*, *information needs*, *information seeking behaviour*, and in the electronic information environment to concepts of *information search process* and *information retrieval*.

In the LIS literature, information seeking behaviour is frequently used as a subset of information behaviour, with information search behaviour as a further subset (Wilson, 2000). As Case (2006) explains:

Most accounts of empirical investigations do not bother to provide a definition of information seeking, taking it for granted as what people do in response to a need for information. It could be said that information seeking is more closely tied to the concept of "need" than it is to the notion of "information" itself. (p. 80)

Case's (2006) summary of the literature is noteworthy:

Gary Marchionini's definition of information seeking is problem oriented: "a process in which humans purposefully engage in order to change their state of knowledge" and which is "closely related to learning and problem solving" (1995, pp. 5-6). Also in this vein is Brenda Dervin's definition of sense-making in terms of confronting problematic situations; indeed, for some investigators information seeking has come to be synonymous with sense-making. (p. 80)

It follows that information behaviour is influenced mainly by the users' informational task expectations coupled with other factors like self-efficacy, affective behaviour, and the search strategy training users have received (Joseph, Debowski, & Goldschmidt, 2013a). It is acknowledged that there is a body of literature that specialises in studying search tasks in detail (e.g. Byström, 2002, Vakkari, 2003).

Vakkari (2016), using Kuhlthau's (2005) conceptual framework of information search process model, presents concepts of learning as problem-solving and sense-making, and situates this in the realm of *searching as learning*. Vakkari (2016) contends that "learning is embedded in the [search] activity performed" (p. 8) and elaborates that:

In selecting sources the searcher explores the document surrogates in the result list or full documents to assess the value (relevance, utility) of the documents found and also to satisfy her information need. (p. 9)

These emerging findings indicate a shift in how users evaluate the quality of resources. As reported by Haglund and Olsson (2008) self-published or non-peer-reviewed material in sources like Wikipedia or personal websites are increasingly used as valuable information sources. In these cases the users pass value judgements based on general reading around the topic to determine the 'scholarliness' or authority of the selected resources. Likewise, Head and Eisenberg (2009) contend that "information gathering context involves finding, accessing, and securing relevant research resources that 'satisfice' individual research needs" (p. 9). This does not necessarily mean that the traditional forms of evaluation have been abandoned.

In fact, Tenopir *et al.* (2016) highlight that traditional methods and criteria utilised to determine trustworthiness and authority of scholarly resources remain important. Their international survey recruited 3600 researchers, and the finding asserts that journal ranking as well as peer review remain important measures of trust and forms the foundation in decisions about "what to read, what to cite, or where to publish" (p. 2355). Reporting on the same survey, Jamali *et al.* (2014) stated that there are differences across researchers depending on the level of development of the country they belong to. Their findings reveal that scholars from countries with a very high Human Development Index (HDI, such as USA and UK) rely more on internal criteria such as peer review, while researchers from less developed countries (such as China and India) are more likely to rely on external criteria such as authors' country of affiliation and reputation of publisher. Another difference between scholars from high HDI is that they are more negative towards the use of repositories while scholars from countries with low HDI are more likely to access and publish in open

access publications. Connaway, Dickey and Redford (2011), based on a multi-year research project, conclude that the context of the information environment and need determines the level of effort a user puts into seeking information. Their overall premise is orientated around the concept of convenience that dictates the effort.

Similar observations of online search preference can be situated in the *principles of least effort*, as well as the *library anxiety theory*, that situates the library in a negative perspective while making the online environment favourable. These theories are discussed further in the following section. Information behaviour as a theoretical framework is addressed further in Chapter 3 (section 3.3).

### **2.2.1 Library anxiety**

Library anxiety theory manifested from a grounded theory study by Mellon in 1986 on the information search process of undergraduate students (Katopol, 2005). The theory was further tested using quantitative methodologies by Bostick (1993), leading to a five dimension scale of library anxiety: barriers with staff; affective barriers; comfort with the library; knowledge of the library; and, mechanical barriers (Onwuegbuzie, Jiao, & Bostick, 2004).

Van Kampen's (2004) investigation on doctoral students' library search experiences, further validated and expanded on Bostick's scale by adding a sixth dimension, that of comfort with technology. Jerabek, Meyer, and Kordinak's (2001) research compared computer anxiety to library anxiety with an overall conclusion that implies the issue is not technology but interpersonal contact, which has the unwanted potential of exposing users' lack of knowledge. It was also implied that it is not the library that has a problem but the human intermediary.

Consequently, according to Van Kampen (2004), existing findings on library research studies report little on user dissatisfaction with the library services, but rather focus on the "demand for more full-text databases and online services" (p. 29). This infers the preference for services without the personal *barrier* that might result from human mediation. Interestingly, a preference for online interaction with library staff was highlighted in Catalano's (2013) review stating that distance learning doctoral students were more likely to consult a librarian, than their counterparts studying on campus.

There is no evidence of a similar comprehensive investigation on faculty library usage. Nonetheless, Nicholas and Clark (2015) drawing from their extensive research on the Google generation, through analytics of visitor behaviour to online sources and also interviewing researchers, state that “when you talk to academic researchers..., libraries, if mentioned at all, are mentioned generally in a negative nostalgic fashion” (p. 31). Haglund and Olsson (2008), investigating the information needs of young university researchers at three universities in Sweden, using observations of search sessions and follow-up interviews, conclude that the researchers relied on immediate access to electronic information and were reliant on Google. The study also concluded that most of the 24 researchers in the study considered their library to be complicated.

This discourse is further supported by Van Kampen-Breit and Cooke (2015), inferring a user perception of academic library as a complicated entity. Furthermore, this discourse on library anxiety highlights an implicit reticence by users in asking for help from library staff lest the user be judged as incompetent. This perception of the library is further exacerbated with the ease of Google offering reliable reference material through a simplified convenient search process. As Gremmels (2015) outlines, confirmation of this earlier palpable but unnamed phenomenon on user anxiety assisted many academic libraries to address it by reshaping their approach to service delivery.

### **2.2.2 Convenience of Google and least effort**

The principle of convenience has been discussed in the literature as the Principle of Least Effort, also known as Zipf’s law of 1949 (Brophy & Bawden, 2005; Case, 2005). Zipf’s law, which has been tested and verified over time, hinges on user preference on ease of use and accessibility over the quality of information (Bates, 2005). This manifests as, the effort required for searching through library stacks, unfamiliar online catalogues, and/or multi platforms of different databases, in comparison to a one-stop online search platform such as Google.

Research on Google versus library databases has demonstrated its ease of use or convenience rather than its effectiveness as the key to making Google popular (Georgas, 2013; Rowlands *et al.*, 2008). Recent literature increasingly highlights that

users largely enter the search paradigm through Google and that users of the *Net generation* are impatient information consumers (Judd & Kennedy, 2010). The *Net generation*, also referred to as the *Google generation*, are attributed to those born after 1993 (Rowlands *et al.*, 2008), and they are also typified as “digital natives” versus the earlier generations, referred to as “digital immigrants” (Prensky, 2001, cited in Judd & Kennedy, 2010, p. 1564). It is believed the digital natives have a natural affinity with technologies while digital immigrants are considered as laggards (Prensky, 2001, cited in Judd & Kennedy, 2010, p. 1564).

According to Dalal *et al.* (2015, p. 672), based on their experimental research of academic information seeking behaviour, students expect immediate full-text access either directly from the search page or through a link to an external source. Dalal *et al.* also observed that if a link resolver was broken and failed to take a user to the article immediately, students lose interest. D’Couto and Rosenhan (2015) identified time pressures as a significant factor that shapes the information behaviour of academic student researchers. The consequence of ubiquitous internet access and the continuous exposure to a one-stop search experience, is a subsequent user-behaviour that expect “immediate gratification” in academic information seeking too (D’Couto & Rosenhan, 2015, p. 565). Connaway *et al.* (2011) investigated convenience as a critical factor in information seeking behaviour and concluded that the centrality of convenience is more prevalent among younger users, namely the so-called “millennials”. Nonetheless, they also highlighted that it applies across all demographic categories, including faculty, even if to a lesser degree. However, it is not conclusive how much effort users invest in finding scholarly material when faced with literature behind pay-per article protocols or held in a library collection accessible only through their computer network or linked to membership credentials.

Earlier research (e.g. Bell, 2004; Brabazon, 2006; Brophy, 2004; Judd & Kennedy, 2010) has demonstrated that Google is the search engine of choice, or information intermediary for university students when they are confronted with a research problem. Likewise, academics and researchers have also been found to rely on Google (e.g. Fry *et al.*, 2008; Haglund & Olsson, 2008; Jamali & Asadi, 2010), at least at the initial phase of their information seeking. Jamali and Asadi (2010) reported that Google was the most used intermediary by academics as the starting

point for academic research, while library databases were relied upon when specifically seeking journal articles. Their investigation collected data through 56 interviews and 114 questionnaires from scientists at the Department of Physics and Astronomy at University College, London.

In summary, the research evidence is conclusive that Google is a central premise of academic information seeking behaviour of both students and academics. However, this does not completely negate the use of library databases. The main reason for the quick take-up of Google is attributed to the convenience of searching using Google. While not directly linked, other implied reasons include the anxiety of library use owing to the perceived complexity of academic libraries as well as the interpersonal component of library staff as an intermediary in the access to information.

### **2.3 The implications of the Google phenomenon on library service provision**

As outlined by Brophy and Bawden (2005, p.12, citing Columbia, 2004; Pew Internet & American Life, 2002b; Troll, 2001), research from the early 2000s imply that library usage has declined in favour of research using search engines. A study by Shanahan (2008) carried out on undergraduate medical students, identified that the majority of students usually search the internet when seeking information to complete their assignments, while only a few utilise library databases. This raises the question of the quality of the information sought. As Fabos (2008) outlines, even though the internet allegedly opens access to a vast array of ideas, given the nature of the online environment this access could be limited in scope. As Fabos (2008) further states:

When we consider the way students use and are encouraged to use the internet in schools—that is, through the portal of commercial search engines—, it is my contention that they are not accessing a vast array of ideas. They may think they are, but they are not. Instead, they are overwhelmingly reliant on an information resource that is, as it is evolving, fantastic for business but not so good for education. (p. 839)

On the contrary, others conclude that Google has managed to achieve more effectively what libraries have always strived for in organising the world of

knowledge (Caufield, 2005; Price, 2003). Also, through its general search interface, Google Scholar, and Google Books, Google provides users with satisfactory search results (Chen, 2011; Howland *et al.*, 2009; Ludwig & Wells, 2008). Accordingly, recent research concludes that Google has become the first point of contact for many in the search for academic information (e.g. Griffiths & Brophy, 2005; Georgas, 2013; Jamali & Asadi, 2010).

Therefore, Ross and Sennyey's (2008) criticism of academic libraries has a valid basis in the current online environment where, according to them, many students complete their university education without using the library. This lack of use of libraries creates a need to understand and conceptualise the value of libraries and their relevance in the web-based environment (Kiran & Diljit, 2012).

The next section further discusses a selection of research that addresses the often complementary as well as the dichotomous discourse on the library and Google as information sources.

### **2.3.1 The shifting stance on Google from an LIS perspective**

While recent research has demonstrated the popularity of Google amongst users and has provided proof that it carries value as an information source, Google has been criticised by the LIS sector for several reasons. First, the probability of a commercial bias and an imminent pay-per view paradigm, especially with the Google Book Project, that could have implications on both the public-interest information policies and the role of librarians' professional services, were debated (Litwin, 2004). The monopolistic nature of Google has been dwelled upon, not only from an academic perspective (Miller & Pellen, 2009) but also from an everyday information seeking perspective (Vaidhyanathan, 2011).

Second, not mutually exclusive of the first, is that the compromise on quality of information is questioned. Users appreciate the ease of access of Google (e.g. Fast & Campbell, 2004; Georgas, 2013) while education professionals worry about the quality compromise on information retrieved (Brabazon, 2007). As was outlined earlier, while Google retrieves citations, it does not always provide full-text as most scholarly literature is held in scholarly journal databases, which require subscriptions, usually mediated through a library, or are available via pay-per-paper

view from publisher websites. The practice of users settling only for free online content has not been systematically researched, but is implied. In this regard, Brabazon (2006) is highly critical of students using sources sought through Google, stating that there is a flattening of expertise, which she terms as “the Google Effect” (p. 158). She further states that the metaphor comparing Google to a library catalogue is dangerous. Her main criticism was targeted at Google’s *PageRank*, which retrieves results that are popular through its interlinked backlinks that does not necessarily reflect traditional refereeing and accredited peer review.

Given the incontestable popularity of Google as well as the advantages it offers as a search tool, recent LIS research focus is on how libraries can capitalise on Google. In addition to ease of access for Web searching and the increase in online institutional repositories, the degree to which users adopt “new technologies and how institutions and educators should respond has been the subject of recent commentary and research” (Judd & Kennedy, 2010, p. 1564). Additionally, the earlier highly valued online public access [library] catalogue (OPAC) came under scrutiny for not measuring up to the way users expect it to work (Fast & Campbell, 2004). As Ross and Sennyey (2008) state, for those “weaned on Yahoo and Google” (p. 148) the OPAC became a rather rigid and unhelpful tool. Consequently, the shift of OPAC to a *federated search* and later a *discovery tool* followed.

### **2.3.2 The transformation of the library catalogue**

The library online catalogue, earlier referred to as OPAC, saw transformations into federated search interfaces in the early 2000s (Georgas, 2013) and discovery tools in the late 2000s (Asher *et al.*, 2013). The online catalogue is one of the most expensive services offered through a library, both in terms of technology and in terms of human resources (Ross & Sennyey, 2008). It is not uncommon for the less privileged economies to be running libraries without an online library catalogue. As detailed by Riyaz *et al.* (2012), the cost of securing a proprietary integrated library system to enable an OPAC, or the take-up of the alternative open source platforms given the shortage of qualified human resources, are constant challenges for many libraries.

In the 1970s, the union catalogue was envisaged as the ultimate tool that would enable the discovery of information held in participating libraries, instead of the

earlier confines to searching individual libraries (Ross & Sennyey, 2008). As Riyaz *et al.* (2012) outlined, some developing countries like the Maldives, are still lagging behind in the creation of individual library catalogues, let alone a national union catalogue. Even in affluent countries, with the widespread adoption of automated library systems from the early 1970s, and the follow-up implementation of union catalogues, the ‘perfection’ of the online catalogue remained problematic (Ross & Sennyey, 2008, p. 148 citing Tennant, 2007). Hernon and Mathews (2013, p. 4-10) suggest that OPAC has become a librarian’s tool, and for users it is the last place to look for information, if at all. In comparison to the popularity of one click search engines, a drawback of the OPAC, including union catalogues, is that it only searches the monograph collection while the numerous journal databases the library subscribed to has to be searched individually (Georgas, 2013).

The federation of all the individual sources offered through a library soon followed. Nonetheless, federated search has been slow in the uptake by libraries due to the cost factor (Georgas, 2013). Even where offered, user preference is for Google even when users acknowledge library databases and catalogues are more organised and retrieve more accurate results. This preference for Google is predominantly attributed to ease of access, familiarity of the interface, and comparable coverage (Fast & Campbell, 2004; Georgas, 2013; Haglund & Olsson, 2008). A significant point is that Google pioneered this universal search, and affluent libraries followed their steps enhancing their OPAC into federated searching, in order to search more like Google.

In a study carried out by Georgas (2013), it was concluded that despite the limitations of the library federated search, a majority (56.3%) of students believed it to be more efficient for research assignments. The study was conducted in a controlled environment at the City University of New York, experimenting using students’ search sessions on Google and the library’s federated search for the same topics. This is a positive turn given earlier similar studies indicated that students relied more on Google for their research (e.g. Haglund & Olsson, 2008). Also of interest is Fast and Campbell’s (2004) investigation comparing university students’ perceptions of searching OPAC and the web. Their conclusion was that students found the OPAC more complex requiring more effort in comparison to the ease of

using search engines. While the investigation was focused on search engines in general, the findings highlight students' preference for Google.

Comparing Fast and Campbell's (2004) findings to the findings by Georgas (2013), the overall conclusion is that students understand the library online catalogue, OPAC, as well as federated search, are more organised in comparison to a search engine and bound to yield more relevant and authoritative results for their search. While Georgas's (2013) findings demonstrate a slightly better perception of the library catalogue over Google, it should be taken with caution given the closed environment, the small population size, and the comparability to an adequate federated library search. Some noteworthy findings include: 81% of the students liked Google for ease of use, 43.7% believed Google to be more efficient, 50% liked Google better, and 34.4% will recommend Google to friends for research. Furthermore, for the results retrieved during the experimental session (on a scale of 0 to 10 with 10 being the most relevant), students rated 7.90 for the relevancy of results retrieved through Google, while the federated search of the library was rated 7.59 (Georgas, 2013).

These results have underlying fuzziness and are not conclusive of student perceptions on whether they favour one over the other. This is not surprising given that the two variables under comparison are in fact not comparable. Google retrieves search results from content on the unmatched vastness of the internet; and the library federated search interface, retrieves content held by the library and therefore limits the discoverability of broader content. Library catalogues moved from federated search to discovery tools for this reason. A discussion on discovery tools follow after the next section on library invisibility.

### **2.3.2.1. *Invisible libraries***

The discourse on library catalogues becoming discovery tools plus the adoption of *link resolvers* to share with Google Scholar also has relevance to Nicholas and Clark's (2015) notion of invisibility of the library for researchers. Ross and Sennyey (2008) while critical of library catalogues, hint at the underappreciated role of library licensing that provides full-text of scholarly articles, at the same time highlighting the complementary nature of both the library and Google:

For all its faults and limitations, [Google Scholar] does something that no library system can match. It allows us to seamlessly search a wide variety of information from PubMed and Open Worldcat to Science Direct and Blackwell and links to the underlying articles. A user with the right IP (Internet Protocol) address can retrieve commercial and open access scholarly information and yet remain blissfully unaware of the Library's role in licensing them. (p. 148)

It is recognised that in academic settings, Google's "find it @ [at library]" link resolver makes Google more relevant by capitalising on resources held by libraries (Johnson, 2009; Howland *et al.*, 2009). The *find it* link works where libraries have agreed to integrate their federated search through a link resolver (Asher *et al.*, 2013). How this impacts on retrieved results is illustrated in Figures 2.1, 2.2, and 2.3.

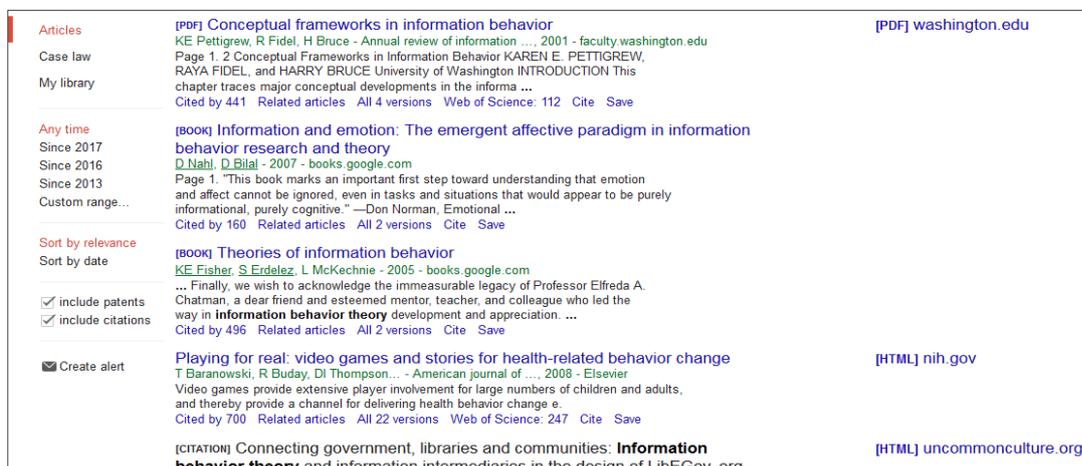


Figure 2.1. Extract from the Google Scholar results view, for the search term "information behaviour theory". Search carried out with no active link resolvers

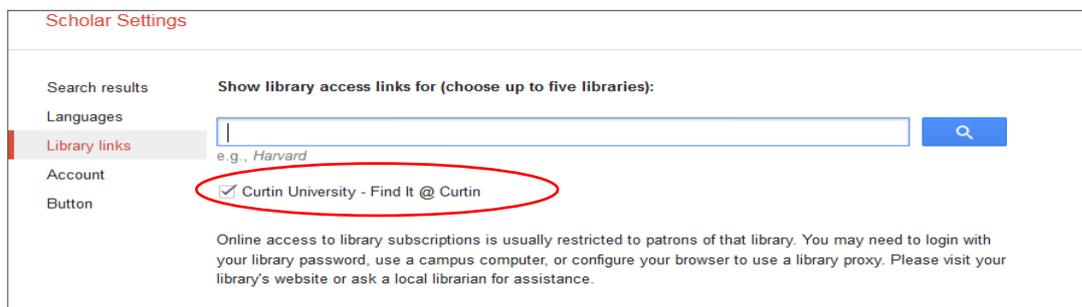


Figure 2.2. Extract from Google Scholar settings, displaying how to manually link the search results to Curtin University

The screenshot shows the Google Scholar search results page for the query "information behaviour theory". On the left side, there are search filters including "Articles", "Case law", "My library", "Any time" (with sub-filters for "Since 2017", "Since 2016", "Since 2013", and "Custom range..."), "Sort by relevance", "Sort by date", "include patents", "include citations", and "Create alert".

The search results on the right include:

- Result 1:** "[PDF] Conceptual frameworks in information behavior" by KE Pettigrew, R Fidel, H Bruce. The snippet mentions "Annual review of information ..." and "2001 - faculty.washington.edu". A "[PDF] washington.edu" link is visible on the right.
- Result 2:** "[BOOK] Information and emotion: The emergent affective paradigm in information behavior research and theory" by D Nabi, D Dalal. The snippet mentions "books google.com" and "2007".
- Result 3:** "Theories of information behavior" by KE Fisher, S Erdelaz, L McKachnia. The snippet mentions "books google.com" and "2005".
- Result 4:** "Playing for real: video games and stories for health-related behavior change" by T Baranowski, R Buday, D Thompson. The snippet mentions "American journal of ..." and "2008 - Elsevier".
- Result 5:** "Connecting government, libraries and communities: Information behavior theory and information intermediaries in the design of LibEGov." by PT Jaeger, U Sorhan, JC Bartol, WC Taylor, E Larson. The snippet mentions "First Monday, 2014".

Two red ovals highlight the "Find it @ Curtin" links for the second and fifth results. The first oval is around the link for the book "Information and emotion...", and the second oval is around the link for the article "Connecting government, libraries and communities...".

Figure 2.3. Extract from Google Scholar results view, for the search term "information behaviour theory", with the Curtin University library link resolver active

Figure 2.1 shows a snippet of the first page of retrieved results on Google without activating a library *link resolver*. The links on the right show a hyperlink to open the content on the originating website. These links are not necessarily to the full-text, but display all the content the owner (website) holds. Figure 2.2 shows the manual setting on how to link Curtin University to the retrieved results. Figure 2.3 is a display of the same search as Figure 2.1, but this time with the Curtin University's link resolver activated. When users are logged on a device connected to the same network as a library with an active link resolver, the manual setting is not required and often the link takes the user directly to the document in question.

Emerging research on Google Scholar and link resolvers indicates many users are unaware of how "find it @ ..." works or are unassuming of the strength of what it offers (Dalal *et al.*, 2015). The link resolver facilitates the discovery of relevant literature even outside the confines of the affiliated library; users can follow up with document delivery requests from their library if the service is offered. The link resolver also increases the chance of users not stopping just at the content retrieved from the internet, but bridges them to the full-text scholarly content licensed through the library thereby making the library relevant. Nonetheless, while it has the "potential to draw users to library databases" (Asher *et al.*, 2013, p. 465) the seamless transition has the potential to make the library invisible. As Herson and Mathews (2013) proclaim, it creates an illusion that the faculty and students are not using the library but are relying on internet content searched through Google.

Based on earlier investigations comparing user perceptions of OPAC or federated search against Google, it can be implied that users are aware of the difference between library databases and the library catalogue. Additionally, users understand that the library federated search tool searches across content held by the library while Google searches more broadly (Georgas, 2013).

### **2.3.2.2. *Discovery tools replacing the library catalogue***

The replacement of the library catalogue (including federated search) with the recent trend of using discovery tools as discussed below, has perhaps created more confusion regarding the library (Dalal *et al.*, 2015), while at the same time the single search box is favourably received by users (Gross & Sheridan, 2011). Discovery tools do not search only the content held by the library, but it also searches and retrieves results that are linked to open access content on the web.

Dalal *et al.* (2015) observed graduate students' library online search strategies and reported that students found the library's new discovery tool was confusing at times, as their search also retrieved results that did not have full-text content. Based on students' prior experience of searching individual library databases, students expect library search platforms to retrieve full-text articles. The experiment was carried out using a web-based tracking tool that records their search session. This was followed with a survey of the students to gather an understanding of their perceptions. The findings indicate students perceive themselves to be competent in searching for information using the library search interface. Nonetheless, Dalal *et al.*, (2013) highlighted there was a mismatch between the students' perception and the observed search strategies. The findings also indicate students often were frustrated with the discovery tool or often did not use it, instead opting to search individual databases. Further to this, a criticism made against library discovery tool search platforms is their association to a high failure rate of the link resolvers. Trainor and Price (2010, cited in Dalal *et al.*, 2015, p. 673) reports 29% of link resolvers through library search platforms fail to link the user to the intended article, thereby frustrating users further.

Furthermore, the significance of the link resolvers provided on Google Scholar's search interface is not evident to everyone. For instance, Dalal *et al.* (2015) reported, students are confused by the 'find it @...' link resolver, perceiving it as an indication

of a redirection to the stated library that would require further searching. Consequently, some students opt not to use the specific ‘find it @’ link because they perceive this to be more complicated. Conversely, some students opt to click the simple hyperlink on the retrieved result snippet. Examples of these links using Google Scholar search results are shown in Figure 2.4.



Figure 2.4. Difference between the Google “find it @” link resolver (circled on the right), and general hyperlinks (marked on the left).

The “find it @ Curtin” link (see Figure 2.4) will take the user directly to the resource through the Curtin University Library if the user is logged on to the university network and is signed on to the Library. If the user does not have the necessary credentials to access the library, this link will not yield full-text. The general hyperlink highlighted on the left (on Figure 2.4) will take the user to the specific webpage from where this information is sourced. The website might or might not contain the full-text.

Asher *et al.*’s (2013) investigation compared user interaction with: Google Scholar; a conventional library catalogue; and, two library discovery tools, namely EBSCO discovery service (EDS) and Summon. Their study consisted of five groups of student participants, one each for the sources listed above and a fifth group who were not confined to a specific search tool. The data collection was based on an observation of their search sessions as well as follow-up interviews extracting data through their reflection on the search experience. The retrieved results from each group were assessed for ‘scholarliness’ by an authoritative group. Their findings indicate the results retrieved through one of the discovery tools (EDS) scored higher ( $m=2.54$ ) and the Google Scholar results scored the lowest ( $m=1.80$ ). The students who were asked to use conventional library catalogue and databases, and the “no specific tool” group’s retrieved results were scored in the middle ( $m=2.06$  and  $m=2.05$  respectively).

One observation from these findings is that the retrieved results from Google Scholar gain value through the access to full text resources linked through the user's affiliated library. In Asher *et al.*'s (2013) investigation, the student group who were confined to the Google Scholar search interface did not retrieve adequate scholarly resources compared to the results retrieved by the group who used the library discovery search interface.

In summary, from an LIS perspective it is evident that libraries add value to Google search through library subscriptions; through this process Google has taken over the earlier role of the library online catalogue. Consequently, libraries are increasingly adopting Google-like searching and also opening up their scholarly databases to be linked to Google Scholar searches, so as to ensure the subscribed scholarly material is utilised by their library clientele.

### **2.3.3 Other ways libraries are adapting to the *googling* phenomenon**

These propositions indicate a need for library administrators to rethink library marketing (Mi & Nesta, 2006) to make libraries visible as an institution of value. In an overview of the academic library and its role in the online learning environment, Jefferson (2015) concludes that "the value of the library is not only in the collections of materials" (p. 4819) but also in enabling the discovery of resources held in its collection and other collaborators, as well as in the provision of physical spaces that meet the diverse needs of library users. In the early days of electronic libraries, Reich and Weiser<sup>3</sup> (1994) presented a seminal paper proposing future changes to libraries, and these resonate with how things have progressed so far.

Reich and Weiser's (1994) argument was that, to stay relevant, libraries would need to reconsider their roles as ubiquitous computing will make libraries' informational components indistinguishable by weaving themselves into the fabric of everyday life. They further stated that libraries need to act as a "community activities centre, community information centre, formal education support centre, independent learning centre...reference library, and research centre" (Reich & Weiser, 1994, para 8). As they further stated, some of these roles are completely non-informational,

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<sup>3</sup> Weiser is considered as the proponent of the current highly researched area of *ubiquitous computing*. Weiser defines ubiquitous computing as a concept that computer and associated technology is an everywhere and anywhere phenomenon.

while many others have non-information components. Likewise, issues that will impact on the future of the academic libraries were summarised by Smith (2006, cited by Hernon & Mathews, 2013, p. 23) as: displacement of paper by digital formats; primacy of the search engine; emergence of a digital lifestyle; changing patterns of scholarly communication; and, library as space. As Moss (2015) highlighted, these changes do not mean libraries cease to be relevant. On the contrary, the library as an institution needs to innovate their services in accordance with user expectations.

In the face of information abundance, the least effort, convenience, and right-now-access has become the expected norm of academic information seeking. As Hernon and Mathews (2013), reflecting on the future of academic libraries, summarise, in a post-Google environment it follows that “if a service is not available 24/7, then the service will not be...even thought of as an option” (p. 32). Consequently, the adoption of an e-collection strategy over print collections, the replacement of the traditional library catalogue with discovery tools (Wells, 2016), and unlimited 24 hour access to libraries (Thomas & Johnson, 2015) are some such demonstrated measures.

Not all changes are directly a result of a need to compete with Google as an information source, but are also related to the paradigm shift in educational institutions. Two major changes as Hernon and Mathews (2013, p. 126-127) summarise are a shift from teaching-focus to a learning-focus, placing a greater emphasis on the student as independent learner, and also from individual study to individual and collaborative learning. The first exacerbates the need for a wider access to information and the latter emphasises a demand for more collaborative spaces than individual study spaces in academic libraries. Irrespective of these changes, the need for “quiet study spaces for serious solitary learning” prevails (Stewart, 2009, p. 17).

In summary, it can be concluded that the changes taking place in library service provisions to a large extent revolve around the *googling* phenomenon, as users increasingly interact with the Google search engine and its associated platforms to meet academic information needs. The changes, such as library online catalogues replicating the Google search interface through discovery tools, the anytime access to

information, e-preferred collections development, and the library as a technological hub with more networked devices are expensive ventures. Thereby, the following section situates the *googling* phenomenon in the information divide discourse.

## **2.4 Information seeking in the context of the information divide**

Information divide and digital divide are concepts that address the dichotomy of access to information sources by different groups within a country or also across countries (Haider & Bawden, 2007). According to Wedgeworth (2004), the term *digital divide* refers to the gap between individuals, households, businesses, and geographic areas regarding their opportunities to access ICTs, and to their use of the internet for a wide variety of activities. The concept of digital divide can be traced back to the information society discourse starting from the 1970s that looks at the *information divide* (Yu *et al.*, 2016, p. 615).

Initial research into this concept of the information divide attempted to address services for the disadvantaged sections of a given society, and they were identified as *information poor* (Yu *et al.*, 2016 citing: LeDonne, 1977; Trezze, 1978; and, Soedjatmoko, 1979). On the contrary, Kagan (2000) used *information rich/poor* to address the difference in diverse countries, concluding that poorer countries lacked the ability to provide acceptable levels of access to information for their citizenry and thereby increasing the knowledge gap between countries. Yu *et al.*'s (2016) seminal research in the discourse of information rich and poor, highlight that even though these concepts have been evident in LIS research since the 1970s, the distinction of information rich and poor had lacked a systematic measurement. As they further highlight, "in the absence of such criteria, the research communities and policy makers often opt to identify the socio-economic rich...as information rich" (p. 615). While the complete measurement scale is out of scope for this research, a selection of variables from Yu *et al.*'s (2016) measurement scale could be useful in contextualising the research findings. These variables include information availability, information accessibility, and information resource base (p. 624).

ICTs and the online environment including search engines such as Google and also the increase in online institutional repositories are believed to reduce the gap of the digital divide (Nicholas & Clark, 2015; Obeidat & Genoni, 2010). Investigating the

extent and nature of the digital divide in Jordan, as a developing country, in comparison to Australia as a developed country, Obeidat and Genoni (2010) concluded that there was an indication of a digital divide between the countries. Nonetheless, the authors also reported that the availability of digital/online content had helped reduce the information divide between the countries. Their research measured the extent of document availability for the academic community in the two countries either through the affiliated library collection or those available freely on the internet. Obeidat and Genoni's (2010) investigation was based on a random selection of citations from international journals, Australian journals, and Arabic language journals published in Jordan, which were tested for their availability on accessible platforms. The authors concluded that the library from Australia provided more full-text content than the library from Jordan; nonetheless, it was also found that the open access movement through institutional repositories as well as open access publications and papers hosted on personal websites minimised the disparity of access to scholarly literature experienced in Jordan. Obeidat and Genoni (2010) further noted that this access apply mostly to international publications predominantly in the English language.

The information divide is not only restricted to that of resource capabilities but also to that of limitations on resources through language barriers. Neuhaus *et al.*'s (2006) suggestion of the English language bias of *googling* has not been systemically studied. Nonetheless, it was alluded to by Obeidat and Genoni (2010) that the shortage of scholarly material in other languages, especially from a developing country situation, could be attributed to the slow uptake of open access repositories in these countries.

LIS related research on Google has been predominantly carried out in places where library services are advanced, with powerful OPACs and/or federated searching across their subscribed databases, and linked to Google's "find it" resolvers. How this translates to the developing countries' scenario, where the library sector is largely under-developed, is not yet evident. This is because little research has been conducted on Google in a developing country context. Amara and Khalid's (2009) analysis of Web search behaviour at the University of Punjab revealed Google was the most popular search platform used by students in their academic information

seeking. This study, however, did not attempt to understand whether Web searching was a supplement or a replacement for library use, and did not investigate the perspectives of academics. The study in Jordan (by Obeidat & Genoni, 2010), referred to earlier, indicates that the Web overcomes earlier restrictions of access to academic information in developing countries. This raises questions about whether students and academics from developing countries are reliant on freely available 'scholarly' material and whether this satisfies their information needs, and if so what does this mean for the provision of academic library services?

In summary, while the Web facilitates universal access to information with Google enabling an effective search across online resources, the level of access differs across communities and countries.

## **2.5 Conclusion**

The role of Google versus the library as an information resource in the academic community discussed in this literature review is illustrated in Figure 2.5.

It can be concluded that when faced with an academic information need, users usually interact with their respective library catalogue or Google search interface. Recent research implies that users largely enter the search paradigm through Google/Google Scholar and users of the net generation are impatient information consumers (Judd & Kennedy, 2010). However, it is not conclusive as to how much effort users invest in seeking *scholarly* material when faced with papers behind pay-per article protocols.

Earlier comparative studies on Google from an LIS perspective tried to assess Google as a competitor, with research attempting to assert the superiority of the library content against Google results. The main problem with this approach lies in the comparison of two somewhat different variables. Google searches the Web as a whole and retrieves citations to content that might or might not have full-text available on the internet. Library catalogues, library scholarly databases, or library federated search interfaces are confined to a limited collection licensed through the library, and are deemed more scholarly.

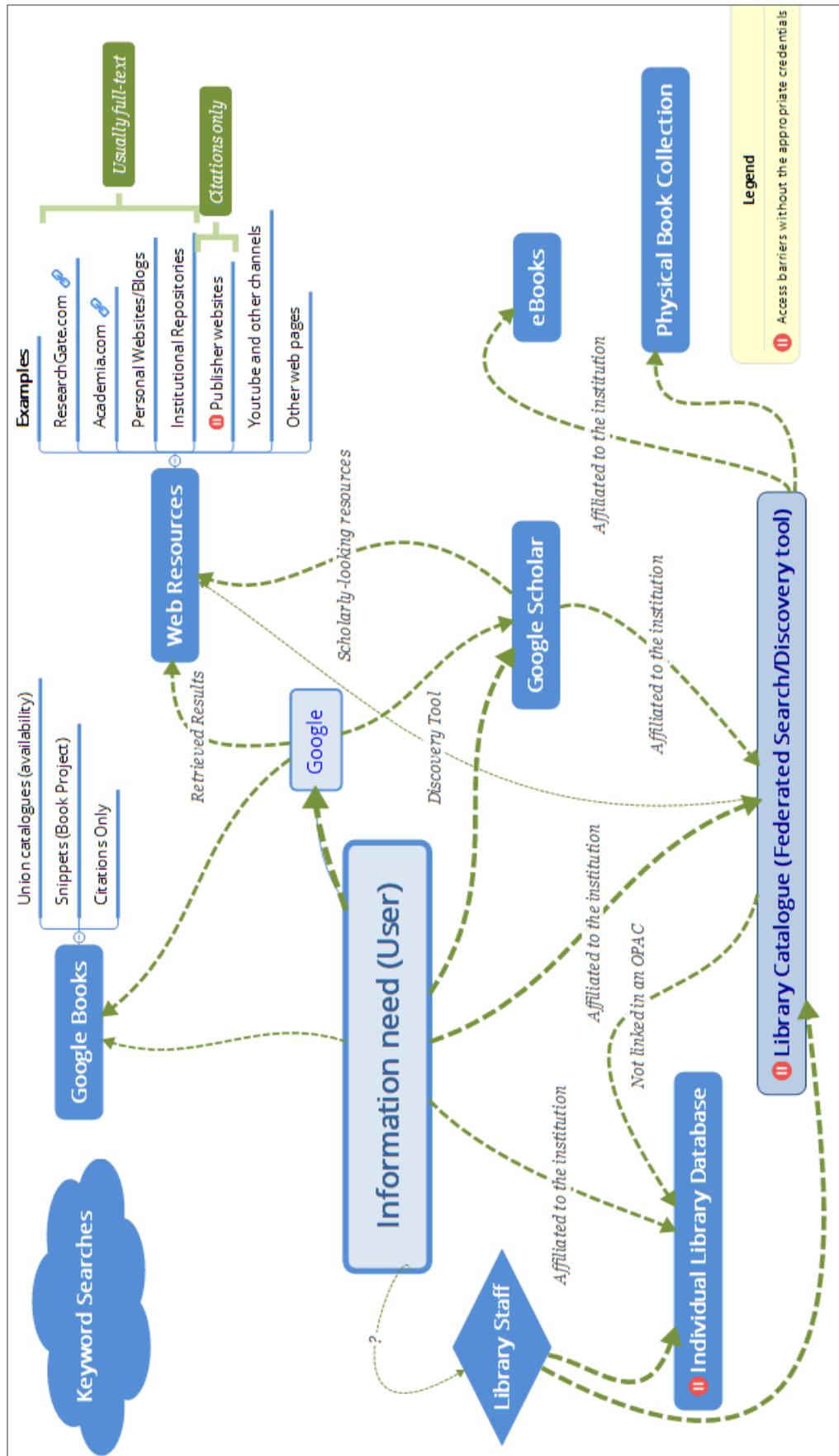


Figure 2.5. Conceptualisation of user interaction with information sources to meet information needs, based on the literature reviewed

The recent move to federated search platforms in place of traditional online catalogues has been shown to yield promising results in favour of libraries. This is because, even though users search on Google Scholar, the *find it* link resolvers direct users to their affiliated library for full-text in many cases. Nonetheless, these advances are novelties afforded by affluent libraries. Additionally, given the similarities of what both Google and the library as an institution aim to achieve, and based on existing research, as well as the anecdotal commonplace of *I can Google it* mindset, there is space to believe Google is the modern alternative to a library or to a large extent replaces the role of the reference librarian. Most comparable research is drawn from a developed country context that usually have well-resourced libraries.

Google offers advantages over the library given its technologically attuned strategies, as well as its commercial edge investing on its expansion, in comparison to libraries that generally provide a public service with limited funding. As a result, library collections vary from library to library. Therefore, an understanding of user perception from diverse economies as to whether Google is an alternative or a supplement to an academic library and vice versa could be useful for library sector reforms, especially in resource-poor countries.

The next chapter outlines the research design and justifications in this investigation on understanding the characteristics of *I can Google it* information seeking behaviour of the academic community from a developed and a developing country.

## Chapter 3: Research Design

This chapter outlines the methodological approach and methods utilised in this investigation of the *googling* phenomenon in academic information seeking. The chapter first reiterates the aims and objectives of the research, followed by the philosophical foundations underpinning the epistemology of the research paradigm. Next is an overview of the theoretical framework that guides the execution of the research, leading to the adopted methodology. This is followed by the justification of the chosen methods, the planned implementation, and acknowledgement of any limitations. Finally, the ethical considerations for the research are discussed, followed by a summary of the chapter.

### 3.1 Aims and Objectives

The over popularity of Google has been loosely referred to as the *Googling phenomenon* (Price, 2003; Serjeant, 2004) and the *Google phenomenon* (Miller & Pellen, 2005) with a variety of other terminology also evident in the literature.

As demonstrated in the review of literature in Chapter 2, the research evidence appears conclusive that Google has largely taken over the academic library's traditional role of information intermediary. Recent research imply that users enter the search paradigm through Google (Nicholas & Clark, 2015) and that users of the net generation are impatient information consumers (Judd & Kennedy, 2010).

Earlier comparative studies have concentrated on assessing the quality of content retrieved from Google platforms versus library sources and overwhelmingly conclude that the library sources are superior in quality (e.g. Asher *et al.*, 2013). The user-centric information seeking investigations generally conclude, users are aware that when they use the library online catalogue or database they are bound to get more reliable results, nonetheless they prefer Google for the ease of use (Georgas, 2013; Rowlands *et al.*, 2008). This portrays an anecdotal *I can Google it* attitude.

Therefore, the research questions for this study are:

1. How prevalent is the *I can Google it* attitude among the academic community, and how does this phenomenon influence the academic community's information seeking behaviour?

2. What is the impact of this *googling* phenomenon on the provision of academic library services, and are these similar across diverse economies?

The specific objectives of this study are to:

- Understand the characteristics of the *I can Google it* information seeking behaviour of academic staff and students;
- Investigate if and how this phenomenon impacts on the provision of academic library services; and,
- Examine the similarities of this phenomenon across economically diverse nations.

### **3.2 Research paradigm**

This research is embarked upon with the philosophical assumptions, that:

- The overall hype of *I can Google it* has underlying meanings that need further exploration to unravel the possibilities that libraries are indeed more important today than ever before;
- Libraries need to change their approach to be appreciated as relevant; and,
- Libraries in developing countries, owing to resource limitations, have a higher chance of being considered obsolete in the face of the *googling* phenomenon.

These assumptions can be subjective. The researcher has considerable years of work experience in the library and information services sector and therefore has a high regard for libraries as an important institution. Additionally, the experience of having worked in a developing country (Maldives) and the experience of studying and working in a developed country (Australia), could have accentuated these assumptions. It is believed that the worldview of the individual's belief system is bound to be ingrained in philosophical assumptions. As Creswell and Clark (2011, citing Thomas Kuhn, 1970) state, a worldview is a "set of generalizations, beliefs, and values of a community of specialists" (p. 39). These subjectivisms can be counteracted through careful selection of appropriate methodological approaches in the grounding of epistemological stances.

### 3.2.1 Interpretivist epistemology

Epistemology is a branch of philosophy that concerns itself with the search for a theory of knowledge. Knowledge, as defined in philosophical works, relates to the nature of knowledge and its justification, simply termed as “true justified belief” (Moser, 2005, p. 2). It is the underlying theory or principles behind how one approaches answering questions like *how do we know what we know?*

According to Sarantakos (2005) there are two major stances of epistemology: positivism and interpretivism. It follows that positivists interpret the social world in a scientific manner and interpretivists construe the social world comprehending behaviour from the viewpoint of social ‘actors’ of a phenomena. According to Collins’s (2010):

[Interpretivism is] associated with the philosophical position of idealism, and is used to group together diverse approaches, including social constructionism, phenomenology and hermeneutics; approaches that reject the objectivist view that meaning resides within the world independently of consciousness. (p. 38)

According to Williamson (2013), interpretivism is inductive while positivism is deductive; “deductive reasoning is linked with the hypothesis testing approach to research” while “inductive reasoning begins with particular instances and concludes with general statements or principles” (p. 6).

It should be noted that terminologies on epistemology are not consistent within single works and across multiple others. For example, Crotty (1998) branches epistemological stances into objectivism, constructionism, and subjectivism. Likewise, Creswell and Clark (2011) allude to epistemology as philosophical assumptions and also as worldviews—also used synonymously with paradigms. Willis (2007) uses the same terminology and proposes three research paradigms: postpositivism, critical theory, and interpretivism. Williamson (2013), citing Denzin and Lincoln (2005) as an example, states, some expert methodologists over the years have changed their perspective to categorise all research to be interpretive. Furthermore, Williamson (2013), elaborating the major philosophical research traditions, firstly, subdivides the positivist paradigm in to positivist and post-positivist paradigms, and secondly constructivist and phenomenological paradigms under the umbrella term interpretivism.

### 3.2.2 Constructivism versus pragmatism

Taking these array of paradigms into consideration, and considering the intended exploration of the *googling* phenomenon, a simple constructivist worldview is believed to be of value. According to Creswell and Clark (2011), constructivism enables an understanding of a phenomenon through multiple participant meanings through social and historical constructs, which can lead to theory generation. Creswell and Clark (2011) categorise philosophical paradigms into: postpositivist, social constructivist, advocacy and participatory, and pragmatic worldview. From these paradigms, this research might also be seen as pragmatic.

Creswell and Clark (2011) summarises pragmatism as driven through consequences of actions, problem-centred, pluralistic and real-world practice oriented. They explain that the pragmatist paradigm typically utilises a mixed methods research approach, while post-positivists often use a quantitative approach, with the constructionist and participatory paradigms more inclined to qualitative methodologies. Mackenzie and Knipe (2006) situate pragmatism as a fluid paradigm that is not bound to either the positivist or interpretivist philosophical foundation and as such they use interpretivist and constructivist synonymously, justifying that constructivist research usually utilises qualitative data collection frequently complemented by quantitative data (p. 196).

The contention of terminologies is extensively addressed in methodological literature (Lincoln & Guba, 2008). Likewise, Mackenzie and Knipe (2006) critique the confusing use of terminologies to refer to research paradigms that do not have any significant distinctions. Table 3.1 is a reproduction of Mackenzie and Knipe's adapted summation of methodological literature on the language commonly associated with the major research paradigms.

Exploring these various research paradigms any further is beyond the scope of this research. It is suffice to state that this research is approached from an interpretivist epistemology explored through both qualitative and quantitative data. The aim is not a positivist observation or measurement of the phenomenon, but rather the aim is to construe an understanding of the phenomenon under investigation. For this reason, Sarantakos's (2005) explanation about interpreting the social world by understanding

human experience through the viewpoint of social ‘actors’ is of essence here, and will be explored further in section 3.4.

*Table 3.1. Language commonly associated with research paradigms (source: Mackenzie & Knipe, 2006, p. 198)*

<b>Positivist/ Postpositivist</b>	<b>Interpretivist/ Constructivist</b>	<b>Transformative</b>	<b>Pragmatic</b>
Experimental	Naturalistic	Critical theory	Consequences of actions
Quasi-experimental	Phenomenological	Neo-Marxist	Problem-centred
Correlation	Hermeneutic	Feminist	Pluralistic
Reductionism	Interpretivist	Critical Race Theory	Real-world practice oriented
Theory verification	Ethnographic	Freirean	Mixed models
Causal comparative	Multiple participant meanings	Participatory	
Determination	Social and historical construction	Emancipatory	
Normative	Theory generation	Advocacy	
	Symbolic interaction	Grand Narrative	
		Empowerment issue oriented	
		Change oriented	
		Interventionist	
		Queer theory	
		Race specific	
		Political	

### **3.3 Theoretical framework**

The conceptualisation of the research is based on established theoretical frameworks so as to approach the research methodologically with a sound epistemology.

#### **3.3.1 Information Behaviour as theory**

As Bates (2005) states, a theory is “a system of assumptions, accepted principles, and rules of procedure devised to analyse, predict, or otherwise explain the nature or behaviour of a specified set of phenomena” (pp. 1-2). *Googling* as a means of seeking information can be situated in theories of information behaviour. As Bates (2010) outlines:

Information behaviour is the currently preferred term used to describe the many ways in which human beings interact with information, in particular, the ways in which people seek and utilize information. Information behaviour is also the term of art used in library and information science to refer to a sub-discipline that engages in a wide

range of types of research conducted in order to understand the human relationship to information. (p. 2381)

Wilson (2000) defines information behaviour as “the totality of human behaviour in relation to sources and channels of information, including both active and passive information-seeking, and information use” (p. 49). Pettigrew *et al.* (2001) define information behaviour as “how people need, seek, give, and use information in different contexts” (p. 44).

Information behaviour is an area of study that has been scrutinised for some years from a range of angles and disciplines. Thereby, a number of different theories and definitions as well as categorisations can be seen in the literature. Fisher, Erdelez, and McKechnie’s (2005) book on “Theories of Information Behaviour” includes more than 70 conceptual frameworks. Most of the information behaviour research (e.g. De Groot *et al.*, 2014; Du & Evans, 2011; Griffiths & Brophy, 2005; Hsin *et al.*, 2016; Joseph, 2016) reverts to one of these conceptual theories, either as a theoretical framework and/or to propose new insights into modifying an *information seeking* or *information search* framework.

However, there was no exact theory or model that matched this thesis’s research questions, and therefore an interpretive/hermeneutic phenomenological approach was seen as useful. According to Lopez and Willis (2004):

Hermeneutic phenomenology differs from the descriptive approach, in that an interpretive approach does not negate the use of a theoretical orientation or conceptual framework as a component of inquiry. In a hermeneutic study, theory is not used in a formal way, that is, to generate hypotheses to be tested. Instead, a theoretical approach can be used to focus the inquiry where research is needed and is used to make decisions about sample, subjects, and research questions to be addressed. (p. 730)

Phenomenology as a methodological approach is addressed later in this chapter, after the following synopsis of theoretical frameworks that were considered for this research.

### **3.3.2 Relevant theoretical models**

Wilson’s (1981, cited in Knight & Spink, 2008) information behaviour theoretical model focuses on “information need – which was said to be framed by the users”:

environment; role; and physiological, affective and cognitive needs” (p. 211). According to Knight and Spink (2008), the emphasis of this discourse was more on how users approached information seeking rather than how users interacted with the search systems. Similarly, Ellis’s (1989) model of information seeking behaviour focused on identifying patterns in individuals’ information search activity. The six characteristics of Ellis’s model includes, starting, chaining, browsing, differentiating, monitoring, and extracting (Ellis, 2005). Another landmark study within the information behaviour discourse was Kuhlthau’s information search process model (Pettigrew *et al.*, 2001). The focus of Kuhlthau’s approach was on how users interacted with search systems. This model—introduced in 1983 and verified and refined continuing onto 2001—presented three realms of activity: thoughts, feelings, and actions; and are described in six stages: initiation, selection, exploration, formulation, collection, and presentation (Kuhlthau, 2005, p. 231).

These concepts of information need, information seeking, and information searching have been concisely addressed by Wilson (1999) in an attempt at ‘nesting’ models that depict information behaviour in its various forms. The major models and/or theories cited by Wilson (1999, pp. 251-262) include:

- Dervin’s (1983) Sense-Making Theory;
- Ellis’s (1989) elements of information seeking (also Ellis, Cox, & Hall, 1993);
- Kuhlthau’s (1991; 1994) information search process;
- Wilson’s (1996) model of Information Behaviour;
- Ingwersen’s (1996) model of the IR (Information Retrieval) process;
- Saracavic’s (1996) model of the IR process; and,
- Spink’s (1997) model of the IR interaction process.

Wilson (1999) proposed that these models are not conflicting, but are complementary. Accordingly, Wilson (1999) presented “a nested model of the information seeking and information searching research area” (p. 263, shown in Figure 3.1). This model proposes *information behaviour* as the overarching concept of *information seeking*, with *information search* presented as a further narrowing of information seeking.

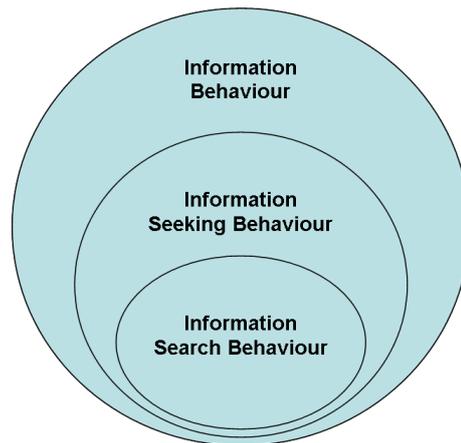


Figure 3.1. Nested model of the information seeking and information searching research areas (source: Wilson, 1999, p. 263)

Knight and Spink (2008) carried out a similar exercise and summarised that:

The historical context of the major IB [information behaviour] model developments is closely aligned with two on-line technology revolutions. The first involved the creation of early online IR systems; used by “information professionals” who usually searched on behalf of the person who would ultimately use the found information. The second major development has been the advent of Web search engines, which have made available to any Web-user a practically immeasurable amount of information, with its own unique set of information characteristics. (p. 210)

Knight and Spink (2008) then presented a nesting of models that incorporates the plethora of information searching, information seeking, and information retrieval models into a macro model of human information retrieval behaviour on the Web as shown in Figure 3.2.

According to the authors, this nested model combines earlier major models including Wilson’s (1981) *model of information behaviour*, Ellis’s (1989) *behavioural model for information system design*, Kuhlthau’s (1991) *information-seeking model*, Johnson and Meischke’s (1993) *model of information-seeking*, Bates’s (1989) *berry-picking model*, Marchionini’s (1995) *information seeking in electronic environments model*, Ingwersen’s (1996; 1992) *cognitive model of IR interaction*, Saracevic’s (1996) *stratified model of IR interaction*, Spink’s (1997) *search process model*, and Choo *et al.*’s (2000) *behavioural model for the Web* (Knight and Spink, 2008, pp. 211-225).

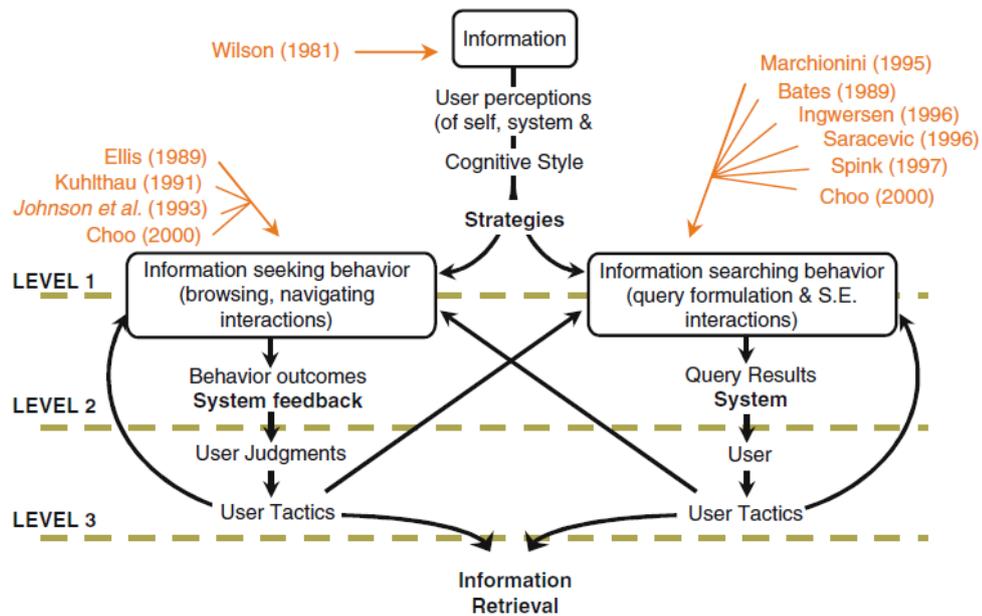


Figure 3.2. Macro model of human information retrieval behaviour on the Web (source: Knight and Spink, 2008, p. 230)

Knight and Spink’s model (Figure 3.2) is of value for its summative approach of all the major information behaviour models. However, the purpose of this research is to understand the perceptions of information users with regard to the Google search engine versus the academic library as an information source; it is not an attempt to necessarily understand the steps the users take in the information seeking process. The strategies, ‘browsing...’ as *seeking* and ‘query formulation...’ as *searching*, listed at Level 1 of the model needs further deliberation.

The distinction in *information seeking* versus *information searching* behaviour is summarised by Joseph (2016, p. 1085) as the “user-related” versus the “system-related” information behaviour. Accordingly, information search behaviour is a significantly specialised aspect of information seeking, and the investigation in the search behaviour is useful for system enhancements. For instance, Joseph, Debowski, & Goldschmidt (2013b) investigated the search behaviour of electronic document records management system (EDRMS) users, and identified how best to offer support and education for EDRMS users.

Further to this, information search behaviour research has also been used to conceptualise how users interact with internet search engines. Likewise, Hölscher and Strube’s (2000) investigation into the search behaviour of experienced internet

users and ‘newbies’ addressed two main information seeking behaviours: browsing and searching. Their conceptualisation of the findings is reproduced in Figure 3.3.

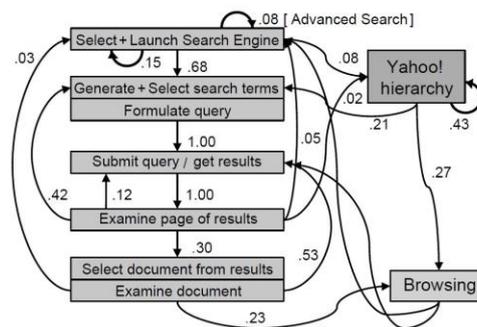
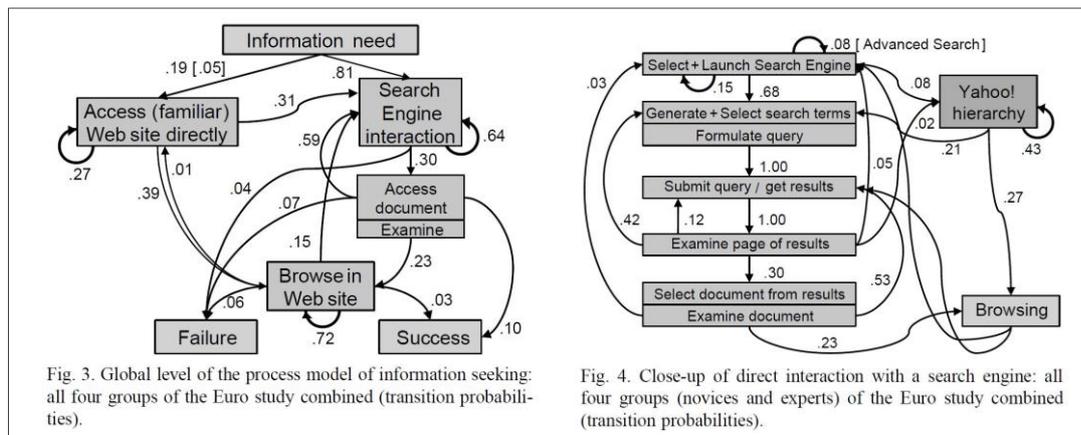


Figure 3.3. Conceptualisation of Web search behaviour  
(source: Hölscher and Strube, 2000, p. 342)

Hölscher and Strube’s (2000) investigation was centred on the premise that the use of search engines was a common online information seeking strategy. Browsing was attributed to the act of navigating the Web and the follow-up activities after a search was executed, specifically the time spent on browsing through the subject categories provided by the search engines of the time. Searching was attributed to the use of specific search engines. These two strategies perhaps cannot be separated as browsing occurs in tandem with searching.

Therefore, Wilson’s (1999) contextualisation of information search behaviour as a subset of information seeking behaviour (Figure 3.1) is believed to be more relevant as the overarching concept. At the same time, Knight and Spink’s (2008) model provides an overall understanding of the various information behaviour theoretical models (Figure 3.2). It is not the purpose of this research to propose a new model of information behaviour. In contrast, this research uses a hermeneutic phenomenological approach, guided by a combination of Knight and Spink’s (2008) and Wilson’s (1999) models as the underpinning theoretical framework that dictates the direction of the study.

It is acknowledged that further research on the detailed conceptualisation of individual-level information behaviour exists (e.g. Sei-Ching, 2011). Nonetheless, given the explorative nature of this thesis, such detail was considered out of scope.

### 3.4 Methodological approach

The purpose of undertaking this research is to understand the context of information seeking in the current online environment. The intention here is not to prove or disprove a concept. Rather, the purpose is to explore, interpret, and describe the *googling* phenomenon in academic information seeking. It follows that the academic community are the ‘actors’ (Sarantakos, 2005) in this context, and they can help understand their perceptions when deciding on what information source to use, to what extent, and the context of use.

#### 3.4.1 Phenomenology

The central premise for this research therefore justifies a qualitative/interpretive approach due to the exploratory and phenomenological nature of the questions under review. The *I can Google it* mindset is something that cannot be quantified easily as it is based on views, opinions, and the individual interpretation of knowledge users have accumulated and also framed with the information sources at their disposal. Hence, for this study, phenomenology forms the basis of the qualitative research component. As Lyotard (1991) explains:

The term [phenomenology] signifies a study of ‘phenomena’, that is to say, of *that* which appears to consciousness, that which is ‘given’. It seeks to explore this given – ‘the thing itself’ which one perceives, of which one thinks and speaks – without constructing hypotheses concerning either the relationship which binds this phenomena to the being *of which* it is phenomena, or the relationship which unites it with the *I for which* it is phenomena. (p. 33)

As Willis (2007) explains, “phenomenology is the study of people’s perception of the world (as opposed to trying to learn what ‘really is’ in the world)” (p. 107). The two main phenomenological approaches are descriptive and interpretive.

In this research, phenomenology is not proposed in the descriptive Husserlian sense (Giorgi, 1997). As Lopez and Willis (2004) state, “an important component of Husserlian phenomenology is the belief that it is essential for the researcher to shed all prior personal knowledge to grasp the essential lived experiences of those being studied” (p. 727). A contrasting approach, the hermeneutic or interpretive phenomenological approach, is utilised for this study. This approach was introduced

by Heidegger, a student of Husserl, who challenged some of Husserl's assumptions about how phenomenology could guide meaningful inquiry (Lopez & Willis, 2004). An important premise of interpretive phenomenology is that the professional knowledge and experience of the researcher adds value to the research undertaking (Lopez & Willis, 2004). According to Lopez and Willis:

The hermeneutic phenomenologist, rather than seeking purely descriptive categories of the real, perceived world in the narratives of the participants, will focus on describing the meanings of the individuals' being-in-the world and how these meanings influence the choices they make. (p. 729)

As already demonstrated in the literature review, *googling* is referred to as a phenomenon while no research has defined the phenomena. Phenomenology as a research method is not necessarily the only way to examine this. However, it is believed that this approach is the best as the purpose of this study is to examine and describe the essence of user experience in seeking information in the *googling* environment. Hermeneutic phenomenology is also more relevant as it is believed that in studies like this, the researcher's own perceptions and experiences play a salient, even if unintentional, role.

### **3.4.2 Case Study**

While the *googling* phenomenon is alluded to as a world-wide phenomenon (e.g. Miller & Pellen, 2005), the worldview of the researcher formed through study and work experience in two diverse economies carries an underlying assumption about salient differences in the characteristics of the phenomenon across different countries. Consequently, it was decided to conduct the research using comparative cases from these two countries: Australia as a developed country example and the Maldives as a developing country example.

According to Yin (2014) the case study is "an empirical inquiry that investigates a contemporary phenomenon (the "case") in-depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (p. 16). As Willis (2007) outlines, the case study is a methodology that receives criticism for the mix of methods that it might employ. Furthermore, the interpretation of what a case study entails, also differs from scholar to scholar. For

example, Creswell (2013, citing Stake, 2005) states that “case study is not a methodology but a choice of what is to be studied” (p. 97). According to Kumar (2011), the case study is a useful approach when the focus of the investigation is to explore and understand rather than to confirm and quantify. It can be argued that this concept of exploring is similar to what an interpretive phenomenological research approach entails, as was outlined in section 3.4.1.

Creswell (2013) proposes five distinct qualitative research approaches. These include phenomenology and case study as two distinctive approaches, with the other three being narrative research, grounded theory, and ethnography. Accordingly, the reference to cases in the proceeding sections, is not to the classic case study as a comprehensive research methodology (Creswell, 2013; Yin, 2014). On the contrary, a case study approach is employed to determine what is to be studied in a bounded system (Stake, 2005). In this instance, it is the determinant of institutions (cases) to be studied in order to develop an understanding of academic information seeking from comparative diverse academic institutions.

### **3.4.3 Case derivations (sampling)**

As Yin (2014) outlines, using comparative multiple cases is a useful approach if the purpose is to reach cross-case conclusions. Accordingly, the cases for this research involve three comparable tertiary institutions selected from two countries.

The selection of these two countries were purposive and based on convenience owing to the familiarity of both countries to the researcher; Maldives as the home-country and also the target of this inquiry and Australia as the host-country for the research. Bryman (2008) states that “a convenience sample is one that is simply available to the researcher by virtue of its accessibility” (p. 183).

Furthermore, the two countries or their economies are considered to be appropriate representatives of a developing country and a developed country. The United Nations Development Programme (UNDP) on its Human Development Index of 1 to 188, ranks Maldives 105 (categorised as medium human development), while Australia is ranked 2 (categorised as very high human development) (UNDP, 2016). The following offers a brief justification of the three sample cases from both countries.

Two institutions from the Maldives, the Maldives National University (MNU) and Villa College (VC), were selected as representative tertiary institutions from a developing country perspective. The MNU is the first of the two universities in the country and is state owned. Additionally, compared to the second university, Islamic University of Maldives, MNU is comparatively multidisciplinary with a larger student and staff population. Likewise, from the private tertiary institutions in the country, VC was selected as it is the most prominent private institution. There are no private universities. It was decided to select two institutions from the Maldives because of the small scale of these institutions. Further elaborations on the Maldives education sector is included in Chapter 4 (section 4.1).

Curtin University in Western Australia was selected as a representative university in a developed country for two reasons. Firstly, for convenience as the researcher had previously studied and worked at Curtin and is currently affiliated to the University for this Research, and therefore familiar with the systems in place. Secondly, because (as outlined in section 2.4) Curtin had earlier been successfully used as a “mid-ranking university in a developed country” context, in comparison to a university in Jordan as a developing country example, investigating the digital divide (Obeidat & Genoni, 2010, p. 385).

Details about these institutions will be covered in Chapter 4, Background to the Cases.

### **3.5 Research methods and data collection**

Information seeking behaviour has predominantly been investigated through user interactive research methods including interviews, survey questionnaires, and/or through analysis of individual search logs. As Ellis (1989) highlighted, “the traditional focus of information retrieval research [was] on laboratory testing of indexing systems” (p. 237). Clark, Nicholas, and Jamali (2014) report that analytics based on search logs on host servers generated by the digital search platforms is losing its effective usability in terms of individual information seeking. This is attributed to the increase in open access platforms leading to a loss of “border controls” making the “web-user anonymous” (p. 186). An analysis of search logs in a controlled laboratory environment, supplemented by interviewing or surveys of the research participants are also reported (e.g. Asher *et al.*, 2013). The use of

interviewing and/or a quantitative questionnaire to gather data on user information seeking behaviour can also be seen in the research studies of Fast and Campbell (2004), Hsin *et al.* (2016), Jamali and Asadi (2010), and Malik and Mahmood (2009).

As the purpose of this research was to gather an understanding of the characteristics of the prevalence of *googling* in academic information seeking, it was decided to use in-depth interviewing followed by an online survey to complement the data from the interviews. As outlined earlier (section 3.2.1) in reference to Mackenzie and Knipe (2006), the interpretive epistemology and the methodological approach of phenomenology using cases for inquiry, allowed for this mixed methods approach.

While the overall aim was to understand the *googling* phenomenon within the academic environment, for the practical reasons of data collection and situating the research into a meaningful context, the scope of the academic community here is limited to academics and students situated in a university setting. Knight and Spink (2008, p. 231) justifies the use of post-graduate level students and academics in their research study for uniformity of the following variables across the two groups: cognitive style; computational experience; academic discipline; academic role; and, the type of information sought.

Somewhat contradictory to Knight and Spink (2008), this research proposed the use of undergraduate students in addition to postgraduates and academics in order to enable generalisation across the Maldives' case study. This is because there was a limited number of postgraduate students, and related to this, to ensure the inclusivity of the larger cohort of the Maldives' tertiary education sector who consisted mainly of undergraduates. Nonetheless, to reduce the range of variables given the level of information literacy and awareness across different groups of students, only those in their final-year of undergraduate study were considered for recruitment. Figure 3.4 summarises the data collection phases and methods. A mapping of the research questions and objectives to the methods is included in Appendix 3A.

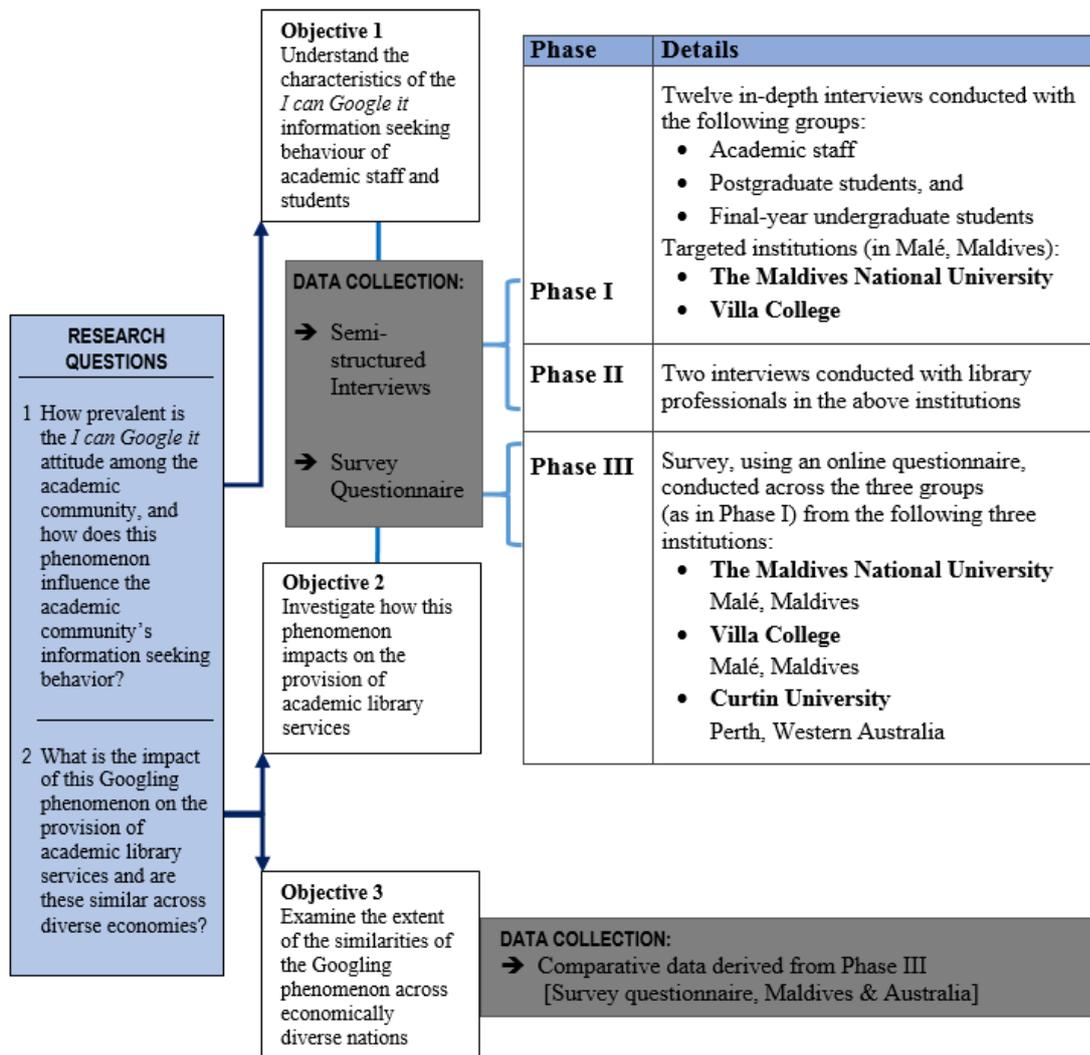


Figure 3.4. Summary of data collection phases and methods

The following sections elaborate on the adopted data collection methods, the in-depth interviews and the survey questionnaire. With both of these methods, an overview of the method, the instrument for data collection, planned implementation, limitations of the approach, as well as how the collected data was analysed are detailed.

### 3.5.1 Interviews

The initial research component (Phase I and II) used semi-structured in-depth interviewing methods.

It was decided to conduct interviews only with the Maldives' academic community and not the Australian community. This was because there was sufficient literature on comparable developed country scenarios in the use of Google.

Similarly, there was very limited literature from the Maldives that addressed information needs, usage, and research habits. Nor was there adequate documentation that detailed information service provision from the Maldives' academic institutions. Therefore, to contextualise and comprehend how the *googling* phenomenon impacts on library service provision in the Maldives, it was decided to also include Maldives LIS professionals in the interview sample.

The main purpose of this qualitative data collection was to gather an understanding of the participants' information seeking experiences when faced with an academic task, specifically the use of Google versus library resources. As this is a behavioural trait, individual interviewing was determined to be a better alternative. According to Sarantakos (2005), interviews are a subset of the survey data method, and help to understand the world from the participants' experiences. Interviews are usually conducted on a one-to-one basis and tend to yield richer information as it allows the flexibility of immediate causative probing for clarity and context (Kumar, 2011; Rubin & Rubin, 2005; Sarantakos, 2005).

The disadvantages of interviews include the time required for data collection and the possibility of researcher bias or subjectivity in interviewing as well as subjectivity and the complexity of data analysis (Gorman & Clayton, 2005). The interviewer is a central part of the data collection process and therefore has the potential of introducing bias in questioning and probing. As Sarantakos (2005) states, "in qualitative research [interviewers] are expected to avoid controlling the interview situation, to be close to the subject and to be engaged" (p. 272). Therefore, for successful interview outcomes, the interviewer needs to be skilled and experienced. The other drawback is that in some situations, interviews can be seen as invasive given the lack of anonymity between the interviewer and the participant (Kumar, 2011).

An alternative method of eliciting similar rich information from participants is the focus group. According to Bryman (2008) while a focus group can depict normal social interaction settings, it can also be limiting as participants are asked to discuss in a group an issue not necessarily of their own choosing. A focus group can save time in generating rich data in comparison to individual interviews, as similar information from multiple participants are gathered in one sitting; nonetheless, the

potential of dominant participants in the group changing the course of the conversation requires consideration (Bryman, 2008; Kumar, 2011). Other limitations of focus groups are the need for multiple participants to be available at a time suitable for everyone in the focus group and also the lack of privacy (Kumar, 2011).

The strengths and drawbacks of these methods were considered before the selection of interviewing as the preferred data collection method, and in doing so, measures were put in place to minimise the limitations. The researcher had prior experience in conducting interviews and the proposed interview population was known entities to the researcher by virtue of extensive work experience.

### **3.5.1.1. Recruitment of interview participants**

Interview participants were selected using purposive sampling. According to Beck and Manual (2008), the purposive representative sampling approach has merits in social research if the aim is to obtain a general understanding of a variety of perspectives from different actors within the same cohort. Furthermore, Flick (2007) states:

Sampling in qualitative research...is a way of managing diversity so that the variation and variety in the phenomenon under study can be captured in the empirical material as far as possible. (p. 27)

According to Creswell (2013, p. 81, citing Polkinghorne, 1989), for a phenomenological inquiry, interviewing 5 to 25 individuals who have all experienced the phenomenon will be sufficient. A similar sample size can also be justified based on existing research. For example: Hölscher and Strube (2000) interviewed 12 internet experts in their research on Web search behaviour; Lazonder, Biemans, and Wopereis (2000) selected 8 'expert' and 17 'novice' participants; Fast and Campbell (2004) conducted a qualitative study comparing OPACs and Web search involving 8 first-year undergraduate and 8 graduate students; and, Dalal *et al.* (2015) recruited 11 students for their experimental study on the use of library discovery tools versus other sources.

Taking into consideration the scope of the research and the exploratory purpose of conducting these interviews to be complemented by (Phase III, detailed in section 3.5.2) a quantitative survey of a large sample from the same cohort, it was decided to

recruit at least 10 participants. The selection of participants from the target institutions, MNU and VC, were stratified into the following groups: academics, postgraduate students, undergraduate students, and LIS professionals.

Consequently, 15 participants were recruited as follows. The number of interviewed academics, postgraduate and undergraduate students was guided by data saturation.

- Five academics (3xMNU, 2xVC);
- Four postgraduate students (2xMNU, 2xVC);
- Four undergraduate students (2xMNU, 2xVC); and,
- Two LIS professionals (1xMNU, 1xVC).

Interview participants within the representative groups, were selected using a snowball sampling approach. According to Bryman (2008), a snowball sample is a form of convenience sample, and therein lays its limitation as it reduces the probability of representativeness and relies on availability. This sampling approach entails the researcher making initial contact with a person or small group relevant to the research topic and through them establishing contact with others in the target research population. The limitation in this approach can be counteracted by careful guidelines on participant attributes during the selection process (Bryman, 2008).

Accordingly, a decision was made to interview the most senior LIS professional in each library. To recruit academics and students, the researcher contacted a key person in each institution. They were given instructions on the three main categories of the academic community being targeted: academic staff, postgraduates, and final-year undergraduates. In identifying academics, the need to identify at least one academic with publication experience was emphasised and achieved.

### **3.5.1.2. Interview instrument: semi-structured interview guide**

The interview as a data collection method offers flexibility for the researcher to shape the interview as a structured or unstructured conversation. For this research, it was decided to use a semi-structured interview approach. As Bryman (2008) states:

If the researcher is beginning the investigation with a fairly clear focus, rather than a very general notion of wanting to do research on a topic, it is likely that the interviews will be semi-structured ones, so that more specific issues can be addressed. (p. 439)

A notable advantage of a semi-structured over an unstructured interview is the ability to have a structure that, if required, can be useful in comparing findings across all interview data (Bryman, 2008). At the same time, a semi-structured interview allows a similar flexibility to that of an unstructured interview for the interviewer to probe emerging themes further within the structured topics (Sarantakos, 2005). The data collection tool in this approach is often referred to as an interview guide (Bryman, 2008). Through the literature review the researcher developed a clear focus on general assumptions around the *googling* phenomenon, and had identified specific areas for exploration. The interview guide was developed based mainly on themes derived from the research studies of Fast and Campbell (2004), Griffiths and Brophy (2005), Jamali and Asadi (2010), and De Groote *et al.* (2014). This literature is summarised in Table 3.2.

*Table 3.2. Summary of main literature used in the development of the data collection tools*

<b>Author(s) &amp; brief title</b>	<b>Useful questions/themes from the source</b>
<b>Fast and Campbell (2004)</b> University student perceptions of searching OPACs and the web	<ul style="list-style-type: none"> <li>◇ Think back to the beginning, before you started searching. Where would you have normally started a search like this?</li> <li>◇ Would you say you're experienced at searching library catalogues?</li> <li>◇ How would you compare searching the library catalogue and the Web?</li> <li>◇ Where do you think you're more likely to actually find what you are looking for, the library catalogue or the Web? Why do you think you feel that way?</li> <li>◇ Would you say you are experienced at searching the Web?</li> </ul>
<b>Griffiths and Brophy (2005)</b> Student searching behaviour and the web: use of academic resources and Google	<ul style="list-style-type: none"> <li>◇ Most frequent starting point for academic information seeking</li> <li>◇ Choice of search engine</li> <li>◇ Perception on academic resources</li> <li>◇ How journal articles are sought</li> <li>◇ Levels of use of the library OPAC</li> <li>◇ Perceptions on ease of use</li> <li>◇ Perceptions of quality (Table 1, p. 550)</li> </ul>
<b>Jamali and Asadi (2010)</b> The role of Google in scientists' (academic researchers) information-seeking behaviour	<ul style="list-style-type: none"> <li>◇ Methods used for finding articles</li> <li>◇ Practice of depositing papers in e-print archives, publishing</li> <li>◇ Reasons for preference for Google</li> <li>◇ Criticisms of Google</li> </ul>
<b>De Groote, Shultz, and Bleicic (2014)</b> Use of online resources by health sciences faculty (academics)	<ul style="list-style-type: none"> <li>◇ How users accessed electronic resources</li> <li>◇ Whether various user groups differed in their use of resources</li> <li>◇ What users' primary information sources were</li> <li>◇ Whether users were aware of the multitude of library online resources available</li> <li>◇ How they read journal articles (print/online)</li> </ul>

Specific questions were considered addressing how the participants would usually start a search, how often they would use Google versus the library and any other

search engine. Further questions addressed their perceptions about the Google search experience, information literacy, the library services at their institution, and their perceptions on how the library needed to change.

#### **3.5.1.3. *Piloting and refining***

Two slightly different semi-structured interview guides were developed: one for the academics and students, and a second for the LIS professionals. As these were not based on a prior data collection tool, both interview guides were piloted. As Bryman (2008) states, pertinent reasons for piloting are to identify improvements for the flow of the questions as well as to gain experience of using the interview guide. Interviews are time consuming and therefore it is ethical to ensure participants are not inconvenienced with an ineffective interview session.

The academic staff and students' interview guide was first piloted on a former academic staff of MNU who was a colleague of the researcher, and who also at the time was studying for a doctoral qualification at a Perth University. This allowed the convenience of conducting a face-to-face interview in a timed mock-up session with a representative of the target population, and also enabled extensive time to discuss what worked and did not work. Before the mock-up interview session, the participant was made aware that the guide was intended to be used to interview academics as well as university students, thereby preparing the participant for rich feedback from both perspectives. The interview was recorded to allow for thorough analysis, and also to test the recording quality of the identified equipment.

The resulting edited version of the interview guide was later piloted with a former undergraduate student of MNU acquainted with the researcher, therefore having the familiarity and trust that would ensure a friendly yet professional atmosphere to conduct an hour long interview followed by feedback on the experience. The interview guide for the LIS professional was piloted with a former colleague who is a senior library staff at MNU. These two pilot interviews were conducted in the Maldives during the field visit before the formal data collection in December 2014.

These two pilot phases did not result in any major structural changes to the interview guide, but enhanced the researcher's confidence with these tools. The semi-structured interview guides are presented in Appendix 3B.

#### **3.5.1.4. Implementation**

The interviews constituting Phase I and II of the data collection (shown earlier in Figure 3.4), were planned to occur during the researcher's field visit to the Maldives in December 2014 to January 2015, and was executed accordingly. The researcher conducted all the interviews.

The participants were identified through a central contact person in each of the institutions. These contacts identified possible participants' contact details, based on their acceptance to devote about 45 minutes of their time. These were then shared with the researcher who contacted the potential participants with information about the research. The interview dates and times were set as per convenience for the participants involved and were each held at a mutually agreed location that offered privacy, most of them in the respective institutional premises of the participants. One interview was held in the researcher's residence as that was found to be more convenient for the participant owing to the vicinity of the participant's residence and the agreed time being outside official work/study hours.

All identified prospective participants, except one academic with the most known publication credit, accepted the invitation to participate in the research. A replacement academic was identified through the contact person.

The interviews were conducted mainly in the local language, Dhivehi imbued with English words, as is the norm especially within the academic setting in the Maldives. Additionally, given the technicality of the information behaviour discourse and newness to the local context, it was found impossible to keep the questions strictly to the local language.

A request to consent for the audio-recording was communicated early. Recording was considered essential to ensure accurate data analysis as well as to remove the unnecessary distraction of an over-reliance on taking notes, and to ensure a natural feel to the conversation (Rubin & Rubin, 2005). The recording was conducted using a Samsung Galaxy mobile phone, which was tested when piloting the interview guide. One advantage of using this device was the elimination of the potential obtrusive presence of specialised recording devices (Rubin & Rubin, 2005). Additionally, as mobile phones are everyday use devices compared to digital

recorders, the familiarity of the device increases the interviewer confidence as well as dependability on the device.

#### **3.5.1.5. *Validity and reliability***

Given that the same interviewer (the researcher) conducted the interviews, using the semi-structured interview-guide that had been piloted, this eliminated the following often cited limitations of research interviews. Namely, these disadvantages include: compromise on quality with multiple interviewers (Kumar, 2011); limitations on comparability of data across the interview participants of an unstructured interview; and, the possibility of deviating from the objectives of the research, especially if the interviewer was a novice (Bryman, 2008).

Nonetheless, some aspects of the interview process are not in the control of the interviewer. As identified by Kumar (2011) other disadvantages of interviews are attributed to the quality of the interaction, researcher bias and time-intensiveness. Recruiting participants is often not easy owing to availability of time, and the quality of interaction can be influenced by the personality of both parties in the interview conversation. Researcher bias can be in the form of how questions are framed, but interview recording is a measure that can be used to keep this in check (Kumar, 2011).

#### **3.5.1.6. *Analysis***

The interviews were transcribed as a translation in the English language, using a transcribing tool called Listen&Write™. Additional time that would be required for a verbatim transcription in the original language was not justifiable given that the outcome of the interviews was to be written for an English speaking audience. Additionally, as the interviews were to be transcribed by the researcher, the translation bias was also eliminated and this process facilitated a simultaneous initial analysis. As implied by Gibbs (2007), transcription is not the most important aspect of analysis, and analysis can even be done directly from a recording.

Nonetheless, transcription was considered an important step in this research so as to capitalise on the rich analysis that can be carried out using a qualitative data analysis tool like NVivo™, also thereby reducing the subjectivity of coding. Coding is the process of identifying central themes from the conversations, and is the central

premise in qualitative data analysis (Byman, 2008). The transcribed texts were formatted for the question headings from the interview guide and imported to the NVivo™ software. This enabled auto-coding on the questions. Further manual coding was carried out for other themes. Further detail on coding and analysis will be presented in Chapter 5, along with the interview findings.

### **3.5.2 Survey**

The second data collection method selected was the use of a quantitative survey using an online questionnaire. Unlike the qualitative component of the research, this quantitative survey was implemented in the two countries chosen for the study, the Maldives and Australia, targeting the academics and students. The purpose of using a survey was to explore the *googling* phenomenon through the perceptions of those experiencing the phenomenon. The information sought was intended to be similar to that from the interviews described above.

A survey is considered an ideal data collection method when the information sought is reasonably specific and the researcher has an understanding of the range of possible responses (Bryman, 2008). Surveys are the most widely utilised quantitative data collection method, and there are a number of ways they can be used, including self-administered versus researcher administered questionnaires, online versus paper-based questionnaires (Bryman, 2008), and emailed versus posted questionnaires (de Vaus, 1995).

#### **3.5.2.1. *The survey instrument: online questionnaire***

For this research, a questionnaire administered through the online survey tool, Qualtrics™ was believed to have the best value. Participants prefer online questionnaires to paper versions for the ease of completion (Perkins, 2011). The advantages of using a tool such as Qualtrics™ is the combined strength of creating user-friendly intuitive questionnaires as well as the built-in seamless statistical reporting.

As Perkins (2011) summarised, successful survey outcomes have relevance to the credibility of results, and credibility is to a large extent linked to the response rate. Online surveys have the potential for higher response rates due to cost-effective administration, convenience of completion for users compared to paper-based

surveys, and the flexibility of follow-up with relatively unobtrusive reminders (Perkins, 2011). Additionally, the ability to integrate filter questions ensures the participant sees only applicable questions depending on earlier responses (Bryman, 2008) and therefore, facilitates “multiple surveys simultaneously” (Bertot, 2009, p. 119). Likewise, a number of skip questions were built in to the Qualtrics™ online questionnaire to cater for two streams of questioning: students versus academics. Additional skip questions were factored to reflect individual responses.

The questionnaire (Phase III of the data collection, see Figure 3.4 in section 3.5) was designed after the analysis of the interview data from Phases I and II. As outlined earlier (section 3.5.1), the interviews were conducted as a precursor to the survey questionnaire development, as there was no prior research from the Maldives’ context. The key literature identified earlier in Table 3.2 was also instrumental in the design of the questionnaire.

For easy comparison across all three cases, the questionnaire was designed in the English language. Based on the high literacy level and prevalence of the English language as the medium of instruction in the Maldives, it was anticipated that error of interpretation would be minimal if at all.

#### **3.5.2.2. *Validity and reliability of the survey instrument***

The questionnaire was pilot tested in two stages. The first included an academic staff and an undergraduate student from Curtin University. As the pilot student was an online student, this process yielded helpful insights into making the questionnaire more inclusive of the differences from online and on-campus student perspectives. The academic staff input was valuable for the question phrasing, timing, and flow of the questions.

After revising the questions accordingly, the questionnaire then was piloted by two academic staff and two former postgraduate students from MNU. The main purpose of the piloting was to ensure the questions made sense from the Maldives’ perspective. Participants were also asked to pay attention on the skip questions to see if the system driven ‘skip-logic’ was working appropriately for different groups.

No significant changes other than typographical errors and aesthetic improvements were identified from this second stage of piloting. The piloting was useful in

confirming the questionnaire could be completed within 32 minutes while still being mindful of continual reporting on areas for improvement. Based on the written feedback received, minor edits to question statements were made in order to ensure the questions were concise and user-friendly. One noteworthy change was to the text comment box for the last question that was displaying only a small space for the typed response and therefore making it a clumsy experience for the participant.

Once the questionnaire was refined, a third stage of piloting was carried out involving one second-year undergraduate student at Curtin and a former academic from VC. No need for improvements were identified. The questionnaire, with the backend question display logic, is presented in Appendix 3C.

The questionnaire included 17 questions/constructs with scaled variables. Cronbach's Alpha measures using SPSS tested for the internal consistency reliability of the scale. Nine of these constructs reported alpha value of above .70 indicating relatively high internal consistency (see Appendix 3D for detailed statistics. Note: a reliability coefficient of .70 or higher is considered "acceptable"). The remaining constructs resulted in an alpha value between -.449 (Q32) to .648 (Q38). While these numbers statistically indicate lack of internal consistency for these 8 questions, they were considered for further analysis given the exploratory nature of the research. It is also noted that participants are made up of three different categories (undergraduates, postgraduates, and academics) eventuating in possible significant differences across the groups, therefore resulting in acceptable inconsistency across responses from these three groups.

### **3.5.2.3. *Sampling***

A sample devoid of bias is essential to ensure the validity and reliability of findings, especially for generalisations across the population studied, and systematic random sampling can eliminate this bias (Kumar, 2011).

The target population for the survey were the three institutions MNU, VC, and Curtin selected on a purposive sampling strategy, as outlined earlier (section 3.4.3). The sample selection from each of these tertiary populations followed a random sampling approach. As de Vaus (1995) states, "it is impossible to separate the questions of

sampling and questionnaire design from the issue of questionnaire administration” (p. 106). With an online questionnaire, a systematic random sample is impossible as there is no control on who can access an online survey with an open link.

The two main ways of recruiting participants to complete an online questionnaire is to send individualised survey links to email addresses or to use a generic link using a website. The website strategy as summarised by Marci and Tessitore (2013) consists of “publishing the survey link on... Websites or forums...related to the research subject” (p. 39). The online survey tool and ethical considerations guiding the recruitment of Curtin University participants (detailed in sections 3.6 and 6.1.2.5) dictated the use of a generic link as opposed to individualised links shared through direct emails.

Jamali and Asadi (2010, citing Hemminger *et al.* 2007) reported that “academic web-based survey participation rates range from 3 per cent to 62 per cent for electronic surveys” (p. 286). The authors also reported being able to recruit 47.1% of their target population by emailing the online questionnaire to the target population. Consequently, because the online questionnaire for this research had to be posted online as a generic link, a sample size of 10-15% was targeted.

Table 3.3 summarises the target population and sample size.

*Table 3.3. The target population and intended sample size (numbers [n])*

		Staff [n]	Postgraduates [n]	Final-year undergraduates [n]	Total [n]
<b>MNU</b>	Estimated population size	175	140	611	<b>926</b>
	Target sample size at <b>15%</b>	27	21	92	<b>140</b>
<b>VC</b>	Estimated population size	75	88	35	<b>198</b>
	Target sample size at <b>15%</b>	12	14	6	<b>32</b>
<b>Curtin</b>	Estimated population size	1,845	10,293	12,174	<b>24,312</b>
	Target sample size at <b>10%</b>	185	1,030	1,218	<b>2,433</b>

*Notes.*

Curtin population size was estimated using 2013 figures at <https://planning.curtin.edu.au/stats/students2009-2013.cfm>

MNU population size was estimated based on data from MNU (2012) Annual Report.

VC population size was estimated based on anecdotal information (also supported based on Nizar, 2017) as the researcher was not able to secure access to published data.

The final-year undergraduate student numbers were calculated as an estimate of a 1/4 of the total undergraduates enrolled at the time. The sample numbers are rounded to the next whole number. E.g. MNU staff 15% at 26.25 rounded to 27.

From a statistical perspective of reliability of results, the following sample size is required to generalize the findings to the population being studied, with a 90% confidence level and a 5% margin of error.

Table 3.4. Statistical sample size calculation (numbers [*n*])

Country	Target institutions	Population [ <i>n</i> ]	Sample size [ <i>n</i> ]
<b>Maldives</b>	MNU and VC (Staff, Postgraduates, and Undergraduates)	1,124	<b>219</b>
<b>Australia</b>	Curtin University (Staff, Postgraduates, and Undergraduates)	24,312	<b>268</b>

*Notes.*  
 These figures have been computed using Raosoft® sample size calculator (<http://www.raosoft.com/samplesize.html>)  
 Confidence level is calculated at 90% and margin of error at 5%

Successful recruitment will result in 219 participants from the Maldives (MNU and VC), and 268 participants from Curtin. The recruited sample size will be reported later in Chapter 6 with the survey findings (see section 6.1.2.5).

### 3.5.2.4. *Limitations*

While the online questionnaire modality makes the survey distribution as well as survey completion easy, it does not necessarily ensure participation. As reported by Nulty (2008), response rates to online surveys are lower than for a face-to-face on-paper survey. Given that the survey for this research was planned for concurrent data collection from two geographic locations, it was believed a face-to-face survey would not be possible due to the time limitations and therefore the choice of online modality was appropriate. As Perkins (2011) states, these limitations can be countered to increase the response rate by offering incentives, increasing the number of contacts with participants, personalising invitations, and the trustworthiness of the survey sender.

The possibility of misinterpreting the questions given that survey questionnaires preclude the causative relations as in one-to-one interviews is cited as one of the main disadvantages of data collection through questionnaires (Busha & Harter, 1980). This can be countered to some extent by a careful consideration of the question terminology as well as extensive piloting. Given that the survey questionnaire was developed based on interview findings from the same cohort, this limitation is largely countered and also leads to the triangulation of data.

Another limitation of questionnaires that are not completed face-to-face, as identified by de Vaus (1995), is the difficulty in ensuring the intended person fills in the questionnaire. With online questionnaires, there are mechanisms to send individual access links to individual email addresses, thereby having some control over who completes the survey. Nonetheless, this was not used for ethical reasons. To this

effect, screening questions were put in place to ascertain the participant was from the target population. For example, the first question of the questionnaire was set to filter if the participant was in either of three categories of staff and students. If they responded to “none”, the online questionnaire was set to terminate for that participant at that point. Likewise, another question was put in place to ascertain if the participant belonged to either of the three target sample populations MNU, VC, and Curtin. If “none” was selected for this question, the survey was terminated.

#### **3.5.2.5. *Implementation***

The survey was planned to take place in September 2015 allowing for sufficient time to analyse Phase I and II data leading to the design of the data collection tool for Phase III. However, owing to unforeseen personal circumstances, the research had to be halted for nine months and consequently Phase III data collection was delayed until October 2016.

The survey was executed simultaneously in the three institutions with the researcher spearheading the survey promotion and participant recruitment. The researcher was based at Curtin University and actively sought participation from within, with the support of research assistants (one each) from within MNU and VC leading participant recruitment from the Maldives.

As was earlier outlined in reference to Perkins (2011), it was anticipated that direct contact was important to encourage prospective participants to complete the online survey questionnaire. The research assistant from MNU was arranged through informal channels as the researcher had worked at MNU earlier and had appropriate contacts. The research assistant for VC was arranged through recommendation from the head of the Research Centre at VC.

#### **3.5.2.6. *Analysis***

The use of the Qualtrics™ survey tool allowed for direct analysis based on system generated statistical reports.

SPSS was used for statistical tests to assess the internal consistency and reliability of the survey instrument, as well as to compute differences (t-tests) across the Maldives and Australia survey participant responses.

Further details about survey participant recruitment and survey analysis will be reported in Chapter 6 (sections 6.1.2 and 6.1.4).

### **3.6 Ethical considerations**

As summarised by Creswell (2009) research ethics involve ensuring the integrity of the research, protection of research participants, and guarding against research misconduct in data collection as well as analysis and reporting.

This was firstly ensured through the candidacy process that approved the overall research design. Secondly, the approval of the Curtin University Human Research Ethics Committee was sought prior to data collection (approval number: RD-32-14). The approval document is included in Appendix 3E. This approval was for Phases I and II of the data collection process. An amendment to the ethics application was sought upon the completion of the survey tool for Phase III of the data collection (approval number RD32-14-01). The approval document is included in Appendix 3F.

Thirdly, before data collection, approval was sought in writing from the three target institutions for participation in the research. The consent documents from MNU and VC are included in Appendices 3G and 3H respectively. Curtin University has a formal protocol to engage Curtin students and staff as research participants. The approval document following the completion of this protocol is attached in Appendix 3I. A further ethics amendment (included in Appendix 3J) was required to reach prospective participants through Curtin's official communication channels.

In accordance with Curtin University retention guidelines and Research Data Management Plan, all raw data will be maintained for a period of seven years. Accordingly, all digital data (including interview recordings and questionnaire datasets) is stored in the allocated Curtin network drive (JOSEPP-HU01397), and all physical data is stored in a secure location within the Department of Information Studies.

#### **3.6.1 Ethical issues concerning research participants**

Kumar (2011) highlights that the central ethical issues that need consideration in the use of research participants are, seeking informed consent through disclosure of the research purpose, ensuring privacy and confidentiality of participants, and being

mindful of sensitivities around the types of data collected or any harm to which they might be subjected.

The key contact person within the institution first identified the interview participants from the Maldives, and their contact details shared with the researcher only if the prospective participant consented. Before the interview session, participants were sent information about the research in writing. This also included a form that required signed consent for participation as well as the interview recording. The themes of inquiry included in the information letters differed slightly across the academics and students, versus LIS professionals. The template of the two information letters, and the consent form are included in Appendix 3K.

To ensure accuracy of collected data, the participants were given the opportunity to provide feedback on their interview transcript.

In the reporting of the interview findings, participants were identified as academic (Staff#), a postgraduate student (PG#), an undergraduate student (UG#), or LIS professional (LIS#), and de-identified in all instances. Owing to the small sample size, the participants' institutional affiliation (MNU and VC) was not identified in instances where it might have compromised their anonymity.

Similar to the interview participants, the survey participants were provided with information about the research, confidentiality of data collection, and any potential risk with their participation. This was included in the cover letter with the survey questionnaire (included in Appendix 3C). Personal identifiable information was not collected through the questionnaire to ensure complete anonymity. The nature of the online survey tool, through the IP address, showed the geographic location from where participants linked to the survey. While this did not breach any confidentiality protocol, this geographical identification helped ascertain to some degree that the participants were coming from the intended population groups.

The proposed data collection from the interviews, as well as the survey, was not anticipated to pose any risk or harm to the participants. The interviewees might feel some discomfort, but only due to the inherently intrusive nature of in-depth interviews.

### **3.6.2 Ethical issues relating to the researcher**

Researcher bias is the central ethical issue relating to the researcher. Researcher bias can be attributed to subjectivity, especially in qualitative data collection (Kumar, 2011), and issues in data analysis, interpretation and reporting (Creswell, 2009).

Taking these into consideration, the epistemology and assumption of the research was deliberated and made transparent in its initial conceptualisation and was included in section 3.2 earlier. Furthermore, for accuracy of data analysis and minimisation of researcher bias in interviewing as well as analysis, it was decided to interview individuals who consented to be audio-recorded, so as to ensure an accurate record of the conversation was preserved for future enquiry.

As demonstrated in the justification of the research design and the selection of methods (see sections 3.2.1 & 3.5), the research employed appropriate methods of inquiry, and the informed use of specialised software in the data analysis (see sections 3.5.1.6 and 3.5.2.6) ensured an objective interpretation of the data.

### **3.7 Conclusion**

The research takes a phenomenological approach using mixed methods for data collection. The methods include in-depth interviews of a small purposive sample of academics and students from the Maldives and an online survey of a larger random sample from Australia and the Maldives.

The purpose of the interviews was to gather a detailed understanding of the use of Google versus library sources for information seeking from a developing country perspective, given the shortage of research in this area. The findings from these interviews and the existing literature emanating from studies in developed country settings guided the design of an online questionnaire implemented in the selected cases from both countries.

Chapter 4 will provide background information to the selected cases. The findings from the interviews and survey will be reported in Chapters 5 and 6 respectively.

## **Chapter 4: Background to the Cases**

This chapter provides the background setting for the selected country cases. The main focus of the research was to investigate the *googling* phenomenon in the Maldives academic community, using Australia as a comparative case. As outlined in Chapter 3, the two countries were selected as representatives of a developing and developed country respectively. This chapter is structured into two main sections with the first exploring the cases from the Maldives, and the second exploring the case from Australia. Included in each section are a brief country overview followed by a background into tertiary education in the country case; details of the selected institutions; and, an overview of the situation of information provision and access for the user community in each of the institution. The chapter is concluded with a summary of the highlights of the three institutions.

### **4.1 The Maldives National University and Villa College**

A representative sample strategy (as outlined in section 3.4.3) was used to select the two tertiary institutions from the Maldives owing to the small scale of the population.

#### **4.1.1 An overview of the Maldives**

The Maldives is a small island nation in the South East Asia region with a population of less than 400,000 (National Bureau of Statistics [NBS], 2016). The Maldives is categorised as a developing country in terms of its economic growth. Economic indicators show a steady growth of the per capita income at US\$771 in 1984, US\$2,514 in 2004 (World Bank, 2007), and US\$6,792 in 2014 (International Monetary Fund, 2016). The country has a 99.3% literacy rate for both men and women (UNDP, 2016), making the country unique in comparison to other developing countries. Literacy has been historically high, with a 93.2% literacy rate reported in 1986 (Maniku, 1989). The country's measure of literacy is based on the ability to read and write the local language, Dhivehi.

However, since the 1960's, the English language has been the main medium for education (Latheef & Gupta, 2007). Therefore, English language literacy is now widespread in the younger generation, with many of the older generation, mainly in the urban areas, also conversant in English (Riyaz & Smith, 2012). The country's

dispersed geography, with thousands of islands scattered across the ocean, presents challenges in equitable service provision, mostly owing to the cost of required infrastructure and the limitations in transportation network (Asian Development Banks, 2007). The population in 123 of the 188 inhabited islands are made up of less than 1,000 people each, with 39% of the total population of the Maldives living on the capital island, Malé (NBS, 2016). This results in a concentration of core services in Malé with the rural islands having an unequal service provision. For further context, a map of the Maldives, with additional geographic indicators, is included in Appendix 4A.

Irrespective of the economic challenges, universal primary education across the country was achieved by 2001, with the number of school children enrolments for both primary (grades 1-7) and secondary (grades 8-10) schooling remaining consistently high since 2004 (UNDP, 2014). Table 4.1 summarises selected education achievements across a number of countries in “very high human development”, “high human development”, “medium human development”, and “low human development” categories according to the Human Development Index (HDI) rank.

*Table 4.1. Education achievements: Selected country data from the Human Development Index (source: UNDP, 2016, pp. 230-233)*

<b>HDI Rank</b>		Literacy rate (% of population aged 15 and above) <b>2005-2015</b>	Population with at least some secondary education (% aged 25 and older) <b>2005-2015</b>	Gross enrolment ratio in tertiary education (% of tertiary school- age population) <b>2010-2015</b>	Government expenditure on education (% of GDP) <b>2010-2014</b>
<i>VERY HIGH HUMAN DEVELOPMENT</i>					
1	Norway	..	95.3	77	7.4
2	Australia	..	91.5	87	5.3
10	United States	..	95.3	87	5.2
<i>HIGH HUMAN DEVELOPMENT</i>					
52	Oman	94.8	58.8	29	5.0
62	Malaysia	94.6	77.1	30	6.1
73	Sri Lanka	92.6	80.5	21	1.6
105	Maldives	99.3	32.6	13*	5.2
<i>MEDIUM HUMAN DEVELOPMENT</i>					
113	Indonesia	93.9	47.3	31	3.3
131	India	72.1	48.7	24	3.8
132	Bhutan	64.9	9.6	11	5.9
147	Pakistan	58.7	35.4	10	2.5
<i>LOW HUMAN DEVELOPMENT</i>					
169	Afghanistan	38.2	22.2	9	4.8
174	Ethiopia	49.1	15.8	8	4.5

*Note.*

\*The tertiary education data has been sourced from UNDP (2015, p. 243), and is for 2008-2014.

The Maldives is ranked 105 out of 188 by the United Nations Development Programme (UNDP) in its Human Development Index of 2016, with other comparative countries like Bhutan and Sri Lanka ranked at 132 and 73 respectively (UNDP, 2016). The HDI for the Maldives demonstrates a steady rise of these indices over the years (UNDP, 2014). While the Maldives is placed in the “high human development” category, the data indicate only 32.6% of the population have at least some secondary education with 13% of the population enrolled in tertiary education (UNDP, 2015).

The main challenge in a wider reach for higher education in the Maldives is attributed to the geographic dispersion of the islands, and therefore *eLearning* is highly sought (Thaufeega, 2016). Likewise, tapping into Information and Communication Technologies (ICTs) is seen as one strategy to reduce the gap in the provision of information services to the geographically dispersed island nation (Riyaz & Smith, 2012). The Maldives has a favourable ICTs outlook with 812,128 registered mobile phone users (CAM, 2016), which is double the country’s population. Likewise, the internet penetration rate accounted for 63% of the population in 2014 (NBS, 2016) with 26,295 broadband and 264,937 mobile internet users (CAM, 2016).

These figures are significant given Asia has a combined internet penetration rate of 45.6% with lower rates for comparable countries like Sri Lanka (29.3%), Bhutan (36.9%), and India (34.8%) (Rayamajhi, [2016]). Nonetheless, as reported by Ali (2016), the internet bandwidth in the Maldives is not always favourable to support online education delivery. The limitations are greater in the islands as broadband is not widely available, resulting in the use of mobile internet devices to access the internet (Ali, 2016). Investigating the use of ICTs within the tertiary education sector of the Maldives, Kinaanath (2013) concluded that the country’s geographic dispersion across the ocean, with limited infrastructure, results in a digital divide between the remote islands.

#### 4.1.2 The Maldives' tertiary education: A brief history

Tertiary education was introduced to the Maldives in the early 1970s and these tertiary institutions were affiliated to their respective ministries (Muna, 2014). Examples include the Ministry of Education overseeing the Institute of Teacher Education, and the Ministry of Health responsible for the Allied Health Services Training Centre. Six such institutions were in existence by the late 1990s and were amalgamated in 1998 to form the Maldives College of Higher Education (MCHE). At this stage, the MCHE predominantly conducted certificate programs and a handful of diploma programs. MCHE was further expanded with additional faculties/centres and degree programs with the view of achieving university status. The other public tertiary institution in the country at the time was the College of Islamic Studies (CIS).

The first university legislation in the Maldives was endorsed by the Parliament in January 2011, and consequently, in February 2011 MCHE gained university status as the first university in the country, and was renamed the Maldives National University (MNU) (World Bank, 2011). Likewise, the CIS was rebranded as the Islamic University of Maldives (IUM) in 2015 to become the second university to be established in the country (Ali, 2016). To date, no private universities have been registered.

In addition to these public institutions, a number of smaller institutions have been operating in the Maldives as private Colleges from the late 1990s, and as of 2011 over 95% of these enrolments were in certificate and diploma courses (World Bank, 2011). A summary of the level of courses offered through MCHE, CIS, and private tertiary education providers as at 2009 is included in Table 4.2.

*Table 4.2. Number of tertiary education programs offered in the Maldives in 2008 (source: Maldives Country Report, 2009, p. 5)*

Year	Certificate	Advanced Certificate	Diploma	Advanced Diploma	Bachelor Degree	Postgraduate (coursework)
MCHE (now MNU)	6	20	21	2	6	4
CIS (now IUM)	-	4	2	-	2	-
Private Institutions	31	12	19	6	4	-

The data show that the bulk of tertiary education provision is vested in the public institutions. The number of enrolments in these courses was 4,990 for the two public institutions (MCHE & CIS) and 905 for three, out of the seven, private institutions

Cyryx, IBS, and Villa College (Maldives Country Report, 2009, p. 5). Data for the other four private institutions named in the report was not included owing to the unavailability of data.

Reportedly, by 2010, there were 45 private higher education providers (Maldives Qualifications Authority, 2010 cited in Waheed 2013). Nonetheless, as Waheed (2013) states, enrolment details are not available for many of these institutions. Table 4.3 provides a snapshot of the number of student enrolments in the Maldives private tertiary institutions as reported by the World Bank (2011). The data show only 181 students were enrolled in degree courses in 2009/2010, and situates Villa College (VC) as the most prominent among the private tertiary institutions.

*Table 4.3. Student enrolment numbers (n) in private higher education institutions in the year 2009/2010 (source: World Bank, 2011, p. 11)*

<b>Private Colleges</b>	<b>Total (n)</b>	<b>Bachelor Degree (n)</b>	<b>Professional and Diploma (n)</b>	<b>Certificate and others (n)</b>
Villa College	608	181	263	164
Mandhu College	472	*	136	336
Cyryx College	2,557	*	286	2,221
IBS	752		103	649
Focus Education Centre	552		117	435
MAPS College	237		237	0
Clique College	757		757	0
<b>Total</b>	<b>5,935</b>	<b>181</b>	<b>1,899</b>	<b>3,855</b>

*Note.*

\*Mandhu and Cyryx College have some enrolments at the degree and postgraduate degree level. However, enrolment numbers in these programs were not available at the time of the MOE-DHE survey” (World Bank, 2011, p. 11, citing MOE-DHE, 2010).

Given this shortage of higher education opportunities in the country, coupled with the narrow subject fields covered in these emerging institutions, many Maldivians travel overseas to a diverse range of countries (Chauhan, 2008). These countries mostly include Australia, England, Egypt, Lebanon, Malaysia, New Zealand, Pakistan, Scotland, and Sri Lanka; and therefore, the “university educated Maldivians are exposed to a rich variety of higher education systems, as well as societies and cultures” (World Bank, 2011, p. E2).

In summary, MNU and IUM are the only two universities in the Maldives, and they are state-owned. A number of private institutions exist as tertiary colleges, with some offering university level courses. VC is the most prominent among these private colleges with confirmed enrolments in university level education. The following two

sections provide an overview of the selected institutions for this research: MNU as the public institution and VC as the private institution.

#### **4.1.3 The Maldives National University – public institution**

The MNU, declared a university in 2011, dates back to the oldest state operated vocational training institution, Allied Health Services Training Centre (AHSTC), established in 1973 and operated under the aegis of the Ministry of Health (World Bank, 2011). The first diploma level qualification at AHSTC was introduced in 1991 with 6 students (Institute of Health Sciences, 1998) and their first bachelor degree was introduced after the status change to the Faculty of Health Sciences under MCHE (the precursor to MNU). The first degree program to be introduced at the MCHE was the Bachelor of Arts in Dhivehi Language introduced in 2000 (MNU, 2017a).

The MNU is made up of the following Faculties/Centres:

1. Centre for Foundation Studies
2. Centre for Maritime Studies
3. Centre for Open Learning
4. Faculty of Arts
5. Faculty of Education
6. Faculty of Engineering Technology
7. Faculty of Islamic Studies
8. Faculty of Health Sciences
9. Faculty of Hospitality and Tourism Studies
10. Faculty of Shari'a and Law
11. Faculty of Science
12. MNU Business School

The most recent statistics from MNU show enrolment in its courses at 7,617 in 2015, with 62% of these students (4,317) enrolled in non-award courses (MNU, 2015). The students in degree level courses (3,300) are mostly in the area of education, followed by business related courses.

Only 333 of the 3,300 students were enrolled in postgraduate programs. As of 2015, MNU offered 54 undergraduate courses and 16 postgraduate courses, with most courses offered through the Faculty of Education, followed by the Faculty of Shari'a and Law (MNU, 2015). The postgraduate courses mostly comprised of graduate certificate and graduate diploma level programs with a few master's programs.

An estimated 7% of the total MNU students enrolled in its undergraduate and postgraduate courses study through the Centre for Open Learning (COL) (MNU, 2012). As reported by Ali (2016), among the 7,176 students enrolled in COL from 2010-2015, 418 students were in bachelor degrees, 406 in postgraduate certificates, and 47 in masters degrees (p. 19). As further emphasised by Ali (2016), starting from 2010, distance education courses from COL are offered on a blended learning model (also termed flexible learning/teaching as well as block-mode) with a combination of online and face-to-face teaching. Face-to-face learning occurs after the online component is completed and is usually in the form of "two block sessions each semester where they spend 8-10 hours of [intensive] tutorial time for each course" (Ali, 2016, p. 18).

#### **4.1.4 Villa College – private tertiary institution**

Villa College (VC) was selected for this study as the most prominent private tertiary institution in the Maldives offering university level qualifications.

Villa College, in comparison to other similar private colleges, is noted as an institution that has expanded their services over a short period of time, increasing their enrolment numbers "from just 7 at its inception in 2007 to over 1000 students in 2010" (VC, 2010, cited in Waheed, 2013). Anecdotal evidence also suggests that Villa College made swift changes during the lead up to the passage of the University Bill in the Maldives Parliament in January 2011 with a view to upgrading to university status. As reported by Muna (2014), the College submitted a proposal to the Maldives Department of Higher Education recently seeking to be recognised as a university. The researcher was not able to secure any further documentation on the

developments to this effect. According to the VC website<sup>4</sup>, to date they operate as a College.

Even though Villa College is a local private tertiary institution, it also conducts undergraduate programmes in Education from the Open University of Malaysia (OUM) (Ali, 2010). As Ali (2010) outlines, OUM is a consortium of 11 Malaysian public universities and conducts its business via the Open and Distance Learning (ODL) model. He further states that the “ODL model allows...students to study and attend class on weekends and outside school hours” (p. 9). According to information on the VC website<sup>5</sup>, they also affiliate with other overseas universities to offer their programs locally through VC. These include postgraduate and undergraduate education programs from the University of the West of England, a professional accountancy qualification through the UK Association of Certified Chartered Accountants, and two bachelor degree courses from Heilbronn University in Germany.

VC’s 2017 convocation booklet (VC, 2017) reports a total 3,000 enrolled students, and an associated news article reports a total of 1,100 students completed undergraduate degree programs, with another 704 completed postgraduate programs since VC’s inception in 2007 (Nizar, 2017). The researcher was not able to gain further access to the enrolment data of Villa College.

The VC is made up of the following Faculties/Centres:

1. Faculty of Business Management
2. Faculty of Educational Studies
3. Faculty of Hospitality Management and Tourism Studies
4. Faculty of Information Communications Technology
5. Faculty of Law
6. Faculty of Marine Studies
7. Faculty of Shari’a and Islamic Studies
8. Institute of Research & Innovation

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<sup>4</sup> <http://www.villacollege.edu.mv>

<sup>5</sup> <http://villacollege.edu.mv/global-connections.html>

The VC website (villacollege.edu.au, as at 31 January 2016) states that, the College offers about 40 different study programs and 15 of these leads to a university level qualification. They include 11 bachelor degrees and 4 postgraduate programs with 3 master's degree and 1 graduate diploma program. The postgraduate programs are in the areas of Education, Accounting, Business Administration, Human Resource Management, Information Technology, Teaching, and Shari'a and Islamic Studies.

#### **4.1.5 Quality of tertiary education in the Maldives**

Research on the quality of tertiary education in the Maldives is sparse. An investigation by Shiuna and Sodiq (2013), to elicit stakeholder views on improving education in the Maldives, found that student participants perceived MNU as needing more qualified lecturers among other improvements such as library resources and better student support. A study carried out by Hasan and Hynds (2014) on perceptions of the motivational influences for successful teachers in the Maldives in a rural setting indicates that many teachers choose the profession as “it is amongst the easiest areas in the Maldives to get a job on his or her home island” (p. 20). The same sentiment was reflected in another recent study by Maxwell *et al.* (2015) that investigated the challenges and issues of academic staff in the Maldives tertiary education sector from a female perspective. Hasan and Hynds (2014) proposed that motivation to perform as a teacher may not be a priority for some as it is easy to maintain a job once entry is sought, because systematic regular appraisals are infrequent or non-existent. Their investigation did not explore research outputs as a measure of professional development.

Similar research on university staff appraisal is not available. However, the indicated lack of rigor of teachers in the school environment (Hasan and Hynds, 2014) can be an indication of a similar pattern at the tertiary level. Navarro and Shareef's (2011) situation analysis of MNU following its elevation to a university status suggests that “the possibility of significant inefficiencies” (p. 3) of the quality of the courses was a factor for the large proportion of students who did not complete their enrolled course. Similar to Shiuna and Sodiq's (2013) findings, the student feedback gathered by Navarro and Shareef (2011) indicated a desire by the students to see the university

becoming “a real university” (p. 5) by providing highly qualified academics and better library resources.

#### **4.1.6 Research culture and scholarly publications in the Maldives**

The MNU largely operates as a teaching university with only a recent focus on research (Maxwell *et al.*, 2015). The first postgraduate research programme at MNU commenced in 2014 with two students enrolled in the Doctor of Philosophy in Education (MNU, 2014). This is a first for the Maldives. There is no documented evidence to show whether any further doctoral enrolments have been made. The MNU’s first systematic research grants scheme was also initiated in 2014 with five staff and one higher degree by research student successfully securing grant money for their research projects (MNU, 2014).

These positive changes highlight the early stages of MNU embarking on a research culture. Research output can be linked to the qualification and capacity of academics to engage in research. In its bid for capacity building, the Maldives government, in partnership with aid agencies, has offered overseas higher education scholarships since the late 1980s. For instance, the World Bank (1996) reports the successful return of 284 scholarship recipients after completing their post-secondary training in overseas institutions under the first International Development Association (IDA) project in the Maldives, 1988-1996. The second Maldivian to gain a Doctorate completed his studies in 1991 through this project. Since then, over 140 Maldivians have completed a doctoral degree affiliated to an overseas university, many on similar scholarships (Riyaz, 2017). The preliminary tracer study by Riyaz (2017), while it is acknowledged as not comprehensive, shows a sharp increase in the number of Maldivians gaining doctoral qualifications in recent years. This is as illustrated in Figure 4.1.

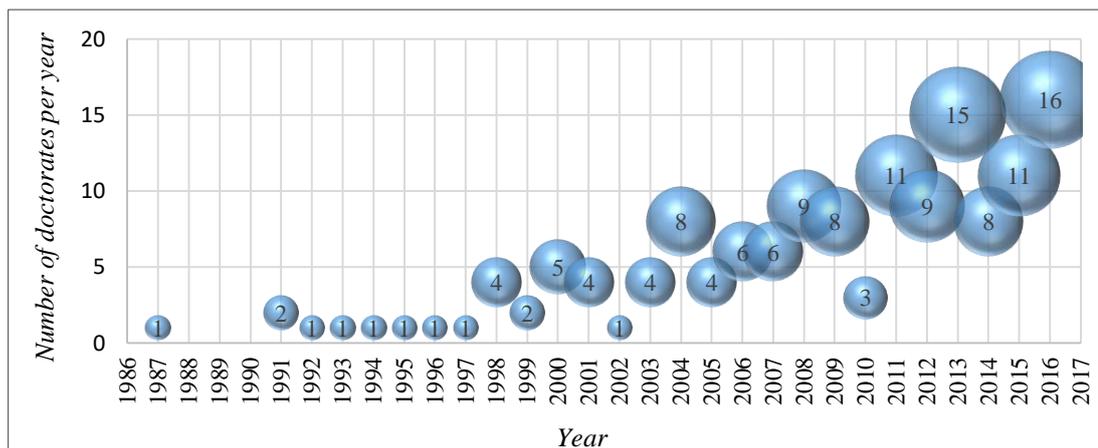


Figure 4.1. Number of Maldivians who have gained a doctoral qualification, 1987 to 2016 (source: Riyaz, 2017)

To this effect, the data on the changing landscape of staff qualifications reported in 2009 (presented in Table 4.4) is noteworthy.

Table 4.4. Number of fulltime academic staff in public higher education institutions in the Maldives (CIS and MCHE), by qualification (source: Maxwell *et al.*, 2015, p. 6)

Year	Total number of staff [n]	Lower than a bachelor degree [n (%)]	Bachelor degree / postgrad diploma [n (%)]	Masters [n (%)]	PhD [n (%)]
2006	143	35 (24.5%)	61 (42.7%)	43 (32.2%)	1 (1.0%)
2009	146	40 (27.4%)	51 (34.9%)	52 (35.6%)	3 (2.1%)

The data for CIS (now IUM) and MCHE (now MNU) show the number of academic staff with a postgraduate qualification as their highest qualification had increased from 33.2% in 2006 to 37.3% in 2009 (Maxwell *et al.* 2015). According to Navarro and Shareef (2011), as at 2011, 61% of MNU staff have a postgraduate qualification. While similar data on VC is not accessible, a news article by Nizar (2017) reports that over 85% of VC’s academics have a postgraduate qualification with 20% of the staff possessing a Doctorate. Accordingly, based on anecdotal information and owing to the increase in the PhD qualified Maldivians over the years (in reference to Figure 4.1), the number of MNU staff with a PhD is assumed to have increased.

Table 4.5 presents a synopsis of research output by MNU staff, and includes extracted text from Navarro and Shareef’s (2011) report around the theme of research culture. The study was carried out at the four largest faculties of MNU.

Table 4.5. Collated data from Navarro and Shareef (2011) on research/scholarly output by MNU staff in the past ten years, also highlighting challenges identified by the staff

	Percentage of staff with:			Main hindrance (selected significant remarks)	Resource & facilities (selected library related remarks)
	2 or more research projects	1 or 2 research projects	no research output		
Faculty of Education (FE)	11%	28%	61%	“Policies for the work day do not permit [time] to engage in research” (p. 29) ...like the staff, the dean expressed the belief that the university needs to build a culture of research...[and] there is no regular budget for research (p. 30).	“Several staff members recommended that the university facilities, particularly the library, be improved to support a culture of research” (p. 41)
Faculty of Health Sciences (FHS)	0	21%	79%	“we (staff) wanted to do a tracer study...we did not get the budget for it” (p. 51). “One Head of Department pointed out that there is no support for research” (p. 51). “In addition to requiring a more conducive environment and increased funding, staff also said they need time to do research.” (p. 51)	“Most staff agreed that books and journals are necessary to support research, along with the availability of databases.” (p. 51)
Faculty of Management and Computing (FMC)	0	56%*	44%	“The staff does not believe that there are sufficient incentives for engaging in research... They cite time as one of the biggest obstacles.” (p. 87)	“The FMC is unique in having its own library, however all the respondents complained that the library is inadequate and poorly resourced. Budget requests for improving the library have not been funded in the past.” (p. 88)
Faculty of Hospitality and Tourism Studies (FHTS)	0	60%	40%	“...staff believe that research is not encouraged...and also responded that the time is too limited to conduct research along with their other duties.” (p. 66)	“Additional resources are also required... online journals and books.” (p. 66)

Note.

\* Navarro and Shareef (2011) note that in the focal group interviews, staff cited the research done for preparing courses as a part of their scholarship.

The factors identified by academic staff for the lack of a research culture at MNU according to Navarro and Shareef (2011) can be summarised as: a workload that is centred on delivery of teaching thereby limiting time for research; a lack of motivation as scholarly productivity is not measured in staff appraisal and promotions; and, a low level of library facilities, including access to current journals and resources.

While the report addresses a number of important areas for improvement based on staff feedback, it has to be highlighted that the situation analysis did not gather data about the level of resources available from the library, or about the library usage by the academics. The researcher was at that time the Chief Librarian at MNU and thus can comment that while the library had limitations owing to financial resources as well as manpower, the available resources were underutilised. Consequently, this research is an attempt to initiate a systematic exploration into the low use of library resources, and lack of scholarship among the academic community of the Maldives.

Most of the undergraduate programs as well as master's programs offered at MNU consists of a research component resulting in a 10,000 word dissertation. The researcher herself has supervised a number of these students in the Faculty of Health Sciences and the Faculty of Arts during 2011 to 2013 as an external supervisor. It is interesting to note that the university struggles to find appropriately qualified personnel from within the institution to supervise students with their research projects. Therefore, the responsibility is often vested with external supervisors with a research background and passion for research and scholarship rather than an emphasis on experience and qualification in the subject speciality. This personal experience can be somewhat supported with Navarro and Shareef's (2011) observation that in most of the undergraduate degree programs the students are required to do a research project with the project being supervised by staff who are themselves not involved in any research.

Similarly, one of the key recommendations arising from a World Bank (2011) report was that to improve the quality of MNU as a higher institution of learning it needed to develop along multiple paths including "the generation of research capacity and the production of research output, including journal articles, papers, monographs and books." (p. [E5]). Strengthening the research culture through the establishment of a research centre, with mechanisms for publishing research, was also one of the strategic directives identified in the MCHE (2008) "Operational Priorities for University Title", and also in MNU's (2013) "Strategic Plan for 2013-2017" formulated after university status was granted.

With the establishment of the university in 2011, development of an envisioned research centre began to gather momentum with concept papers presented to the University Council during 2011 to 2012, while the researcher was still a member of the *Higher Degree by Research Committee*. While this was progressing at MNU, Villa College launched their *Institute for Research and Innovation*, in November 2012 (VC, 2014). The *Research Centre* at MNU was launched later in 2013 (MNU, [2016]), first as the *Postgraduate Research Centre* as the central body to establish and regulate the new Higher Degree by Research programs, and later renamed to reflect its overall research role within the university.

#### **4.1.7 Local scholarly journals**

Peer-reviewed journal publications attached to these research institutions soon followed with MNU publishing its first journal in 2013 as the “*Maldives National Journal of Research*” (MNJR) (MNU, 2017a), and VC publishing their first journal in 2015 as the “*International Journal of Social Research & Innovation*” (VC, 2016). The submission guidelines for MNJR indicate an initial annual issue, followed by a biannual modality (MNU, 2017b). The information on the journal website shows MNJR has been published as an annual publication with 5 issues, one issue per year from 2013 to 2017. VC’s journal website shows only the first issue in 2015 with no further evidence whether subsequent issues were published.

While there is no conclusive evidence, the implied irregular publication history can be attributed to the newness of scholarly publication in the country, the lack of an organised process, and lack of interest by academics. The following excerpts from Navarro and Shareef (2011), and the lack of any other traces of the existence of the named publications are noteworthy:

In the past, as a means of encouraging research and scholarship, a Teacher Journal was published in the Faculty of Education. The dean is currently attempting to revive the Journal and hopes to have a new edition ready for publication in the future. (p. 29)

The dean [of FMC] also mentioned his own experience of trying to start a newsletter publication about five years ago to showcase staff scholarly contributions. The newsletter came out a couple of times and then ended for lack of contributions by the staff. (p. 87)

Additionally, the researcher's personal experience as an Associate Editor, for the *Maldives Journal of Health Sciences* (MJHS) is noteworthy. The MJHS came into existence as the official journal of the Faculty of Health Sciences, of MCHE (the precursor to MNU). It followed a double blind peer-review modality. The first issue was published in 2003 after delays owing to a lack of response from necessary authorities for its formal recognition as a journal. The editorial team went ahead with the first issue anticipating the situation would be resolved quickly. Unfortunately, formal approval did not eventuate in time for the 2004 issue. Consequently, the publication was cancelled and the scheduled articles were returned to the authors. Also of significance is that the article contributions were predominantly from expatriate health professionals working in the Maldives with a meagre contribution from local authors.

There are indications of an increase in research and scholarly publications by Maldivians in the recent years. However, there is no comprehensive index of the research outputs. MNU's research report for 2014-2015 (MNU, [2016]) lists 23 publications attributed to authors affiliated to the university. VC's research outputs, based on their journal website, includes six journal articles.

#### **4.1.8 Academic libraries in the Maldives**

A well-stocked academic library is widely believed to be a requirement for academia and scholarship. The following section provides an overview of the library and information services provision at MNU and VC.

##### **4.1.8.1. MNU Library**

The reading and research material for MNU's academic community is provided through the MNU Library consisting of the Central Library and three other branch libraries located in Malé, where the main campus operates. Three other smaller collections are located in the regional campuses.

Similar to the history of the formation of MCHE and later MNU, the library units were earlier attached to the individual institutions and later centralised in preparation for making the institution university-ready (Riyaz, 2013). The last published data on the MNU Library show an estimate of 100,000 books (including multiple copies of the same title) and subscription to 3 suites of scholarly databases: EBSCO, HINARI,

and LexisNexis Professional (Riyaz, 2013). These databases and the library book catalogue have to be searched individually, and pose limitations in the discoverability of the available resources, as there is no federated search interface. The MNU library is the first academic library in the country to offer an online library catalogue using an integrated library system (Liberty™) with a computerised circulation.

The situation analysis of MNU, referred to earlier, highlighted that the university staff were unhappy with the level of access to resources (Navarro & Shareef, 2011). The dean of one of the faculties was cited as having said the “library was inadequate and poorly resourced and that budget requests for improving the library have not been funded in the past” (Navarro & Shareef, 2011, p. 88).

Snapshots of the MNU Library are included in Appendix 4B.

#### **4.1.8.2. Villa College Library**

Compared to the MNU library with a history that goes back to 1973 with the MNU precursor institutions, the VC Library was newly formed in the late 2000s and is relatively small. The researcher was not able to gain access to VC’s internal documents, and there does not appear to be any in the public domain that traces the library’s development.

The VC website ([www.villacollege.edu.mv](http://www.villacollege.edu.mv), as at July 3, 2017) lists the following e-resources offered through the library: OUM, JSTOR, Royal Society Journal Collection, Oxford English Dictionary, Oxford Textbook of Medicine Online, EIFL/IOP free access, International Monetary Fund, Periodic Neurology Briefs, and E-Library USA.

Of these, OUM’s (Open University of Malaysia) digital library is made accessible to students affiliated to OUM programs conducted at VC. Figure 4.2 shows a screen capture of the OUM Library<sup>6</sup>. As stated on the page, all databases offered through OUM can be searched simultaneously.

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<sup>6</sup> <http://library.oum.edu.my/oumlib/>



Figure 4.2. A screenshot of the digital library webpage of OUM Library

Of the other listed e-resources, EIFL and E-library are noteworthy. EIFL (Electronic information for Libraries) is an international consortium and offers some level of full-text access through the membership of the Maldives National Library (Nashath, 2011). Likewise, E-Library USA is a collection of electronic databases made freely accessible through the American Corner, supported by the Office of American Spaces, located at the Maldives National Library. The access credential is offered through the National Library to individual members. The extensiveness of the other listed e-resources were not clear and will be reported in Chapter 5, following the interviews with the LIS participant from VC.

The VC Library is housed in a small room with an indicative collection size of about 5,000 books. Based on personal communication with the librarian at VC, it was ascertained that the VC library uses a semi-automated system of library circulation using an Excel™ spreadsheet, and lacks an online catalogue. Likewise, the individual digital collection listed above need to be searched separately and with different login credentials.

Snapshots of the VC Library are included in Appendix 4C.

#### 4.1.8.3. *Challenges in library provision in the Maldives*

The limitations of the library service provision as outlined above, can be attributed to limited resources, including human resources as well as finance to support any developments. The contention about the shortage of finance is one that is common across many institutions in developing countries aiming to provide access to the

varied global information sources, especially online journal databases. As identified by Adam (2012) the subscription cost for databases offered through MNU in 2012 was US\$42,496.00 (MVR 654,438.40) with a reported 4% average yearly increase in cost during the five-year period to 2012 (p. 139). This yearly subscription cost is substantial given that the MNU Library was able to spend an average of only US\$38,933.00 (MVR 599,183.00) per annum on its print book collection during 2009 to 2012 (Riyaz, 2013).

To overcome these cost barriers, libraries agreeing to form consortia to share the cost is widely seen as an alternative approach. However, as reported by Shabana (2012) on a case study of the Maldives Library Consortium, the Maldives information sector has not been able to organise itself yet to realise the benefits from a consortia venture.

From a developing country perspective, the costs identified above for the library collection are significant. Nonetheless, as evidenced by Navarro and Shareef's (2011) analysis, this is not enough to meet the needs of the academic community. Interestingly, these resources that are available at great costs are underused and thereby have the potential to create the impression that the databases are not required. A small-scale study by Mohamed (2010), conducted at the Central Library at MCHE found that among those who regularly visited the library only 40% showed satisfaction with the library databases on offer, and 60% of the library visitors never used the databases. There is no other literature on the information seeking behaviour of the Maldivian academic community to further corroborate the underlying reasons for these findings. This could have relevance to the level of engagement between the academic community and the library. Interestingly, an anecdotal perception exists that there is better access to information material online than there is through the libraries of the Maldives, and/or that users prefer bypassing the library wherever possible. One purpose of this research is to explore the extent of this phenomenon.

Investigating the information culture of the Maldives, Riyaz and Smith (2012) concluded that the Maldives experiences an information divide between the urban and rural regions of the country. The investigation did not focus on the academic community. It was found that the population of Malé, the capital of the Maldives, has

access to and skills in the use of ICTs, albeit limited, and those on the outer islands have much more limited access. It was also observed that while there were differences in access to information, the way people interacted with information and how much information was utilised had no significant difference between both rural and urban communities. Additionally, the findings revealed that while Maldives had made significant advances in ICT provision and internet penetration levels, due to the high cost of ICT infrastructure and the cost of securing access to information, the Maldives continues to be disadvantaged in providing adequate access to credible information sources (Riyaz & Smith, 2012).

It is acknowledged that the above contextualisation of the tertiary education sector, research culture, and library provisions in the Maldives includes more information from MNU perspective than that of VC. This is due to a lack of accessible documentation, which can also be attributed to the newness of tertiary education and research in the Maldives.

The next section provides an overview of the contrasting developed country case chosen for this research. Compared to the detail provided for the Maldives' institutions, the Australian institution will be addressed more briefly, given that the university is well known with easily accessible literature available for further reading where required.

## **4.2 Curtin University**

The justification of Curtin University, Western Australia, being selected as a representative university in a developed country was presented in section 3.4.3. Curtin University is one of the most popular international universities in Australia with 31% of its students from overseas. Therefore, it is acknowledged that generalising the findings to the "Australian" context could be questionable. However, it is believed that the international students gaining entry into Curtin University as well as the academic staff (whether migrant or not) would have acclimatised into the Australian rigorous academic sector, and any differences will be a true reflection of the diversity of the Australian workforce and therefore generalisable.

#### **4.2.1 An overview of the Australian tertiary education sector**

As at 2015, Australia had 172 registered higher education providers of which 37 were public universities and 4 private universities (Department of Education and Training [DET], 2015). DET also reports that there were 975,001 domestic students (729,484 in bachelor degrees and 244,517 in postgraduate programs), and another 308,373 international students (176,835 in bachelor degrees and 131,538 in postgraduate programs). Research is an important component of Australian university operations and is prioritised in the bid to raise university profiles. DET (2015) reports that “direct Australian Government funding for teaching, learning and research has grown both in absolute and real terms, rising from [AUD]\$3.2 billion in 1989 to \$15.4 billion in 2014” (p. 4) with research funding expenditure for the year 2014 at \$2,682.40 million (p. 27).

#### **4.2.2 Curtin University: A brief history of WAIT to Curtin**

Established as the Western Australian Institute of Technology (WAIT) in 1966, and referred to as “the quintessential college of advanced education” (White, 1996, p. 1), WAIT was elevated to university status in January 1987 as Curtin University of Technology and from 2010, it is known as Curtin University (Hart, 2014).

At the time of the commencement of restructuring in the 1980s, WAIT had already established a research and development base that facilitated in the transformation of the institution (White, 1996). A few examples of the further strengthening of research at WAIT include: the establishment of Exploration Seismology Unit in 1983, the enhancements on the already existing geophysics base dating back to the 1970s; the establishment of a Satellite Imagery Unit in 1983; and, establishment of a National Key Centre for Teaching and Research in the School of Science and Mathematics in 1987 (White, 1996, pp. 246-256). Postgraduate education was already part of WAIT in the early 1980s before embracing university status. Furthermore, White (1996) also states, the offering of Doctoral Awards from WAIT was under discussion at its Academic Board and favoured in August 1981 (p. 263). In the 1980s, WAIT also began the exploration and establishment of WAIT offshore programs in Singapore and Malaysia.

The University is increasingly recognised for its research and innovation and is currently ranked among the top universities in Australia. Curtin University is also recognised internationally and is placed in the 201-300 band (the last band being 401-500) in the Academic Ranking of World Universities (Lim, 2016).

It is not the purpose of this section to detail the history of WAIT and Curtin University. However, this overview is presented as a backdrop to contextualise the advancements that had already occurred at WAIT before the institution was conferred the status of a university. This is useful as a comparison of the changes that occurred within the Maldives' tertiary education sector where the University (MNU) has yet to achieve the level of research and development that was happening at WAIT in the 1980s.

#### **4.2.3 Curtin University's current enrolment and research rigour**

According to Curtin University's (2015) Annual Report, the student population in 2015 was approximately 53,611. Of these, 8,733 (31%) students were international students, mostly from China, Malaysia, India, and Indonesia. The statistics also report 1,755 academic staff with 60% involved with research. Reportedly, by 2015, 76.6% of Curtin academics held a doctorate (Curtin University, 2015). The research intensity of Curtin, in comparison to the earlier discussed two Maldives' institutions, can be seen in the difference in the number of research staff as well as higher degree by research (HDR) students. The data show that in 2014, Curtin enrolled over 2,000 HDR students versus two students at MNU. This evidently places increased demands on the Curtin library as the central academic information resource.

#### **4.2.4 Curtin University Library**

The Curtin Library's central space is the Robertson Library on the main campus located in Bentley, a suburb of Perth, Western Australia. Other smaller library units are located at remote campuses with a well-established and utilised inter-library loan system, as well as a document delivery service that caters to staff and postgraduates securing material not available at the library from external sources. Curtin University (2015) highlights that the "Robertson Library received almost 1.9 million student and

staff visits in 2015, an increase of 19 per cent over 2014” (p. 18). Snapshots of Curtin Library are included in Appendix 4D.

The Curtin Library collection expense (based on depreciation and amortisation across 10 years) for 2015 was AUD 4,712,000 (Curtin University, 2015). As reported by Wells and Sallenbach (2015), Curtin Library initiated electronic journal subscriptions in the mid-1990s and by the year 2014 its physical journal subscriptions were at 0.2% of the estimated serial collection of 165,006. Similarly, with the popularity of eBooks, the Library now has an ‘e-preferred’ model of collection development even for the book collection (Wells & Sallenbach, 2015). Their 2014 statistics summarises the book collection at 1,073,277 titles with 521,290 titles available in print and the rest on different electronic modes of access. As Wells and Sallenbach (2015, p. 2) further outline, these changes were necessary for the Curtin Library to stay relevant given the way information is delivered and accessed in the ubiquitous online environment. It is also reflective of the transformations in teaching delivery modes from face-to-face teaching to more digital and online teaching.

Online teaching requires off campus students, who are most likely located in another state or country to have equal access to library resources. As outlined by Wells (2016), Curtin Library discarded the traditional OPAC in the early 2000s in favour of federated searching that facilitated single click searches across multiple databases. Further to this, following on with the new generation of discovery tools, the Library implemented the Primo discovery system (v. 2) in 2009 and eliminated federated search services, with the end result of providing users with a seamless search across the Library’s collection including print and eBooks, journal databases, and other online collections (Wells, 2016).

### **4.3 Summary**

In summary, the three institutions started their business of tertiary education as technical or vocational institutions, with MNU and Curtin later embracing university status in 2011 and 1987 respectively. VC is working towards attaining university status. Table 4.6 summarises the staff and student statistics for MNU, VC, and Curtin.

Table 4.6. Staff and student statistics for MNU, VC, and Curtin. Data collated from the Maldives National University Annual Reports (MNU, 2014; MNU, 2015), Villa College (World Bank, 2011), and Curtin University Annual Report (Curtin University, 2015)

Categories	Student enrolment and staff employment	MNU 2014	MNU 2015	VC 2010 <sup>a</sup>	Curtin 2014	Curtin 2015
Student enrolment details	Total student enrolment (excluding non-award)	3,189	3,300 <sup>b</sup>		50,800	50,664
	Attendance: Full-time ratio	<sup>c</sup>	<sup>c</sup>		68%	69%
	International students studying on main campus	0	0		8,656	8,733
Level of courses students are enrolled in	Online students (Curtin) <sup>d</sup>	-	-		5%	6%
	Block-mode students (MNU) <sup>e</sup>	6%	7%		-	-
	Postgraduate research	2	0		2,396	2,457
	Postgraduate coursework	341	333		8,579	8,485
Level of courses students are enrolled in	Undergraduate	2,846	2,967	181	39,825	39,722
	Non-award (certificate, diploma)	4,088	4,317	427	3,814	3,923
Staff (fulltime equivalent)	Teaching	212	234		613	705
	Research	-	-		361	426
	Teaching and research	2 <sup>f</sup>	2		720	624

Note.

Research methodology planning was carried out in 2014-2016. Thereby, 2014 and 2015 were the most recent data available at the time. This dataset was used for the survey sample calculations, and therefore this table has not been updated to the current recent data.

<sup>a</sup>Not able to trace any recent published data. The data in this column was derived from World Bank (2011).

The VC's 2017 convocation booklet (VC, 2017) states, to date they have enrolled 3000 students.

<sup>b</sup>The MNU 2015 data do not include student enrolment at the Centre for Maritime Studies, Faculty of Science, and Foundation Studies.

<sup>c</sup>The available data do not show the proportion of part-time students

<sup>d</sup>The data is an approximation, as precise data is not available. The online student estimation at Curtin has been derived using data on Curtin University website <https://planning.curtin.edu.au/stats/students2012-2016.cfm>

<sup>e</sup>MNU's Centre for Open Learning (COL) is the central body that offers flexible learning opportunities and their courses are predominantly block-mode (not fully online). The data here is based on the total student enrolment at COL.

<sup>f</sup>The statistics in the MNU reports do not distinguish between research staff and teaching staff and it is assumed this distinction does not exist in the staff structure. Nonetheless, both years show 2 academics employed at the Postgraduate Research Centre.

Curtin is a well-established university with 2,457 students and 1,000 staff engaged in research by the year 2015. MNU data show two students enrolled in a higher degree by research (HDR), with a newly established research centre with limited staff. VC has yet to commence HDR programs. MNU and VC to date operate mostly as teaching institutions, and embarked on research around 2013. MNU lacks a performance appraisal framework that necessitates research outputs by their academics. There is no documented evidence from VC in this regard. At Curtin, research rigor and research output is an important measure for academic tenure and promotion.

Curtin University offers access to a vast range of information resources including an abundance of eBooks and scholarly databases. MNU and VC offer very limited access to scholarly databases and fewer eBooks. An overview of the library at MNU and Curtin is included in Table 4.7. As detailed earlier in the chapter (section 4.1.8.2), there is no precise data on the VC Library.

*Table 4.7. Overview of MNU library and Curtin Library*

	<b>MNU Library</b>	<b>Curtin Library</b>
Book collection:	Approx. 100,000	Approx. 1,073,277
Journal Databases:	3 suites of databases	300+ databases
Estimated annual collection expenditure:	AUD 81,429.00	AUD 4,712,000.00
Library catalogue:	OPAC	Discovery tool
Access to online collections:	4 different login credentials	One login credential
Library branches:	4 urban, 3 rural	1 main, 3 remote

*Note.* MNU Library data collated from Adam (2012) and Riyaz (2013); Curtin Library data collated from Curtin University (2015), Wells and Sallenbach (2015), and [library.curtin.edu.au](http://library.curtin.edu.au)

The library collection at Curtin is searchable using a one-click discovery tool, the MNU library has a traditional OPAC as their library catalogue with the three databases they subscribed to requiring different login credentials and searched separately. VC does not offer an online searchable library catalogue and the scholarly databases offered are limited in scope requiring different credentials except for the access to OUM databases.

This background into the three cases from Maldives and Australia has highlighted the differences in the three institutions of tertiary education selected for this research, mainly in the research rigor and the level of access to scholarly literature. The next two chapters will provide the findings from the interviews and survey conducted with participants from these institutions.

## Chapter 5: Interview Findings

As outlined in Chapter 3, this research uses an interpretivist paradigm with a phenomenological approach to understand the context of *googling* in information seeking behaviour. The phenomenon is investigated using three cases, two from the Maldives and one from Australia. Chapter 4 provided a background into the selected cases. Phase I and II of data collection consisted of in-depth interviewing with a small sample from the Maldives academic community, and Phase III involved an online survey with a larger sample from the academic community of the Maldives and Australia. This chapter reports on the data collection from the interviews.

The chapter is divided into three sections: the first section contains an overview of the interviews and explains how the results are presented, the second section presents the findings thematically, and the third section ends the chapter with a summary of the findings.

### 5.1 Overview

The central objective for conducting the interviews was to understand the prevalence of *googling* in academic information seeking in the Maldivian academic community and to understand the associated characteristics of the anecdotal *I can Google it* perception. For Phase I of data collection, thirteen participants were recruited from MNU and VC for the following categories:

- Academic staff;
- Postgraduate students; and,
- Undergraduate students.

A further research objective was to investigate if the *googling* phenomenon impacted upon the provision of academic library services, and if it did then to discover how. To this effect, Phase II of the data collection included interviewing LIS professionals, one each from MNU and VC.

Phase I and II interviewing were conducted during December 2014 to January 2015 in the Maldives.

The researcher conducted the interviews, using a semi-structured interview guide (see Appendix 3B). The participants were made aware of the general themes for the conversation through the information letter sent to them prior to the confirmation of the interview.

### **5.1.1 Interview themes**

The themes for staff and student participants were:

- Your experiences and opinions about *googling* as a source of information access;
- How and when you Google to meet information needs;
- Your level of satisfaction in meeting your information needs through Google and/or your library; and,
- Your experiences and perception of the library services at your disposal and how you perceive it to change or should change.

The themes for LIS participants included the first three points as above and the following two:

- Your experiences and perception of the information seeking behaviour of your library clients; and,
- Your perception on how your library caters to the information needs of your clients.

While the semi-structured interview guide was utilised to standardise the questions, the order of the conversation and questioning was not controlled and allowed for other questions in line with the conversation within the pre-defined themes.

### **5.1.2 Participant recruitment**

Participants from the academic staff and student groups were identified through the key contact persons at both institutions for representative participant selection.

From the undergraduate students, only those in their final year of study were invited to participate. From the academic staff, an effort was made to select at least one staff with a publishing record; this was emphasised as there was a shortage of academics who had published. The most experienced academic librarian from each of the institutions was invited to participate as a representative of LIS professionals.

During the interview process, it was felt that one of the interviews with an academic was problematic as the conversation consisted of considerable mumbling on the part of the participant. Every attempt was made to try and rephrase the answers to ensure accuracy of what was being heard, as well as to make it clearer for the voice recording. After the interview, listening to snippets of the recording, it was strongly felt that given the small sample selection, this particular interview could not be relied upon. Additionally, the directive given to the contact person in the sample selection was to identify at least one academic with a publishing record. The first interviewed academic from the institution did not have a publishing record, and after the conversation with this second academic, it was discovered that this participant also did not have any publications. Given these two shortcomings, the issue was discussed with the researcher's doctorate supervisor and it was decided to interview an additional academic from that institution. It was also decided not to discard the interview completely as some of the information was usable and could provide valuable insights.

There were a total of fifteen participants in Phase I and II of the interviewing process.

Phase I:

- 5 academic staff (MNUx3, VCx2);
- 4 postgraduate students (MNUx2, VCx2); and,
- 4 undergraduate students in their last year of enrolment (MNUx2, VCx2).

Phase II:

- 2 LIS professionals (MNUx1 and VCx1).

From here on, these four participant groups are referred to as staff, postgraduates, undergraduates, and LIS.

Of the five staff, two had a doctorate and three had a master's level qualification. The staffs' tertiary education experience averaged 4.3 years (ranging from 1.5 to 7 years). The two LIS participants had over 10 years of experience in mid-management positions in libraries, one qualified with a bachelor degree and the second with a diploma, both in the area of library studies. Of the four postgraduate students, two had completed their two years of study and were waiting for their results, with the other two students in their second year of study. Of the four undergraduate students,

three had completed their study requirements with the fourth student about to commence their final semester.

Participants were asked about their prior educational exposure in order to factor in any perceived impact this could have had on their information behaviour. Seven of the fifteen participants (4 of the 5 staff, 1 LIS participant, and 2 of the 4 postgraduate students) had completed at least one university qualification overseas. Five of them studied in developed countries including Australia, Canada, New Zealand, and France. The other two participants studied in India and Saudi Arabia.

In the participant selection, due to the small sample size, no emphasis was made on maintaining a gender balance. Age and gender of the participants are summarised in Figure 5.1.

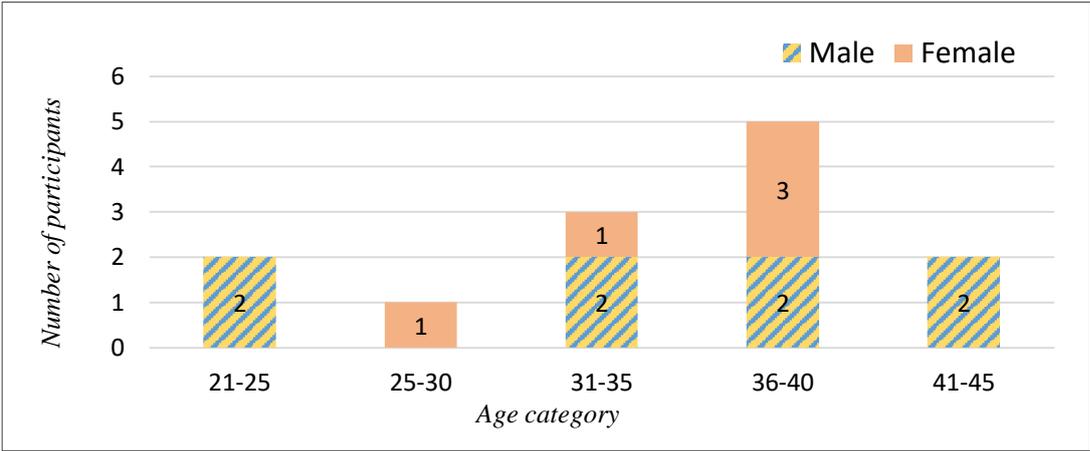


Figure 5.1. Age and gender of participants of Phase I and II data collection

The staff consisted of two male and three female participants, the postgraduates included two males and two females and all four undergraduates were male. The two LIS participants were female, which was expected given that there are few males working in the Maldives library sector.

The age range of the staff participants was 36 to 40 years, while the students were between 21 to 45 years of age.

A summary of the demographics of interview participants, with participant reference codes, is included in Appendix 5A.

### **5.1.3 Interview execution**

The 15 interviews were held at mutually agreed locations, mostly in the affiliated educational institution of the participant, or else in their official work location, and in private. Of the 15 interviews, 14 were held on the mainland, Malé, with 1 interview in Hulhumalé, the extended island of the capital, where the participant worked. All the conversations were recorded with the participants' written consent. The interviews were carried out in the Dhivehi language imbued with English words, which is the norm.

### **5.1.4 Interview transcripts**

The recorded conversations were transcribed as a translation in the English language, and were carried out by the researcher. One reason for the researcher to do the transcription was to ensure the non-verbal exchanges that occurred during the interview were captured as much as possible. This was achieved through the reference to the notes taken at the interview and also reliance on memory where possible. The transcription was completed using a transcribing tool, Listen&Write™. The advantages of using this tool over the combination use of a normal audio device and a word processing document on the computer, like *Windows Media Player* and *Microsoft Word*, was the elimination of unnecessary keystrokes and clicks in pausing the conversation and playing it back again. Listening and writing occurred on the same device with simple keystrokes to pause and write.

The name of the participants or any identifiable personal information is not included in this thesis for privacy reasons, as advised on the participants' information sheet. When reporting of data, the participants will be referred to as Staff# (for academic staff), PG# (for postgraduates), UG# (for undergraduates), and LIS# (for LIS professional).

The interview transcripts were emailed to all participants for comments if they so choose. One participant (Staff03) opted out of the invitation to review the transcript. Another participant (LIS13) responded with minor edits, and this was modified accordingly. One participant (Staff01) confirmed satisfaction with the transcript. Two participants (LIS14 and Staff15) responded asking for more time outside the 2

weeks' deadline and this was granted, but they did not follow it up even after a reminder. The others did not respond to the invitation.

### **5.1.5 Issues in the interview execution and analysis**

The timing of participant recruitment clashed<sup>7</sup> with the end of the academic year and therefore many students were away on holiday. Additionally, the academics reported to work early in January in preparation for the new academic year, and therefore time commitment from some staff for an interview session proved to be difficult.

In the information letter sent to the prospective participants it was stated that the interview duration would be about 30 minutes. However, all interviews went beyond this, the shortest being 42 minutes and the longest extending to 73 minutes. The extended time was used only with consent from the participants. The range of questions to be covered as well as the time required to get the participants to a comfortable mind-frame took more time than expected, in comparison to the first pilot interview. Based on the subsequent two pilot interviews, it was anticipated that interviews would take at least 50 minutes, nonetheless as the information letters to the participants had been dispatched by then, the prospective participants were informed verbally prior to the time commitment of the need for 30 to 60 minutes.

One of the 15 interview recordings had issues in the quality of comprehensible conversation. This interview was conducted in a closed classroom at the participant's institution. As it was mid-day in a tropical country, the ceiling fan was on full speed and created a buzzing noise that impacted the quality of the recording. However, the interviewer's side of the conversation was clearly discernible on the audio recording, while the participant's side of the conversation was muffled in places. The following is a snippet from this transcript.

Q: Are you aware whether the library subscribes to databases?

A: [Can't hear the one word answer. With the follow-up questions and answers it is assumed "yes"].

Q: Do you know which ones?

A: Don't know the specifics (a few more is said, can't make out the words)

...the other there is access to more wide variety, and for degree students it's ok.

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<sup>7</sup> It was not unforeseen. On the contrary, data collection was scheduled at this time as the likelihood of getting participants to set aside an hour of their time would be close to impossible during semester.

Q: So to the end of 2014, because you had access to your earlier university, you had no need for it, is that right?

There were no other difficulties in the quality of the recordings, other than the last interview recording missing about 15 minutes of the conversation. This was discovered much later, at the transcription stage. A follow-up email was sent to the participant seeking permission for an online interview or else for a written response to the last two questions that were not captured on the recording. The participant initially responded requesting extra time, but did not follow it up.

In the initial stage of transcription, the voice recognition software, Dragon™, was utilised in the hope of speeding up the process. However, getting the software to pick up the researcher's accent consistently proved to be time consuming. Additionally, as the translation to English was being done while listening to the conversation in Dhivehi language, dictating it coherently into the software proved to be taxing on the researcher's concentration. Therefore, the traditional method of listening and typing up the transcript was preferred.

#### **5.1.6 Interview analysis**

The interview transcripts were imported into the qualitative data analysis tool NVivo™ for systematic coding and analysis. A set of standard questions/themes were drawn using the semi-structured interview guide and each interview transcript was read through inserting these questions/themes next to the matching conversation snippets. These questions/themes were formatted using the standard heading attribute, and the associated snippets were formatted for standard text attributes using the NVivo™ text editor. This enabled auto-coding on the heading and paragraph styles allowed on the software. These auto-coded standardised questions/themes and the resulting *nodes* and *references* table is included in Appendix 5B and a snippet is reproduced in Figure 5.2.

In Figure 5.2 the *Name* column shows the coded themes/nodes, the *Sources* column indicates the number of interview transcripts in which the theme/nodes appears, and the *References* column shows how many times the node appears across all the conversations.

Nodes			
Name	Sources	References	
2.1 LIS Do you think your customers approaches information seeking activities	2	17	
2.12b What changes would you like to see in your library~	13	173	
2.12 In general what do you think about the library as a physical space and as	14	209	
2.11f Reading habits	15	210	
2.11e LIS view on level of emphasis on students to use the library	2	17	
2.11d Lecturers' view on their level of emphasis on students to use the library	5	46	
2.11c How much emphasis is placed by lecturers on using library databases~	6	45	
2.11a Induction to library and its resources	14	152	
2.11 Information literacy & research rigour	15	246	
2.11 e Journal impact factor and journal rankings	12	89	
2.10a How would you rate the services at your library~	15	208	
2.10 Do you see googling as an alternative to the library~	13	101	
2.1 How would you normally start a search~	15	315	

Figure 5.2. A snippet from the Nodes table (from coding in NVivo)

These standardised questions (nodes) are not necessarily the questions that were asked in the interviews. But they were devised to code and categorise the pages of interview data. With the conversations tagged with these standardised nodes, NVivo™ generates reports for each of these nodes, bringing together all the different interview conversations coded with the particular node (including multiple occurrences within the same interview) into one document. A sample snippet of these reports, constituting 243 pages of data, is included in Appendix 5C. This particular snippet is for the node “2.1 How would you normally start a search”. A number of mind maps were developed before arriving at these nodes. A sample mind map is included as Appendix 5D.

## 5.2 Interview outcomes

The results detailed below are presented thematically and do not necessarily follow the order in which the questions were asked. Neither are they in the same format as presented in the interview guide. These accounts do not necessarily include all the conversations that occurred during the interview, as some comments were beyond the scope of this research. The outcomes that follow are reflective of themes of inquiry that were specified on the information letter sent to the participants (see section 5.1.1), and the themes have been regrouped as follows:

- Google as a source of information access;
- Online search strategies in the *googling* environment;
- Perceptions about the library as an information resource;

- LIS participants' perception on user information behaviour; and,
- Changes required for the libraries to stay relevant, and the associated challenges.

Quotations, presented within data tables and as indented block-text, in this chapter are not the exact words of the participants because the interviews were conducted in the local language, Dhivehi. However, the translations are as close as possible to the participants' words. In reporting, unless required for context, the participants are not identified whether belonging to MNU or VC. In some of the quotations from the interviews, a dialogue style is used, again mainly for anonymity, and in these cases 'Q' is used to represent the interviewer questions and 'A' is used to represent the participant answers. A matrix of the themes (nodes in Nvivo™) against the following reporting structure is included in Appendix 5E.

### **5.2.1 Google as a source of information access**

All the participants were asked to recall a situation where they had to search for information, for example: a report requiring research, an assignment, a publication, or a project of an academic nature. The participants were asked to explain how they initiated their information search and whether they were able to retrieve information to meet their needs.

The conversations around these probing questions demonstrated online searching plays a large role in starting a search to address their information needs. All the participants described the prominence of Google in their online searching endeavours. Some participants named Google straight away, while for others it required a conversation around online searching to pinpoint Google as the prominent search engine.

#### ***Staff responses***

I start looking for information online...Google, mostly. I use the library rarely...When I get a relevant article or information from Google, then I refer to the bibliography on that article...I search Google to follow that up – to see where I can find the specific article...I do get enough information [from Google books and Google general...there are instances where I find relevant articles, but full-text is not available...from [institution's] database there is limited access to full-text...Generally speaking it is easier to access through Google. (Staff01)

I start with Google because when you do the search you are able to retrieve a lot of relevant results. But they don't necessarily give full access isn't it? From there, I go to the University website and look for the particular resource (talking retrospectively about places studied overseas recently). I can still access my university collection... the connection from here is slow...I think in this scenario, using Google is even more effective. I can use Google and then follow up the stuff that I don't get access to from Google - those that appear important. I mean, we most often can access abstract isn't it? (Staff02)

[To look up information I use] mostly the library; the National Library as well as the MNU Central Library. Also the internet... sometimes I use the terms and search for important citations given on the reference list of appropriate articles...I do use the database provided here. EBSCO! And it's not too difficult for me to find information on EBSCO. And then I mainly use Google. Google Scholar also. (Staff03)

What I do is at first on Google, I do a general search - from there I try to identify readings of interest. (Staff15)

### ***Postgraduate student responses***

I am not comfortable depending on just online information. But still, Google is a very good way of starting a search...With any topic, it's easier to get a grasp of the topic by doing a Google search; by either reading opinions of people, newspaper articles around that topic or just about any writing. It's very easy to find. Google is very useful to brainstorm the topic, to find what to write, how to pitch your own writing. (PG04)

I do use it [the internet]. Mainly to get a general understanding of people in their writings...*googled* for general information. And then used subject recommended books. Mostly on Google [books?]. (PG07)

I *google*...You are able to get a lot of information isn't it? On a variety of topics. Sometimes, an exact match might not be found. But there will be many related stuff. Or at least shows other pathways that can be followed. I use Google for all my needs... From OUM I have arrangements to use their digital library. With password and pin. It's easy to find things from there. In Google, sometimes we are not able to get full-text isn't it? Some needs to be purchased. But from that library database we are able to get whatever they have for free. (PG09)

I searched on Google, mostly. We have online access from the College to OUM. So can search on that. But mostly I retrieved stuff from Google...And when searching, you are able to tell what angles to pursue further. (PG10)

### *Undergraduate student responses*

First [access] point is library. If not able to get books from there, then I search on EBSCO... I mostly depend on the library for information...I use it [Google Scholar] for published articles, to check if it is available there. Sometimes on Google, it is difficult to find. But when you look on Scholar it will be there. (UG08)

I do utilise the Open University (OUM) library. There are quite a lot of material available from the library. But quite a lot of information is sought by searching Google and selecting trustable articles. (UG06)

I use Google as the main information source. (UG11)

At first I refer to the book [syllabus]...assignments are based on... And then I search to see if there are any articles [on the internet]...Google search most of the time! And then if I find a good site, I book mark it for future reference...I search Google first, and then some of the sites have photos of the book and a small description. If that book looks appropriate, then I search on Google Books. Some books have larger chunks of it freely available compared to others. (UG12)

Common themes that emerged through these conversations are firstly, the prominence of Google as a starting point for information seeking and as a discovery tool to easily find citations to scattered literature. Secondly, there was also a perception that Google was equivalent to online/internet/web, and thirdly, Google met the expectations as an information source better than other sources at their disposal like the subscribed scholarly databases or the library. The notion that the library and the scholarly databases are two separate entities emerged from the VC participants and this will be addressed later in the chapter.

#### **5.2.1.1. *Google as a starting point and as a discovery tool***

Google was predominantly seen as a discovery tool, as a path finder, with ready access to full-text material in some instances. It was also seen as a tool to gather the range of information sources available on a topic and to locate the easiest access point for a known article or book.

From Google, most stuff have only abstracts. When we know where the article can be located exactly it is very easy to find it from the database. (Staff02)

Many times [Google search] leads me to forums. In some of the discussion forums there are discussions going on by master's level students on similar topic: discussion

about relevant books in the area, etcetera. I gather information through those channels too. (PG04)

The conversations demonstrated that there was an overall hype of high reliance on Google to meet information needs. However, it was found that the more educated one was, the less reliance there was on Google as an end in itself. Not all participants perceived Google the same way. More staff approached Google as a discovery tool while more postgraduates perceived Google as a useful information resource complemented with the access to scholarly databases through their institution. Undergraduates perceived Google as a useful information source but this group also relied more on the library in comparison to staff and postgraduates, specifically on the book collection.

Interestingly, there was only one academic staff with no overseas tertiary education exposure and this staff placed more importance on the library as the discovery point even while noting dissatisfaction with what was on offer. This distinction was not evident from the six student participants with no prior overseas education experience.

#### **5.2.1.2. *Google synonymous with online/internet/web***

Some participants talked about online searching at great length and further probing was required to elicit whether *online* referred to Google use or the internet generally. In most cases, the term was used in reference to a Google search, and in a few cases it referred to the suite of scholarly databases available to VC staff and students.

A: I start looking for information online.

Q: What do you mean by online?

A: Google Books and also, because I am based in Villa College, we have access to the OUM database.

Also of significance was not having an apparent reason why participants started using Google.

Q: Ok. The way you search Google, the way you start your search on Google - what are the reasons for not starting it on the OUM database?

A: No specific reason. Have not thought about that. (PG 09)

Inferences can be drawn around the association of internet with Google by examining how and when Google became part of the participants' information seeking context.

The timeframe of Google uptake as an academic information source by the participants are summarised in Table 5.1.

*Table 5.1. Participants' reasons for Google adoption, and the associated timeframe*

<i>Participant</i>	<i>When, why, and how Google was adopted</i>	<i>Uptake Year</i>
Staff01	I have been using it ever since I started teaching. So, more than 15 years...I use it daily. I do end up searching something on Google every day. Not necessarily research based. But for learning materials, for videos, for PowerPoints. Additional resources for teaching material and activities. So, using Google is a daily thing.	2000
Staff02	I think for academic purposes I must have been using it from maybe 2004 or 2002....I would say [I use it] to a very large extent. Ever since I came back to the Maldives [in 2008], Google is everything for me [as an information source]. But I don't just rely on what I get from Google. If we are to write a quality paper, we need to verify our sources isn't it? So, I do trace it through to the original source....I know the limitations of Google. It will pick up all sorts of resources.	2004
Staff03	I guess I started using it only after joining here - I mean using it frequently....There isn't a day that I don't use Google...When preparing for a lesson, I do a Google search before every class. Even if for a routine lesson, I do update myself.	2008
Staff05	About 8 years I think. [I use Google] daily...to find out who are the people...business side...general search...publications...Things like financial times...	2007
Staff15	From my time doing master's I think...in 2006.... [I don't use Google] that much. There is quite adequate access to journals and reading material from the University (referring to earlier affiliated overseas University). I did use [Google] to some extent [back then]. But mostly it was as a last resort....Now I use Google a lot.	2006
PG04	From around 2000 I think. Yes. [I use it for] just about anything, I guess. Current affairs, general information, even to write an article, I do search on Google...I do end up wasting a lot of time too. One thing leads to another and I keep on reading...I do tend to read just about anything that could inform me.	2000
PG07	Starting from somewhere around 1998 or 1997....School related work. Because of the nature of my subjects I had to use it sometimes...It was accessible at school. From computer lab.... [Most of my search time is on] Google I would say. To find relevant articles. HINARI/EBSCO is to look for specific articles.	1998
PG09	[Started using it] when I started diploma...from 2003.... [I use Google] a lot of times in a day. Even in between classes that's what I do...To get further information on the next lesson just before going into class...I try to keep up to date...Whenever I need information I guess...Definitely at least an hour will be spent I suppose.	2003
PG10	Always. Mostly I use Google... As soon as I started studies... From diploma... so 2003. 100% [of my study related information needs are met by Google] I have to say. But of course I do refer to books too. But the large proportion is Google. I use it quite frequently on the phone too. Even during class, if I need to look up something further that's where I go.	2003
UG06	Since the time when we started using internet. From 2008ish. 2009. or 2008. When I started using it, I wasn't too aware of it. It was a trial and error... When working on an assignment, I would say [now] I use it for 2 hours at least daily.	2008
UG08	From Grade 8 onwards... For study related purposes... I don't see anyone else using anything else. So I think it's kind of taken for granted that it is the way to search... I often use Google for not less than 2 hours I think. Mostly for photos, slides.	2006

... continuation of Table 5.1.

<i>Participant</i>	<i>When, why, and how Google was adopted</i>	<i>Uptake Year</i>
UG11	Ever since I started diploma I guess...2003... I joined as a teacher in 2000, but at that time there was not much of internet access even at the School. There were computers but not internet. But when I joined the diploma course the next year here in Malé that's when I had access to internet. And through the work on group assignments, learned through team members too...I guess [I spend] 6 hours in a day [on Google]. And when I was studying it would be even more. As it happens even [at work] if I get some free time I will... and also just after the work-shift I go to my island and then for few hours after that I spend on studies and am always using Google.	2003
UG12	Ever since the time from school...From the year 2000. I was in Grade 8. And was doing computer studies. Google is constantly used. For instance even at work it [Google] is always used... It is used for academic purposes most of the time. Even at work, if I don't know something, I <b>just google</b> to find out (emphasis added). By Google I mean YouTube too.	2000

Interestingly, those who had been exposed to overseas tertiary education from early on took to Google comparatively much later (Staff02, Staff05, Staff15). The uptake of Google by Staff03 and UG06 (both above 40 years of age) at a later date was explained as having to rely on other people to search for information on their behalf in the early 2000s owing to a lack of internet access. The younger participants appeared to have imbedded Google in their day-to day activities without any conscious reasoning other than associating Google to be the 'place' to turn for information (specifically: PG07, PG09, PG10, UG08, UG11, and UG12).

As highlighted in the last row on Table 5.1, *google* and similar terms are used as a verb. The participants were also specifically asked for their perception on the meaning of commonly used terms like *googling*, *google it*, *I googled it*, etcetera. The data is summarised in Table 5.2.

Table 5.2. Participants' interpretation of the term *googling*

<i>Participant</i>	<i>Quote</i>	<i>Interpretation</i>
Staff01	When you say <i>googling</i> , it just means you get the information you want.	Searching online
Staff02	In a general context it is talking about using Google. More importantly it is talking about looking for something...In Maldivian context, I think it is also saying just use the internet.	Searching online
Staff03	Sometimes we do say 'ask Google'...in that context we don't mean to say just use Google search engine. But it is a reference to the internet.	Searching online, mostly on Google
Staff05	Starting on Google, and then it takes you to other sites, and searching on those sites is also counted as <i>googling</i> .	Searching online
PG04	<i>Googling</i> now means searching the web...For me <i>googling</i> means accessing websites. Google is the one on the fingertip.	Searching online

... continuation of Table 5.2.

<i>Participant</i>	<i>Quote</i>	<i>Interpretation</i>
PG07	Some people could mean it to specify Google searching. Others could use it in general for using the internet...I use Google to search.	Searching online, mostly on Google
PG09	Search information through Google	Search on Google
PG10	Search for information on the net	Searching online
UG06	It's Google search	Search on Google
UG08	It just means looking for information	Searching online
UG11	Specifically Google. That's how I see it. To me what it means is that you just have to look on Google and you will find it.	Search on Google
UG12	But these days, we often say 'just google' to say 'go to the internet'...so in that respect I guess we can say <i>googling</i> is using the internet	Searching online, mostly on Google
LIS13	Searching using the internet	Searching online
LIS14	Google has dominated our thinking and computer browsers I suppose. Almost everyone has Google on their desktop. Even the computer labs have Chrome, and therefore when you open that browser it takes you to Google search page. Hardly anyone uses [Windows] Explorer these days. So you see it, and you are brainstormed to think, as soon as someone says <i>googling</i> , it means they go on internet and search.	Search on Google

Of the fourteen participants who answered the question, seven participants (3 staff, 2 postgraduates, 1 undergraduate, and 1 librarian) were certain that *googling* equated to searching online. Three other participants (1 staff, 1 postgraduate and 1 undergraduate), interpreted *googling* as meaning searching online mostly using Google. Only four participants (1 postgraduate, 2 undergraduates, and 1 librarian) stated that *googling* simply meant using the Google search engine.

The response from one of the librarians (LIS14) is noteworthy. Talking from the experience of conducting information literacy sessions, the librarian stated that users were not aware of search engines and that Google by its ubiquitous presence had become the gateway to the internet. This perhaps is reflective of the internet newcomers (younger generation as well as the mature adults who took to the internet recently) equating Google to the internet by their emphasis on *online* as equivalent to searching on Google, and by extension associating *googling* to searching online.

### **5.2.1.3. Awareness of search engines other than Google**

The staff and student participants were asked if they were aware of other search engines and to what extent they used anything other than Google. These conversations are summarised in Table 5.3.

Table 5.3. Awareness about search engines other than Google

<i>Participant</i>	<i>Named</i>	<i>Do you know other search engines?</i>
Staff01	Yahoo	<ul style="list-style-type: none"> <li>• I haven't used Yahoo enough to be able to compare.</li> <li>• From the start I have used Google. I guess it was easy to use and never had a reason to try something else.</li> </ul>
Staff02	Yahoo	<ul style="list-style-type: none"> <li>• Some time back I did use Yahoo a bit.</li> <li>• At the time when we started University Education, I think the most reliable and buzz thing was Google...and it is also user friendly and we can retrieve quite a lot of relevant results, and Google Scholar is very appealing.</li> </ul>
Staff03	Bing	<ul style="list-style-type: none"> <li>• I have used Bing a little bit. Not recently. Sometime ago, around 2009...Google is easier.</li> </ul>
Staff05	Yahoo, Web Crawler, Bing	<ul style="list-style-type: none"> <li>• But that's not as easy as Google. I did use Bing quite a lot... It's been a long time since I used Yahoo.</li> <li>• I think it is easier to find needed information from Google.</li> </ul>
Staff15	Yahoo AskJeeves	<ul style="list-style-type: none"> <li>• I have used it [Yahoo]. And also things like Ask Jeeves or something like that. But I perceive Google to be better.</li> <li>• I am just too used to Google, and it's my preferred.</li> </ul>
PG04	Yahoo	<ul style="list-style-type: none"> <li>• My searching is kind of distributed between Yahoo and Google...I think, we most often use Google hence are familiar with it. But we get almost similar results from both Yahoo and Google.</li> </ul>
PG07	Not too aware	<ul style="list-style-type: none"> <li>• Q: Any specific reason why you don't use [another search engine]?</li> <li>A: No. Maybe because we all use Google mostly. It's easy... Because it is used often - it is familiar.</li> </ul>
PG09	Yahoo	<ul style="list-style-type: none"> <li>• I have heard of Yahoo...I guess I have this perception that Google gives us more information.</li> </ul>
PG10	Yahoo	<ul style="list-style-type: none"> <li>• I do know there are other search engines like Yahoo and others...I have used Yahoo to some extent.</li> <li>• Google is easier to search... I have always used Google,... I guess we just naturally got in to the habit of using Google without much thought on it.</li> </ul>
UG06	[Says can't recall the name]	<ul style="list-style-type: none"> <li>• What I notice is that Google is a bit more accurate. And it retrieves a wide variety of relevant results. Maybe I am biased towards it...I do sometimes use something else. But have difficulty hence return back to Google.</li> </ul>
UG08	Yahoo, Bing	<ul style="list-style-type: none"> <li>• I have mostly used it [Bing] by mistake [because it comes on default on some of the systems]...It just occurs that the search is difficult and that's why I take a closer look on what I am searching on. And then find out it is Bing.</li> <li>• Google is easy to use. It gives you more information, specific information...With other search engines there are too much useless information on the display.</li> </ul>
UG11	[Not aware]	<ul style="list-style-type: none"> <li>• A: Haven't used Yahoo.</li> <li>Q: But have you heard about it or Bing?</li> <li>A: Yes I suppose [heard about Yahoo] but not Bing.</li> </ul>
UG12	Bing, Yahoo, AskJeeves	<ul style="list-style-type: none"> <li>• Because I study IT, these things are part of the study. Now Google and Bing are almost the same. Others are different and difficult to use.</li> <li>• From among Google services, I prefer YouTube now. Grasping concepts explained on videos is easier than reading books.</li> </ul>

An undergraduate and a postgraduate stated they were not aware of any other search engines. Another undergraduate stated awareness but did not recall any names. Those participants who stated awareness, predominantly named Yahoo (9 out of 10 participants) and four participants named Bing. Except for one undergraduate who stated using Bing alongside Google and a postgraduate who stated using Yahoo alongside Google, all other participants appear to rely on Google.

#### **5.2.1.4. *Specific reasons for using Google***

The reasons cited for the reliance on Google (as seen in Table 5.3 above) ranged from:

- Easy to use / user friendly (staff01, staff02, staff03, staff04, staff15, PG07, PG09, UG06, UG08, UG12);
- Most reliable/better/accurate results (staff02, staff15, PG09, UG06, UG08);
- Used to it/familiarity (Staff15, PG04, PG07, PG09);
- Omnipresence (staff02, PG09, UG12); and,
- No reason to try something else (Staff01).

The notion of omnipresence, or using Google just because it is the default search engine on their browser, is an interesting concept. UG12 was the only participant who stated using another search engine (Bing) more than Google. The student specifically said that both Bing and Google work in the same way and that the Google search engine was mostly used as it appeared by default on the student's computer Web browser of choice (Chrome™).

All participants who stated an awareness of search engines, also cited Google was easy to use. This stated awareness needs to be taken with caution, as while some participants were aware of popular search engines like Bing and Yahoo, it was clear that there was no real awareness of how a search engine functions.

The second most cited reason for using Google was its reliability, and these conversations also indicated Google was perceived as a self-contained database or was equated to self-hosting information websites like Wikipedia.

I think it is easier to find related material, it [Google] is a bit easier. And in Bing what happens is, of those available in Bing there are many that needs to be purchased. So

that's also difficult. In Google there is free material. So that is easier isn't it? We can't afford to buy all information we need. (Staff03)

I do use Yahoo quite a lot....My searching is kind of distributed between Yahoo and Google. Our students use Wikipedia very much....I don't use Wikipedia. (PG04)

Given the blurring of what the internet is and what Google is, and how Google is seen as an information mediator, the participants were asked how satisfied they were with Google searches. The statement by UG12, “you just have to look on Google and you will find it” is noteworthy.

#### ***5.2.1.5. Google as supplement or alternative to library***

Those participants who saw Google as not just a pathfinder, but also as an access point for acceptable research reading material, did not dismiss the importance of a library altogether. While many saw Google as an alternative to the library, others considered Google as a supplementary/complementary resource. In either case, Google was seen as meeting their expectations more than their affiliated library did.

Of the thirteen participants from the staff and student categories, six (3 staff and 3 postgraduates) viewed Google or the internet as providing supplementary support to that of the information sources offered from their respective libraries. The participants opted to use words like “parallel” to describe their use of both the library and Google/internet and revealed some mixed perceptions about the library.

It [Google] cannot be an alternative. Like when fax machine was introduced, post office was predicted to become extinct, but we still have post offices. So not an alternative. The roles are different. A library's role is different. (Staff05).

I am not comfortable depending on just online information. But still, Google is a very good way of starting a search... It's not an alternative, but a parallel use I believe (PG04).

[I do] not necessarily use EBSCO when Google fails. Often times it's a parallel search. (Staff15)

Staff15 quite explicitly prefers the use of a library, however, the staff also stated that in the Maldivian context, it was not possible to do without Google/online sources. This notion of a lack of access was being used by the participants as an indication of Google becoming an alternative:

Here [at VC], [web]-sites load at a slower speed [compared to a search on Google]. So it is very difficult to access the databases (in reference to OUM databases as well as alternative access to an overseas University library database). And therefore, I think in this scenario, using Google is even more effective. I can use Google and then follow up the stuff that I don't get access to from Google—those that appear important....I think in a country like Maldives, Google is very important. I think most often, we would be forced to do with just Google...I suppose not as an alternative. But I think in the Maldivian context, given our situation, I think Google is better than library. That's not the correct word I suppose. Not better. But I think it is more helpful, for an academic! I don't know from a student's perspective what it would be like. (Staff02)

Apart from these implicit associations, some participants were quite explicit about their use of Google as an alternative to the library. Seven of the thirteen participants (2 staff, 1 postgraduate, and all 4 undergraduates) perceived Google/internet as taking on more of an alternative role to that of the library. One staff participant with this view also had strong beliefs about the importance of access to reliable scholarly publications, but explained that irrespective of the entry point, be it the internet or the library, the content was frequently the same when taking into consideration the library's access limitations to scholarly databases.

Even in the database it's the same article. Google Scholar is also the same article. But the thing is it is easier to search through Google [compared to library]. The full-text that we get out of it is the same thing...Like if it is in JSTOR it will be showing that. When we go to JSTOR, it is the same article. Of course, we can search through JSTOR, but it is easier to do it through Google. When I select articles, I select after careful scrutiny. Checking whether it is published in a journal, which journal, the year of publication, publisher, who the author is, authority of that person in terms of other publications. I don't select just any article....I do think Google is an alternative to library. That's how I use it. (Staff01)

Of the five students with perceptions of Google as an alternative to a library, one student from MNU declared significant use of the library. The student explained that the library was expected to meet specific study assignments' assessment criteria, and that there were adequate books to meet the student's needs in terms of the required citations. However, the student also expressed the perception that even without a library they could complete their studies:

I know friends who have passed their studies just by relying on the internet. You

might lose some marks for not using published reference sources. But some do score very highly too. (UG08)

The responses from the other three undergraduates and the postgraduate in this group (7 participants) who implied Google/internet as an alternative, quite readily dismissed the need for a library. The conversations explicitly clarified that three of these students had already completed their studies without using the library resources, including the databases. The fourth student was in the last semester and so far had managed without using the library or associated databases.

### 5.2.1.6. *Google is reliable / meets expectations*

As outlined earlier (in section 5.2.1.4), participants cited reliability as a significant reason for their choice of Google over other search engines. Towards the end of the interview conversation, all participants were asked a few closed-ended scaled-questions. Probing for reasoning for their responses further corroborated the answers given. One question asked was “do you believe *googling* meets your information needs?” The responses are summarised in Figure 5.3.

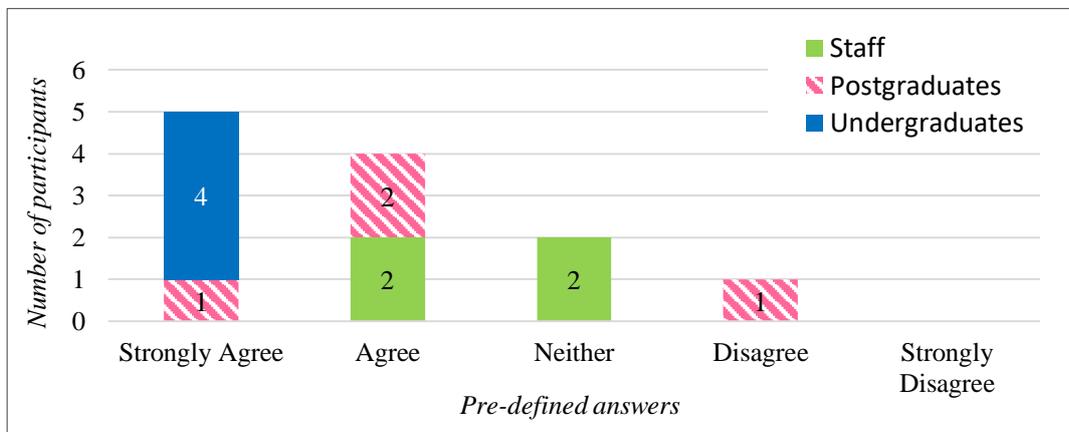


Figure 5.3. “Do you believe *googling* meets your information needs?”

The overall perception by the participants carries an *I can google it* attitude, with undergraduates more inclined to believe this. Only one postgraduate disagreed with the statement, two of the staff chose to stay neutral and two staff stated that *googling* met their needs at an acceptable level. Discussions with all of the participants revealed that, their level of reliance on Google had relevance to poor library access or a negative perception of the library.

## **5.2.2 Search strategies in the *googling* environment**

As seen in earlier (section 5.2.1), academic information seeking by MNU and VC participants predominantly starts online, mostly on Google. This section looks at: the use of scholarly databases; the choice of Google platforms, including Google Books and Google Scholar; the breadth of browsing and how search terms/keywords are constructed; quality assessments of retrieved material; and, how limited access to full-text journal literature through Google is handled by the participants.

### **5.2.2.1. *Use of scholarly databases***

The participants were probed for their awareness about the availability of library scholarly databases in an effort to understand how useful the databases were and how much the databases were being utilised compared to free content on the internet.

The conversations demonstrated that some users were not aware of the databases, some were aware but had difficulty using them, some participants were aware and yet did not trust it to be of value, some cited the cumbersomeness of getting login credentials for the individual databases, and one participant said slow internet speed was a deterrent in accessing scholarly databases.

#### ***MNU***

According to the MNU LIS participant, the library subscribes to LexisNexis Professional, EBSCO, and HINARI. Access to the databases was through three separate login credentials that required manual processing. This was in addition to the login credential to access the user account on the library integrated system that included circulation and OPAC.

EBSCO and HINARI can be accessed even from home...You just need the credentials provided by MNU Library. One complaint that we get is that they are having to remember too many passwords...Some don't even want to go through the registration process to receive the password. (LIS14)

The LIS participant believed the databases were comprehensive and catered to MNU needs given the small-scale of the University and budgetary provisions. The LIS participant also believed that the databases were underused and estimated that only about 10% of the MNU community were using them.

Table 5.4 summarises MNU participants' use of these databases. The last column is an interpretation based on the conversation.

*Table 5.4. MNU participants' level of awareness of, and the use of, scholarly databases offered through their affiliated library*

<b>Participant</b>	<b>Databases the participants are aware of</b>	<b>Interpretation on frequency of use</b>
Staff03	EBSCO / HINARI / LexisNexis	Often
Staff05	"Don't know the specifics"	Not clear
Staff15	EBSCO / HINARI / LexisNexis	Often
PG04	LexisNexis / EBSCO	Never
PG07	EBSCO / HINARI	Sometimes
UG08	EBSCO	Rarely
UG11	EBSCO	Never

Only two of the seven MNU participants, both academics, alluded to frequent use of these databases.

I just started writing articles [this year]. From EBSCO...surprisingly there are quite a lot of journals available. There may be some journals that I particularly want but not available there. But still, there is quite a variety of journals on the database. You just have to search....Most probably people just don't use it....I certainly have got enough material online through the databases. (Staff15)

One undergraduate and one postgraduate stated they had never used the databases but were aware of them. The postgraduate, also a staff at MNU at a course coordination position, revealed an awareness of the existence of LexisNexis and EBSCO and understood that a large sum of money was spent on subscriptions. However, it was stated that the student had never used either of the databases.

Q: Is that because there isn't appropriate resources available from [the databases]?

A: Not really. I am just not too aware of it. It's not too familiar. It will take time to learn and adapt to it...I am not saying that I will not use those databases in the future. But I have not used it for my master's program, as I feel the databases will not be useful for my studies.

## VC

According to the VC LIS participant, JSTOR was the only scholarly database that VC subscribed to, and OUM databases were freely accessible to staff and students enrolled in OUM courses through VC. The registration and access to both JSTOR

and OUM required different login credentials and these were managed through student services with no tangible link to the library. This explained the mixed answers that were received from VC participants when asked whether their library subscribed to scholarly/journal databases. The following is a response from a staff participant:

A: Yes. Have access (a slight hesitation, question unclear I suppose!).

Q: Is it through the library?

A: Through the portal.

Q: Are the databases subscribed through the library? How is that organised?

A: There's an individual login for OUM, for lecturers teaching the OUM modules. It's directly to the OUM database. And for JSTOR we can access it through College domain.

The responses by all six participants are summarised in Table 5.5, and show a discord between the library and the offer of the scholarly databases.

*Table 5.5. VC participants' level of awareness of, and the use of, scholarly databases offered through their affiliated library (the last column is an interpretation based on the conversation)*

Participant	Databases the participants are aware of	Interpretation on frequency of use
Staff01	JSTOR, OUM – through the VC portal	Often
Staff02	“I don't know the full details of that”	Never
PG09	OUM “From OUM through VC portal” “I don't use the library”	Rarely
PG10	OUM (talked about OUM a few times but never associated it with the library)	Often
UG06	Aware. “No access” (Block-mode)	Never (tried once)
UG12	OUM/JSTOR – links on Moodle	Rarely

According to the students, they had to request access to the databases through the student desk”.

There are many students who do not even use OUM... Some junior students in Villa have asked me to find papers for them... I have informed many that, they can get access. But they don't want to...because they have to go to student desk...to request access to the database....But some repeatedly ask me just to avoid going there. (PG10)

The VC LIS participant also described access to EIFL databases and eLibrary from the American Centre through the Maldives National Library consortia. None of the VC staff and student participants mentioned awareness of these. As explained by the VC LIS participant these databases offer limited full-text content:

A: Even with those, the most important article that we are after will not be available in full-text. Only those a bit older are available.

Q: Do you mean OUM?

A: No, the databases we have, EIFL. And also our subscribed database, JSTOR. Even with that, the most important articles are to abstract. Therefore, I don't believe there is adequate access to full-text resources online.

Similar sentiments were shared by one of the VC staff participants.

I am very sure that even from the access we have, we won't be able to get much. For example databases like JSTOR—they are very limited databases. I don't believe it will meet my needs. And many of those have limited subject coverage....To be honest, I have not even tried that. Students express dissatisfaction at it. So do some academics from here. They say that it is pretty bad. So I have never even had the urge to try (Staff02).

One VC undergraduate mirrored dissatisfaction with the few times the databases were tried:

I think I accessed it [OUM Library] about twice. It was very difficult to use....Search process is not easy....Not able to search just with a free-text term. It was just difficult! The login credentials and stuff were given from here, at the beginning....These sites are accessible only within the College, limited to the premises. (UG12)

UG12, studying in an IT degree program, stated a high reliance on Google while fully aware of the limitations of free access on the internet, but at the same time citing the limitations and difficulties of scholarly database access.

Those databases...contains quite high quality material. And there are PDF files. With Google, no matter who puts it up, there is no way of verifying it—so definitely material from the databases will be better. (UG12)

#### **5.2.2.2. *The choice of Google search platforms***

In section 5.2.1.2 we have seen a blurring perception of the web, Google, other search engines, and online sources like proprietary scholarly databases. In this vein, participants were probed to contextualise the distinction they placed on the major Google platforms, specifically: Google general search, Google Books, and Google Scholar.

All five staff participants were aware of Google Scholar and stated using it often, but their usual starting point was the Google general search platform.

I use Google Scholar and Google Books. As I said, the usual beginning is general search. If the bibliography contains relevant articles or books, I follow it up using Google Scholar for articles. (Staff01)

When working on a research paper, I start *googling* at a later stage. The initial work is done on my own, before going to Google. I wouldn't have to go to Google to figure out the research question....What is required further is to find out the new developments in the field....When I Google, I think I Google for specific authors... So, normally I search on general Google. I do search Google Scholar towards the end of my search. (Staff02)

The following commentary from one of the two staff participants with a doctoral qualification, who also had the most publishing experience, is noteworthy:

I use Google basic [general search] mainly. Because, when you search Google Scholar what is retrieved are those material that they have classified as academic...Google Scholar might not display important working papers in word document format that is retrieved from Google basic search.

Of the four postgraduate participants, one claimed to be using Google Scholar often, two had no knowledge of Google Scholar, and the fourth participant had a vague idea of its existence. All four postgraduates were aware of Google Books and were aware that only snippets of information could be viewed. Of these four postgraduates, only one participant stated they used Google Books.

Similar to the postgraduate participants, three of the four undergraduate participants appeared to have no idea what Google Scholar was, while one participant used Google Scholar often and found it useful. The student who used Google Scholar did not appear to use Google Books, while two of the other three undergraduates used it.

What can be deduced from the findings on this theme is that all participants predominantly started their online search on Google's general search interface (Google.com) and followed the links that looked promising. This presumably could have led them to Google Scholar or Google Books but they were unaware of it. Most participants were not aware as to how Google Books, Google Scholar, and the basic Google general search interfaces differ. From the interviews, it can also be deduced

that the participants in general used Chrome™ or Firefox™ as the Web browser and therefore the default search box that appeared on their computers was the Google general search-box.

### 5.2.2.3. *Number of result pages browsed*

The participants were asked how many result pages they usually look through when searching on Google, taking into consideration that there are 10 retrieved results displayed on each page. Figure 5.4 shows a snippet of the first page of results retrieved on Google Scholar for the term “information seeking behaviour theory”, as an example.

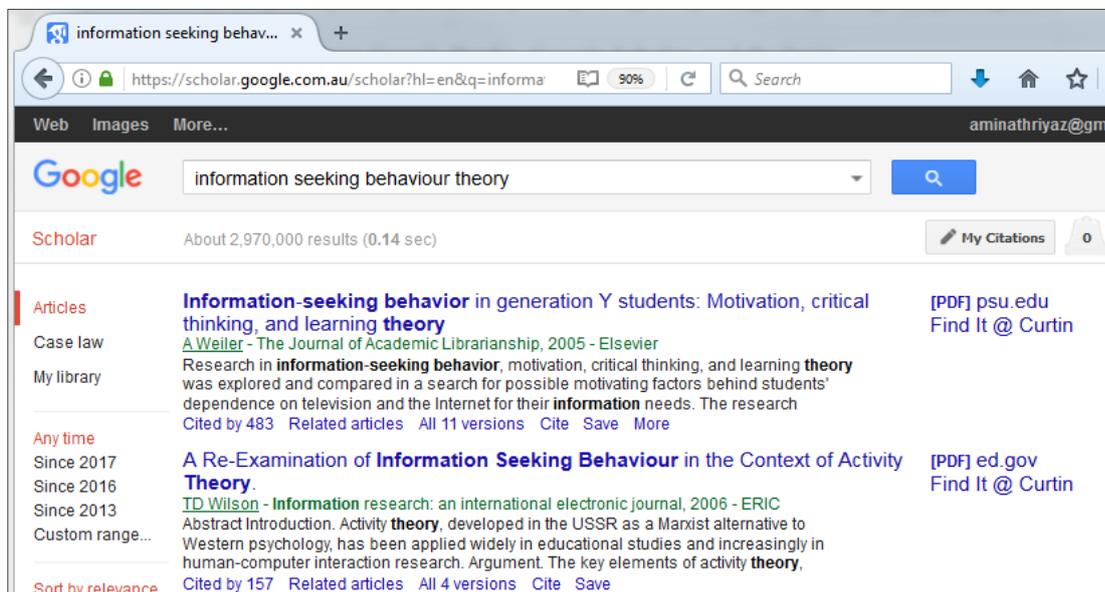


Figure 5.4. An example of Google Scholar retrieved search-results page (showing 2 of the 10 results displayed on Page 1)

The participant responses (summarised in Table 5.6) demonstrate that they believed they were usually able to decide within about one to two pages of retrieved results, whether to look any further.

Table 5.6. Perception on the number of Google result pages participants skim through

Participant	How many results pages do you usually look through on Google?	Number of pages
Staff01	First page mostly. Second sometimes. Very rarely do I look at more pages....I just believe that there would not be any more relevant material on further pages. By experience we know that the relevancy reduces further down the results....Have to try keywords in different ways to retrieve useful information.	2
Staff03	Most of the time one to three. I hardly stop with just the first page. After third page it's very unlikely to get good results...Mostly I keep looking further just to see if I can find some free content.	3
Staff05	Usually first 2 to 3 pages....If looking for a specific topic/article, could go to 3. But for a simple general search, first page will do. Usually 2 for specific, first page for generic.	2-3
Staff15	Sometimes even about 10 pages....For just a very general search...maybe 3 to 4 pages....But still, as I go further, the relevancy reduces. But I'm always cautious that there could be more.	3-4
PG04	Mostly I just skim through the few lines under each [retrieved] result to see if it matches what I am looking for. Most times, I open up about 6 links....Usually I do skim through the second page....The results are dependent on the keywords used.	2
PG07	I would usually go through 50 [results, 5 pages]....I will look until I can find reliable information.	5 ∞
PG09	Sometimes even 10 pages. Sometimes an overall look, can tell whether the search term did not work....For [general search] I guess 1 or 2 pages.	1-10
PG10	If I am not getting desired results I keep looking....About 10 pages usually. I don't go through all the results. Browse through the headings of the results and open only those I want....Sometimes you might not find much. If that's the case, I will stop that search. I only go through more pages if relevant results still continue to appear.	10
UG06	Sometimes, several articles can be retrieved from the first page itself....For general searches on average let's say 2 to 3....Most of the time, I just search until I find something good.	2-3 ∞
UG08	The first page alone is not enough many times. So I tend to browse through other pages too....Maybe 2 out of 10 searches, it would be 10 to 20 pages....On average 10 pages....[I] skim through the snippets to decide if that looks promising. You can tell just by a quick skim....Sometimes good results do appear on later pages too. And that happens because of the keyword we use.	10
UG11	At first I browse through some and open some links and go through it. I check the references. And then check the abstract....And then compare against the topic I am searching on....I just skim through until I find something relevant.	∞
UG12	It depends based on...for example, if I'm looking for a PDF, I look at a large number of pages. For a normal search,...most I would go through is 5 to 6 pages...summaries of the results help me decide what to open. And also the site addresses gives me an indication of what can be reliable....The exact assignment term might not be that useful. So you have to try a few alternative terms.	5

The participants did not necessarily open all the retrieved results on the pages they skimmed, but made a decision to open the links based on the snippet of information visible under each result. The staff in general, mentioned skimming through two to

three pages while the students in general mentioned going up to ten pages, or “as long as it takes” to find something useful (PG07, UG06, UG11).

Sometimes skimming of result pages was not only based on retrieving intended material but also to see what other alternative angles of searching should be pursued.

It's better to go a bit further than the first page to minimise our error of keyword use, and the possibility of articles from other angles are also there. (PG04)

One staff highlighted that a few more pages of results are skimmed because “sometimes the same article which is available for purchase on another site are also available free from another one and the free content happens to appear later [on the list of retrieved results]” (Staff03).

#### **5.2.2.4. Construction of search terms**

As seen in Table 5.6, the overall determinant on the number of result pages to skim, appears to be related to the participants’ trust in Google ranking to display the relevant material for the search term appearing on the first few pages. It is interesting to note that the overall perception is that the information searchable through Google is sufficiently good enough, and that the lack of retrieval of relevant results is only a matter of inappropriate search terminology.

In some instances the first keyword tried works. But sometimes, it could just give one useful article. So have to revise the keyword [and search again]. (Staff01)

If there aren't related stuff on the results...I change the search term. (PG09)

Sometimes, it could be that the keyword being used is not the right one, so I change the keyword. And try search again (PG10).

Other times, there could be nothing worth pursuing further on the first page....If I am not satisfied with those, I search again with a different search term. (UG06)

According to all thirteen staff and student participants, they mostly used basic search terms/keywords from the topic at hand, with only a very rare use of the advanced search feature. Only two participants (Staff05 & PG10) mentioned the use of advanced searching, and stated that they hardly used it even though they understood advanced searches were meant to be more effective.

In addition to the main words or phrase from the topic at hand, there was a mention of inserting qualifying terms like “eBooks”, and “PDF” to narrow down the results. In this respect, the following are noteworthy:

[I use] eBooks and then the topic of my assignment...I look for white papers. And that comes as PDF documents. So when I search, I specify to search PDF. (UG12)

If I come across an interesting article on a bibliography of what I am reading, I try to search on that title and add “PDF” to see if there is anything available. (Staff15)

These conversations led to further probing by the researcher to understand why PDF files were sought after.

#### **5.2.2.5. *Quality Assessments of retrieved material***

A few participants (UG11, UG08, UG12, and Staff15) implicitly associated the quality of articles to those available as PDF files. The quality was not necessarily attributed only to the quality of the reading experience owing to the file format, but to that of a perception that the PDF format was a measure of the content quality.

PDF files are most often copyrighted material. (UG08)

You can be pleasantly surprised even then – like when you search on Google and enter “PDF” as part of the keywords, you will find complete books – scanned versions uploaded by individuals. (Staff15)

However, the criteria for a PDF did not come up in their responses when participants were specifically asked about how they assess the quality of material sought online, specifically using Google. Two statements that stand out are:

The trust is not on Google—but on the publication, the credentials of publisher and or author. (Staff01)

When we search and retrieve material from Google, it does not compromise quality. (Staff03)

Similar sentiments were echoed by most of the staff participants. There was unanimous agreement that Google results were not inferior to library sources if the users were vigilant in knowing how to differentiate scholarly material. The

conversation around the theme of how the quality of material is assessed is summarised in Table 5.7.

*Table 5.7. How participants assess the quality of the material sought online*

Participant	Quality determinants
Staff01	Publisher; Author; Peer reviewed
Staff02	Author; Author affiliation; Author status
Staff03	Journal article; Authenticity of journal; Author credibility
Staff05	Author credentials; Ensure the article is from an academic source
Staff15	Reliability of the journal
PG04	Scan the citations; Presentation of the argument
PG07	Scrutinise the research methodology and design
PG09	Scan the citations; Presentation of arguments
PG10	Standard of writing; “Intelligent judgement”
UG06	Presentation of arguments—consistency across other literature; Articles based on research; Scan the citations
UG08	Author credentials; Publisher; Presence of necessary information for citation
UG11	Scan the citations
UG12	Author; Scan the citations; Authority of the website

The key determinants that resonated with staff participants mostly were the credibility of the author and the journal. Student participants predominantly cited using the reference list on the retrieved article (“scan the citations”) as a measure of credibility. For example UG06 stated:

Also checking what is cited in those articles, if the citations are to relevant reliable sources, the article can be considered to be of value.

Other methods of evaluation included checking if the arguments in the retrieved article were strong, if the article was based on research and also the credibility of the methodology, and the quality of writing.

#### **5.2.2.6. Other search strategies**

In addition to the selection of platforms on which to search, the determinants of search terminology, and decisions on the quality of retrieved results, the interviews also highlighted the following in the participants’ endeavour to search for information:

- The importance of bookmarking serendipitous discovery of key websites/resources (Staff15, UG12);
- Following up relevant material from the list of bibliography of already identified relevant articles (Staff01, Staff03, Staff15); and,
- “Going to the library and talking to the librarian” (Staff03).

Furthermore, the conversations around this theme reveal that the participants utilised certain strategies to source the full-text of citations or abstracts retrieved through online/Google searching. When faced with limited access to full-text articles in the results retrieved, the staff and students:

- Seek alternative/substitute articles that offer free full-text access (Staff15, PG04, PG07, PG09, PG10, UG08, & UG11);
- Use friends/colleagues network in more affluent universities overseas (Staff03, Staff15, & PG04);
- Fall back on alumni access to affiliated university libraries (Staff01, Staff02, Staff05, & Staff15);
- Use the subscribed databases on offer through their library/institution (Staff01, Staff03, Staff15, PG07, PG09, & PG10);
- Write to the author directly, mostly through information sought on academic social media such as Academia and ResearchGate (Staff02 & Staff03); and,
- Spend their personal funds to secure key papers (Staff01, Staff03, PG10, UG06, UG08, & UG12).

Searching further for an alternative substitute article appeared to be the most often preferred option by students, when their desired article sought through an online search led to pay-access or contained only an abstract. Staff were more inclined to use alternative access strategies to find the article they wanted. Falling back on alternative access to affluent libraries (as alumni or through colleagues or friends) was the most preferred by the staff participants (including one postgraduate who is also an academic staff), and this is the group who were mostly at liberty to tap into similar networks through their former education affiliations overseas. This however does not mean that the staff did not settle for alternative articles:

I have free access to my [overseas affiliated] university library databases....Writing to the author directly [is an alternative]....There could be instances where you just have to make do with what you get. (Staff02)

Have to learn to manage with what we have.... But even if that article is not there, there will be something that can very easily substitute that article.... I do get new stuff from EBSCO [MNU library database]. Many of the staff [here] do not expect the library databases to have the information they require. (Staff 15)

These findings suggest that the staff and postgraduates were more inclined to check the affiliated library/scholarly databases when they failed to find it online, while undergraduates in similar situations preferred to settle for quick access by direct purchase online. Purchasing was seen only as a last resort and a rare occurrence.

Sometimes, if the article is not available on the directed site there are other sites where the same article can be found in full-text....I use OUM... It's easy to find things there.

[I don't use the library]. (PG09)

Can't really afford it. So far managed without purchasing....Just had to rely on free material. (Staff05)

[I have had to purchase] a couple of times. For one module, I just couldn't manage with Google search. (UG06)

It needs to be highlighted that the participants never approached the library staff even if they were not successful in securing the full-text. The main reason for not checking the databases themselves was a distrust that the full-text would be there. The reasons for not contacting library staff was cited as time constraints and lack of trust that librarians would be able to do anything further:

Sometimes have relied only on the abstract, rare cases.... I try to find another related article....Never tried to see if the library can assist to source full-text. (UG11)

What happens is, we don't have enough time—can't check everything [library databases]. I do what is most comfortable for the timeframe, [and pay to access articles found through online search]. (UG08)

One postgraduate from VC highlighted frequent use of databases offered through the institution<sup>8</sup> to source any full-text of citations found through Google. Nonetheless the student also reported having had to pay for access.

Q: So those must have been very important articles I guess [to pay for access]. Did you try any other alternative way of getting those articles for free?

A: Yes. I tried. I don't do that [purchase] often. Only if the article is very relevant and important.

Q: Ok. Did you approach the library to see if they can source it for you?

A: No.

Q: Why was that?

A: You mean, why I did not e-mail or contact them to find the article for me?

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<sup>8</sup> Note that VC participants rarely refer to the databases as *library databases*.

That's because of time constraints. There is no guarantee that it will work out.

Q: Even in the National Library [functioning also as the Public Library], they do have some online databases. Are you aware of that?

A: No.

The VC LIS participant's response to similar situations is noteworthy:

Q: In similar situations where a student has come across an article with only abstract is visible - do they approach the library for further assistance to seek the full-text?

A: Very rarely.

Q: Is there anything you can do if they approached you?

A: Yes, we can write to the resource head office and pursue options. It works sometimes.

If they [users] approach us, as I said before, as a librarian we will address it and within two working days we will reply to that at the very least even if we don't manage to source it. But very few approach us in that way.

It was clarified that VC as well as MNU do not have reciprocal borrowing arrangements with other local libraries, nor are there any document delivery arrangements.

### **5.2.3 Library as an information source**

The findings in section 5.2.2.6 highlight that the participants' need for reliable information is overshadowed by convenience of access, and thereby cultivates a preference for online searching. This section attempts to situate this overdependence on online content through participants' experiences and perception of the library services at their disposal.

The participants were asked how often, how, why, and when they used the library at their institution. This was also used as a comparison to further explore the reliance placed on online sources such as Google. The conversations around these questions demonstrated, except for two participants, a largely negative connotation of library services and a widespread mistrust in the library to be able to cater for their needs. The themes around the concept of the library as a source of information access can be categorised into:

- "I rarely use the library" / "the library is not that useful";
- Low appeal for the physical library;

- Mismatch between user expectation of a library and what is at their disposal; and,
- Absence of library champions.

### 5.2.3.1. *“I rarely use the library” / “the library is not that useful”*

As prevalent as the use of Google was, so was the opposing perception that the library was not relevant or not useful. Table 5.8 contains a summary of the library use pattern of the thirteen staff and student participants. The last column is an interpretive categorisation based on the conversation.

*Table 5.8. Participants’ frequency of library use*

<b>Participant</b>	<b>Snippets of conversation from the interviews</b>	<b>Frequency</b>
Staff01	I use the library rarely... Maybe once a month or so. Not too often. I don't go into the physical library much	Rarely
Staff02	I did enter into the library [once]. And there is nothing much there that I can use...I brought [from overseas] the books that I would need if I am to supervise a student, or to carry out research.	Never
Staff03	I do go to the library. But not as much as I did when I was studying; because, I get up-to-date material from Google, more than the library. I purchased the core books I require for teaching.	Sometimes
Staff05	Now I don't [use the library] too much...don't want hard [print] copy that much...When we study, we had time to read too so I used to use the library....Now life is hectic.	Rarely
Staff15	Here, on the library catalogue there is a shortage of recent material, maybe [its] limited in my specialised area....I do rely on EBSCO... I think I will be considered as a frequent user. I borrow books often.	Often
PG04	We are not able to use it [library] much as we are too lazy to even go up to that library...We have online access to the core texts that we need [from outside the library].	Never
PG07	There isn't much time to go to the library. So I search mostly online....On HINARI/EBSCO and also Google.	Sometimes
PG09	Throughout the master's course, I visited the library just once. That was for some information that I couldn't get on Google—something on local context.	Rarely
PG10	I do use the library. And sometimes, core texts are not available for all the subjects. In those cases, have to Google....If core texts are available in the library, I borrow those. I don't use anything else from the library. I do use the OUM database.	Sometimes
UG06	In reality we use it [library] very rarely in our studies. I think I used it only twice....getting a book out of the library and then returning it in time...it's just too much. There is not enough time for that.	Rarely
UG08	I visit the library quite often...to include material found from the library [to comply with assessment requirements]....But my perception is that it is easier to find material on Google than the library.	Often
UG11	I used library comparatively very few times. For some assignments it was essential that I use the library. For example, books recommended by the lecturers. And most often what happens is when I go to the library the book is out – borrowed by another student....There are not enough copies.	Rarely
UG12	I don't use the library....[But] we have to do three local modules. For those, I had to use the...National Library (indicating affiliated library is not useful)...It would be true to say that there is nothing [local] available [online].	Rarely

Eight participants' library use can be categorised as "never or rarely". Of the remaining five participants, three participant responses can be categorised as "using the library sometimes" while only two participants were frequent library users.

One MNU postgraduate and one VC staff indicated they have never used the library they are affiliated with; nonetheless, the conversation revealed that they had been frequent users of other libraries they were affiliated to in their earlier studies overseas. Both believed their current affiliated library had nothing to offer them.

Based on the data in Table 5.8, the frequent library users (even if few) were from MNU: one staff and one undergraduate. The staff participant revealed that the frequent use was a recent occurrence that eventuated when they became familiar with library staff, based on changed work circumstances. Subsequently, the staff discovered that the sources available from the library met their needs at a satisfactory level contrary to their earlier perception. The earlier non-use was explained by a previous bad experience and anecdotal negative perspective from others about the library linked to an alienating atmosphere and substandard services. The undergraduate revealed their frequent use was concerned specifically with the library's book collection and only because it was expected that the suggested texts were to be used to meet course expectations for the prescribed assignments.

The rest of the participants (2 MNU staff, 1 VC staff, 1 MNU postgraduate, both VC postgraduates, 1 MNU undergraduate and both VC undergraduates) used the library sometimes or rarely.

#### **5.2.3.2. *Low appeal for the notion of library as a physical entity***

Based on the observations from the field visit to the libraries during data collection, as well as the researcher's personal knowledge, the MNU and VC libraries have very different physical infrastructures.

The MNU Library's physical collection size is relatively significant, with a number of library branches spread across the capital island, Malé; this is, in addition to the regional branches. Additionally, the combined monograph catalogue is searchable online. The MNU Central Library is housed in a purpose-built four-storey building,

with the three mainland library branches having a combined seating capacity of 312 users.

In contrast, the VC Library is in the preliminary stage of development with a small collection of physical books and a seating capacity of less than 30 people.

However, based on the information in Table 5.8, there appears to be no significant distinction between the VC and MNU participants in their perception of their affiliated library. PG04, a postgraduate and also a staff participant of MNU, did not use the physical library and did not believe the library's online collection to be of any use for their learning. Notably, a student from VC (PG10) utilised the library although not frequently. Staff15 from MNU who studied overseas in well-developed library settings for their bachelors, master's and PhD saw the MNU Central Library from an almost positive perspective and used it often. These findings practically indicate that the aversion to the library as an entity was not merely based on the limited resources offered through the library.

And, since you mention that, even in developed places, [in] overseas libraries...even internet is in some places part of the library now. But what I'm saying is that reliance is now more on online information rather than the physical information sources.  
(Staff02)

The participants were asked to rank the library services: 10 being the *best* and 1 being the *worst*. The following two participants are the only notable answers, from all thirteen participants, with a positive outlook that talked more in favour of the library use compared to Google use.

It's a bit difficult to rank it just like that. Because I have to think about so much like taking into consideration their constraints and limitations that they work with. It would have been easier to rank taking specific functionalities or areas I suppose....I'm not entirely happy with the level of access to material. But still, I am able to find enough to manage. So maybe 5 or 6. (Staff15)

I guess it is ok. I get what I need maybe 75% of the time.... [The services of the library staff] are alright. Maybe say, 80% satisfied. (PG07)

Based on the overall conversation of the eight student participants, PG07 from MNU was the only student who relied more on library resources, including the physical

library as well as the online databases on offer. It appeared, the Faculty<sup>9</sup> the student belonged to, placed emphasis on using the library. Also, considering the availability of the scholarly databases as well as the monograph collection, it can be assumed that the discipline area was better resourced than many others at MNU.

On the other end of the spectrum, some of the negative feedback was critical of the library management, location of the library branches, low level of library staff services, the physical environment of the library, and shortage of copies of high demand books. These were mainly attributed to the MNU Library.

Poor management is there. But also there isn't enough books. And earlier we had a special collection here [at the Faculty] for the lecturers. But now that the collection has been taken to the main Library we are not able to use it much as we are too lazy to even go up to the [Central] Library (which is a 5 minute walk away)...It's also very unfriendly, unwelcoming. There is no atmosphere to read there. (A staff)

I am not satisfied with the library services...And also it's not our library...We have to access [another branch<sup>10</sup>] library. One or two copy of a book could be there. That's not enough compared to the number of students. (An undergraduate)

Interestingly, there was not much commentary in favour or against the VC library except notes like “I would say [VC library] is less than satisfactory...there is nothing much there I can use” (Staff02). Most VC interview participants appeared to have little expectation of the library services. Notably, the VC participants did not refer to the databases as part of the library.

### **5.2.3.3. *An expectation for all content to be online***

The findings indicate a desire for all library resources to be available online. This was observed from all participants:

When I was studying, what I figured was that in the initial stages when for example developing something like a concept map, one has to refer to books. Depth of information is in books rather than journals. But then there are eBooks [for online use]. Seminal information content is found on early books...I think that's the only instance where books are required in the physical library. Except for that, making

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<sup>9</sup> The Faculty is not identified to maintain the student anonymity. Given the small population base, it will be easy to guess with the name of the Faculty.

<sup>10</sup> The specific MNU branch library was named, but is omitted for student anonymity.

resources available on an online system, may it be eBooks, or journals would suffice. (Staff02)

With printed books, what happens is it's pretty difficult. Have to read the whole book to find what you want. With PDF books, you can search for the required term. And you can read the required section only. That is time saving. So that's why I like eBooks. (UG12)

Many students rely on Academia and other sites like that. They have no other alternative. Even if they have access to some online content [referring to database made accessible by VC] - I am not sure what kind of an access is there to be honest - it will be very difficult to find relevant information. So for them it is much easier to search on Google and use papers posted by individuals on sites like Academia....And often times, I guess students don't really understand the difference between reports, white papers, journal articles - their weightage, relevance etc. So whatever they find first, they just use it. That's why I am saying, for students we need to provide better access. From a student's perspective, it is very important to have a well-established online resource system. I think that's something the College has to seriously think about. (Staff02)

In addition to the lack of resources and a desire for online content to make up for that lack, Staff02 also indirectly raised issues about improvements required for information literacy skills.

Likewise, themes emerged that depict differences in the way users search for information and librarians think their users should search for information. The users talk about ease of searching Google and the cumbersome experience of using the library. On the contrary, LIS participants were concerned with their clientele's lack of use of the available resources. The next section reports on findings from the interviews with the LIS participants.

#### **5.2.4 Perceptions on user information behaviour**

The LIS participants highlighted limitations in the level of information provision through their libraries. Nonetheless, they were also of the view that users in general did not fully utilise what was available. While reasons for user perceptions were not conclusive, the LIS participants perceived:

- A weakness of information literacy in their users;
- User anxiety/hesitation in asking for help;
- A gap in users' awareness of what the libraries offered;
- A negative connotation of libraries in general;
- Users preference for convenience of online search over quality material; and,
- An *I can Google it* attitude.

As only two LIS participants were interviewed, to ensure anonymity, participant code names are not included with individual quotes unless essential for context.

#### **5.2.4.1. Weakness in information literacy**

Both MNU and VC LIS participants were critical about how information literate their students were:

Many are not too competent [in searching for information]. They [students] don't have the skill to identify reliable and unreliable sources. Mostly they use Wikipedia....Even with books, they want to look for a specific title. If that exact book is not there, they don't even bother looking at other books on that topic. It appears, they don't have the knowledge to check index of a book or even content pages. I try to explain that there might not be a matching book to every single topic that they think of, but that there could be chapters.

Students don't appear to really be too concerned with the...quality of what they find online. They tend to go with the first couple of results...I would say they are not much aware about evaluation of information...I guess it [Google] is an easy access point that makes it so popular. And people don't know about the difference between organised database and what is available freely on the internet.

In my training sessions...I see them searching on the whole sentence of their assignments on Google. No search strategies are utilised.

[There is] very little encouragement [on students to use the databases]. Because, even lecturers most often don't know how to use the databases.

According to MNU LIS participant, the MNU Library offered ad-hoc sessions on effective search strategies for the databases they offered. The sessions were organised on request from individual Faculties/Centres. The participant reported that, some Faculties were more proactive in getting their staff and students to attend, while

other Faculties did not coordinate with the library for similar sessions. The LIS participant believed more information literacy sessions were required. This perception was based on previous encounters with staff and students in their information seeking efforts, as well as from the experiences of other similar sessions. The following excerpt was in reference to an information literacy workshop held for staff.

Before the information literacy session, the staff perception was that there was not enough material on offer from the Library. But after the session, they were asking me “why does everyone keep saying that there are not enough information?”

The VC LIS participant identified the difficulty involved in getting students to even register for a session, and also stated there was difficulty securing a time slot in orientation sessions as the orientation was already quite time intensive.

#### **5.2.4.2. *User anxiety***

According to the LIS participants, there was an anxiety or hesitation by staff and students in asking for assistance from librarians. This was mostly attributed to the academic staff:

A: They can be scared, or ashamed to ask for help. Sometimes there are students who need help with OPAC also.

Q: Scared?

A: Or maybe not confident enough to tackle new databases....They just don't want to ask for help. In terms of lecturers, they don't want to approach the desk staff and ask them for help in the use of databases. It could be because the staff at the [library] front desk are so much younger and not so qualified. They [lecturers] don't want to say that they don't know something. It could be something cultural to feel ashamed to come and ask for help....Maybe they feel someone might make assumptions about them.

There are staff who don't come to the library at all....Some senior staff will only call [phone] to check if a specific book is there in the library and ask for it to be sent over....Even if we don't have the exact title, we might have an alternative title that could work very well for their needs.

#### **5.2.4.3. *User awareness of what the libraries offer***

According to the LIS participants, the reason for this hesitation in using the library could be related to a lack of awareness of what the libraries had to offer.

We might not be catering for all the disciplines. But for the current standard of the University, I believe we are providing adequate level of information. I would say the information resources are in fact underused. But from the user side, the feedback is that there isn't enough material. But I don't take that to be accurate...When I do a search on an area that they request information on, I find relevant material.

EBSCO is kind of like Google search. With a similar search box, it's very straight forward. Not too many links and filtering is also on one single page. So there is no reason why EBSCO should be difficult or considered difficult.

The LIS participants were aware they were not able to provide world-standard services, but believed there were enough resources from the library if one tried to find out what was available.

#### **5.2.4.4. *A negative connotation of libraries in general***

The lack of awareness on what the library offered, which consequently led to a negative connotation of the library has already been discussed earlier from an academic staff perspective (specifically sections 5.2.2.1, 5.2.2.6, and 5.2.3). Staff15 reported a change of perspective after getting to know the library better. It was reported that the sources available from the library met his/her needs at a satisfactory level taking into consideration the constraints within which the Library operated.

The LIS participants felt that users for some reason had an inherently negative perspective about libraries in general.

From long time back, it [Libraries] has been seen in a negative light...Some [lecturers] I guess believe that it [library] is a useless place. Some even find it shocking that we have (number omitted) library staff...Many perceive library staff have nothing to do.

Related to these negative connotations there was also the notion that the Library had nothing valuable to offer, and that the Library could be bypassed in the business of teaching and learning.

Recently, I talked to a group of postgraduate students when they came to the Library to complete their clearance form for graduation. I had a chat with them to see if they were happy with the library, library databases etc., whether they used it, whether it was useful in their distance education course. And their answer was "we don't need it as we are given notes."

The general feedback I get from students from [Faculty] (name omitted) is that lecturers say "the Library would not have the required material"—that's the kind of feedback we get. I guess instead of encouragement, there's more of a discouragement in the use of library resources.

#### **5.2.4.5. *Convenience of online search over quality material***

The LIS participants also perceived that the negative perspective by academic staff and students about libraries was accentuated by a desire for ready access to information, and that Google was seen to be a better alternative.

They would go to the first available source, and that is Google. I know this because I teach information literacy; main target group are [Faculty...] students. One of the general questions I ask everyone is "who uses Google?" and everyone says first point of contact is Google. And at a session I took for [Faculty/Centre] staff last year, I asked the same question...majority of them said their first point of research is Google.

The LIS participants believed convenience of access was more important, for the user community in their academic information seeking, than the quality of the material sought.

Everyone knows that Wikipedia is editable by just about anyone isn't it? But still Wikipedia is the first thing that comes on the [Google] result page and therefore that is often used. Many students don't even want to scroll down and look a bit further.

Internet is an easy access platform isn't it? They can have access on their phone ...their home network...accessible anywhere—and therefore, visiting the library becomes a chore for most students.

#### **5.2.4.6. *An 'I can Google it' attitude***

The LIS participants were also asked what they thought of the users' perception of Google, whether there was an *I can Google it* attitude among the user community, to which the answers were affirmative.

For example, students will come to the library just for its cooling environment (important Maldives being a tropical country). And sometimes I prompt them to use the time productively by reading something while they are sitting there, and many would respectfully say, "miss, why spend time reading that, when information can be found on the phone anytime we require the information?" That's the attitude these days.

"Let's google it": everybody says that....That attitude is there definitely....Even in academic situations the "I can google it" attitude is there. I ask them [in my information literacy sessions], whether they use Google. In follow-up conversations about looking for information what is often said is "we will just Google it".

As seen in the earlier sections, the staff and student participants indicated they were reliant on online sources mostly because they felt they had better access to resources using online search platforms such as Google than they had through the affiliated library. LIS staff, on the other hand, perceived while there was limited access to scholarly resources through the library, users' information seeking behaviour and perspectives of the academic community needed to shift for meaningful change.

### **5.2.5 Changes required for libraries to stay relevant**

It was anticipated that users would express their dissatisfaction with library services and would have ideas on what needed to change. The following is a summary of the findings from the interviews on the themes of what an ideal library is and what changes participants would like to see in their current affiliated library.

#### **5.2.5.1. *What is an ideal library?***

The participant responses on what an ideal library entails, varied but carries an idyllic vision of grandiosity:

When I think of a library I see it as a place with an enormous collection of books....It should have many wings, and plenty of open space. An easily accessible place, and also a place that provides space for research students to refer many books at the same time with ample desk space....I would say, it has to be a user-friendly place. (PG04)

The main points from the interviews about the ideal library are summarised below, firstly as a physical library building and secondly as an information resource.

As physical space, the library:

- Should be grand, easily accessible, and welcoming (PG04);
- Should be a quiet and comfortable space for reading (Staff01, Staff03, Staff05, PG04, PG07, PG09, PG10, UG06);
- Is a place to read from print books either because everything is not available electronically (Staff01, Staff03, PG07, UG11) or because there are materials that require physical access (PG09, UG08); and,
- Should have a researcher-friendly atmosphere with ample desk space (PG04).

As an information resource, the library should:

- Provide a wide variety of information sources (all participants);
- Provide print books for concentrated reading (Staff01);
- Provide eBooks for easy searching and skim reading (Staff01);
- Facilitate access to resources (staff02, PG04, PG07, PG09, UG06), even those that are not physically held by the library or held in library databases (e.g. document delivery) (Staff02, UG08, UG11); and,
- Offer a user-friendly (PG04) online searchable collection (all participants).

Only a few participants (1 staff and 2 students, from VC) stated they did not necessarily require a physical library and the reasons for this were predominantly linked to the availability of time:

More than a physical library, it needs to be virtual....I don't have the time to visit a physical library, say even once in 3 months. So for me, library is not physical.  
(Staff02)

I think we are not able to use a library because of our current lifestyle. We have class only once in a week hence do not go to the College on other days. And that day there are back to back classes (block-mode studies). Don't have time to specifically go to the library. (PG09)

A participant also highlighted the importance of a well organised and easily accessible online library platform:

Even when we use an online collection, we tend to go with the sites that is easy to use, one that retrieves more results. There could be more books in another database, but if it is clumsy to use then it won't be used. An easy, user-friendly interface is important. (PG04)

Another significant point made was about the usability of online collections only when they were truly available online without being limited to the confines of a physical space:

Limiting a collection of books to a physical space is not that useful. And having eBooks just accessible within the library is also not helpful. If the collection is made online [accessible from any location], that is better. (UG12)

A few participants highlighted that a physical library building was essential:

Space is required for students to go and study in the library. Especially in the Maldives, and more so in Malé, the space in the library for students for study is very important. Most students are from other islands, they don't have time nor the space to study at home. In many cases it's several students sharing the same room. Many students have issues with lack of light to study as someone else would want to switch off and sleep early. Some have noise distractions as others play music in such confined spaces. We have come across these. So a library space is important for studies; at least for now in our Maldivian context. (Staff03)

The evidence of the interviews indicated that all participants visualised a library as a place of value.

The participants were also asked about their perception of their affiliated library (MNU and VC) and specifically asked about changes that they would like to see in these libraries.

#### **5.2.5.2. *Changes to the MNU Library***

The following list is a summation from the MNU staff and student participants' conversations on the perceived changes to the MNU Library.

##### ***Service provision / staffing***

1. Better customer service (Staff03, Staff15, PG04), and more library staff. (UG08).

2. Simplify the registration process to access the different suites of scholarly databases (Staff03). This entails automating library access based on admission/employment so as to allow single session logins to all library databases and library catalogue (Staff15).
3. Improvements to the process of requesting items on loan to another client (Staff03).
4. Implement interlibrary loan facilities (Staff15).
5. Need subject librarians who can assist with specialised information searching (Staff15).
6. Simplify overdue fines, at least by introducing a grace period (Staff15).
7. Implement/revisit services so that the block-mode remote students are not disadvantaged from accessing the library collections, especially to the physical collection (Staff03, UG11).
8. The library staff needs upscaling to be educated and skilled at a similar intellectual level as the clients they serve, including students and academics (Staff15).

***Collection / resources***

9. Increase number of copies of core texts (Staff03, Staff05, UG11).
10. Create promotion and awareness of the databases, especially for the students (Staff03).
11. Offer simultaneous search possibility across databases (Staff15).
12. Enable efficiency in the organisation of the physical library for easy retrieval (Staff03, Staff05).
13. Provide up-to-date textbooks (Staff05) / more books and resources (UG08, UG11).
14. Facilitate online access to all library material by digitising the existing collection and securing eBooks (PG07). This also relates to number 7 in this list.

***Library physical space and infrastructure***

15. Enable after-hours book returns (Staff15).

16. Instil a welcoming environment that promotes reading and research (PG04).
17. Provision and maintenance of a quiet study environment in the library (Staff05).
18. Implement infrastructure (e.g. extra power points) to enable the use of mobile devices like laptops (Staff03).

The desired improvements to the library that came up in conversation with MNU LIS participant are as follows:

1. Introduce a proper reference service (reference desk). For this, more LIS qualified staff are required.
2. Address the issue of the high turnover of staff to provide better services.
3. Provide more online resources/eBooks to meet the needs of the users. This is also required to overcome the demand for multiple copies of text for simultaneous use, especially in the case of core-texts.
4. Improve IT support to provide reliable online services.
5. Implement the necessary infrastructure within the library: more networked computers, especially to enable access to online resources including databases and eBooks.
6. Introduce an online repository for MNU publications.

#### **5.2.5.3. *Changes to the VC Library***

The VC Library lacked an online catalogue and used a semi-automated circulation model. The VC library was on the mainland and housed in a small room containing a collection of 7,000 books (LIS13). The following is a summated list of changes for the VC Library that were gathered from the conversations with VC academic staff and students:

#### ***Service provision / Staffing***

1. Implement changes to become a research hub in line with the research goal of the College (Staff02).

2. Employment of qualified professional library staff for forward-looking planning and implementation of services (Staff02).
3. Provision of extended opening hours, especially during the weekend, to cater for block-mode students (PG10).

#### ***Collections / resources***

4. Address the need for provision of more resources/books (Staff01, Staff02).
5. Offer scholarly online resources (Staff02), more eBooks (UG06, UG12).
6. Simplify registration to access databases on admission (PG10).
7. Enable off-campus access to databases, especially for block-mode students (UG06, UG12, & Staff02).

#### ***Physical library / infrastructure***

8. Provide more space in the physical library (Staff01, Staff02).
9. Incorporate an audio visual library (Staff01).
10. Facilitate better access to online resources / internet connectivity needs improvement (Staff02).

The VC LIS participant conversation around the desired changes to the VC Library can be summarised as follows:

1. Create more awareness about the library and the resources on offer and thereby create a reading culture.
2. Promotion and mandated integration of information literacy into students' learning components.
3. Implement an online catalogue.
4. Create an audio visual unit.
5. Enhance and increase the physical space of the library with provision for group study and individual study space.<sup>11</sup>

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<sup>11</sup> It should be noted that at the time of the interviews in January 2015, structural changes were ongoing at VC with plans to move the library to a purpose-built location

It is also important to note that the above lists of desired changes from both MNU and VC participants cannot be considered exhaustive. Rather it is a reflection of the most pressing concerns based on the level of service available at the time of this research, as well as the limitations in the conversations owing to the length of the interview session and the content covered within approximately 60 minutes with selected participants.

Reflecting on the desired changes from the user and librarians' perspectives, it can be deduced that both parties hold similar views and ideas about what needs to happen. The question that was not specifically explored in the interviews, as it is beyond the scope of this research, was the reasons for the lack of action on these changes.

#### **5.2.5.4. *The void in catering for online/distance/block-mode students***

One main issue about the MNU and VC libraries that should be highlighted from the above interviews is the discrepancy across the student groups in service provision. Students enrolled in distance/block-mode courses have limited access to the physical library resources given these students mostly live on outer islands. Additionally, the VC participants reported that not having remote access to the online databases was frustrating. This was because most students were in fulltime employment while studying in block-mode courses. Reportedly it was difficult for them to spend time on campus just to access library resources.

Two participants (1 MNU and 1 VC) were based outside the mainland in the outer atolls, and travelled to attend block-mode classes. These classes were intensive sessions held over the course of a day or two on the mainland. Students travel back to their islands for the rest of the time while they work on their assignments until the next block of face-to-face instructions months apart. These two students reported an inability to use the library because there were insufficient copies of the books for all students to borrow and their time limitations on the mainland did not allow for short borrowing periods. Owing to the lack of remote access to VC scholarly databases, the VC student did not have access to even the online collection.

### 5.2.5.5. *Shortage of local online publications*

This discord was also acutely felt by those on-campus students undertaking modules/units where they were expected to use local Dhivehi publications, which hardly have any online presence. These sentiments were echoed by one MNU staff in great detail:

Now that we conduct courses in block-mode, there are students who just can't access library services. It can be witnessed from their assignments. They read only the stuff that is available on Google, and base their assignments on that. And even when they search on Google, what they do is they take only material from Dhivehi [web]sites. And most often, on Dhivehi sites, what we have are articles and commentaries written by our past students [and not peer-reviewed]. Like *Jamaa'athuge Khabaru, Fanvaiy* etc.....They [students] don't take the effort to find the original citations given by the writers in those kind of articles online....Students studying on block-mode don't use the library. So to improve their academic standard, we need to find a way to make the library books accessible to them. (Staff03)

The difficulty in accessing local publications also came up in the interviews with a number of student participants:

For example, if we are doing something local, it would be true to say that there is nothing available online. (UG12)

As identified in the previous section, the need to implement electronic access to all library material was a common sentiment across all participants. One student participant with an IT background, explained how simple the process could be and stated that minimal effort was required by library staff. However, in the process of explaining the student articulated a need for library staff to have some technical know-how at least:

I mean for example, when developing an e-library, it will be done the way it is required for the College. And then most often there are interfaces to upload it [the books]. And then the books, for example local books – to make them electronic I guess some work is needed. Scan and OCR – I don't think Dhivehi language has reached that point – hence the text would need to be written. So if that is required that's a lot of time I guess. So, in those ways...But mostly I think the library staff will just have to upload the books. So maybe [the library staff require] some level of IT background on how to manage an application (UG12).

#### **5.2.5.6. Challenges faced by the MNU and VC Library**

While the LIS participants were not specifically asked about the challenges they faced in service provision, some challenges were identified from the conversations. One central challenge was the in-visibility of the library as a key component of the teaching and learning endeavour of the institutions.

Provision of online access to scholarly databases was disassociated from the library in the case of VC. From the conversations with the user community it was understood, there was a general awareness that OUM and JSTOR were on offer from VC. Nonetheless, the participants did not readily perceive it to be a library service. The following response from the VC LIS participant confirmed the basis of the perception:

The subscription is through IAD [Institute of Academic Development]. IAD is the parent body for the library. They manage the subscription. But I need to keep track of things like the expiry and keep them informed....OUM is available free of charge because the courses here are mostly from Open University of Malaysia under an agreement. So access to their database is free to those students who are enrolled for OUM.

Another challenge cited in ensuring equal access to the VC community pertained to accessibility of these databases only within the main campus. Additionally, Staff03 from VC cited the slow internet connectivity within the campus network as a deterrent in accessing the databases:

They try very hard to speed up the internet... But I think it's a long process. On campus, students have wifi - that is not up to speed...So imagine searching a database. And what I know is that, generally at other offices and even homes in the Maldives, internet is very slow...Only when one attempts academic scholarly work, then we know how difficult it is, isn't it? (staff02)

On the other hand, the VC LIS participant noted the difficulty in creating awareness and the importance of promoting the use of the online resources, and cited limitations in their ability to reach the students in an effective manner:

There are online resources provided by the library. But just because something is there doesn't mean it will be used....We need to make them more aware of this by integrating [information sessions] into the orientation too.

The VC LIS participant also voiced concerns about the lack of time resulting from students' packed intensive class schedules. The MNU LIS participant stated some Faculties/Centres were more accommodating in compelling their students to join the information literacy sessions offered through the library, specifically those targeted at educating the users on effective search strategies using the databases.

In addition to the challenges of scholarly databases, both LIS participants stated that many students completed their studies without using the library. Both LIS participants estimated that only 10% of the total student and staff population of the institutions were using the library. As outlined earlier, the LIS participants were critical of the information literacy of their user community.

The shortage of qualified staff within the library team to offer proper reference services was also cited as a challenge. The VC library is staffed with four personnel with one qualified at diploma level in LIS and the other personnel with no prior LIS qualification. The MNU library team consists of about 23 staff with six possessing a diploma LIS qualification and only one staff with a university degree. Coupled with this, the continued *googling* trend seemingly provided the users with alternative information sources that created a further gap between the library and the potential user:

Within last year, only one student approached me. A postgraduate research student...referred to me by a lecturer...Very few people come to a librarian for help. Also, we don't even have Reference Librarians as such. (LIS14)

One contributing factor for this gap between the user and the library could also be attributed to the lack of library champions among the academic community. The student participants were asked how much emphasis their lecturers placed on them to use the library/databases. Similarly, the staff were asked how much emphasis they placed on students to use the library/databases.

Of the four MNU student participants, one postgraduate showed conviction that the lecturers emphasised the use of databases and the other postgraduate showed conviction that there was no encouragement:

Lecturers tell us that HINARI/EBSCO are more reliable...Now I always use those. Very rarely I use Google Scholar. (PG07)

When [lecturer] conducted the sessions, he did highlight the use of databases but it wasn't communicated in a manner that made it compulsory. (PG04)

Of the two undergraduates, one said there was some encouragement to use the databases and the other was not very clear on this.

Of the four VC student participants, except for one undergraduate, the others stated the use of journal databases was encouraged. However, two of them stated that it was difficult to use the database and one student stated having to alternatively use "good enough material from Google". With the fourth student, the concept did not come up and the conversation was very much focused on the student's central reliance on online sources and ability to find good enough sources.

In contrast, all three staff participants from MNU stated that they placed extra emphasis on their students on the use of scholarly databases and on reading. The VC staff participants stated they highly emphasised the use of journal databases. The following excerpts situate this lack of library championship in the cultural setting:

I do highly encourage them. But there is a negative underlying culture. In Maldives, and I'm talking in the context of [this institution], most students are from the working population....They are very busy, in responsible (job) positions, and many are based in other islands....They do not have much of a wish to use the library and seek their own information. The expectation is that the lecturer will be posting everything that is needed online..., or e-mail them....Changing that culture is not something I can do alone. (Staff02)

In the subjects that I teach, there are individual library components....Most [Unit] outlines have that....The frustration is you assign them like 5 marks [for referencing], and...it doesn't matter much. They can still pass through if the rest [of the assignment] is presented well. By just using Wikipedia and things like that [online sources], they can still do a great assignment. (Staff05)

As noted by LIS14, the level of library use differs across faculties within the institution. What is noteworthy, based on all that has been presented in this chapter, is that the academic staff experiences and perceptions of the library is not overly positive, and therefore it is to be expected that their communications with students will also reflect their negative perceptions even if unintentionally.

### 5.3 Summary

The interview findings reported in this chapter make up Phase I and II of data collection for this research. A total of fifteen participants (5 academic staff, 4 postgraduates, 4 undergraduates, and 2 LIS professionals) were interviewed from MNU and VC. Seven of the fifteen participants (4 staff and 2 postgraduates) had completed a prior university qualification in an overseas university, mostly in developed countries. Only two staff participants had published in peer-reviewed journals, thereby indicating a lack of research rigour, which helps in contextualising the findings.

The participants placed a high reliance on online academic information seeking, and Google appears to be the search engine of choice. However, the more educated participants were observed to be less reliant on Google as an end in itself. The participants used terms like *googling* and *to google* often, and as a verb. Additionally, there appeared to be no clear distinction between *online*, *internet*, *web-browser*, and *Google*. A few of the participants, especially undergraduates, did not indicate an awareness of what a search engine was. Only one participant indicated using another search engine in equal proportion to Google. The most significant reason for reliance on Google was cited as its convenience and proven effectiveness.

Participants reported starting their search using the Google general search interface, in general. There was limited awareness of Google Scholar, especially among the student participants. Most participants were not aware of how Google Books, Google Scholar, and the Google general search integrates, and had little knowledge on how these platforms differs. In general, Google was perceived as a self-contained database/website that often provided full-text access to “good-enough” content. The usual search strategy was to use keywords from topics of the research/assignment, some also adding terms like “PDF” to narrow down the search. None of the participants opted for the advanced search feature. If the first page did not contain good-enough results it was taken as an indication that the search term needed to be revised. Participants believed they were usually able to find good-enough matches on the first few pages of Google results. There were strong sentiments that material retrieved through Google was not inferior to library sources, given users were vigilant about identifying scholarly material.

The overdependence on Google did not necessarily mean the participants did not wish to use the library. Nonetheless, seven of the thirteen staff/student participants saw Google as an alternative to libraries while the remaining saw Google as a supplement. The overall perception was that Google met their information needs better than their affiliated libraries. Interestingly, only four participants (2 each from MNU and VC) appeared to use the scholarly databases made available through their respective institutions, while the remaining four participants had never used them. Some cited the cumbersome nature of getting login credentials for the individual databases and also having to search the databases separately as a reason for no, or lack of, use of the library. For others, there was no need to go beyond online searching.

The one-stop searching on Google was preferred and those who used the library/scholarly databases used it to seek full-text for citations/abstracts found by *googling*. This was not always successful owing to the limited subscriptions by the institutions. When presented with this lack of full-text access to the desired article, participants most often search further to find an alternative article that can serve the purpose. Alternatively, participants either tapped into friends/colleagues networks in overseas universities, used personal funds to pay for individual articles, or wrote to authors directly. Not all who took these alternative options necessarily exhausted the library options prior to this. A significant explanation provided by those who purchased articles was a sentiment of requiring the article on the spot and not being willing to spend further time. Another reason for deciding for pay access was a distrust of the library being able to access it for them. Accordingly, except for two, the rest of the participants portrayed a negative connotation of their affiliated libraries to be able to cater for their needs. The few participants who used the MNU Library believed that, even if there were limitations, the Library offered adequate resources. From the VC participants there was an observed disassociation of the library and the databases offered through VC, with more participants citing using the databases than the Library.

All participants had ideas of what needed to change in their libraries, most significant being a desire for all library content to be searchable online, and not confined to the campus network only. The lack of access to VC databases off campus was cited as

detrimental to block-mode students who mostly resided in the outer islands. The MNU library databases could be accessed remotely, nonetheless some participants were critical that books were not available online for the block-mode students. Additionally, it was contended that there was almost no online presence of local publications, therefore it forced students into libraries, and this was not desired.

The findings from the interviews with academic staff and students indicate an information seeking behaviour that is central to online searching, with a preference for Google search interfaces. The library is usually a last resort of access, if at all. The LIS participants believe both institutions provide a reasonable collection of scholarly databases, even though there are limitations. They understand the academic community perceive online searches are more efficient with a prevalence of an *I can Google it* attitude, which invariably leads to an underuse of the library resources. The LIS participants also attribute the over-reliance on Google search interfaces to: a low level of information literacy; user anxiety about asking for help from library staff who for the most part are less educated than the users; and, preference of convenience of good-enough online search over quality material, especially given the limitations in search functionality of the libraries.

These findings, along with the findings from Phase III of data collection presented in Chapter 6, will be discussed further in Chapter 7.

## Chapter 6: Survey Findings

As was outlined in Chapter 3, this research uses an interpretivist phenomenological paradigm, using multiple cases from two countries, to understand the context of *googling* in information seeking behaviour. The data collection tool for Phase III was prepared based on the interview findings from Phase I and II. This chapter reports the findings from Phase III data collection. The chapter is divided into four sections: the first section contains an overview of the survey and participant recruitment; the second section presents the survey findings; the third section highlights issues faced in the execution of the survey that were not foreseen; and the final section presents a summary of the survey outcomes.

### 6.1 Overview

The survey was aimed at understanding the prevalence of *googling* in academic information seeking in two diverse economies, and to ascertain the associated characteristics of the anecdotal *I can Google it* perception. The focus of the research is on the Maldives, as a developing country, with Australia selected as a comparative developed country case study. The selected target sample institutions were the Maldives National University (MNU) and Villa College (VC) from the Maldives, and Curtin University (Curtin) from Western Australia. The survey was conducted online, concurrently in the three institutions during October and November 2016.

#### 6.1.1 Survey instrument – online questionnaire

Data was collected using an online questionnaire (see Appendix 3C) and was designed and hosted using the Qualtrics™ survey tool offered through Curtin University. The themes covered in the questionnaire were:

- Experiences and perceptions about Google as a source of information access;
- How and when Google is used to meet information needs;
- The level of satisfaction in meeting information needs through Google and or the library; and,
- Experiences and perceptions of the library services at the academic community's disposal and how the community perceive the services should change.

The questionnaire consisted of 41 questions with 40 of them closed-ended with multiple choice responses. Some questions were limited to one response while others had the option of multiple selections, with some designed to collect scaled responses (e.g. Q29). The final question (Q41) was open-ended.

It was anticipated that participants would complete about 33 of the 41 questions at most, as the questionnaire was designed with contingencies built in for participants from the three different institutions and with different academic statuses. One example of a similar skip question is shown in Figure 6.1. In this example, the participants answering “No” to Q24 would not be shown Q25. There were 15 such conditional questions.

The image shows a screenshot of a survey interface. At the top, question Q24 is displayed: "Have you published any of your writings?" with radio buttons for "Yes" and "No". Below this, a blue bar indicates the condition for displaying the next question: "Display This Question: If Have you published any of your writings? Yes Is Selected". Below the bar, question Q25 is shown: "Please indicate the platform where you published. (Select all that apply)". It has four checkboxes: "In a newspaper / magazine / newsletter", "In a local journal or book chapter", "In an international journal that didn't give me much hassle in getting the paper through", and "In a peer-reviewed reputed journal".

Figure 6.1. An example of a skip question (Q25)

### 6.1.2 Participant recruitment and survey administration

Participation in the survey was open to MNU, VC and Curtin from the following categories:

- Academic staff;
- Postgraduate students; and,
- Final-year undergraduate students.

From here on, these groups are referred to as staff, postgraduates, and undergraduates respectively.

Participant recruitment was spearheaded by the researcher based at Curtin University, Western Australia (WA), supported by two research assistants in the Maldives, one each from MNU and VC. The survey was initially planned to be active and open for the month of October 2016 only. By the end of this initial month of data collection, significant effort had been exerted to reach prospective participants; nonetheless, the response was significantly lower than anticipated. A description of participant recruitment strategy is included later in this chapter (6.1.2.4).

As at 31 October 2016, there were 194 “recorded responses”<sup>12</sup> on Qualtrics™. Further details are provided in Table 6.1. There were another 35 prospective participants shown as “in progress”.

*Table 6.1. Recorded number of responses (participants) as at 31 October 2016*

<b>Affiliated institution</b>	<b>Staff</b>	<b>Postgraduates</b>	<b>Undergraduates</b>	<b>Total</b>
MNU	38	16	15	<b>69</b>
VC	4	6	1	<b>11</b>
Curtin	41	54	19	<b>114</b>
<b>Total</b>	<b>83</b>	<b>76</b>	<b>35</b>	<b>194</b>

Owing to this low response rate, the survey period was extended by another month to the end of November 2016 after obtaining necessary ethics clearances. During this extended period, the figures saw some improvement, resulting in a total of 371 “recorded responses”. Hereafter they are referred to as participants.

#### **6.1.2.1. Invalid participants**

Of these 371 participants, 55 were automatically “forced-closed” by Qualtrics™ due to the lapse of one month of inactivity on the questionnaire. A summary of these is provided in Table 6.2. These 55 participants were deemed invalid based on the lack of consent. In the cover letter of the questionnaire, it was stated that consent for participation would be determined based on the participant’s submission of the questionnaire.

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<sup>12</sup> The online questionnaire link can be accessed by anyone who has the link. Questions were put into place in the questionnaire to filter if the participant was in the target population. Irrespective of this, anyone who opened the survey and answered even the filter questions and then submits the response are identified in Qualtrics™ as “**recorded responses**”. The participants who initiated answering but did not submit the questionnaire, remain on Qualtrics™ as “**in progress**”

*Table 6.2. Recorded number of participants deemed invalid based on lack of consent*

<b>Affiliated institution</b>	<b>Staff</b>	<b>Postgraduates</b>	<b>Undergraduates</b>	<b>Total</b>
MNU	7	3	2	<b>12</b>
VC	1	4	-	<b>5</b>
Curtin	3	14	9	<b>26</b>
Institutional affiliation unidentified	Maldives	3	-	<b>3</b>
	Australia	2	-	<b>2</b>
<b>Total</b>	<b>16</b>	<b>23</b>	<b>16</b>	<b>55</b>

A further 49 of the 371 participants were deemed invalid based on responses to Q1 or Q6. Q1 determined whether the participant belonged to either of the academic statuses (academic staff, postgraduate, or undergraduate) and Q6 determined whether they belonged to any of the target institutions (MNU, VC, or Curtin).

As such, these 104 participants (55 who did not demonstrate consent and 49 who indicated they were not from the target sample population) were not included in any further analysis for this research.

#### **6.1.2.2. Valid participants**

By the end of the extended data collection period, a total of 267 valid participants had been recruited. A breakdown of this figure is included in Table 6.3.

*Table 6.3. Number of valid participants by end of the extended data collection period*

<b>Affiliated institution</b>	<b>Staff</b>	<b>Postgraduates</b>	<b>Undergraduates</b>	<b>Total</b>
MNU	46	19	19	<b>84</b>
VC	10	7	1	<b>18</b>
Curtin	42	104	19	<b>165</b>
<b>Total</b>	<b>98</b>	<b>130</b>	<b>39</b>	<b>267</b>

#### **6.1.2.3. Questionnaire completion rate**

Due to the complexity of the questionnaire targeting the three different institutions as well as different branching options for the staff and student groups, only filter questions and questions with skip logic were set to force responses. Figure 6.2 shows an example (for Q1) of ‘force response’ in the Qualtrics™ survey tool.

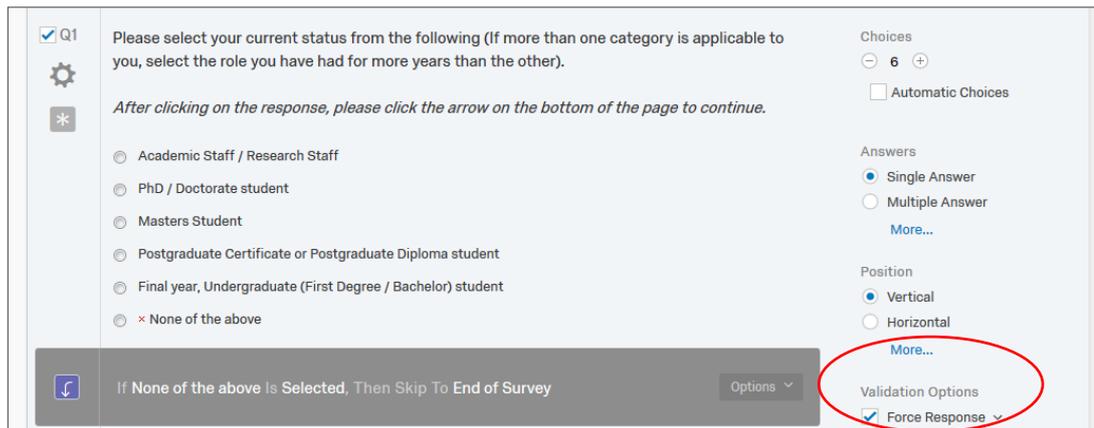


Figure 6.2. Screen capture of Q1 displaying a “force response”

Consequently, of the 267 participants, 15 (5.62%) participants did not attempt all the possible questions and had completed 61% to 83% of the questionnaire.

The incomplete questionnaire details are summarised in table 6.4.

Table 6.4. Number of incomplete questionnaires/responses

Affiliated institution	Staff	Postgraduates	Undergraduates	Total
MNU	5	2	4	11
VC	3	1	0	4
Curtin	0	0	0	0
<b>Total</b>	<b>8</b>	<b>3</b>	<b>4</b>	<b>15</b>

Given they had completed all “forced” questions, and also owing to the limited number of participants, especially from the Maldives, these participants are considered for this analysis.

#### 6.1.2.4. Participant recruitment strategy

The link for the online survey questionnaire hosted on Qualtrics™ was shared with the target groups in all relevant platforms that were accessible and compliant with ethics clearances for this research. Accordingly, the following strategies were used in the promotion of the survey.

- **Printed flyers** about the survey with information on how to find the survey through Facebook™, Twitter™, or Qualtrics™ were distributed within MNU, VC, and Curtin. The flyers also included the QR code™ for the questionnaire URL (Unique Resource Locator) to facilitate direct scan of the code from supporting devices leading to the questionnaire, instead of having to type the

lengthy URL. The flyer was also emailed to known prospective participants as a PDF file with active hyperlinks.

- **Social media:** A Facebook (FB) page <sup>13</sup>, and a Twitter handle (@GooglingLibrary) with hashtag #GooglingPhenomenon was created and publicised in September 2016 for a wider reach of prospective participants. It was found that the FB page attracted more attention, thus more concentrated effort was placed on the FB page than Twitter. Likewise, an FB Ad (advertisement) was paid for so that the survey link appeared on the FB feeds of the target population of the Maldives and Western Australia. This Ad was activated for the first two weeks of the survey period in order to raise the momentum of *likes* to the page. Figure 6.3 shows an FB system generated graphical representation of total prospective participants reached through the FB page.

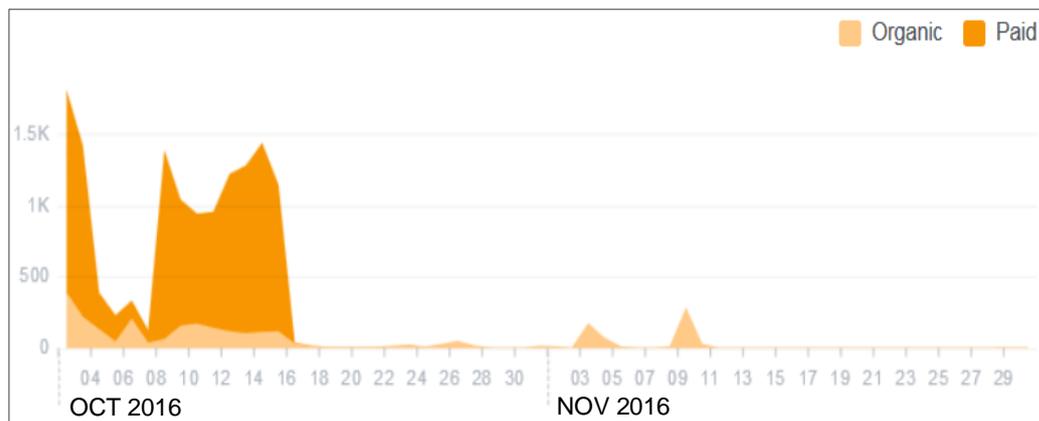


Figure 6.3. Total reach of prospective participants through the FB page

- **Direct communication:** In addition to the above, direct, personalised emails were sent to prospective eligible participants from the researcher's contact list. These include 57 emails to MNU, 23 emails to VC, and 52 individualised emails to Curtin contacts. Additionally, the research assistants at both MNU and VC dispatched their own messages to individuals and groups through email and social media communication channels (including: FB, Twitter, Viber, and WhatsApp). Direct emails were sent to relevant mail groups through group administrators, where it was approved. Examples include: Curtin *HumDis* mail group; emails to Subject Librarians at Curtin; internal blanket emails to all MNU

<sup>13</sup> <https://www.facebook.com/GooglingPhenomenon>

staff and student email addresses; internal blanket email to all staff of VC; and, a generic email to all HDR students at Curtin through the Research Office.

- The survey link and information were posted on the Curtin Staff News webpage, twice. The analytics for the first news post indicated that it received 75 “unique opens” and 79 “click throughs”, and the news was ranked 12/29 based on the amount of unique opens. Nonetheless, it was interesting to note that few staff participants responded immediately after the news post.

Sample documentation of these promotional materials are included in Appendix 6A. This includes the information flyer, FB page and its analytics, extract from Twitter, and the advertisement placed in the Curtin Staff news portal.

#### 6.1.2.5. *Take-up of the online survey*

Irrespective of the effort in promoting the online survey to the target population, the take-up of the survey was much lower than expected. Table 6.5 summarises the population size, the target sample size, and the recruited sample size.

*Table 6.5. Summary of population size, targeted sample size, and recruited sample size*

Institution	Sample parameters	Staff	Postgraduates	Final-year undergraduates	Total
MNU	Estimated population size ( <i>n</i> )	175	140	611	<b>926</b>
	Target sample size ( <i>n</i> ) at <b>15%</b>	27	21	92	<b>140</b>
	Recruited sample size ( <i>n</i> )	46	19	19	<b>84</b>
	Recruited sample size (%)	26.3%	13.6%	3.1%	
VC	Estimated population size ( <i>n</i> )	75	88	35	<b>198</b>
	Target sample size ( <i>n</i> ) at <b>15%</b>	12	14	6	<b>32</b>
	Recruited sample size ( <i>n</i> )	10	7	1	<b>18</b>
	Recruited sample size (%)	13.3%	8.0%	2.9%	
Curtin	Estimated population size ( <i>n</i> )	1,845	10,293	12,174	<b>24,312</b>
	Target sample size ( <i>n</i> ) at <b>10%</b>	185	1,030	1,218	<b>2,433</b>
	Recruited sample size ( <i>n</i> )	42	104	19	<b>165</b>
	Recruited sample size (%)	2.3%	1.0%	0.2%	

*Note.*

Curtin population size was estimated using 2013 figures at <https://planning.curtin.edu.au/stats/students2009-2013.cfm>

MNU population size was estimated based on data from MNU (2012) Annual Report.

VC population size was estimated based on anecdotal information (also supported based on Nizar, 2017 and VC, 2017). The researcher was not able to access official published data.

The final-year undergraduate student numbers were calculated as an estimate of a 1/4 of the total undergraduates enrolled at the time. The sample numbers are rounded to the next whole number. E.g. MNU staff 15% at 26.25 is rounded to 27.

Figure 6.4 illustrates the sample size (left axis), and the percentage of population the sample constitutes (on the right axis).

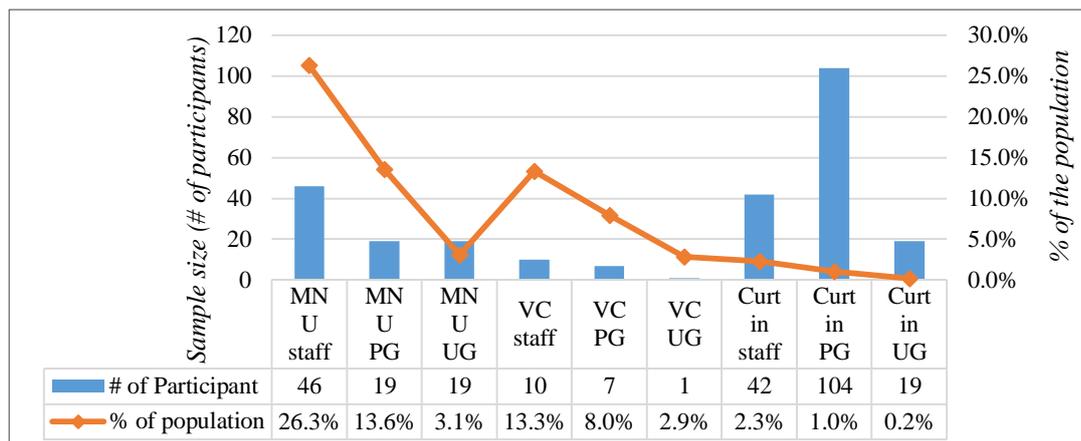


Figure 6.4. Sample size compared with the percentage of the population

As noted in Table 3.4, to generalize the findings to the target populations from the Maldives (MNU and VC) and Australia (Curtin) at a 90% confidence level and 5% margin of error, the ideal sample size should be 219 participants from the Maldives (combining MNU and VC), and 268 from Curtin. The recruited sample is comparatively smaller: 102 from the Maldives (combining MNU and VC) and 165 participants from Australia (Curtin). Statistically, the sample from the Maldives (combination of MNU and VC) offers a confidence level of 80% with a 6% margin of error. With 165 participants, the data from Curtin offers 88% confidence level with a 6% margin of error.

In all three institutions there was a higher response rate from staff, with a targeted sample size of 15% met only from MNU (MNU 26.3%, VC 13.3%, and Curtin 2.3%). The 15% target from the two student groups of MNU and the three groups from VC were not met. Similarly, the target sample of 10% from the Curtin population was not achieved. The lowest response rate was noted for the undergraduates (MNU 3.1%, VC 2.9%, Curtin 0.2%).

MNU assisted the research by sending a generic email to all the students. Nonetheless, the response rates suggest that this had no impact on student recruitment. The MNU research assistant (RA) confirmed that students were known to be slow in checking their MNU official email. The MNU RA also reported difficulty in recruiting students, especially final-year undergraduates, as they were in the last few weeks of the semester with exams scheduled for mid-November. It was anticipated that some increase in student response will be observed in late November, but this did not eventuate.

Additionally, the VC RA reported that the staff from VC were experiencing a higher workload than normal as they were in the midst of preparing for an international conference, a first for the College. Therefore, the VC RA reported having difficulty undertaking the added task of assisting with this research, which explains the low response rate from VC. This was not foreseen in the survey planning stage.

Furthermore, reaching Curtin students and staff proved to be more challenging. The approved Curtin survey protocols did not allow the researcher to access contact details for prospective participants, and there was no central provision to send survey information as a blanket email to all Curtin academics and students. After considerable effort and a second ethics amendment, in the second month of data collection the Curtin Office of Research and Development (ORD) agreed to email the survey information to all higher degree by research (HDR) students directly, on behalf of the researcher. A significant peak in response was seen immediately after this email. Figure 6.5 shows a snapshot of daily participant recruitment numbers.

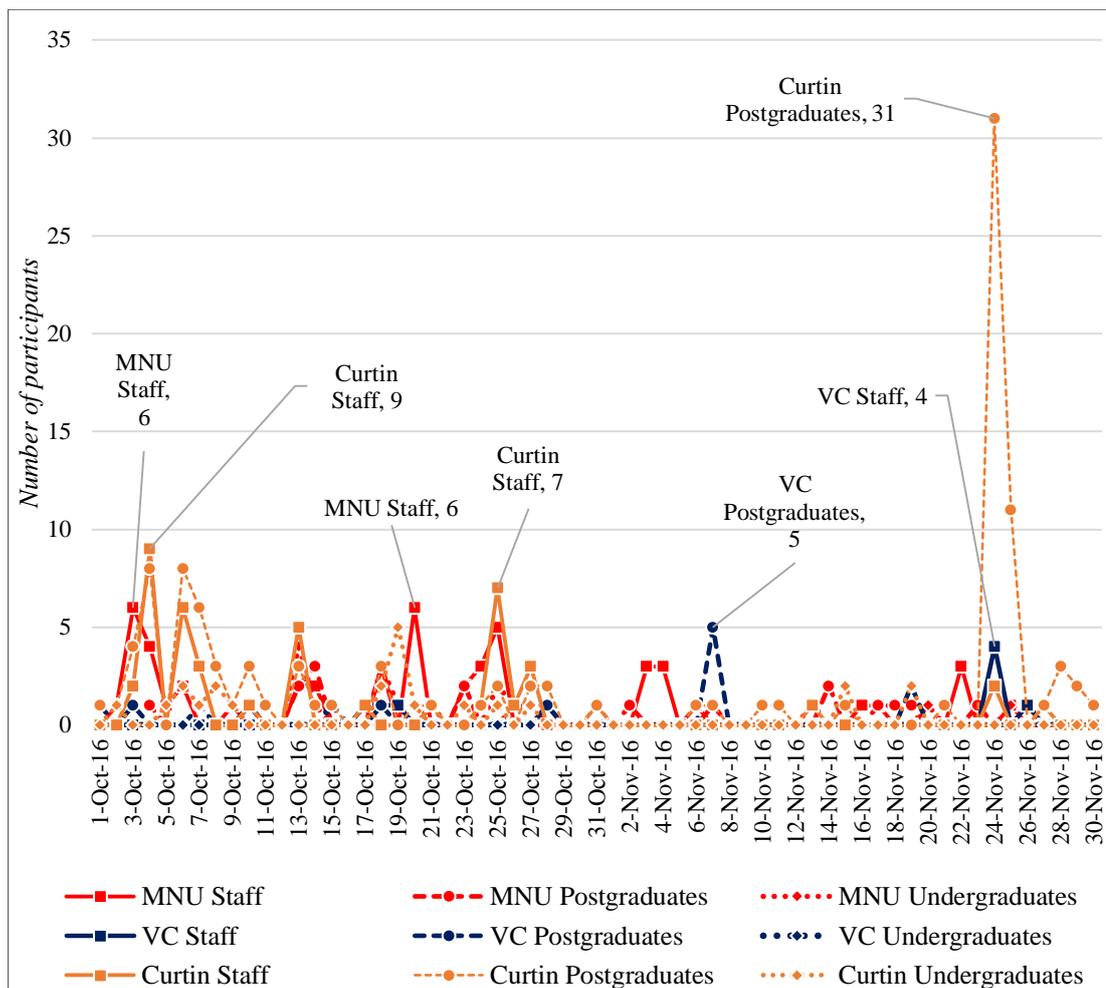


Figure 6.5. A breakdown of daily participant recruitment during the survey period

Overall, the trend revealed that participants tended to participate in this online survey when someone personally known, either as an ally or as a person in a position of authority, had a role in promoting the survey. Some examples (highlighted in Figure 6.5) include: the MNU's generic email to all academic staff on 3 October and 22 October; the researcher's personalised email to former colleagues at MNU on 18 October; VC's generic email to all staff on 17 October and 24 November; and, the ORD email to all Curtin HDR students on 24 November. The intermittent days saw a comparatively low response. Social media was useful in spreading the word, but it did not necessarily result in recruitment.

Also, of interest was that the bulk of the participants from Curtin were students while this was the opposite for the two sample institutions from the Maldives (see the illustration in Figure 6.4). A likely reason is the affiliation of the researcher to Curtin as a fulltime student, and affiliation to MNU as a colleague for most of the academic staff, with no direct access to any of the current students in both MNU and VC.

In lieu of these issues, the target sample recruitment was not achieved during the two months of active participant recruitment. Nonetheless, owing to time limitations as well as logistical difficulties in any further recruitment strategy that could be utilised, it was decided to close the survey and proceed with the recruited participants. The decision was also based on earlier research evidence (*sampling* in Section 3.5.2.3) that affirms online survey recruitment is typically low when used as a generic link. The main focus of this research was on the Maldives, and as earlier seen in Table 6.5, the sample from the Maldives constitutes between 3% and 19%.

### **6.1.3 Issues in survey instrument/tool**

The following two issues were encountered whilst conducting this survey, which impacted on the data collection.

Firstly, the same questionnaire was applied at three different institutions and therefore the questions were left as generic as possible. Given the survey did not specifically identify their institutional library, a few participants from the Maldives expressed confusion as to which library they should be thinking about when responding to the questions about library use. This is understandable given that the library collection in VC was small and the MNU library, even though significantly

large in comparison, was limited in certain areas. Therefore, users often relied on a number of libraries including the Maldives National Library and the Research Library at the Academy of Dhivehi Language that specialises in Maldives history and culture in addition to the language. VC also used the Malaysian Open University Library through their affiliation in course offerings.

While this issue had the potential to skew answers around specific library use, the questionnaire included a number of library-related questions from slightly different angles that compensated for any misrepresentation. Additionally, the data from Phase I interviews could also be used to triangulate the data from the survey, and therefore the issue was not critical to the overall findings.

Secondly, in the third week of the survey, a participant reported a glitch in Q5 (for student’s study-mode) stating that if a selection had been made by error, the possibility of changing the answer was not there. Upon investigation, it was identified that there was a technical design issue in Qualtrics™ that caused this limitation. Given that it was not possible to change the question design attributes without the possibility of tampering with the recorded responses, no changes were made. Instead, a note was added at the end of the question (as shown in Figure 6.6), with an appeal for the participants to add the correct answer in the “other” response provided in the question.

Q5 Please indicate your study mode (If your course is a mix of different approaches, select the one that is most prominent) PLEASE NOTE YOU CANNOT, UNFORTUNATELY, UNDO A RESPONSE ON THIS QUESTION. IF YOU ACCIDENTALLY CLICK AN INCORRECT RESPONSE, PLEASE ADD YOUR RESPONSE IN THE "OTHER" OPTION. MANY THANKS)

	Study mode	
	Full-time	Part-time
On campus - at the main campus	<input type="radio"/>	<input type="radio"/>
On campus - at a regional campus	<input type="radio"/>	<input type="radio"/>
Online	<input type="radio"/>	<input type="radio"/>
Block mode - at the main campus	<input type="radio"/>	<input type="radio"/>
Block mode - at a regional	<input type="radio"/>	<input type="radio"/>

Repeat Headers  
 None  
 Middle  
 Bottom  
 Both  
 All

Validation Type  
 None  
 Custom Validation

Actions  
 Add Page Break  
 Add Display Logic  
 Add Skip Logic

Figure 6.6. Error in question design (Q5)

The error in Q5 has minimal impact on the perceptions, attitudes, and behaviour of information seeking. Nonetheless, it compromised the demographics of the student study-mode.

#### **6.1.4 Data analysis**

The analysis of the collected survey data was mostly carried out using Qualtrics™ analytical reporting using cross-tabulations. The original dataset was firstly divided into three different projects (MNU, VC, & Curtin) to enable detailed cross-tabulations on the sample groups (staff, postgraduates, & undergraduates). Further manual extractions were required for some of the questions, as Qualtrics™ was not able to handle detailed analysis given the complex question presentations. These include Q20 presented as a “side by side” question combining two questions. The other two included graphical scale questions: Q29 using a slider and Q37 presented for starred rating. These visual enhancements were chosen to make the questionnaire user-friendly and simpler to answer. These further analyses were carried out using the Microsoft Excel pivot table feature and SPSS™ software. Using SPSS, multiple comparisons between the institutions and within the groups of each institution was carried out using one-way ANOVA comparing means. These t-test results are summarised in Appendix 6B.

Q41, the only open-ended question was analysed using NVivo™, which facilitated systematic coding and the graphical display of the findings.

## **6.2 Survey outcomes**

This section presents the findings from the data collected through the online survey questionnaire. The questionnaire was divided into six parts with the first part establishing the eligibility of the participant as well as collecting demographic data. The second part aimed to understand the participants’ general information seeking contexts, and the third part focussed on the participants’ use of the Google search engine. Part four collected details about the participants’ information needs and their perception of information sources. Part five gathered specific information about individual search preferences, and the last section attempted to understand the participants’ interpretation of library versus Google as an information source.

## 6.2.1 Part I: Demographic data

The first part of the questionnaire (Q1 to Q13) consisted of demographic questions.

### 6.2.1.1. Academic status of the participants

Q1 and Q6 were designed to stream the participants into the survey by determining their eligibility for the target population. These included “academic staff” (staff), “postgraduate student” (postgraduates) and “final-year undergraduate students” (undergraduates) from MNU, VC, and Curtin. The data for Q1 and Q6 are summarised in Figure 6.7.

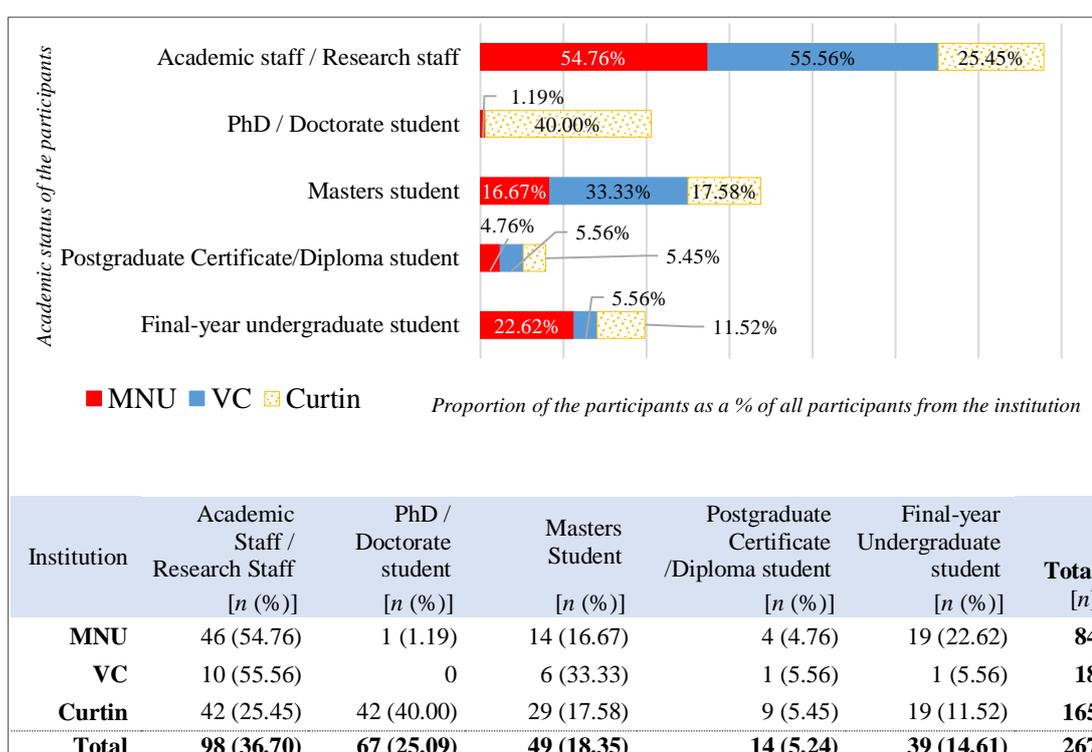


Figure 6.7. The distribution of participants' academic status (Q1) cross-tabulated against their affiliation to the three target institutions (Q6)

Of the 267 participants, 84 were from MNU, 18 from VC, and 165 from Curtin. The postgraduates were asked to identify themselves as a PhD/doctorate student, master's student, or postgraduate certificate/diploma student. MNU and VC postgraduates were mostly enrolled in a master's level course while Curtin postgraduates were mostly doctoral students. In further reporting of the data, these subgroups within postgraduates are only used where the level of detail is required for context.

As illustrated in Figure 6.8, over 50% of the participants from MNU and VC were staff, while postgraduates made up the bulk of Curtin participants (63%).

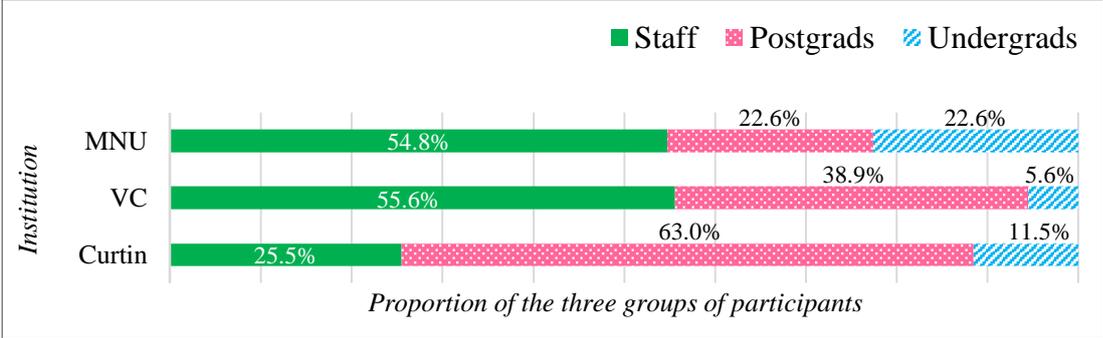


Figure 6.8. Proportion of staff, postgraduate, and undergraduate participants

6.2.1.2. Staff: Level of courses taught

Q2 asked about the level of courses taught, and was targeted only for the 98 participants who selected the ‘staff’ category in Q1. The data is illustrated in Figure 6.9.

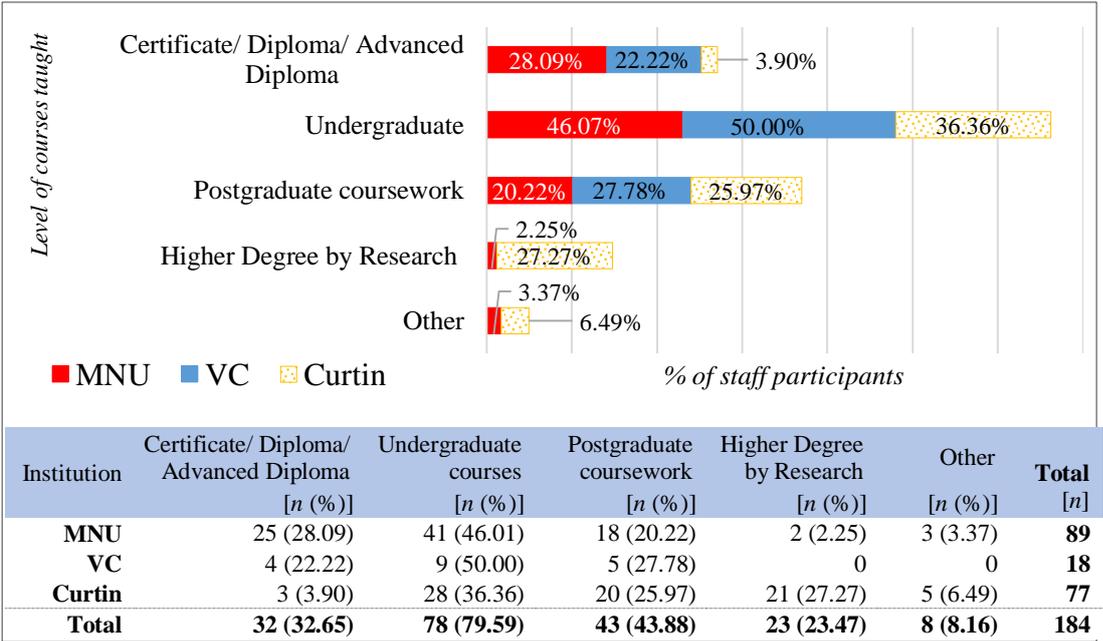


Figure 6.9. Level of courses taught/supervised by the staff participants (Q2)

MNU and VC staff participants were concentrated around teaching certificate and/or diploma (MNU 28.09%, VC 22.22%) and undergraduate level courses (MNU 40.07%, VC 50.00%), with comparatively few staff teaching at postgraduate level (MNU 20.22%, VC 27.78%) and relatively fewer supervising HDR students (MNU 2.20%, VC 0%). Curtin staff participants responded to teaching undergraduate,

postgraduate coursework, and HDR students in comparable proportions: 37.18%, 25.64%, and 26.92% respectively.

The “other” category was selected by five participants (Curtin  $n=3$  and MNU  $n=2$ ). Curtin staff listed “UniReady enabling program”, “IT specialised programs” and “student administration”. The “other” course listed by MNU staff was “masters” and “A-Levels”.

### 6.2.1.3. *Staff: Teaching experience*

Q3 asked about the teaching experience of staff participants. The data is presented in Table 6.6.

*Table 6.6. Number of years of teaching experience of the staff participants (Q3)*

Institution	Over 21 years [n (%)]	16-20 years [n (%)]	11-15 years [n (%)]	6-10 years [n (%)]	Less than 6 years [n (%)]	Total
MNU	3 (6.52)	3 (6.52)	11 (23.91)	14 (30.43)	15 (32.61)	<b>46</b>
VC	0	0	0	3 (30.00)	7 (70.00)	<b>10</b>
Curtin	4 (9.52)	5 (11.90)	6 (14.29)	11 (26.19)	16 (38.10)	<b>42</b>
<b>Total</b>	<b>7 (7.14)</b>	<b>8 (8.16)</b>	<b>17 (17.35)</b>	<b>28 (28.57)</b>	<b>38 (38.78)</b>	<b>98</b>

Comparatively, Curtin participants had more teaching experience at tertiary level with 35.71% participants indicating 11 or more years of experience. A similar proportion of MNU staff had over 11 years of experience with 36.91% in the year brackets above 11. The difference was the higher proportion of MNU staff in the 11-15 years category (23.91%) while a higher percentage of Curtin staff were in the 16-20 years (11.90%) and over 21 years category. Conversely, all VC staff had less than 10 years of teaching experience with 70% of them in the “less than 6 years” category. This is reflective of the recent establishment of VC compared to MNU and Curtin.

### 6.2.1.4. *Students: Number of years into current enrolment*

Q4 asked the students for the completed duration of studies in the current enrolled course identified in Q1. The 169 student participants consisted of 130 postgraduates and 39 undergraduates. The data is summarised in Table 6.7.

Table 6.7. The number of years into current enrolment by the student participants (Q4)

Student course level	1 <sup>st</sup> year [n (%)]	2 <sup>nd</sup> year [n (%)]	3 <sup>rd</sup> year [n (%)]	4 <sup>th</sup> year [n (%)]	5 <sup>th</sup> + year [n (%)]	Final year [n (%)]	Total [n]
<b>MNU PG</b>	13 (68.4)	2 (10.5)	2 (10.5)	2 (10.5)	-	-	<b>19</b>
<b>MNU UG</b>	-	-	-	-	-	19 (100)	<b>19</b>
<b>VC PG</b>	3 (42.9)	3 (42.9)	1 (14.3)	-	-	-	<b>7</b>
<b>VC UG</b>	-	-	-	-	-	1 (100)	<b>1</b>
<b>Curtin PG</b>	39 (37.5)	19 (18.3)	19 (18.3)	13 (12.5)	13 (12.5)	1 (1.0)	<b>104</b>
<b>Curtin UG</b>	-	-	-	-	-	19 (100)	<b>19</b>

Q4 was not displayed to those students who selected “final-year, undergraduate” (in Q1) and was counted as “final year” irrespective of whether they might have been in a three-year or four-year program.

This data provided insight into the students’ study experience in the enrolled course at their current institution. This data was important in correlating other findings about information seeking habits covered in later parts of the questionnaire. The majority (42.6%) of the postgraduate participants (MNU 68.4%, VC 42.9%, & Curtin 37.5%) were in their first year of study.

This response rate also perhaps sheds some light on the low proportion of undergraduate student participation. The higher participation rate by first year postgraduates could indicate that more undergraduates might have participated if the survey had not been limited to only undergraduates in their final year. One assumption here is that late into their studies, students are more occupied with studies and less likely to participate in similar surveys. Another assumption could be that they are less likely to be influenced to participate in an activity.

#### 6.2.1.5. *Students: Study-mode*

Q5 asked for the study-mode of student participants, whether their course was conducted as: face-to-face on the main campus; face-to-face at a regional campus; fully online; or, block-mode. The data from this question is summarised in Table 6.8. The data for PhD students and all other postgraduates are presented separately, as the connotation of face-to-face for research students and for other postgraduates could be different.

Table 6.8. Study-mode of the student participants (Q5)

Student institutional/course affiliation	Face-to-face Main Campus [n (%)]	Face-to-face Regional [n (%)]	Online [n (%)]	Block-mode [n (%)]	Non-response [n (%)]	Total [n]
MNU	PhD	0	0	0	1 (5.6)	1
	Other PG	5 (33.3)	1 (5.6)	0	11 (61.1)	18
	UG	18 (94.7)	0	0	1 (5.3)	19
	<b>Subtotal</b>	<b>24 (63.2)</b>	<b>1 (2.6)</b>	<b>0</b>	<b>13 (34.2)</b>	<b>38</b>
VC	PhD	0	0	0	0	0
	Other PG	4 (57.1)	1 (14.3)	0	2 (28.6)	7
	UG	1 (100)	0	0	0	1
	<b>Subtotal</b>	<b>5 (62.5)</b>	<b>1 (12.5)</b>	<b>0</b>	<b>2 (25.0)</b>	<b>8</b>
Curtin	PhD	59 (89.4)	0	7 (10.6)	0	66
	Other PG	16 (42.1)	0	19 (50.0)	3 (7.9)	38
	UG	6 (31.6)	0	11 (57.9)	2 (10.5)	19
	<b>Subtotal</b>	<b>81 (65.9)</b>	<b>0</b>	<b>37 (30.1)</b>	<b>5 (4.1)</b>	<b>123</b>
<b>Total</b>	<b>110 (65.1)</b>	<b>2 (1.2)</b>	<b>37 (21.9)</b>	<b>15 (8.9)</b>	<b>5 (3.0)</b>	<b>169</b>

The majority of the participants were enrolled in face-to-face courses and were studying on the main campus (MNU 63.2%, VC 62.5%, Curtin 65.9%). The second largest group was block-mode students for both MNU (34.2%) and VC (25.0%), while the second largest from Curtin were online students (30.1%).

There was hardly any representation of students from regional campuses (MNU 2.6%, VC 12.5%, Curtin 0%). This impacted on the reliability of drawing any generalisations from the perspective of similar students.

The percentage of fulltime and part time student enrolments of MNU, VC, and Curtin student participants were in the ratio of 88:20, 38:63 and 68:32 respectively. This is illustrated in Figure 6.10.

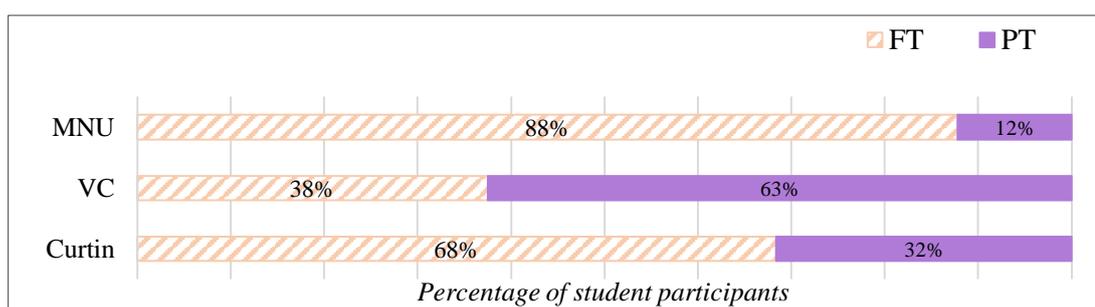


Figure 6.10. Fulltime (FT) versus part-time (PT) ratio of student participants

### 6.2.1.6. Institutional affiliation

Q6 established the participants' affiliation to the sample institutions for this research, and the data has already been presented under the academic status of participants (in Figure 6.7). More participants were recruited from Curtin in comparison to MNU and

VC. To an extent this was reflective of the population size. Further information on the sample size and population proportion was covered in section 6.1.2.5.

Q7, Q8, and Q9 sought answers on participants’ affiliation to a Faculty/Centre within MNU, VC, and Curtin respectively. The data is illustrated in Figures 6.11 to 6.13.

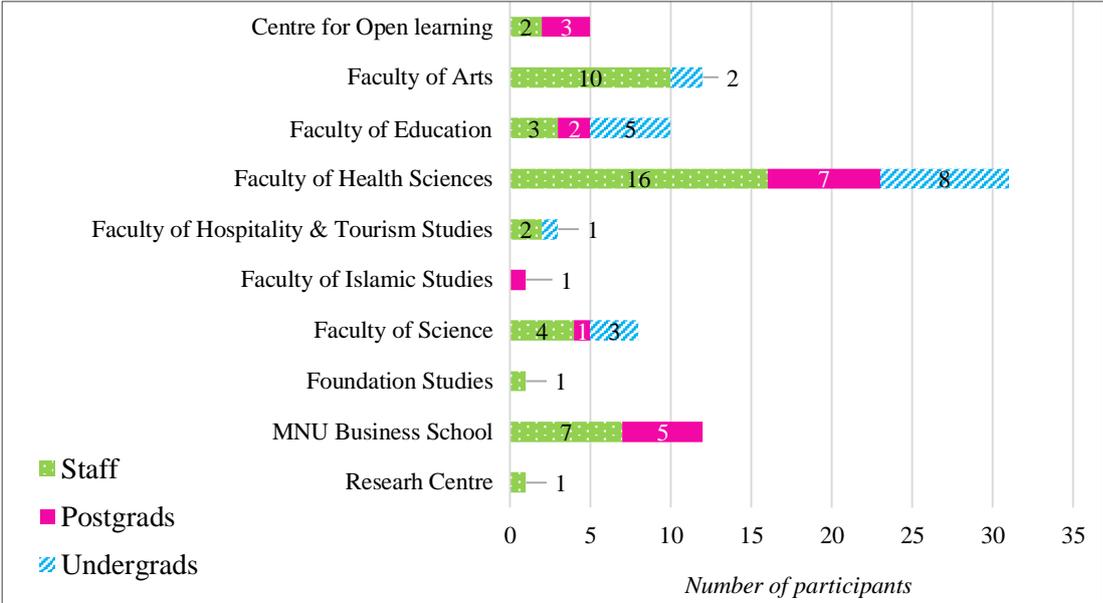


Figure 6.11. MNU participants’ Faculty/Centre affiliation (Q7)

At least one participant was recruited from 10 of the 12 Faculty/Centres of MNU (Figure 6.11). The largest group of MNU participants were from the Health Sciences (n=31, 36.9%) followed by Arts (n=12, 14.3%) and Business (n=12, 14.3%). The high response from Health is perhaps reflective of the researcher’s earlier work affiliation to this Faculty.

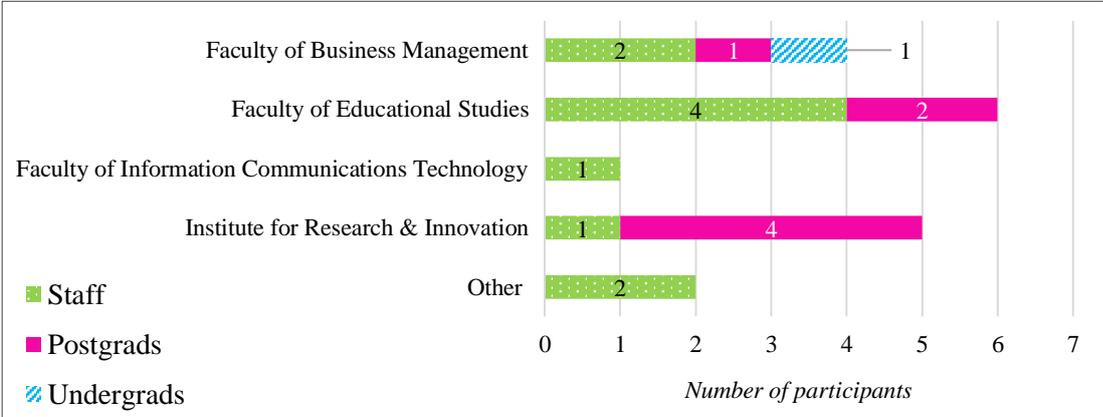


Figure 6.12. VC participants’ Faculty/Centre affiliation (Q8)

The participants from VC were from four of their eight Faculty/Centres (Figure 6.12). More VC staff were from Education (40%) while more students (57.1%) associated themselves with their research institute (IRI).

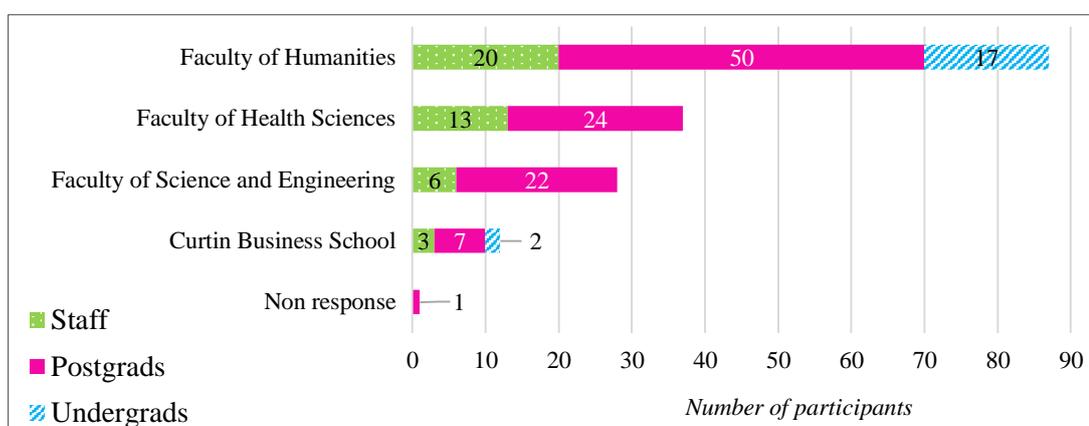


Figure 6.13. Curtin participants' Faculty/Centre affiliation (Q9)

The participants from Curtin (Figure 6.13) were from four of five Faculty/Centres, and predominantly from the Humanities ( $n=87$ , 52.7%), followed by Health ( $n=37$ , 22.4%), Science and Engineering ( $n=28$ , 17%) and Business ( $n=12$ , 7.3%). The high response rate from the Humanities perhaps was reflective of the researcher's affiliation to the Faculty.

### 6.2.1.7. Main campus versus regional campus

Q10 identified the work location of staff participants. Over 94% of all participants were attached to the main campus. The data is shown in Table 6.9.

Table 6.9. Work location of staff participants

Institution	At a regional campus [n (%)]	At the main campus [n (%)]	Total [n]
MNU	4 (8.70)	42 (91.30)	46
VC	0	10 (100.00)	10
Curtin	1 (2.38)	41 (97.62)	42
<b>Total</b>	<b>5 (5.10)</b>	<b>93 (94.90)</b>	<b>98</b>

The students' affiliation to the main campus versus regional campus has already been addressed (in Table 6.8) showing 65.1% of the student participants enrolled in face-to-face courses on the main campus.

### 6.2.1.8. Age distribution and participants' gender

Participants were recruited only if they were older than 18 years of age. Q11 asked for the age of the participants. They were not asked for the exact age, instead they were provided with age categories to select. The data for age is illustrated in Figure 6.14.

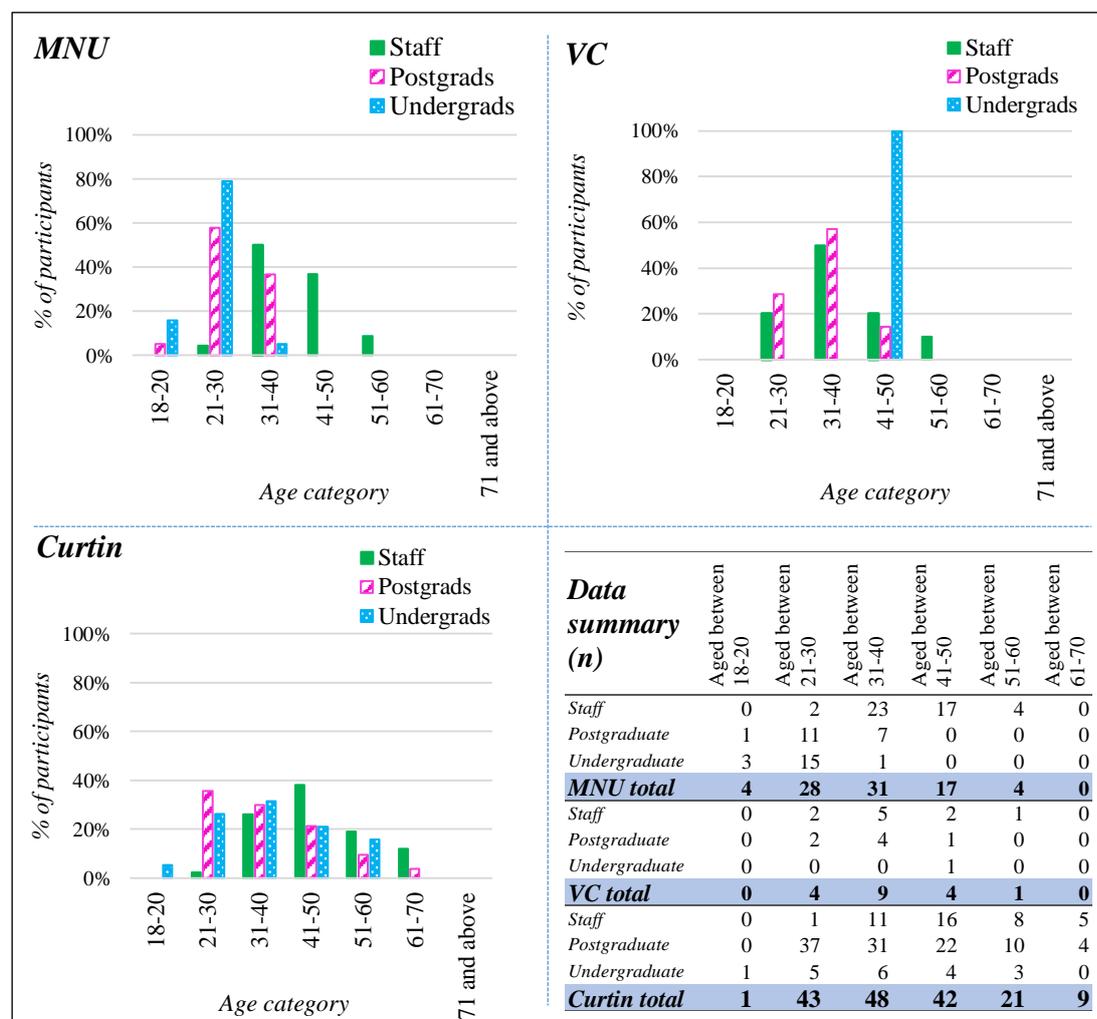


Figure 6.14. Age categories of participants (Q11)

Note. None of the participants selected the '70+' age category. One Curtin participant chose to not answer the question.

The bulk of the student participants were in the age category of 21-30 years and the staff in the 31-40 years category. The VC had a relatively younger staff base with 70% of the staff under 40 years. The MNU staff were mostly in the 31-40 age category (50%), with another 35% staff in the 41-50 age category. Curtin staff were relatively older with 69% aged 41 years and above.

Across the three institutions, the participants were predominately female in all target groups (staff, postgraduates, and undergraduates). The data is illustrated in Figure 6.15.

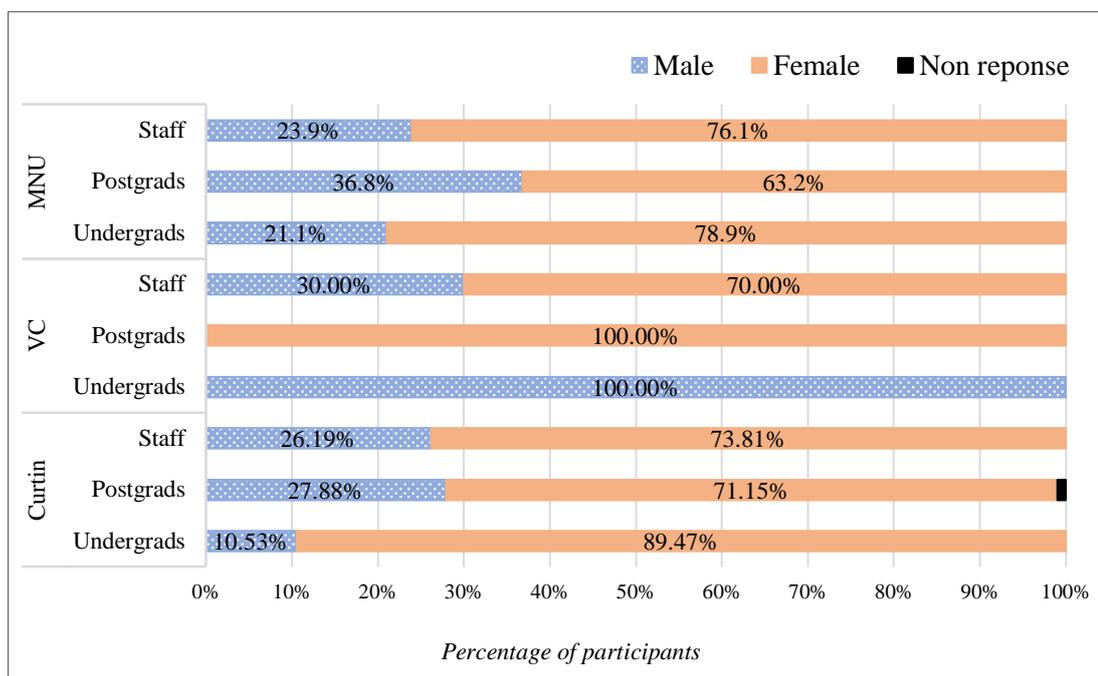


Figure 6.15. Gender representation of the participants (Q12)

### 6.2.1.9. Highest qualification

Q13 sought information about the prior highest qualification of the participants. The data is illustrated in Figure 6.16.

The data illustrate that most Curtin staff (70.7%) possessed a doctorate qualification while most MNU (78.3%) and VC (80%) staff had other postgraduate qualifications, either a postgraduate certificate/diploma or a master's degree. More VC staff in comparison to MNU staff had a doctorate (MNU 6.5%, VC 20%). Unlike VC and Curtin, a few of the MNU staff's (2.2%) highest qualification also included pre-university qualifications.

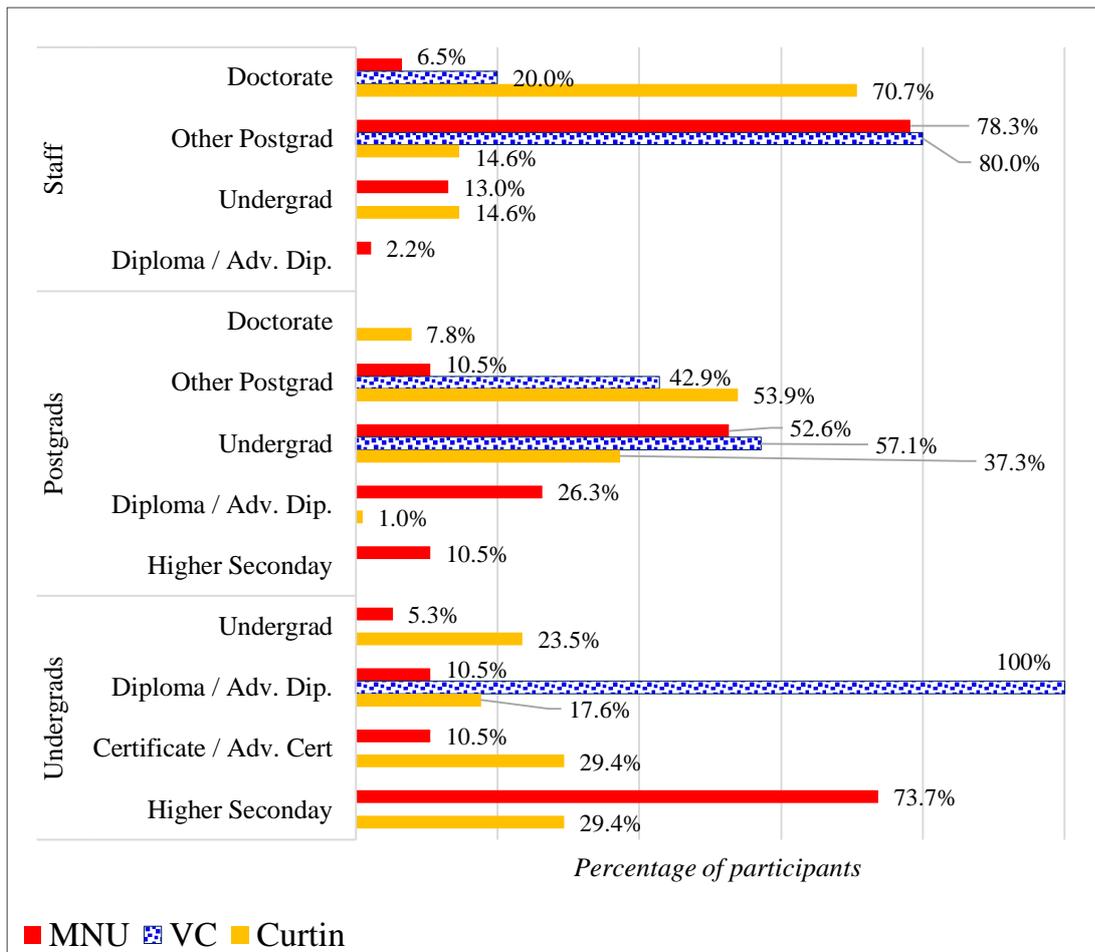


Figure 6.16. Participants' prior highest qualification (Q13)

The highest prior qualification by MNU postgraduates was typically an undergraduate qualification (52.6%) or lower (26.3% with a diploma or advanced diploma and 10.5% with a higher secondary qualification). Contrarily, all VC postgraduates stated possessing an undergraduate (57.1%) or higher qualification (42.9% stating other postgraduate). Similarly, most Curtin postgraduates are already qualified at postgraduate or doctoral level (7.8% possessing a doctorate and 53.9% participants with other postgraduate qualification).

In summary, the demographics across the three institutions indicate a number of similarities, mostly in the gender and age of the participants. Most differences are in terms of Curtin having a higher number of research oriented students and that most of their academic staff possess a doctorate qualification in comparison to their MNU and VC counterparts. Figure 6.17 summarises the demographic data.

<p><b>MNU Staff Participants</b></p> 	<p>Female (76%); Aged between 31-40 years (50%); 41-50 years (37%)</p> <p>Teaches: Undergrad courses (46%); Non-award courses (28%); Postgrad coursework (20%)</p> <p>Teaching experience: Less than 6 years (33%); 6-10 years (30%); 11-15 years (24%)</p> <p>Highest qualification: Masters (74%); Bachelor (13%); Doctorate (7%)</p> <p>Works at the University main campus (91%)</p> <p>Faculty/Centre: Health Sciences (35%); Arts (22%); Business School (15%)</p>	<p>Female (70%); Aged between 31-40 years (50%); 41-50 years (20%)</p> <p>Teaches: Undergrad courses (50%); Postgrad coursework (28%); Non-award courses (22%)</p> <p>Teaching experience: Less than 6 years (70%); 6-10 years (30%)</p> <p>Highest qualification: Masters (80%); Doctorate (20%)</p> <p>Works at the University main campus (100%)</p> <p>Faculty: Education (40%); Business (20%); IRI (10%)</p>	<p><b>Curtin Staff Participants</b></p>  <p>Female (74%); Aged between 41-50 years (38%); 31-40 years (26%)</p> <p>Teaches: Undergrad courses (36%); HDR (27%); Postgrad coursework (26%)</p> <p>Teaching experience: Less than 6 years (38%); 6-10 years (26%); 11-15 (14%)</p> <p>Highest qualification: Doctorate (70%); Masters/GradDip (15%); Bachelor (15%)</p> <p>Works at the University main campus (98%)</p> <p>Faculty: Humanities (48%); Health Sciences (31%); Science and Engineering (14%)</p>
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<p><b>MNU Student Participants</b></p> 	<p>Student participants ratio:  <b>Postgrads (50%)</b>          Undergrads (50%)</p> <p><b>Postgrads: Female (63%)</b>          Undergrads: Female (79%)</p> <p><b>Postgrads: Age 21-30 years (58%)</b>          Undergrads: Age 21-30 years (79%)</p> <p>Main campus face-to-face (63%)          Studies on block mode (34%)          Fulltime (88%) / Parttime (12%)</p> <p><b>Postgrads: Health (37%); Business (26%)</b>          Undergrads: Health (42%); Education (26%)</p> <p><b>Postgrads: 1st year (68%); 2nd year (11%)</b>          Undergrads: in final year (100%)</p> <p>Highest qualification:  <b>Postgrads: Bachelor (53%);</b>          Undergrads: Secondary (74%)</p>	<p>Student participants ratio:  <b>Postgrads (87.5%)</b>          Undergrads (12.5%)</p> <p><b>Postgrads: Female (100%)</b>          Undergrads: Male (100%)</p> <p><b>Postgrads: Age 21-30 years (36%)</b>          Undergrads: Age 31-40 years (32%)</p> <p>Main campus face-to-face (63%)          Studies on block mode (25%)          Fulltime (38%) / Parttime (63%)</p> <p><b>Postgrads: IRI (57%); Business (14%)</b>          Undergrads: Business (100%)</p> <p><b>Postgrads: 1st year (43%); 2nd year (43%)</b>          Undergrads: in final year (100%)</p> <p>Highest prior qualification:  <b>Postgrads: Bachelor (57%)</b>          Undergrads: Post-Secondary (100%)</p>	<p><b>Curtin Student Participants</b></p>  <p>Student participants ratio:  <b>Postgrads (84.6%)</b>          Undergrads (15.4%)</p> <p><b>Postgrads: Female (71%)</b>          Undergrads: Female (89%)</p> <p><b>Postgrads: Age 21-30 years (36%)</b>          Undergrads: Age 31-40 years (32%)</p> <p>Main campus face-to-face (66%)          Studies online (30%)          Fulltime (68%) / Parttime (32%)</p> <p><b>Postgrads: Humanities (48%); Health (23%)</b>          Undergrads: Humanities (89%); Business (11%)</p> <p><b>Postgrads: in 1st year (38%); 2nd year (18%)</b>          Undergrads: in final year (100%)</p> <p>Highest prior qualification:  <b>Postgrads: Master/GradDip(54%)</b>          Undergrads: Post-Secondary (47%)</p>
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Figure 6.17. Summary of participant demographics

## 6.2.2 Part II: Information seeking

This section (Q14 to Q17) of the questionnaire gathered information about the participants' perception of their information seeking preferences in general.

### 6.2.2.1. How would you normally start a search?

Q14 asked the participants how they would normally start a search when seeking information for an academic task. Six predefined answers were provided with a scale ranging from *most often*, *often*, *sometimes*, *rarely*, to *never*. A summary of the data using the *mean (m)* of the scaled responses is illustrated in Figure 6.18<sup>14</sup>.

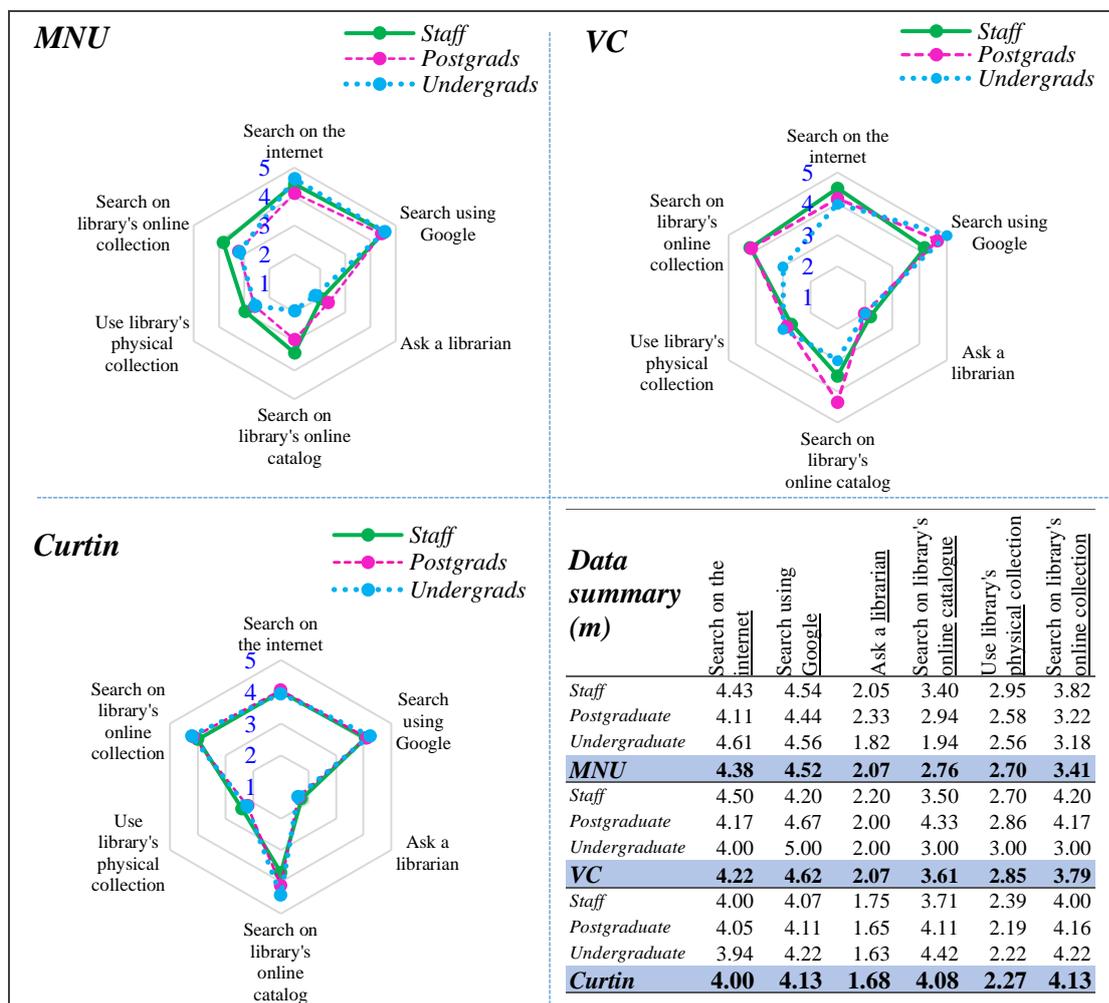


Figure 6.18. How the participants normally start an academic information search (Q14) The data is represented as the mean (*m*) of the five-item scale responses: 5=*most often*, 4=*often*, 3=*sometimes*, 2=*rarely*, and 1=*never*.

<sup>14</sup> The detailed datasheet for Figure 6.18 is included in Appendix 6B. This is included as a sample of the detailed tabulations carried out for all similar questions. The datasheets for other questions are not included in this thesis. Where needed, the other datasheets can be requested for examination through the Department of Information Studies, Curtin University.

The findings for Q14 (Figure 6.18) indicate that the three institutions have an overall similar starting search strategy that relies more on the online versus physical sources. Within each institution the overall pattern is similar across the staff and student groups, with slight notable difference within MNU and VC groups, while there is significantly less difference within Curtin groups.

A comparison (t-test) between the institutions shows that there is no statistically significant difference ( $p$ -value  $>0.01$ ) between the institutions in their preference to start their information searches on the internet. MNU and VC participants had an internet/Google preference (MNU internet:  $m=4.38$ , Google:  $m=4.52$ ; VC internet:  $m=4.22$ , Google:  $m=4.62$ ). For Curtin, the reliance was equally spread across internet searches ( $m=4.00$ ) with an inferred Google preference ( $m=4.13$ ) as the search engine of choice.

The Curtin participants also demonstrated an equal reliance ( $m=4.13$ ) on the library's online collection (discovery tool). Comparatively, MNU and VC relied on the library's online collection less than Curtin did with a slightly higher reliance by VC ( $m=3.79$ ) in comparison to MNU ( $m=3.41$ ). There was a notable difference between VC undergraduates and other groups, nonetheless this was statistically not significant given that only one undergraduate participated from VC.

Overall, the findings indicate a low reliance on the physical library and a lower emphasis on contact with a librarian in starting an academic information search. However, a slightly higher tendency to ask a librarian ( $m=2.07$ ) at both MNU and VC is indicated, than at Curtin ( $m=1.68$ ). Similarly, MNU and VC rarely rely on the library's physical collection ( $m=2.70$  and  $2.85$  respectively), but the reliance is slightly more than Curtin ( $m=2.27$ ).

It is important to note that, while the pattern was similar, the MNU sample groups displayed differences in how often the sources were used, with students using library sources less often than staff. A few participants (MNU  $n=3$ , VC  $n=1$ , Curtin  $n=21$ ) chose to use the "other" answer option to add further details. Nine from Curtin, and one VC participant specified "Google Scholar". The predefined answer options only offered *Google* without qualifying it into other Google search platforms like *Google Scholar*, as the purpose of the question was to understand physical versus online use

as well as library versus internet use, and not the specificities of how Google was used. From the remaining Curtin participants, four stated reliance on friends/colleagues, two stated using their own collection, three named specific online databases such as PubMed, and one participant stated “publication platforms (e.g. ResearchGate, etc.)”. The text entered by MNU participants as other explanations for how information seeking was started included “saved materials”, “getting expertise from experienced personnel”, and “eBooks from the internet”.

### 6.2.2.2. Locating journal articles

Q15 asked the participants how they located journal articles as part of their academic information needs. Five predefined answers were provided with a scale response.

The data is summarised and illustrated in Figure 6.19.

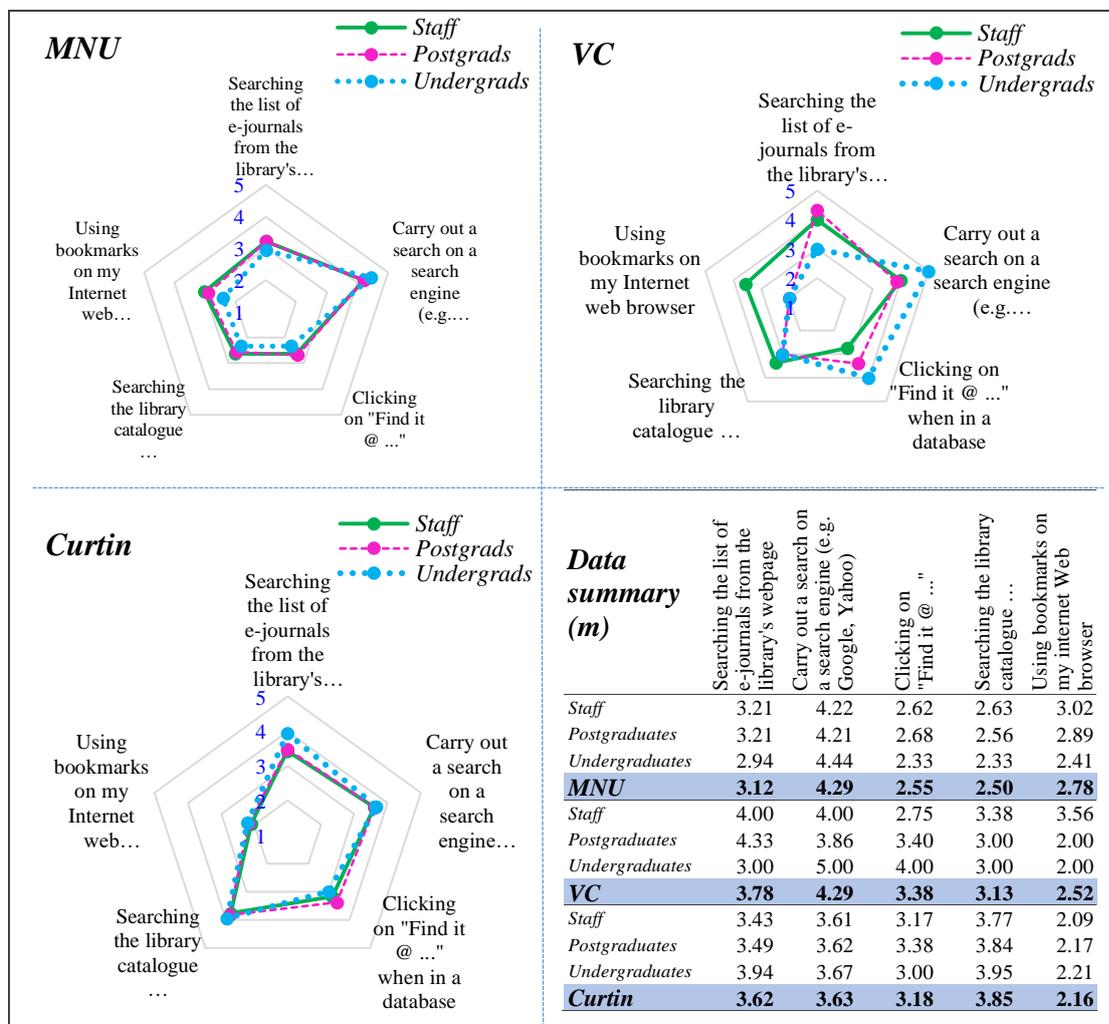


Figure 6.19. Primary methods in locating journal articles

The data is represented as the mean (*m*) of the five-item scale responses: 5=*most often*, 4=*often*, 3=*sometimes*, 2=*rarely*, and 1=*never*.

Although, there was a significant difference from participants between the three institutions, in how they located journal articles, not much distinction existed within the staff and student groups of MNU and Curtin. In the case of VC, because there was only one undergraduate it was impossible to make any generalisations.

MNU's preferred method to locate journal articles was by using internet search engines such as Google, Yahoo, etc. ( $m=4.29$ ). The other listed approaches were not as common, with the second preferred method being "searching the list of e-journals from the library's webpage<sup>15</sup>" ( $m=3.12$ ), and using bookmarks on the individual's internet browser ( $m=2.78$ ). The "find it" resolver as well as the library's online webpage was seldom used when looking for specific articles.

In contrast, Curtin participants primarily located journal articles through the library catalogue ( $m=3.85$ ), "list of e-journals from library's webpage" ( $m=3.62$ ), and search engines including Google ( $m=3.63$ ).

The main differences between the institutions were: MNU's high reliance on internet search engines and a low reliance on the library catalogue, whilst Curtin relied almost equally on the library and internet searches; MNU's significantly higher reliance on bookmarks on their individual Web browsers, was an information seeking behaviour not exhibited by Curtin; and, the significant popularity of using the *find it*<sup>16</sup> resolver functionality at Curtin.

Sixteen participants (MNU  $n=2$ , VC  $n=2$ , Curtin  $n=14$ ) added text to the "other" category with five Curtin participants specifying "Google Scholar" as an additional strategy used in locating journal articles. This combined with the responses to the predefined category of "search engine" made the use of the search engine as popular as the library catalogue for Curtin participants. The remaining nine Curtin participants added "Endnote" ( $n=2$ ), "websites..." ( $n=3$ ) and one participant stated the articles were located from their computer hard drive. This notion of using pre-saved articles from an earlier search was common with the concept of using

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<sup>15</sup> This is equivalent to searching library databases and was included as a predefined answer as the interviews with the Maldives community revealed this to be normal language used to refer to online journal databases.

<sup>16</sup> "Find it @ ..." resolver requires to be setup through a discovery tool and this links the Google search results to the linked library. MNU and VC do not have this facility enabled while Curtin does.

“bookmarks” indicated by MNU and VC staff participants. The two MNU participants who added text into the “other” category stated using “HINARI” and “journals” respectively.

### 6.2.2.3. *Satisfaction with the affiliated library*

Q16 sought information on the participants’ level of satisfaction with the library at their affiliated institution. The following predefined categories of library services/facilities were provided as possible answers, with a scale ranging from *extremely satisfied, moderately satisfied, slightly satisfied, neutral, slightly dissatisfied, moderately dissatisfied, and extremely dissatisfied*:

- Physical library collection (e.g. books, audio visual material);
- Online book collection (eBooks);
- Online journals (databases);
- Library space;
- General environment / ambiance of the library;
- Computing facilities in the library;
- Level of assistance by library staff; and,
- Additional facilities provided to meet academic needs (e.g. reference support).

The data is summarised and illustrated in Figure 6.20.

The data show that in general, MNU and VC participants were not overly satisfied with the library at their disposal, and there were mixed responses to the listed library services with no clear pattern. In contrast, there is a statistically significant difference between MNU/VC versus Curtin ( $p$ -value < 0.01). Curtin participants indicated a higher level of satisfaction to almost all listed categories and the responses to a large extent were uniform across the staff and student groups. The highest satisfaction by Curtin participants were expressed for “online journals (databases)” ( $m=6.42$ ), “level of assistance by library staff” ( $m=5.98$ ), and “library space” ( $m=5.90$ ).

The highest satisfaction of library services from MNU was for “online journals” ( $m=5.20$ ) and this figure is boosted mostly by undergraduates while MNU staff borders on a neutral answer ( $m=4.80$ ). A collective higher ranking from MNU and VC, while it is not as high as Curtin, was for library staff assistance (MNU  $m=5.09$ , VC  $m=5.47$ ).

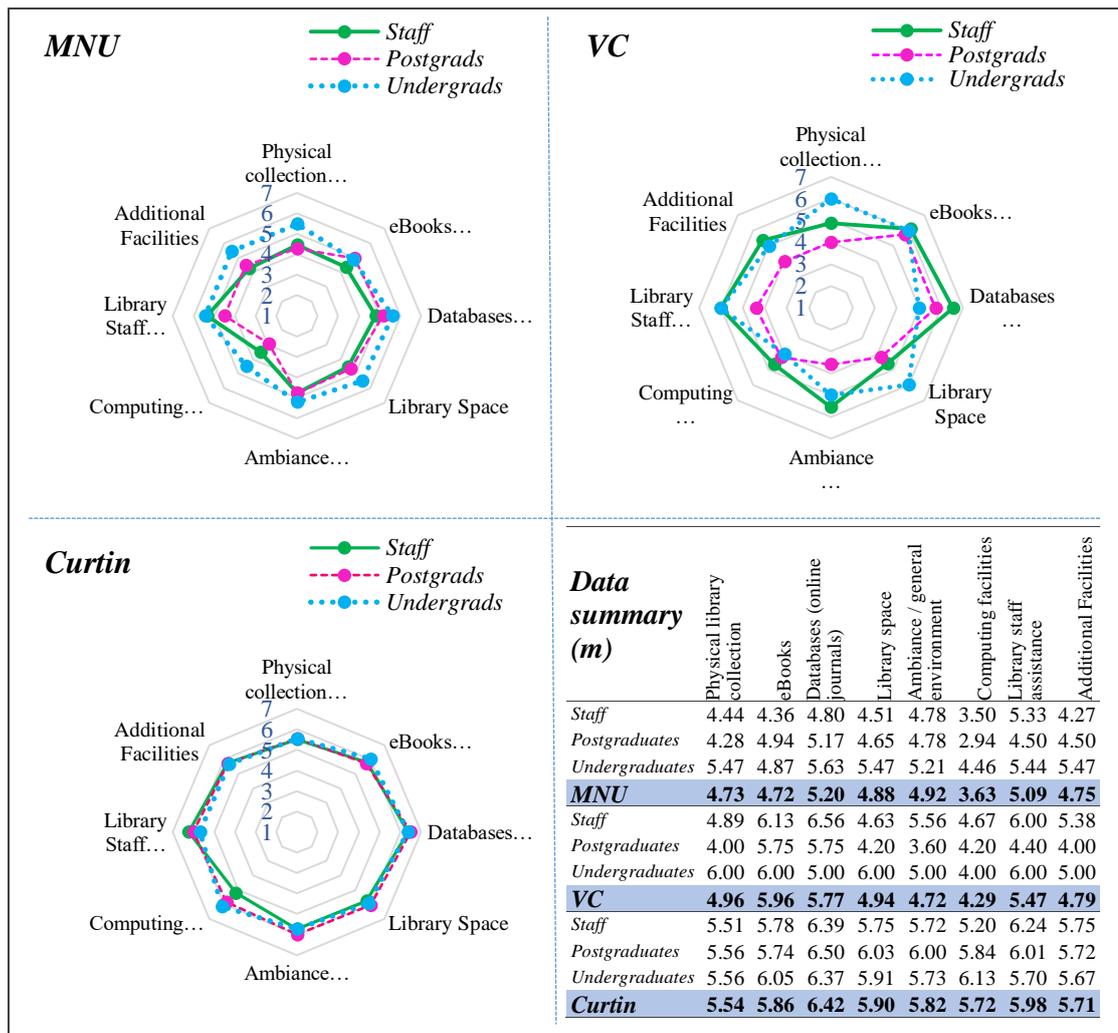


Figure 6.20. Participants' satisfaction with their affiliated library

The data is represented as the mean ( $m$ ) of the scale responses: 7=extremely satisfied, 6=moderately satisfied, 5=slightly satisfied, 4=neutral, 3=slightly dissatisfied, 2=moderately dissatisfied, 1=extremely dissatisfied.

There was a higher satisfaction of the MNU “physical library collection” ( $m=5.47$ ) as well as the MNU “library space” ( $m=5.47$ ) by undergraduates, which could be associated with the differences in undergraduate information needs compared to staff or postgraduates. In contrast, satisfaction for the computing facilities in the library was extremely low across all participants from MNU ( $m=3.63$ ) and VC ( $m=4.29$ ). Interestingly, Curtin participants' answers indicated a slight satisfaction ( $m=5.98$ ) with computing facilities.

The VC data had no clear pattern and could be explained by the small library collection at their disposal and a mix of access to online databases through an Open University partnership arrangement. This will be discussed further in the following chapter.

Six participants (MNU  $n=1$ , Curtin  $n=5$ ) selected the “other” option, and four Curtin participants added text. The comments included positive feedback for additional facilities and services (“library workshops, e.g. super-searcher, endnote”, “helpful workshops”, “inter-library loan”), and a negative comment stating “it is noisy”.

**6.2.2.4. Satisfaction with internet searches**

Q17 sought to understand the participants’ level of satisfaction with their internet searches when seeking academic information. The purpose of this question was to distinguish general online searches by eliminating the online library gateways such as the library catalogue or discovery tool. Three categorical answers were included: “internet searches”, “Google search results”, and “other search engine results”. The latter category allowed text entries to elicit other search engines the participants used. The data is summarised and illustrated in Figure 6.21.

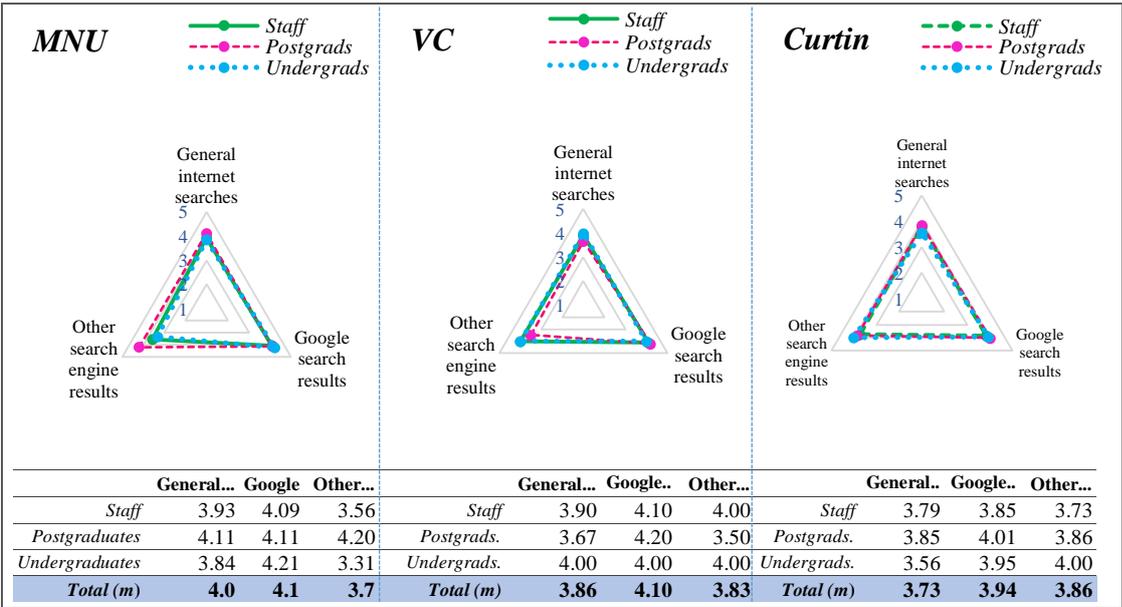


Figure 6.21. Participants’ satisfaction with internet search platforms  
 The data is represented as the mean (m) of the scale responses: 5=extremely satisfied, 4=moderately satisfied, 3=neutral, 2=moderately dissatisfied, 1=extremely dissatisfied.

The data indicate there is statistically significant difference ( $p$ -value  $>0.01$ ) between the institutions. There is also a slightly higher acceptance of online search results by staff and students at both MNU and VC, compared to Curtin participants.

Overall, there was a higher satisfaction with Google than any other online search interface; with a comparatively higher satisfaction level expressed by MNU and VC participants (MNU/VC  $m=4.1$ ) in comparison to Curtin ( $m=3.9$ ). Notably, only one



and is not reflective of the use of any other search engines apart from Google. This observation is truer for Curtin participants who have better access to online databases. Overall, the responses reaffirm the high reliance on Google search engine as the preferred choice for online searching.

**6.2.3 Part III: Google search engine**

Part 3 (Q18-Q21) of the questionnaire attempts to gather information on the participants’ specific use of the Google search engine.

**6.2.3.1. Take up of Google**

Q18 asked the participants about the timeframe when they first started using Google. The question carried four categorical answers: “around 1997 to 2000”, “around 2001 to 2004”, “around 2005 to 2008”, and “after 2009”. The data is illustrated in Figure 6.23<sup>17</sup>.

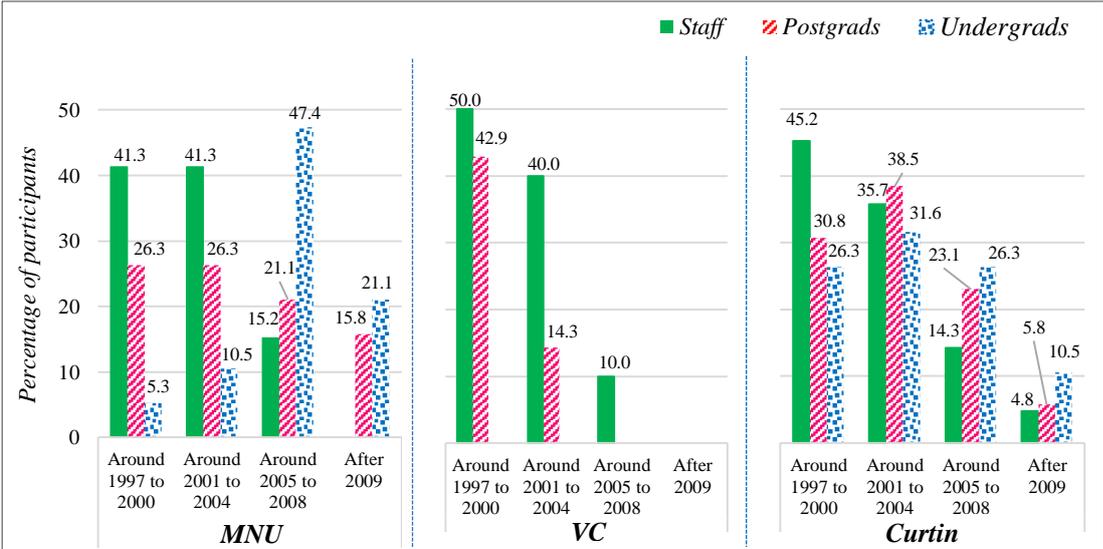


Figure 6.23. The timeframe when the participants started using Google

The majority of the staff (MNU 41.3%, VC 50%, Curtin 45.2%) started using Google around 1997 to 2000, with the second highest response recorded for 2001 to 2004. Except for the 42.9% of VC postgraduates who reported starting to use Google around 1997 to 2000, students’ uptake of Google appears to have happened after 2001, with 26.3% of MNU postgraduates, 14.3% of VC postgraduates, and 38.5% of

<sup>17</sup> VC undergraduate category is not included in the graph as there was only one student who results in a 100% for the category selected by the student and consequently is largely misrepresentative.

Curtin postgraduates selecting around 2001 to 2004. A significant number of postgraduates from MNU (21.1%) and Curtin (23.1%) stated they commenced using Google between 2005 and 2008.

A cross-tabulation of the age (Q11) of the participants with their responses for Q18 (illustrated in Figure 6.24), indicate the timeframe of take-up of Google has a significant association to age.

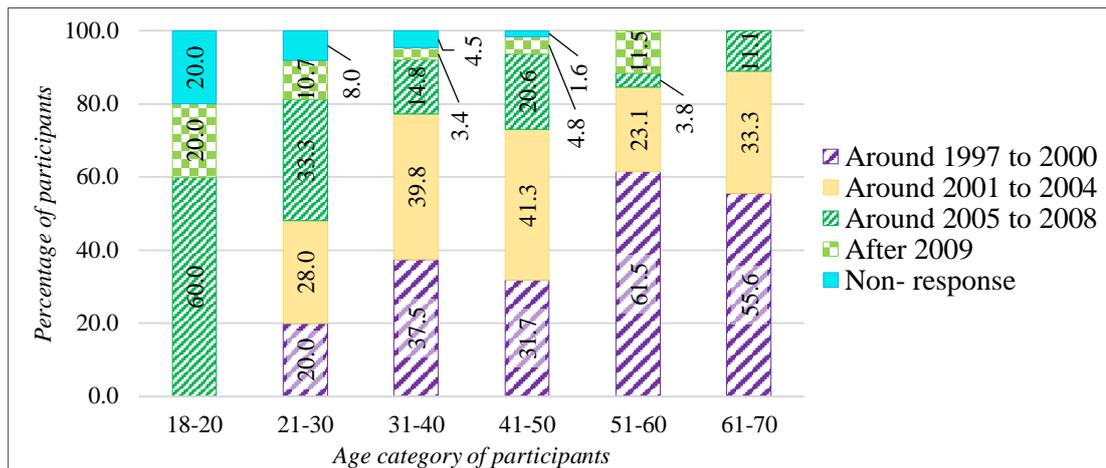


Figure 6.24. Correlation between age of the participants and uptake of Google

A bivariate correlation test between these two variables show a statistically significant association ( $p$ -value  $<0.01$ , Spearman coefficient  $-0.263$ ). An overall inference from the data is that around 55% of the participants aged 51 years and above took to Google around the same time it was introduced. And the rest of the participants took to Google during 2001 to 2004, which was the timeframe when Google gained its popularity.

Q19 sought to understand how the participants came to know of Google. The following predefined answers were provided from which to choose from, with the option to add “other” explanations:

- It was the search engine being used by people in my network (*Network*);
- I was told by someone that Google is the most reliable search engine (*Recommended*);
- It was the page that appears on the internet browser (*Default*); and,
- I just Google, I don't know the exact reason (*I don't know*).

The data, illustrated in Figure 6.25, indicate that a significant number of participants (MNU 29.8%, VC 27.8%, Curtin 36.4%) were not able to state exactly how they became aware of the Google search engine. The number of participants (MNU 6.0%, VC 16.7%, and Curtin 4.2%) choosing to not answer the question also could perhaps be related to the participants' inability to pinpoint a reason they started using Google. The questionnaire was set to display Q19 only to those participants who had indicated using Google in an earlier question.

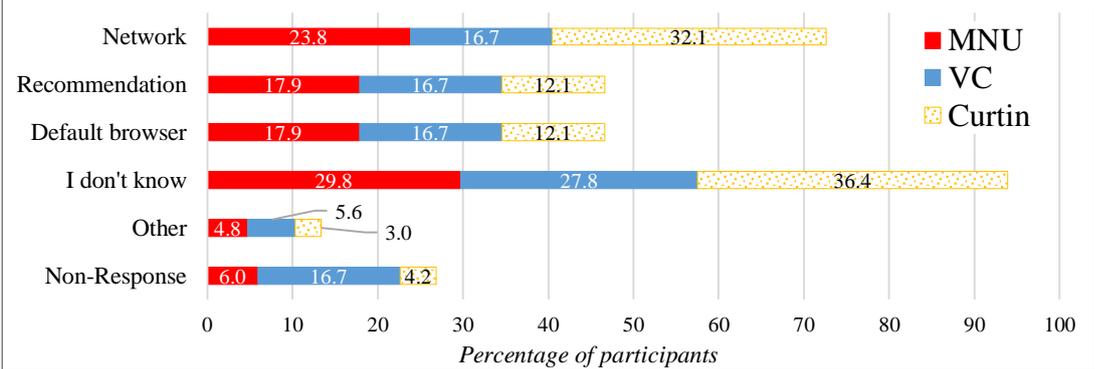


Figure 6.25. How the participants became aware of Google

The data also indicate that a large number of participants (MNU 23.8%, VC 16.7%, Curtin 32.1%) started using Google because others in their network were using it or else it was recommended to them (MNU 17.9%, VC 16.7%, Curtin 12.1%) as a reliable search engine.

The participant perception that they started using Google just because it is linked to the default browser on their computer appears less significant (MNU 17.9%, VC 16.7%, Curtin 12.1%) than the popularity factors (use by the network and recommended). However, this ubiquity could be the reason for the high proportion of participants who selected “I don’t know” (MNU 29.8%, VC 27.8%, and Curtin 36.4%).

The “other” category was provided anticipating there would be participants who might have a different explanation for how they came to know of Google. Fifteen participants (MNU  $n=4$ , VC  $n=1$ , and Curtin  $n=10$ ) selected “other”, and ten of them provided an explanation, with seven of them indicating Google was recommended by someone. Of the remaining three explanations, one indicated it just happened with no exact reason. The remaining two responses stated they use Google because they find it reliable, and therefore is not directly relevant to this question.

### 6.2.3.2. Google general search, Google Books, Google Scholar

Q20 sought to understand how frequently the participants use Google search platforms, and their satisfaction with the retrieved search results. The platforms included in the question were: “Google general search (google.com)”, “Google Books (books.google.com)” and “Google Scholar (scholar.google.com)”, with a choice of scale responses ranging from *often*, *sometimes*, *rarely*, to *never*.

The data for the frequency of use is shown in Figure 6.26 and satisfaction with these platforms is shown in Figure 6.27.

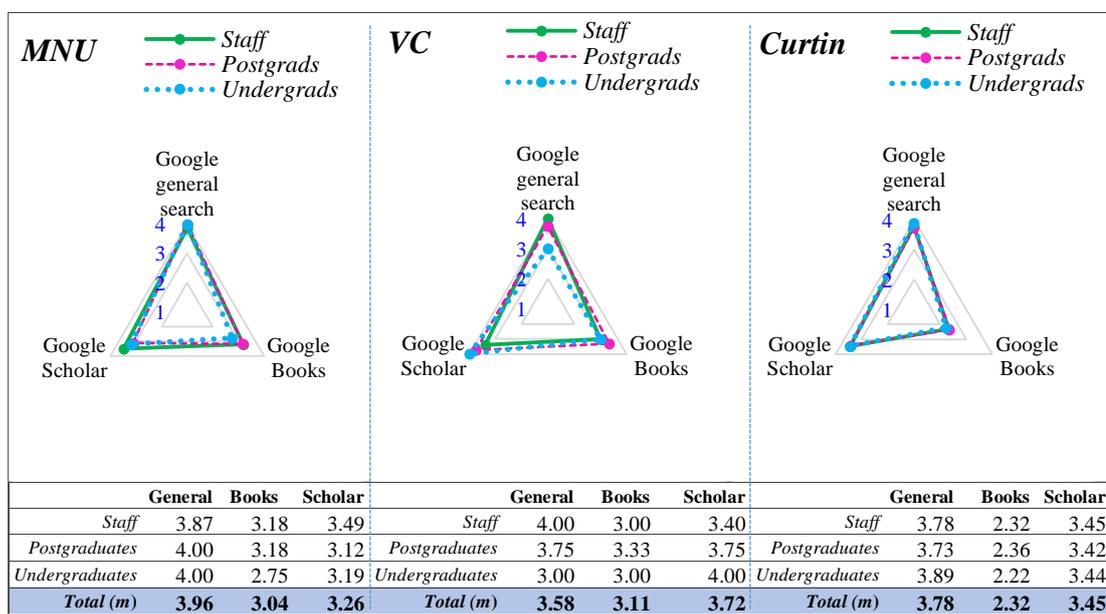


Figure 6.26. Frequency of Google general search, Google Books, and Google Scholar usage. The data is represented as the mean (*m*) of the four-item scale responses: 4=*often*, 3=*sometimes*, 2=*rarely*, and 1=*never*

The findings (Figure 6.26) show that the use of the **general** search interface (google.com) is universal across the staff and students from the three institutions (MNU  $m=3.96$ , VC  $m=3.58$ , Curtin  $m=3.80$ )<sup>18</sup> with no statistically significant difference ( $p$ -value  $>0.01$ ). None of the MNU or VC participants indicated a *never* or *rare* use of the general search. Similarly, it was common across Curtin participants, with one staff participant who stated *never* and seven postgraduates stating that they *rarely* used Google general search for academic information seeking.

<sup>18</sup> The VC undergraduate response is made up of only one participant and therefore should be considered with caution.

The use of **Google Books** was comparatively low by the participants from the three institutions, although it was higher by the MNU ( $m=3.04$ ) and VC ( $m=3.11$ ) in comparison to Curtin participants ( $m=2.30$ ). Google Books appeared to be slightly more popular with staff and postgraduates, in comparison to undergraduates across the three institutions.

**Google Scholar** was more frequently used than Google Books, but slightly less in comparison to the Google general search interface. The data show that Google Scholar was more heavily used by VC participants ( $m=3.72$ ) in comparison to MNU ( $m=3.26$ ) and Curtin ( $m=3.44$ ).

As seen in Figure 6.27, satisfaction is highest with Google general search (MNU  $m=3.37$ , VC  $m=3.06$ , Curtin  $m=3.29$ ) than the other two platforms. Google Books received the least amount of satisfaction (MNU  $m=2.84$ , VC  $m=2.96$ , Curtin  $m=2.13$ ) bordering between *satisfied* to *not satisfied*. The satisfaction level with Google Scholar searches (MNU  $m=3.10$ , VC  $m=3.37$ , Curtin  $m=3.20$ ) was quite similar to the general Google search results.

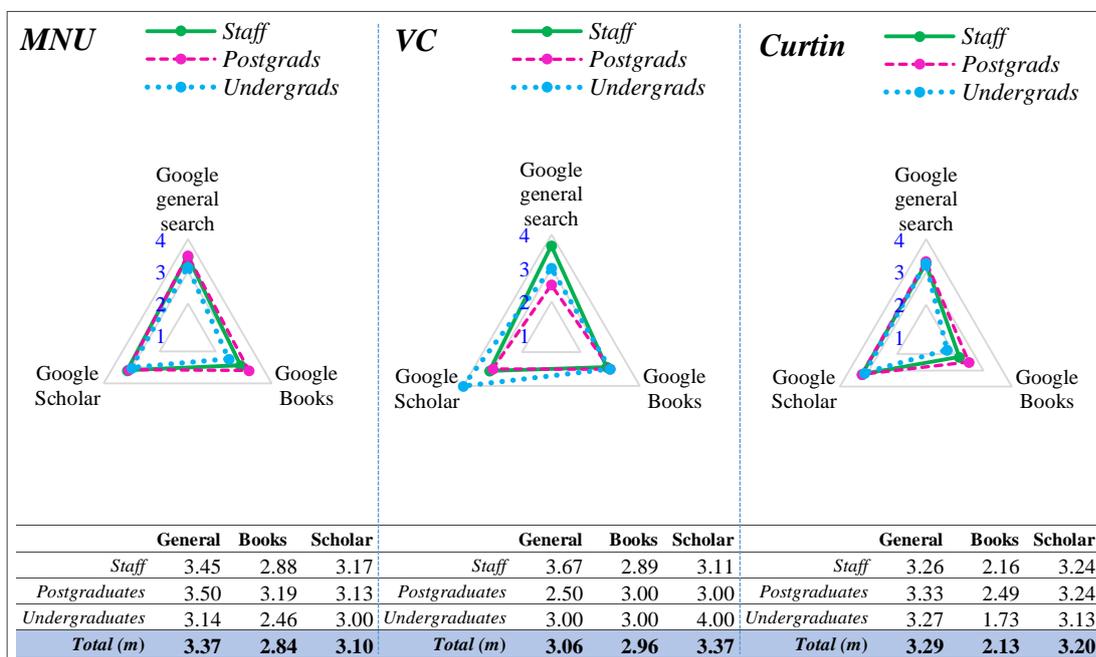


Figure 6.27. Satisfaction with Google general search, Google Books, and Google Scholar. The data is represented as the mean ( $m$ ) of the five-item scale responses: 4=*often*, 3=*sometimes*, 2=*rarely*, and 1=*never*

Interestingly, there is significant general correlation between the frequency of use and the satisfaction with the Google platforms. The data is summarised in Table 6.10.

Table 6.10. Correlation between the use of Google platforms and associated satisfaction

		MNU		VC		Curtin	
		mean	variance	mean	variance	mean	variance
<b>Google general search</b> (google.com)	Frequency	3.96		3.58		3.80	
	Satisfaction	3.37	-0.59	3.06	-0.52	3.29	-0.51
<b>Google Books</b> (books.google.com)	Frequency	3.04		3.11		2.30	
	Satisfaction	2.84	-0.20	2.96	-0.15	2.13	-0.17
<b>Google Scholar</b> (scholar.google.com)	Frequency	3.26		3.72		3.44	
	Satisfaction	3.10	-0.16	3.37	-0.35	3.20	-0.24

The “other” category was selected by 25 participants, implying the use of Google platforms other than those listed. Thirteen of these participants specified what it was. The list included: [Google] images ( $n=3$ ); [Google] maps ( $n=2$ ); [Google] translate ( $n=1$ ); YouTube ( $n=1$ ); google.mv ( $n=1$ ); and, google.com.au ( $n=1$ ). The remaining participants ( $n=4$ ) indicated other portals such as university database and websites.

### 6.2.3.3. *The main reasons for using Google*

Q21 sought to understand the main reasons the participants search with Google. Participants were asked to rank the following statements on a scale ranging from *strongly agree, agree, neutral, disagree, to strongly disagree*:

- It is helpful to understand the context of the topic (*For topic context*);
- The easiest information search (*Easiest search option*);
- Google search platform is clutter free and simple to use (*Simple use*);
- It is the default search page that comes up when I open the computer/device or smartphone browser (*Default search*);
- There is no better option (*No better option*);
- The library does not have enough resources (*Library lacks resources*);
- The library is resourced, but I prefer searching online (*Prefer online to library*);
- and,
- It saves time as I can access it anywhere, anytime (*Convenient*).

The data is summarised and illustrated in Figure 6.28. The statements are abbreviated on the illustration using the phrases in parenthesis above.

The data indicate a general similar pattern across all three institutions as well as similarity across the staff and student groups. The main reasons for Google use were perception of Google as the “easiest search option” (MNU  $m=4.55$ , VC  $m=4.30$ ,

Curtin  $m=4.36$ ), followed by “convenience” of searching from any location (MNU  $m=4.55$ , VC  $m=4.75$ , Curtin  $m=4.21$ ), and its “simple use” interface (MNU  $m=4.33$ , VC  $m=3.90$ , Curtin  $m=4.12$ ). Using Google to contextualise the topic of research at hand was also high for all three institutions (MNU  $m=4.39$ , Curtin  $m=4.24$ , VC  $m=4.39$ ).

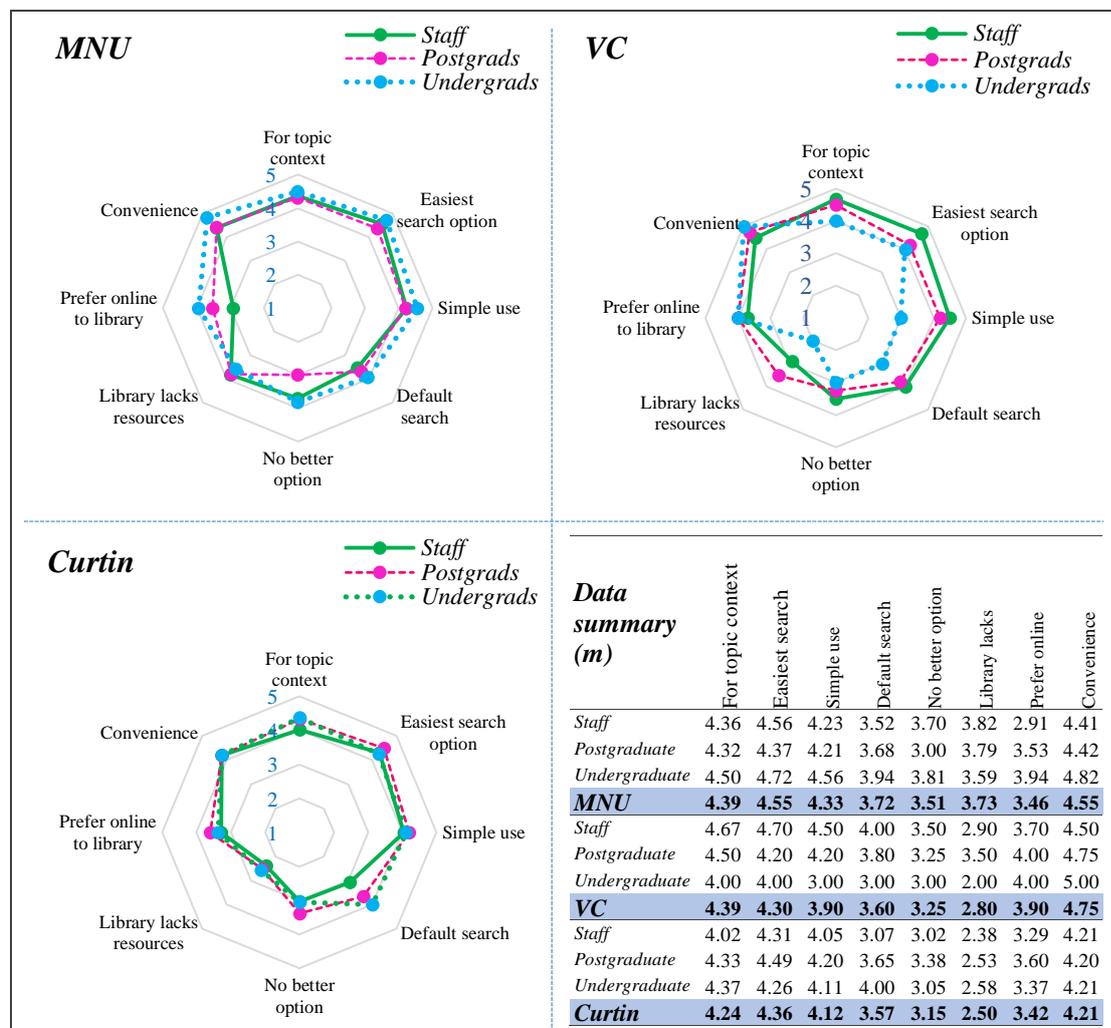


Figure 6.28. The main reasons why participants use Google  
The data is represented as the mean ( $m$ ) of the scale responses: 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree.

The most contrasting response was the use of Google by MNU participants because “their library does not have enough resources” ( $m=3.73$ ) in comparison to a general disagreement to this statement by VC ( $m=2.80$ ) and Curtin ( $m=2.50$ ) participants. A notable difference from MNU and VC compared to Curtin participants was received for the statement that “there is no better option” (MNU  $m=3.51$ , VC  $m=3.25$ , Curtin  $m=3.15$ ). However, the t-test shows no statistically significant difference between the three institutions.

Over half of all participants (51.7%) stated they believed their library was adequately resourced yet they preferred Google as they preferred online searching (MNU  $m=3.46$ , VC  $m=3.90$ , Curtin  $m=3.42$ ). Of all participants 57.3% also believed a reason why they search using Google was because it was the default search page on their internet browser (MNU  $m=3.72$ , VC  $m=3.60$ , Curtin  $m=3.57$ ).

#### **6.2.4 Part IV: Information needs and information sources**

Part 4 of the questionnaire (Q22 to Q26) sought to gather information on the participants' information needs as well as their perceptions on information sources.

##### **6.2.4.1. Championing library use**

Q22 was made visible only to the staff participants (MNU  $n=46$ , VC  $n=10$ , Curtin  $n=42$ ) and sought to understand the level of emphasis lecturers perceived they placed on their students to use the library and its services.

Q23, seeking similar information to Q22, was presented only to the student participants (MNU  $n=18$ , VC  $n=8$ , Curtin  $n=123$ ) and asked for their perception on how much emphasis their lecturers placed on them to use the library.

Participants were asked to rank the following statements on a scale ranging from: *a great deal, a lot, a moderate amount, a little, none at all, and that service/resource not available*:

- Library's physical collection;
- Library's online databases;
- Library orientation;
- Library workshops (e.g. database searching skills);
- Further assistance from librarians;
- Subject guides; and,
- Referencing tools (e.g. EndNote software, reference guides).

The data is summarised and illustrated in Figure 6.29.

The data indicate that staff perceive they place a greater emphasis on the use of library online databases (MNU  $m=5.25$ , VC  $m=5.70$ , Curtin  $m=4.88$ ) than any other service or facility. In comparison, the emphasis on the use of the library's physical

collection was much less (MNU  $m=4.73$ , VC  $m=4.70$ , Curtin  $m=3.31$ ). Overall, in comparison to Curtin staff who place little emphasis on library services except the use of databases, the MNU and VC staff believe they place a moderate amount of emphasis on their students to use other services.

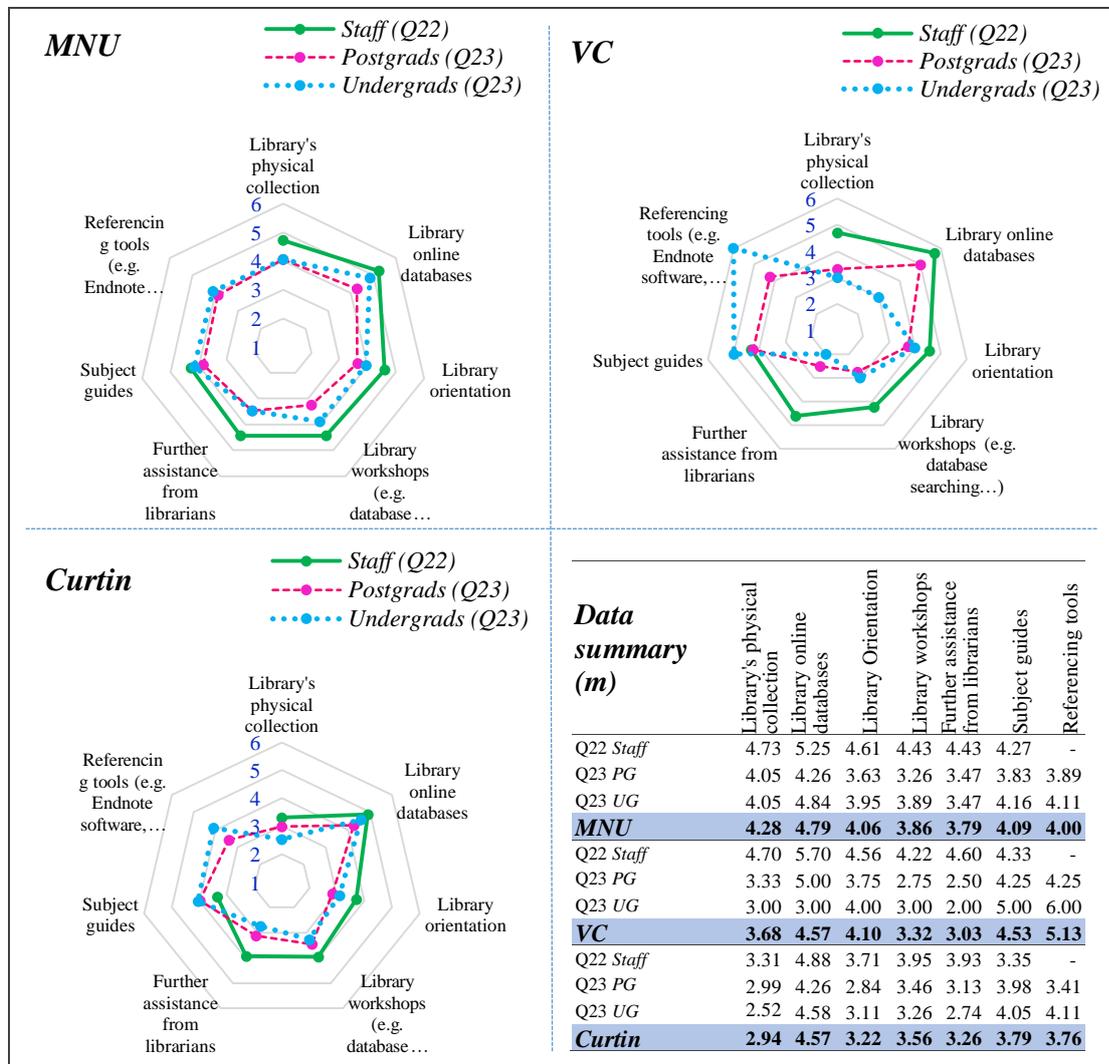


Figure 6.29. Perception on how much emphasis lecturers place on their students to use the library services and facilities.

The data is represented as the mean ( $m$ ) of the scale responses: 6=a great deal, 5=a lot, 4=a moderate amount, 3=a little, 2=none at all, 1=that service/resource not available

The student responses for Q23 indicate that students perceive their lecturers place slightly higher emphasis on using the databases than other library services. Nonetheless, while this is somewhat reflective of the staff data, student perception (Q23) reports a lesser emphasis than the lecturers' perception. The other listed library services/facilities received a lesser emphasis, but with generally a similar pattern across MNU and Curtin. Owing to the small VC sample, any generalisations on their data are extremely limited.

Notably, a significant proportion of students (MNU-PG  $m=3.89$ , MNU-UG  $m=4.11$ , VC-PG  $m=4.25$ , VC-UG  $m=6.00$ , Curtin-PG  $m=3.41$ , Curtin-UG  $m=4.11$ ) believe their lecturers encourage them to use the library for referencing tools. This is the second highest observation from the students' perspective, the first being the use of online databases. Due to a limitation in the questionnaire design, this statement was absent from the question presented to the staff (in Q22).

One of the least emphasised by lecturers, according to the students, was seeking "further assistance from librarians" (MNU-PG&UG  $m=3.47$ , VC-PG  $m=2.50$ , VC-UG  $m=2.00$ , Curtin-PG  $m=3.13$ , Curtin-UG  $m=2.74$ ). Staff participants perceive they place a greater emphasis on this compared to other facilities, such as the use of library workshops or the physical collection held in the library.

The differences in perceptions are significantly low for Curtin staff and students when compared to MNU and VC. Based on findings from earlier questions (particularly Q16), it can be inferred that the low perceived emphasis reported by Curtin lecturers on the use of libraries indicate the use of the library is normal and expected without it having to be emphasised. Contrarily, the same comparison for MNU and VC data is reversed with low use of the library (Q16) and a higher perception of importance of library use (Q22).

Interestingly, a few staff from each institution identified that the listed services or resources were not available from their library. This includes 4.5% ( $n=2$ ) of MNU, 11.1% ( $n=1$ ) of VC, and 4.9% ( $n=2$ ) of Curtin staff who stated "library workshops" were not offered. Additionally, 7.1% ( $n=3$ ) of Curtin staff indicated that there was no physical library collection at Curtin. A cross-tabulation (see Table 6.11) was done to ascertain whether this has any relevance with the location of the staff. Only five staff participants identified themselves as located on a regional campus and none of them stated they do not have access to a physical library collection. Thereby, it is unclear why on-campus staff stated there is no physical library collection at Curtin.

*Table 6.11. Cross-tabulation of staff ( $n$ ) at a regional campus and their response to the question about their level of emphasis on students to use the library's physical collection*

Institution	A great deal	A lot	A moderate amount	A little	None at all	That service/resource is not available	Total
MNU	0	1	3	0	0	0	4
VC	0	0	0	0	0	0	0
Curtin	0	0	1	0	0	0	1
<b>Total</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>

#### 6.2.4.2. *Research and publication*

Q24 sought to understand if the participants had published research outputs. The data for Q24 is shown in Table 6.12.

*Table 6.12. The percentage of participants who have published*

Category		Yes [n (%)]	No [n (%)]	Non-Response [n (%)]	Total [n]
MNU	Staff	19 (1.3)	25 (54.4)	2 (4.4)	46
	Postgraduates	1 (5.3)	18 (94.7)	0	19
	Undergraduates	0	18 (94.7)	1 (5.3)	19
	<b>MNU Total</b>	<b>20 (23.8)</b>	<b>61 (72.6)</b>	<b>3 (3.6)</b>	<b>84</b>
VC	Staff	4 (40.0)	6 (60.0)	0	10
	Postgraduates	0	6 (85.7)	1 (14.3)	7
	Undergraduates	0	1 (100)	0	1
<b>VC Total</b>	<b>4 (22.2)</b>	<b>13 (72.2)</b>	<b>1 (5.6)</b>	<b>18</b>	
Curtin	Staff	35 (83.3)	7 (16.7)	0	42
	Postgraduates	44 (42.3)	59 (56.7)	1 (1.0)	104
	Undergraduates	2 (10.5)	17 (89.5)	0	19
	<b>Curtin Total</b>	<b>81 (49.1)</b>	<b>83 (50.3)</b>	<b>1 (0.6)</b>	<b>165</b>

The data show that almost half of Curtin participants (made up of 83.2% staff, 42.3% postgraduates and 10.5% undergraduates) have published. Conversely, less than a quarter of MNU and VC participants indicated having published any scholarly content. The difference between MNU/VC versus Curtin is statistically significant.

Q25 was presented to those who selected “yes” to Q24 and sought to gather an understanding of the platforms where the participants published. The question carried the following predefined answers to choose from, and allowed multiples responses:

- In a newspaper / magazine / newsletter;
- In a local journal or book chapter;
- In an international journal that didn't give me much hassle in getting the paper through;
- In a peer-reviewed reputed journal;
- As a book or book chapter with a reputed publisher; and,
- Online on my blog or webpage.

The data is illustrated in Figure 6.30.

From those who had published, the most used platform by MNU participants was “a hassle free” international journal (45%,  $n=9$ ) followed closely by “peer-reviewed reputed journal” (40%,  $n=8$ ). The most used publishing platform by VC participants was “a local journal or book” (100%,  $n=4$ ) followed by “a hassle free” international

journal (50%,  $n=2$ ). Conversely, the most used platform by Curtin staff and postgraduates, who had published, were “peer-reviewed reputed journal” (76.5%,  $n=62$ ) followed by “book or book chapter with a reputed publisher” (37%,  $n=30$ ).

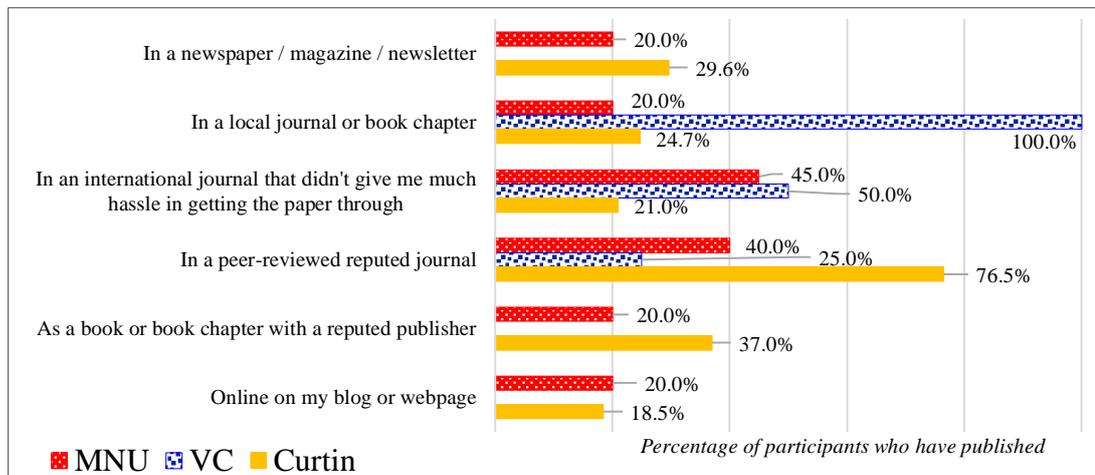


Figure 6.30. Platforms where the participants have published

#### 6.2.4.3. Access to research articles

Q26 sought participants’ perception about the current level of access they had to research articles. Five predefined answers were provided as follows:

- Excellent (“I have access to all the journal articles I need”);
- Good (“I have access to most of the journal articles I need”);
- Varies (“I sometimes have difficulty getting the journal articles I need”);
- Poor (“I frequently have difficulty getting the journal articles I need”); and,
- Very poor (“I always have great difficulty getting the journal articles I need”).

The data is illustrated in Figure 6.31.

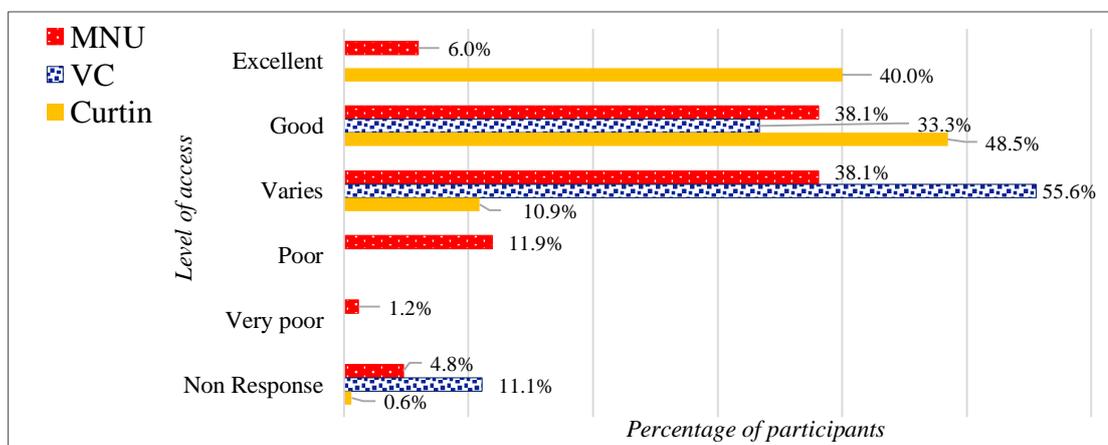


Figure 6.31. Perceptions on participants’ level of access to research articles

While only 6% ( $n=5$ ) of MNU participants and none of the VC participants described their level of access to research articles as “excellent”, 40% ( $n=66$ ) of Curtin participants stated they had “excellent” access to research articles. Notably, only MNU participants described the level of access in the negative with “poor” and “very poor” ( $n=12$ ) answers. The difference between VC vs. Curtin and MNU vs. Curtin is statistically significant ( $p < 0.01$ ) while the difference between MNU vs. VC is not.

Overall, Curtin participants reported being satisfied with their level of access (40.0% “excellent” and 48.5% “good”). On the contrary, MNU and VC participants’ responses imply a less satisfactory level of access with answers ranging between “good” (MNU 38.1%, VC 33.3%) and “varies” (MNU 38.1%, VC 55.6%), indicating they sometimes have difficulty accessing the required research articles.

### **6.2.5 Part V: Search behaviour and preferences**

Q27 to Q35 gathered specific information about the participants’ individual search behaviour and preferences including: criteria used in article selection; strategy used in formulating search terms; number of retrieved results pages skimmed through when searching on Google; dependence on the library; and, other sources of information.

#### **6.2.5.1. *Criteria on selecting reading material***

Q27 asked the participants about the criteria they used in selecting an article to read. The question carried nine predefined answers, also with an “other” option, with a scale ranging from *very important*, *somewhat important*, and *not important*:

- Relevance of the article to the search topic (*Relevance to topic*);
- Quality/quantity of information provided in the abstract (*Abstract*);
- Journal impact factor;
- Journal reputation;
- Article reputation;
- Author reputation;
- Publisher reputation;
- Full-text availability online; and,
- PDF availability.

The data is summarised and illustrated in Figure 6.32.

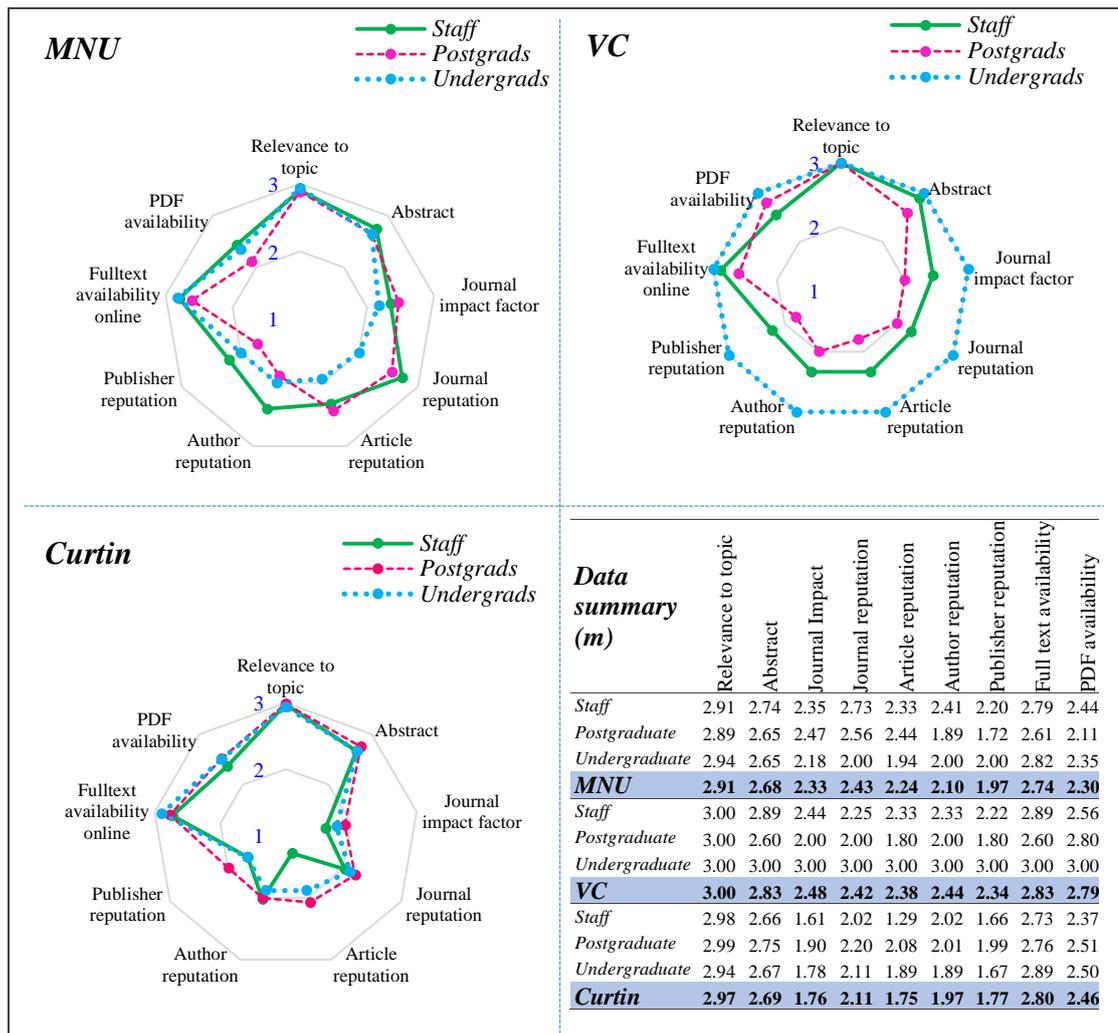


Figure 6.32. Criteria used by the participants in selecting an article to read

The data is represented as the mean ( $m$ ) of the scale responses: 3=very important, 2=somewhat important, 1=not important

As seen in the illustrations for the three institutions, the most important criterion in deciding what the participants select to read was the “relevance of the article to the search topic” (MNU  $m=2.91$ , VC  $m=3.00$ , Curtin  $m=2.97$ ). The second most significant factor was the “full-text availability online” (MNU  $m=2.74$ , VC  $m=2.79$ , Curtin  $m=2.50$ ). With these two criteria, there was not much distinction between the staff and student groups within MNU and Curtin. The small sample size from VC limited the ability to make generalisations.

While the online full-text availability was cited as the second most important criteria, the need for the article to be in PDF was also cited as important by most participants (MNU  $m=2.74$ , VC  $m=2.83$ , Curtin  $m=2.80$ ).

“Quality/quantity of information provided in the abstract” received a high importance by MNU and Curtin participants across the staff and student groups, while the VC individual groups responded slightly different in this category.

Overall, the pattern across the three institutions and across the individual target groups within are quite similar, with the main difference being the low importance by Curtin participants on the journal impact factor ( $m=1.76$ ) while this was given more importance by MNU ( $m=2.33$ ) and VC participants ( $m=2.83$ ). These differences are statistically significant ( $p < .01$ ). Additionally, staff participants from Curtin, compared to students, cited a low importance for the journal impact factor.

Also of significance is the low importance by Curtin ( $m=1.7$ ) and MNU ( $m=2.1$ ) compared to VC participants ( $m=2.34$ ) on the reputation of the publisher. Reputation of the journal was also of low importance in comparison to the full-text availability.

The “other” category was selected by 44 participants (MNU  $n=14$ , VC  $n=2$ , Curtin  $n=28$ ), but only 14 (MNU  $n=4$ , Curtin  $n=10$ ) entered an answer. Two of them specifically stated “ease of access” (1 staff and 1 undergraduate from Curtin), three participants highlighted “the date of publication”, with the Curtin undergraduate participant stating specifically “within the last 10 years”. Two Curtin PhD students stated “cited in other articles” as an important criteria.

#### **6.2.5.2. Search strategy**

Q28 asked the participants about the strategy they use to phrase their search terms when searching on the internet for academic purposes. The question carried the following predefined answers and an “other” option, with a scale ranging from *most often*, *often*, *sometimes*, *rarely*, to *never*:

- Use main words from the assignment or research topic at hand;
- Search specifically for PDF;
- Search for specific authors;
- Use advanced search options to narrow down searches; and,
- Search for specific titles of journal articles or book titles.

The data is summarised and illustrated in Figure 6.33.

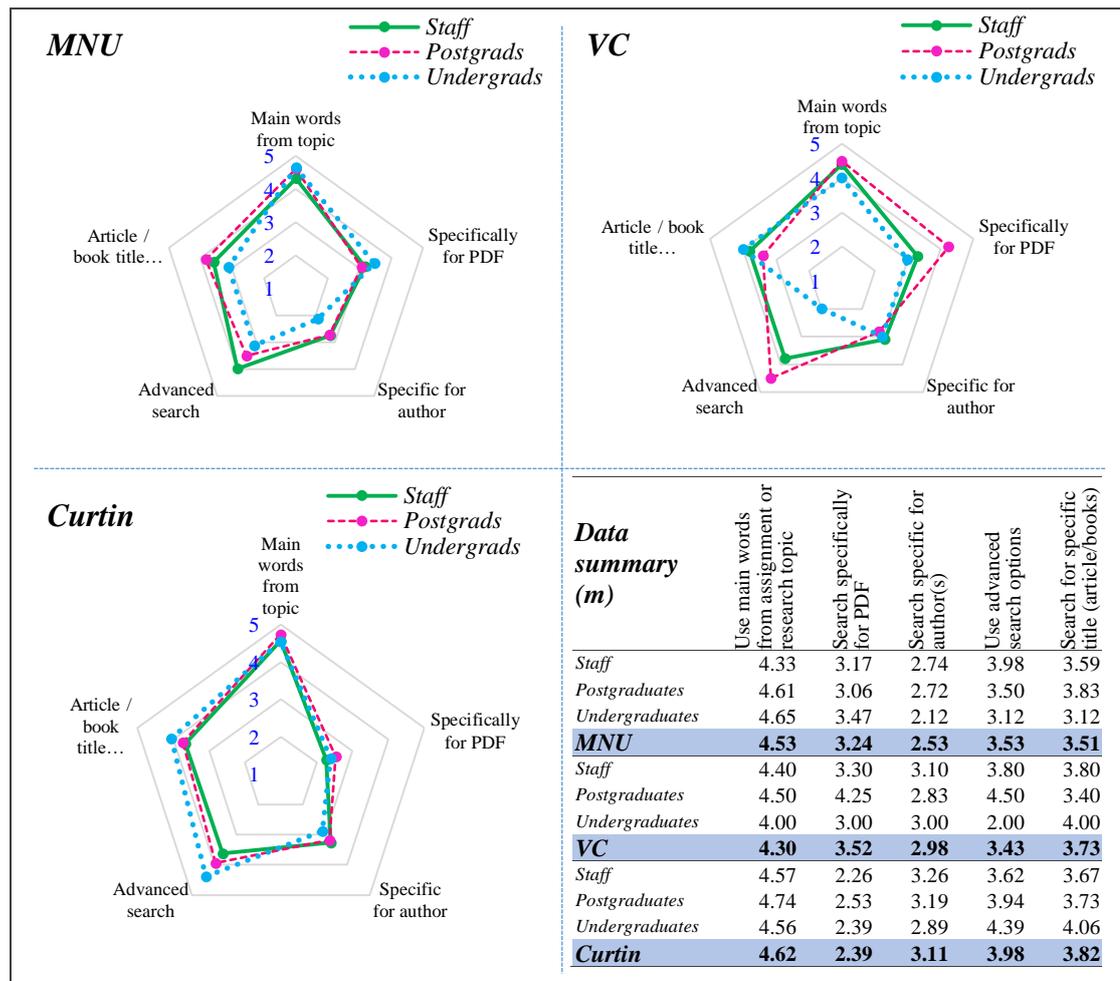


Figure 6.33. Strategies used to phrase search terms when searching on the internet  
The data is represented as the mean (*m*) of the scale responses: 5=*most often*, 4=*often*, 3=*sometimes*, 2=*rarely*, and 1=*never*.

The most common strategy utilised across staff and students from the three institutions to phrase their search terms was to use main words from the assignment or research topic at hand (MNU *m*=4.53, VC *m*=4.30, Curtin *m*=4.62). The second most used strategy across the three institutions was searching for a specific book or article title (MNU *m*=3.51, VC *m*=3.73, Curtin *m*=3.83). Both of these strategies received a slightly higher ranking by staff participants than students from the three institutions.

Use of advanced search appears to be the third most used strategy across the three institutions with significantly more Curtin participants ranking this strategy higher than their MNU and VC counterparts (MNU *m*=3.53, VC *m*=3.43, Curtin *m*=3.98). However, the responses from the staff and student groups within the institutions vary, with more MNU staff and fewer students compared to fewer Curtin staff and more of their students identifying with this search strategy.

Searching for specific authors received a comparatively low ranking across the three institutions, more so from MNU and VC (MNU  $m=2.53$ , VC  $m=2.98$ , Curtin  $m=3.11$ ). A notable distinction across the institutions was the preference for searching for PDF by MNU ( $m=3.24$ ) and VC ( $m=2.52$ ) participants compared to their Curtin counterparts ( $m=2.39$ ).

The “other” category was selected by 16 participants (MNU  $n=6$ , VC  $n=1$ , Curtin  $n=9$ ). A text response was entered by 5 participants. These include: “use all possible words” (MNU); “Boolean”, “move around keywords”, “Google search then in library database of title”, and “search in EndNote” (Curtin).

### 6.2.5.3. Use of information sources

Q29 asked the participants to indicate their level of usage of different information sources. It was presented as a Qualtrics™ “slider” question with the option of sliding the bar between scales of 0 to 100 to indicate the usage of the given information sources against others on the list. The question is reproduced in Figure 6.34 and the data is summarised and illustrated in Figure 6.35.

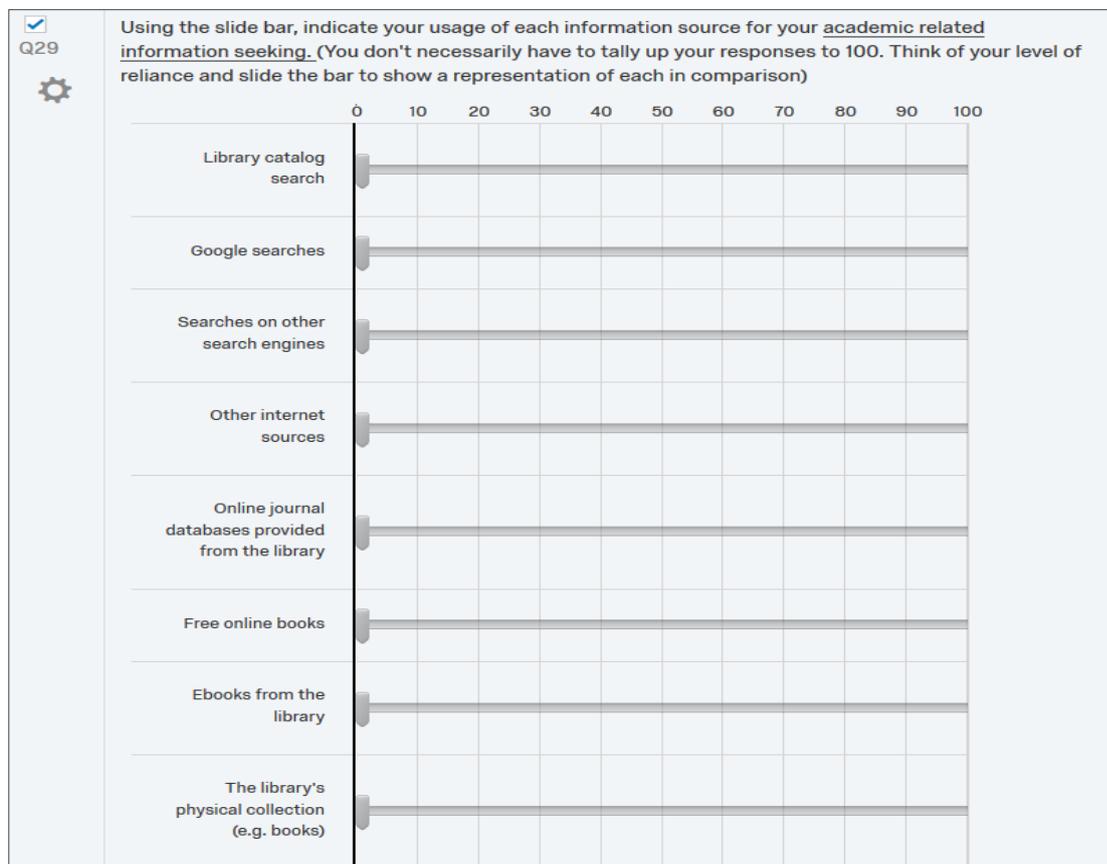


Figure 6.34. A screen capture of Q29

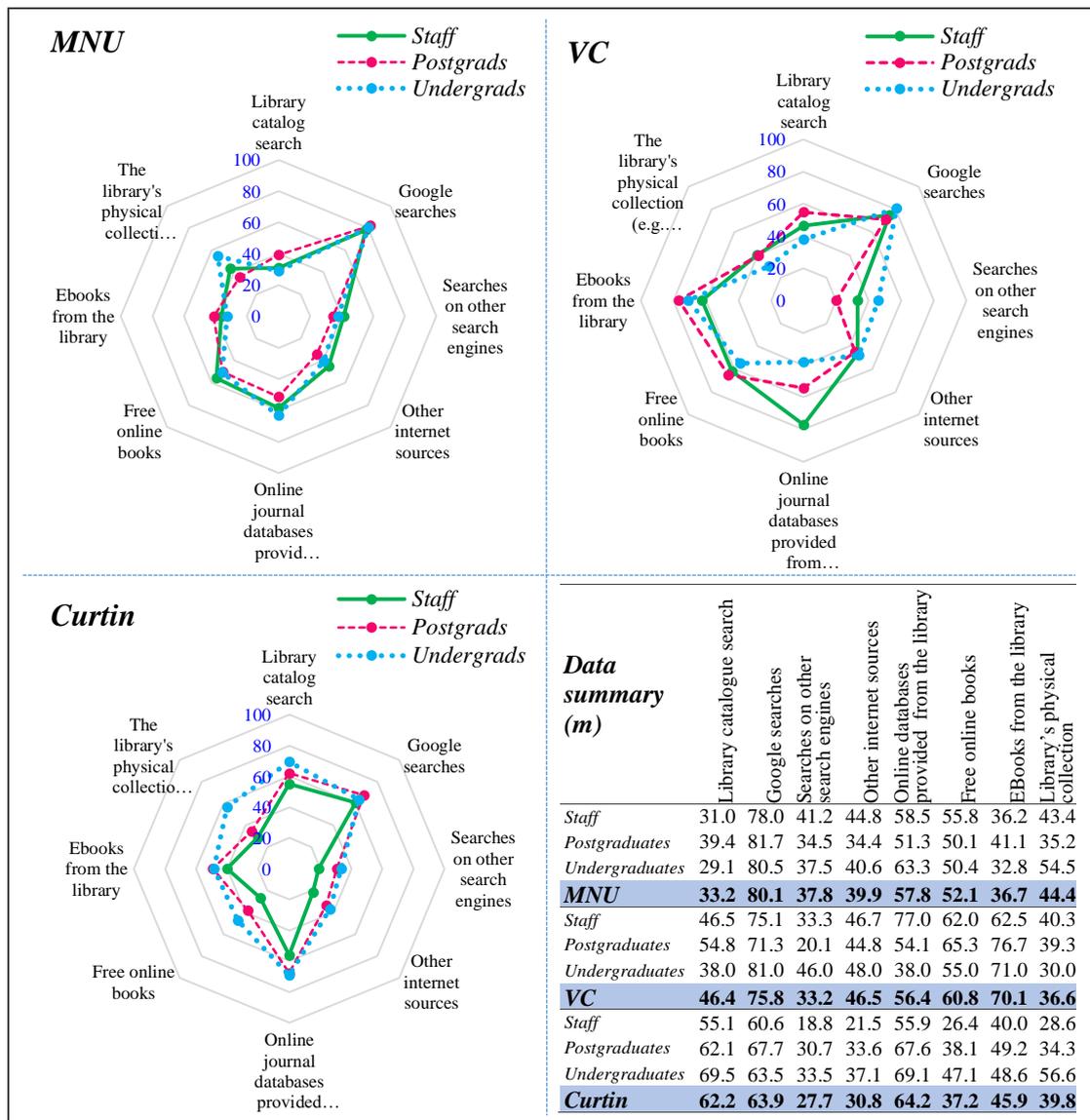


Figure 6.35: Weightage placed on different information sources

The data is represented as the mean ( $m$ ) of the scale responses 0 to 100, 0 being the least and 100 being the highest weightage.

The data (Figure 6.35) indicate that within the academic community, Google searches and online journal databases through the library were the most prominent ways of seeking academic information. While reliance on Google was significantly higher by the MNU ( $m=79.4$ ) and VC ( $m=74.1$ ) participants in comparison to library databases (MNU  $m=58.0$ , VC  $m=65.0$ ), Curtin participants relied on Google ( $m=65.4$ ) and library databases ( $m=64.8$ ) equally. The main difference across the three institutions was Curtin's high usage of the library catalogue ( $m=61.3$ ) in comparison to their MNU and VC counterparts (MNU  $m=32.5$ , VC  $m=48.9$ ).

It is also of interest that the physical library collection has quite a small usage amongst all three communities, the least of all at Curtin (MNU  $m=44.1$ , VC  $m=39.3$ ,

Curtin  $m=34.1$ ). This is significant given the extensive collection held in Curtin Library compared to MNU and VC Libraries.

#### 6.2.5.4. Library usage

Q30 sought similar data to that of a few of the earlier questions, including Q29, but the focus was to narrow down specifically to library usage. Based on the findings from Phase I and II it was clear that VC did not have access to a significant library collection and also in some of the interviews the *library* sometimes was referred to as the physical library only, while at other times it was referred to as the online databases offered through the institution.

Q30 asked the participants to rank how often they use their library: physical visits to the library; online use of the library databases; and, use of additional services from the library such as information workshops, reference assistance, etc. The data is summarised and illustrated in Figure 6.36.

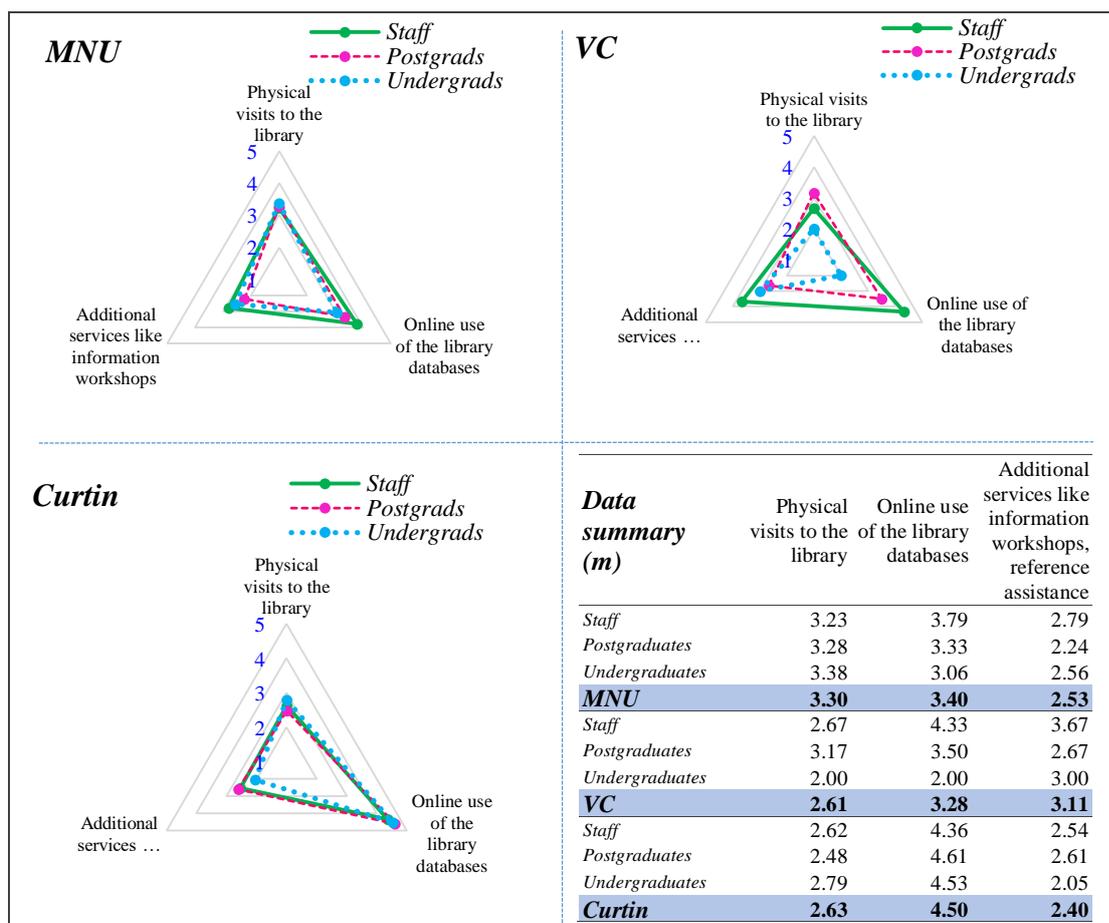


Figure 6.36. Library usage

The data is represented as the mean ( $m$ ) of the scale responses: 5=very often, 4=often, 3=sometimes, 2=rarely, and 1=never

The most used aspect of the library across the three institutions was the “online use of the library databases” (MNU  $m=3.40$ , VC  $m=3.28$ , Curtin  $m=4.50$ ). As the data indicate, there was virtually no difference across the staff and student groups within Curtin on the online use of library databases, while these figures varied within the MNU and VC groups.

Physical visits to the library were low across all three institutions, with the lowest use (*rarely*) reported by VC ( $m=2.61$ ), followed by Curtin ( $m=2.63$ ). The MNU participants indicated visiting the physical library “sometimes” ( $m=3.30$ ) with a lower use by undergraduates compared to staff and postgraduates. It is of interest that the percentage of Curtin participants who stated they have “never” used the physical library is considerably higher (11.9% staff, 26% postgraduates, 42.1% undergraduates) compared to MNU (2.2% staff, 5.3% postgraduates, 0% undergraduates) or VC (0%) indicating the same. It should also be noted that, from the Curtin participants it is the undergraduate students who constitute the bulk of the non-users of the library, with 11.90% staff, 25.96% postgraduates, and 42.11% undergraduates stating they never used their specific library.

Q31 sought to understand the specific reasons for the low use, or no use, of the library. The question was made visible only to the 168 (MNU  $n=48$ , VC  $n=10$ , Curtin  $n=110$ ) participants who answered either “rarely”, or “never” to any one of the three statements in Q30. There were only eight (MNU  $n=6$ , Curtin  $n=2$ ) participants who selected either answer for all three statements.

Q31 carried 15 statements as predefined answers as reasons for *rare* or *never* use of the library. The participants were allowed multiple selections and an additional “other” category was provided to add any further explanation not captured in these statements. The data is tabulated in Table 6.13.

The text added by the participants in the “other” category to explain the reason why they do not use, or rarely use, the library are tabulated in Table 6.14.

*Table 6.13. The reasons for rare use, or lack of use, of the library (predefined statements)*

<b>Percentage of participants who responded to the statements (Q31)</b>	<b>MNU</b>	<b>VC</b>	<b>Curtin</b>
1. The library does not have a sufficient amount of books to cover my information needs	15.1%	14.3%	2.5%
2. The library does not have enough copies of important books	11.5%	10.7%	2.5%
3. I have access to adequate information sources without using the library	14.5%	25.0%	27.0%
4. I am not familiar with library policies	1.8%	0.0%	1.3%
5. The library does not have enough study space (silent rooms, desks, carrels)	6.0%	10.7%	1.3%
6. The library does not arrange instructional activities (tours, lectures) on how to use the library catalogue	6.0%	3.6%	0.0%
7. The library atmosphere is not too welcoming	6.6%	0.0%	1.7%
8. The library services I require are available online, and I know how to use these resources	10.8%	14.3%	29.1%
9. The library staff are not approachable	2.4%	3.6%	0.4%
10. The library does not have enough full-text electronic journals related to my area of study	9.6%	3.6%	1.7%
11. I prefer eBooks/online books and the library does not have adequate eBooks	7.2%	10.7%	4.6%
12. The library is just too difficult to use	4.2%	0.0%	1.3%
13. I am an online student and do not have access to the physical library due to my location	1.2%	0.0%	9.3%
14. I am an online student and there is no need to be on campus, and therefore I don't use the physical library	0.6%	0.0%	10.1%
15. I don't study on campus and therefore I am not able to access the library's physical collection neither the online collection	0.0%	0.0%	2.5%
16. Other	2.4%	3.6%	4.6%
<b>Total selection</b>	<b>166</b>	<b>28</b>	<b>237</b>

*Table 6.14. The reasons for rare use, or lack of use, of the library (“other” explanations)*

<b>Additional reasons supplied by the participants (for Q31)</b>	<b>MNU</b>	<b>VC</b>	<b>Curtin</b>
1. “sometimes, there isn't sufficient amount of books to cover my information needs”	UG		
2. “most of the accounting and business books are out of date”	PG		
3. “I use the library to search the information that I need”	PG		
4. “I have access to university database abroad”	Staff	Staff	
5. “I study off campus and can access all library material from home”			PG
6. “you can get more up-to-date sources online”			PG
7. “don't often come on campus as a PhD student (no coursework)”			PG
8. “I study part-time and cannot easily get to campus because of work commitments”			PG
9. “I tend to study late at night when libraries are closed”			PG
10. “I spend most of my time studying at home or in building 402 where they have new computers :)”			PG
11. “I am an online tutor of online students who are usually too far away to use the library”			Staff
12. “Staff member of main campus (but not regional. This option wasn't provided in the earlier question). When I am on the main campus I sometimes use the library as a workspace.”			Staff
13. “I have my own office on campus”			Staff
14. “Many of the resources I need to access are more conveniently available online”			Staff
15. “I only deal with online students and therefore references need to be available online to them”			Staff

Based on the data in Tables 6.13 and 6.14, the most common explanation for the rare or no use of the library was that “I have access to adequate information sources without using the library” (statement 3). The second most significant reason was that “the library services I require are available online, and I know how to use these resources” (statement 8). A shortage of multiple copies of core texts, as well as limited book collections were cited among the top three reasons for MNU and VC

participants' lack of library use. In contrast, being an online student was cited among the top three reasons for Curtin participants' lack of library use.

### 6.2.5.5. Effort exerted in searching online

Q32 sought to understand how many pages of retrieved search results the participants click through when they do a Google search for academic purposes. The question carried three categorical answers with a scale ranging from *most of the time*, *sometimes*, *rarely*, and *not at all*. The three statements were:

- First page usually contains enough reliable links;
- I browse through about three pages; and,
- I go through as many result pages as required until I get something useful.

The data is summarised and illustrated in Figure 6.37.

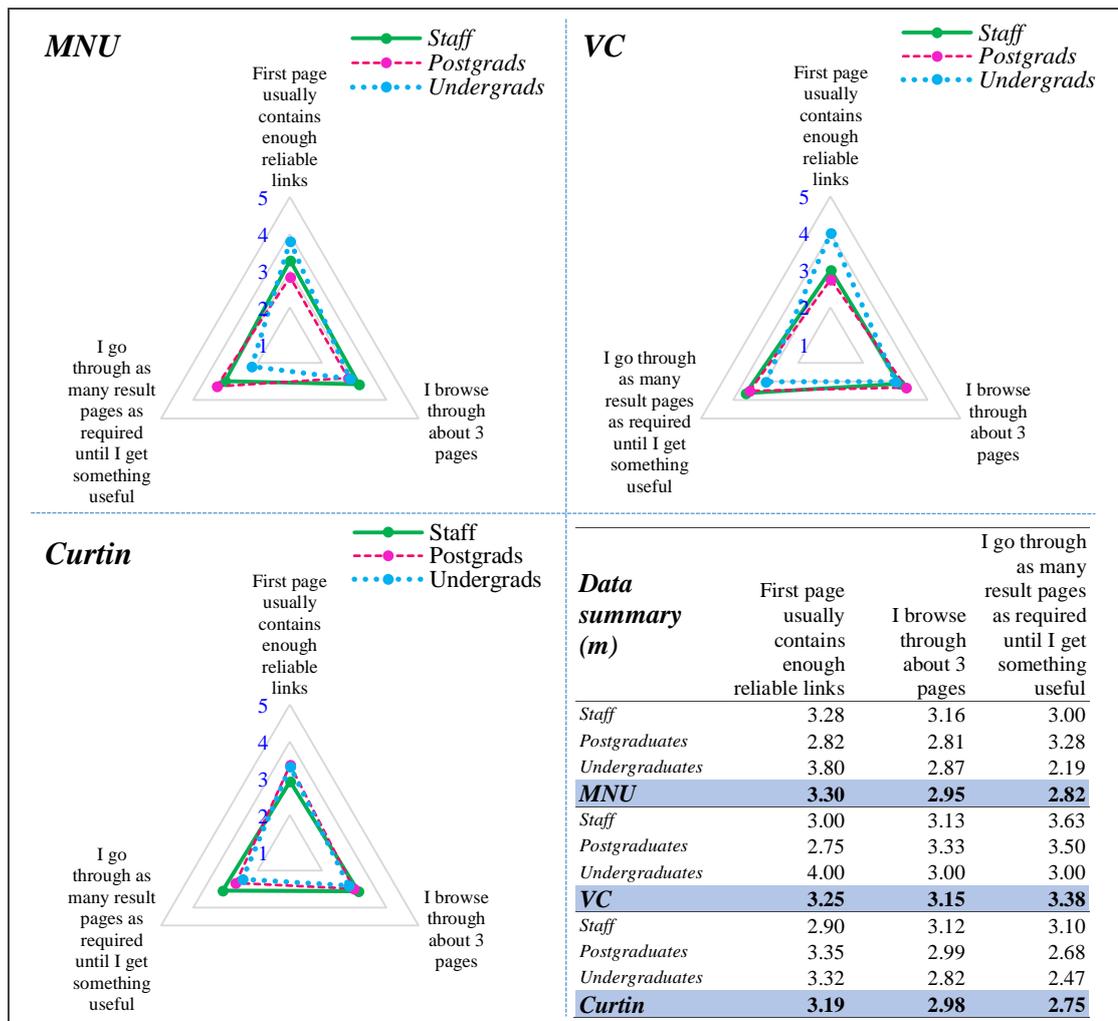


Figure 6.37. Number of retrieved results pages browsed through on Google  
The data is represented as the mean (*m*) of the scale responses: 5=*very often*, 4=*often*, 3=*sometimes*, 2=*rarely*, and 1=*never*

The response from the three institutions and also across the staff and student groups were quite similar, with slightly more MNU ( $m=3.30$ ) and VC ( $m=3.25$ ) participants compared to Curtin ( $m=3.19$ ) stating that the “first page usually contains enough reliable links”. More VC participants ( $m=3.15$ ) compared to MNU ( $m=2.95$ ) and Curtin ( $m=2.98$ ) stated they “browse through about 3 pages” of results. A large proportion of the participants stated that they browsed through as many search result pages as required until they acquired useful information (MNU  $m=2.82$ , VC  $m=3.38$ , Curtin  $m=2.75$ ). There were slight variations between the staff and student groups with considerably more undergraduates going no further than the search results displayed on the first page.

The data in Figure 6.37 indicate that there is no one main search strategy. It portrays an overall picture that most participants perceive most of the time they are able to find what they are looking for on the first page of retrieved results, and that many go through about three pages “sometimes”, but also skimming as long as it takes depending on the search.

Q33, on the reasons why participants skim through three or more pages, was included to get a better understanding on the search strategies utilised, and how it relates to more or less pages of results being viewed. Q33 was presented to those participants who selected either *most of the time* or *sometimes* for the last two statements in Q32, indicating that they often go through three or more pages of retrieved results on Google. These participants were given the following predefined statements to choose from:

- **Statement #1:** All retrieved results are useful, even to some extent. I browse through until my information need is satisfied;
- **Statement #2:** I believe the search terms I used might not be reflective of all possible related results/sources out there;
- **Statement #3:** Even if I know the results listed further down the pages lose relevance most of the time, I browse through them in case there is something that has been missed;
- **Statement #4:** I want to get a feel of the kinds of terminology being used in the area that I am searching; and,

- **Statement #5:** I believe free content are sometimes ranked lower in search results.

The data is detailed in Table 6.15 and illustrated in Figure 6.38.

Table 6.15. Reasons for browsing three or more pages of the retrieved results on Google

Participants	Statement #1 [n (%)]	Statement #2 [n (%)]	Statement #3 [n (%)]	Statement #4 [n (%)]	Statement #5 [n (%)]	Non-Response [n (%)]	Total [n]
MNU Staff	13 (37.1)	8 (22.9)	10 (28.6)	1 (2.9)	1 (2.9)	2 (5.7)	35
MNU Postgraduates	6 (37.5)	4 (25.0)	4 (25.0)	1 (6.3)	1 (6.3)	0	16
MNU Undergraduates	4 (33.3)	2 (16.7)	5 (41.7)	0	1 (8.3)	0	12
<b>MNU Total</b>	<b>23 (36.5)</b>	<b>14 (22.2)</b>	<b>19 (30.2)</b>	<b>2 (3.2)</b>	<b>3 (4.8)</b>	<b>2 (3.2)</b>	<b>63</b>
VC Staff	5 (62.5)	1 (12.5)	1 (12.5)	1 (12.5)	0	0	8
VC Postgraduates	2 (50.0)	0	0	0	0	2 (50.0)	4
VC Undergraduates	1 (100)	0	0	0	0	0	1
<b>VC Total</b>	<b>8 (61.5)</b>	<b>1 (7.7)</b>	<b>1 (7.7)</b>	<b>1 (7.7)</b>	<b>0</b>	<b>2 (15.4)</b>	<b>13</b>
Curtin Staff	8 (21.1)	6 (15.8)	15 (39.5)	4 (10.5)	3 (7.9)	2 (5.3)	38
Curtin Postgraduates	25 (30.9)	13 (16.0)	29 (35.8)	8 (9.9)	3 (3.7)	3 (3.7)	81
Curtin Undergraduates	4 (28.6)	2 (14.3)	7 (50.0)	1 (7.1)	0	0	14
<b>Curtin Total</b>	<b>37 (27.8)</b>	<b>21 (15.8)</b>	<b>51 (38.3)</b>	<b>13 (9.8)</b>	<b>6 (4.5)</b>	<b>5 (3.8)</b>	<b>133</b>

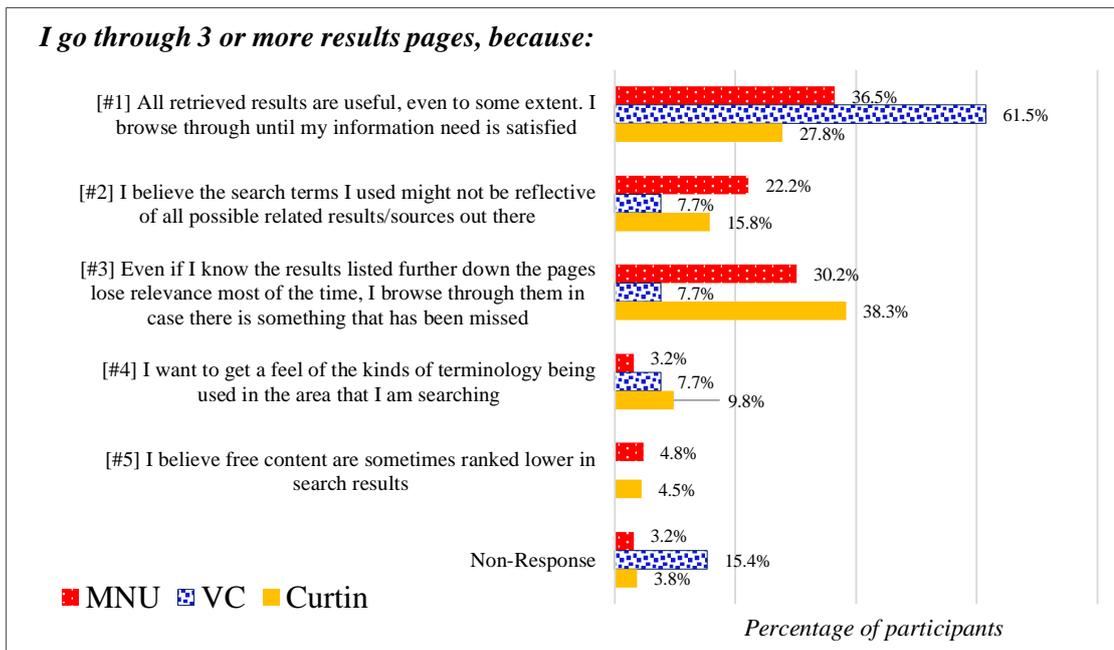


Figure 6.38. Reasons for browsing three or more retrieved results pages on Google (the detail for individual staff and student groups are included in Table 6.15)

Based on the data in Table 6.15 and Figure 6.38, it can be inferred that Google searching is perceived as an exhaustive platform, which provides the desired results with persistent browsing. This is deduced from the proportion of participants answering "...I browse through until my information need is satisfied (#1)" (MNU

36.5%, VC 61.5%, Curtin 27.8%) as well as “Even if I know...I browse through them in case there is something that has been missed (#3)” (MNU 30.2%, VC 7.7%, Curtin 38.3%). As seen in Table 6.15, especially for these two statements (#1 and #3), the responses from student and staff participants within the institution do not vary significantly.

The second main perception for browsing through a few pages of results on Google is not necessarily based on finding relevant results to the searched term, but also as a gauge for overcoming any limitations on the individual’s use of search terms. The statement (#2) “I believe the search terms I used might not be reflective of all possible related results/sources out there” was selected by 22.2% of MNU, 7.7% of VC and 38.3% of Curtin participants. Statement #4 also carried a similar sentiment about search terminology, but it did not receive a comparatively higher selection (MNU 3.2%, VC 7.7%, Curtin 9.8%) and indicates the participants expect their search terminology, even if not precise, would have resulted in relevant results further down the list of retrieved results.

#### **6.2.5.6. *Specific sources of academic reading material***

Q34 sought to understand how prevalent the use of specific library journal databases were among the academic community. The question lists some of the most popular databases across the three institutions, with the option for the participants to add other databases to the list. The answer options carried a scale ranging from *very often, often, sometimes, rarely, to never*. The data is summarised and illustrated in Figure 6.39.

The data indicate MNU participants sourced their reading material mostly from Google ( $m=4.67$ )/Google Scholar ( $m=4.25$ ), and sometimes through their institutionally subscribed databases EBSCO ( $m=3.64$ ) and HINARI ( $m=2.91$ ). Of the 16 MNU participants who selected the “other” category, 9 listed specific sources; they were mostly open-access author-centric platforms like ResearchGate ( $n=2$ ), Scribd ( $n=1$ ) and Academia ( $n=1$ ). The other listed sources were eLibraryUSA ( $n=1$ ), Pubmed ( $n=1$ ), and Maya Clinic ( $n=1$ ).

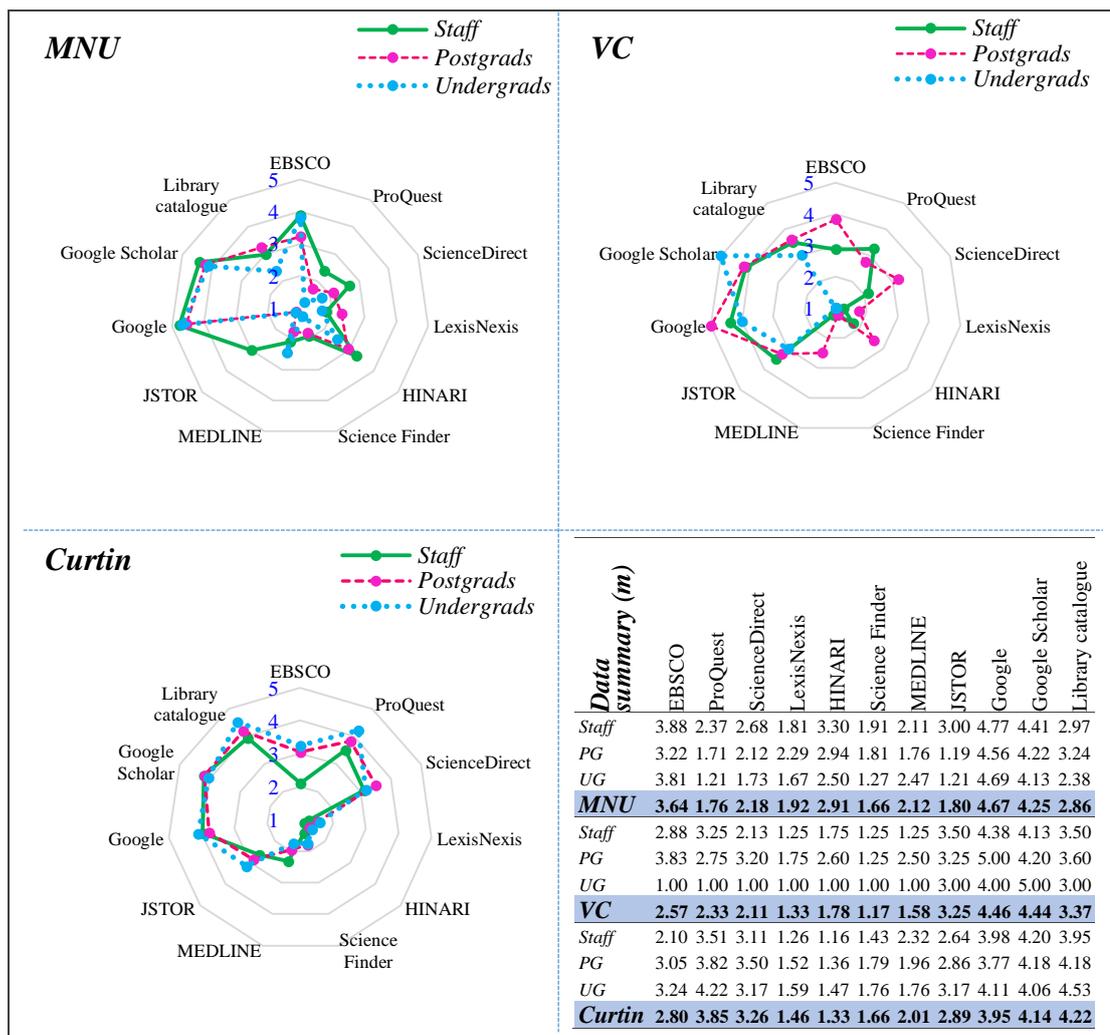


Figure 6.39. Usage prevalence of specific databases to retrieve information for academic purposes. The data is represented as the mean (*m*) of the scale responses: 5=very often, 4=often, 3=sometimes, 2=rarely, and 1=never

VC participants also indicated a similar high use of Google ( $m=4.46$ ) and Google Scholar ( $m=4.44$ ), with sometimes the use of their institutionally subscribed database JSTOR ( $m=3.25$ ). All other listed sources except the library catalogue received mixed responses of rare usage. Interestingly, VC participants indicated a significantly high use of the library catalogue ( $m=3.37$ ), which is noteworthy given it does not have an online catalogue. From the interviews with VC participants during Phase I of data collection, it was found that staff and most students from VC had access to the Malaysian Open University (MOU) library catalogue and their databases through the MOU library portal, and could explain the VC responses.

Three of the VC participants selected the “other” category to indicate they used other sources not listed, but did not add any specific sources.

Contrary to VC and MNU findings, Curtin participants did not indicate an over-concentration on Google platforms. Also in contrast to VC and MNU, Curtin participants indicated a slightly higher use of Google Scholar ( $m=4.14$ ) than their use of Google ( $m=3.95$ ). Additionally, Curtin cited the library catalogue ( $m=4.22$ ) as being used slightly more than Google platforms. It should be noted that the Curtin library catalogue acts as a discovery tool that searches across hundreds of databases subscribed by the library and includes all sources listed for this question. A significant number of Curtin participants (20 of the 33 who selected “other”) listed other databases not included in the questionnaire. These include a mix of databases, publishers, and other sources: Web of Science ( $n=5$ ), Scopus ( $n=6$ ), Informit ( $n=2$ ), PubMed ( $n=2$ ), Ovid ( $n=1$ ), Taylor and Francis ( $n=1$ ), Wiley ( $n=2$ ), Trove ( $n=1$ ), Bielefeld Academic Search Engine ( $n=1$ ), natural medicine database ( $n=1$ ), Emerald ( $n=1$ ), PsychInfo ( $n=1$ ), Hathi trust ( $n=1$ ), and Amazon books ( $n=1$ ).

#### **6.2.5.7. *Alternative routes of sourcing academic reading material***

Q35 sought to understand how often the participants rely on sources other than library and Google searches to seek academic reading material. The participants were given the following statements with a scale ranging from *quite often*, *often*, *sometimes*, *rarely*, to *never*:

- Colleagues in the same institution;
- Friends / Colleagues in other local institutions;
- Friends / Colleagues in other overseas institutions;
- Requests for information through the library using document delivery or interlibrary loan services; and,
- Purchase articles from online sources.

The data is summarised and illustrated in Figure 6.40.

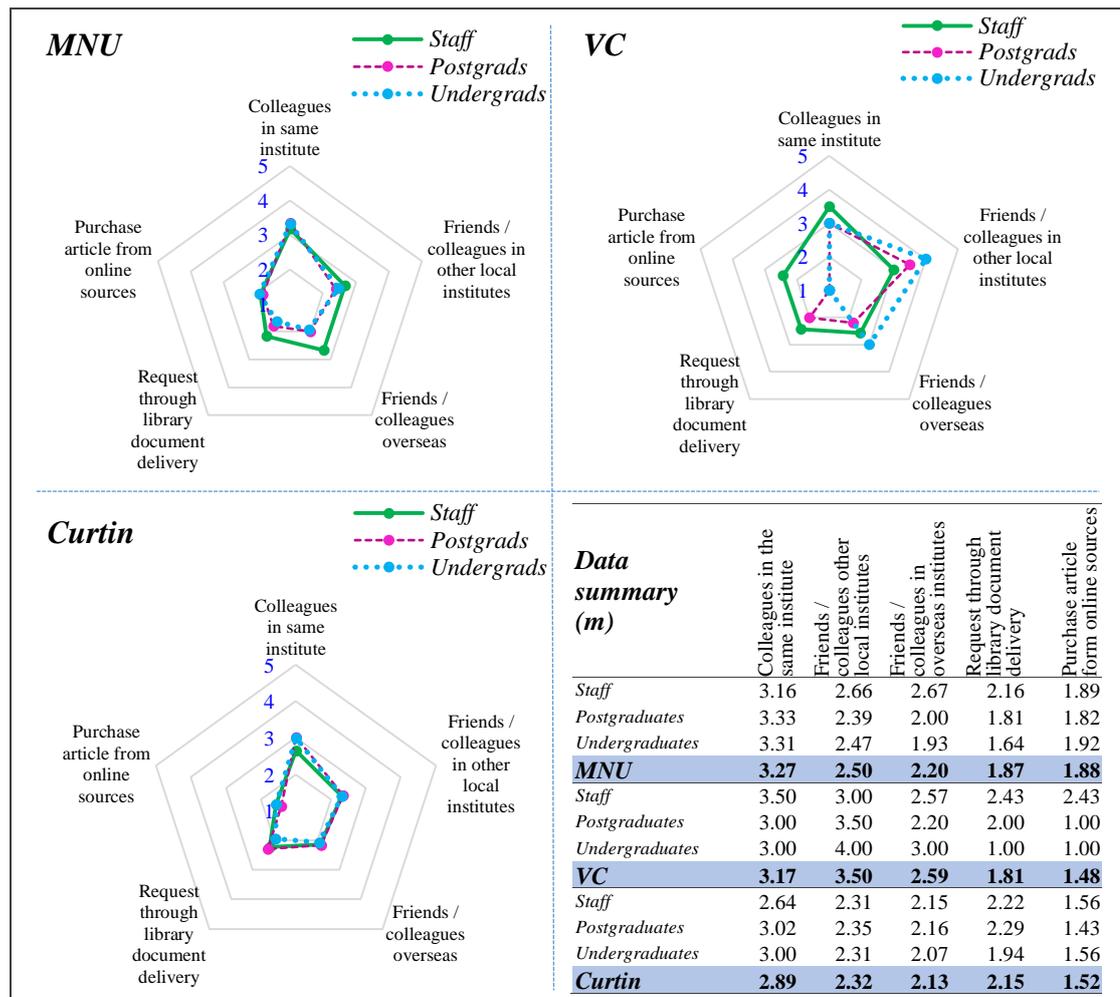


Figure 6.40. Reliance on alternative sources to seek academic reading material  
The data is represented as the mean (*m*) of the scale responses: 5=*most often*, 4=*often*, 3=*sometimes*, 2=*rarely*, and 1=*never*.

The data indicate an overall similar usage across the staff and student groups of MNU and Curtin with a notable difference across the two institutions. While implications can be made, the VC sample was too small for a meaningful inference. The most utilised alternative source of seeking academic reading material across all three institutions is *sometimes* relying on “colleagues in the same institution” (MNU  $m=3.27$ , VC  $m=3.17$ , Curtin  $m=2.89$ ). The second most relied upon are “friends/colleagues in other local institutes” and this was notably higher for VC participants collectively ( $m=3.50$ ) and the response was hugely boosted by the undergraduate response. Participants from all three institutions indicated that on rare occasions, they relied on “colleagues overseas” (MNU  $m=2.20$ , VC  $m=2.59$ , Curtin  $m=2.13$ ).

The most contrasting response across the institutions was the proportion of participants who indicated they have had to resort to paying for articles. This was reported mainly by the staff of MNU ( $m=1.89$ ) and VC ( $m=2.43$ ).

**6.2.6 Part VI: Interpretation of library versus Google/internet**

Part VI, the last section in the survey questionnaire (Q36 to Q41), sought participants’ interpretation of what a Library is versus Google/internet.

**6.2.6.1. Google as an alternative to the library**

Q36 sought participants’ perception on whether they considered Google as an alternative to the library in their academic information seeking activities. The question carried seven predefined statements that captured possible answers. The participants were asked to select the statement with which they agreed the most. Three of the statements were affirmative, that Google was an alternative and three statements negated this notion. If the participants were not happy with any of these statements, they had the choice to add another answer.

The data is illustrated in Figure 6.41. Table 6.16 summates these responses into Google as an alternative, supplement, and as a parallel to the library.

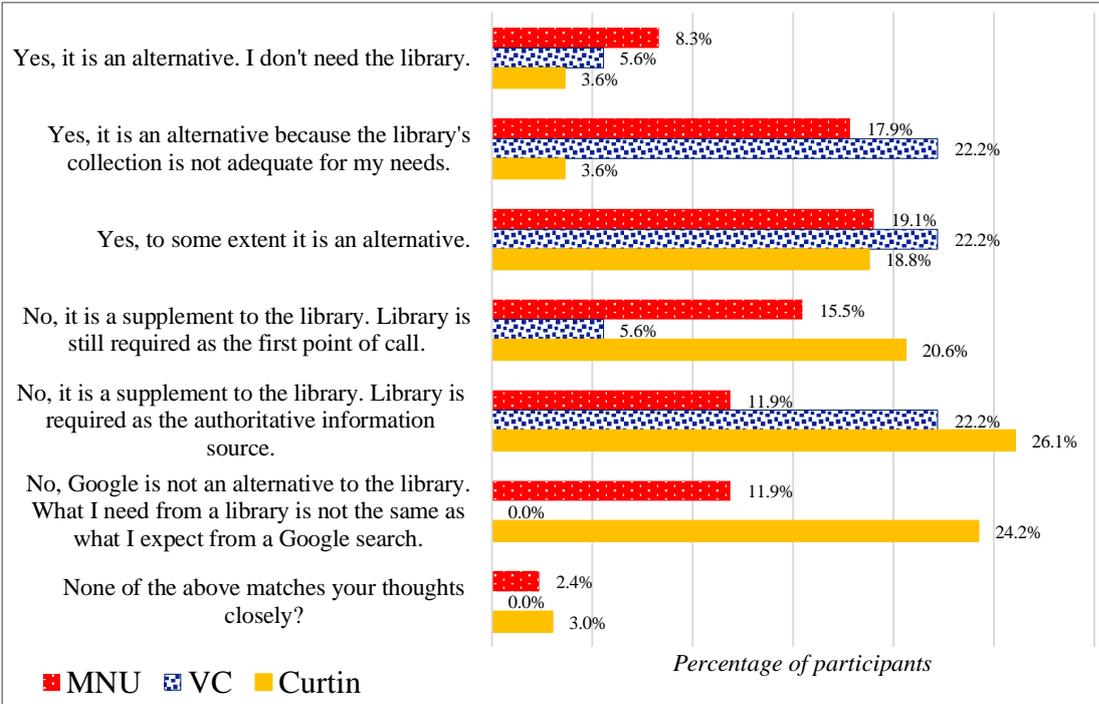


Figure 6.41. Perception of Google as an alternative to the library in academic information seeking activities

Table 6.16. Google as an alternative, a supplement, and a parallel use to the library

Institution	An alternative [n (%)]	A supplement [n (%)]	Parallel [n (%)]	Other [n (%)]	Non-Response [n (%)]
MNU	38 (45.2)	23 (27.4)	10 (11.9)	2 (2.4)	11 (13.1)
VC	9 (50.0)	5 (27.9)	0	0	4 (22.2)
Curtin	43 (26.1)	77 (46.7)	40 (24.2)	5 (3.0)	0

More MNU (45.2%) and VC (50.0%) participants compared to Curtin (26.1%) were of the view that Google is an alternative to the library (Table 6.16). This is reflective of the high use of Google platforms by MNU and VC participants seen in the earlier sections in this chapter and also in the responses to the second statement (Figure 6.41) “yes, it is an alternative because the library's collection is not adequate for my needs”. This statement was selected by 17.9% ( $n=15$ ) of MNU and 22.2% ( $n=4$ ) VC participants compared to 3.6% ( $n=6$ ) from Curtin.

As seen in Table 6.16, the majority of the Curtin participants (46.7%) perceived Google as a supplement to the library and another 24.2% from Curtin indicated Google was not an alternative to the library, but that it is a parallel information source (“what I need from a library is not the same as what I expect from a Google search). This parallel use was selected by 11.9% of MNU participants too, but none of the VC participants chose this.

Fifteen (MNU  $n=11$ , VC  $n=4$ ) participants did not respond to this question and another 7 (MNU  $n=2$ , Curtin  $n=5$ ) participants indicated none of the predefined statements matched their perception. These “other” statements are listed:

No [not an alternative] but the library is not providing enough information about how to use their services best. Some library staffs are not able to cater for our needs.  
(MNU-postgraduate)

Google is a fast internet retrieval means for built-in orderly organised knowledge.  
(MNU-undergraduate)

I find the library online search function is not as good as Google. (Curtin-staff)

I use Google Scholar for specific searches in my research. (Curtin-postgraduate)

It is in line with the library I use the online catalogue as much as Google due to my location. (Curtin-postgraduate)

It's a supplement to the library and the library is supplement to Google, I generally try to source articles via Google scholar through the Find it at Curtin link as often as I can. The two have become symbiotic to some extent. Both the Library AND Google.

(Curtin-undergraduate)

The library is a supplement to Google. Mostly because of services such as request book and to hold physical resources not available online. (Curtin-postgraduate)

The answers indicate a similar pattern to those of the Curtin participants, predominantly seeing Google as a supplement, with MNU participants taking the alternative path. Interestingly, two Curtin participants, instead of agreeing to Google being a supplement to the library, stated that the library is a supplement to Google and also that it is a symbiotic relationship.

### 6.2.6.2. Perception of an ideal library

Q37 and Q38 asked the participants for their perception of what an ideal library is as a physical space and an information resource, respectively. Both questions were presented on a five-star rating scale. The questions are reproduced in Figure 6.42.

<p>Q37. Not taking any particular library in context, what is your perception about an ideal library as a physical space? (Show your agreement with the statement through the number of stars. The more you agree, the more stars)</p>	<p>Q38. Not taking any particular library in context, what is your perception about an ideal library as an information resource? (Show your agreement with the statement through the number of stars. The more you agree, the more stars)</p>
<p>A place for quiet reading <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>The library needs to have books. I want to flip through books <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>A place to meet and collaborate with other colleagues/peers in the academic network <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>The library needs to have all of its content searchable online without having to go through book stacks <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>A place for printing and photocopying facilities <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>The library should have physical books. It is also desirable to have everything online <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>A place with facilities for reliable internet access <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>The library catalog search feature should function like Google search engine <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>A place to house library's physical collection (books, audiovisuals, etc) <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	<p>Other (please state and rate) <input type="text"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>A place that provides online access to information resources (lots of computers and other digital devices) <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	
<p>A place that needs to remain open for use anytime of the day <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	
<p>I don't have too many thoughts on what a library needs to do as a space. But I need the library to be there <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	
<p>Other (please state and rate) <input type="text"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>	

Figure 6.42. A screen capture of Q37 and Q38

The data for both questions depicting composite institutional responses, as well as a further breakdown into the staff and student groups from each institution are shown in Figure 6.43.

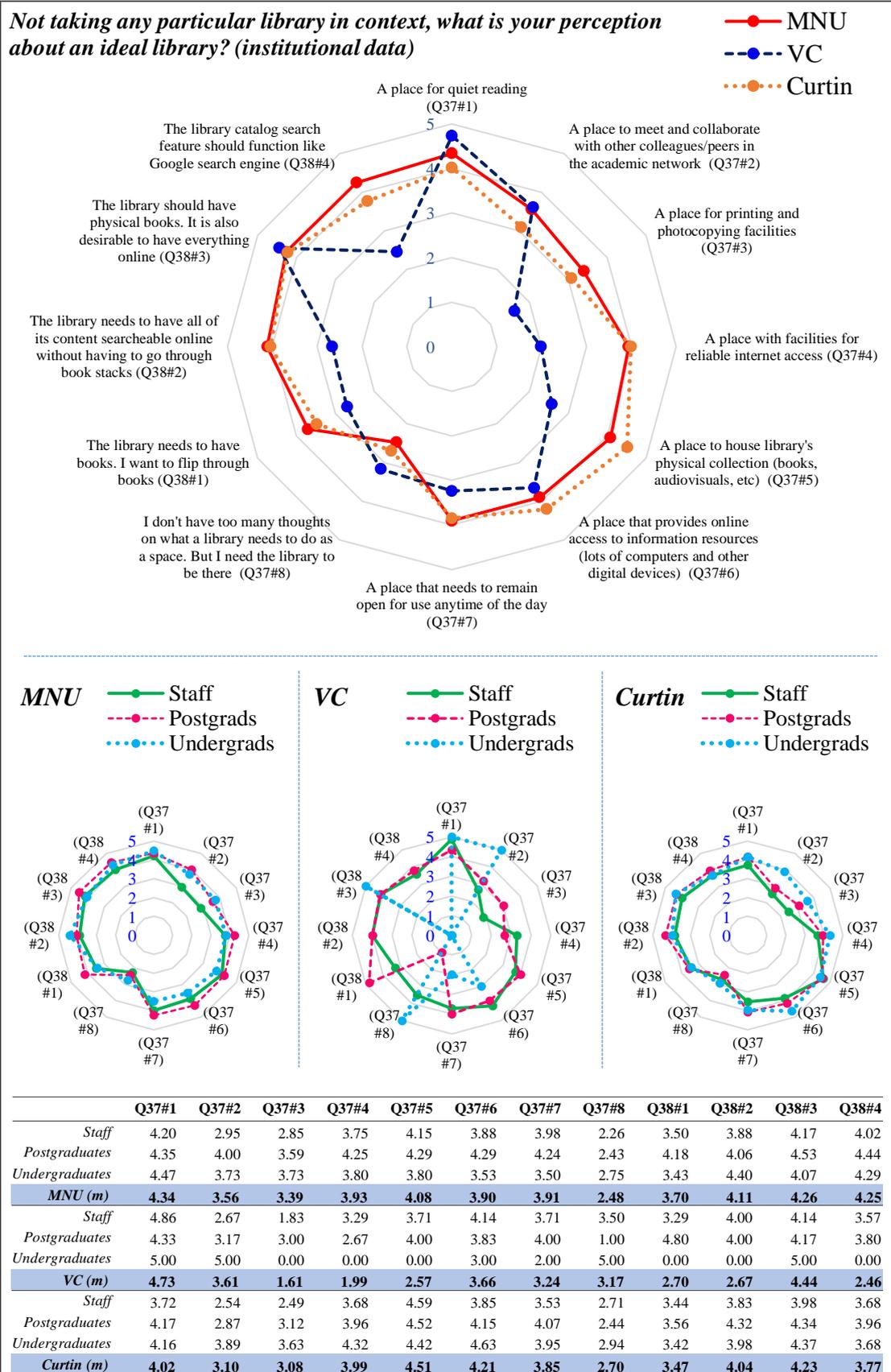


Figure 6.43. Perception of what an ideal library is  
 The data is represented as the mean (m) of the scale responses 0 (least agreement) to 5 (most agreement)

The data indicate that the rating from both staff and student groups do not vary significantly within the institution except for the VC data, and this variance can be explained by the small sample that has the potential to skew the results. Furthermore, the t-test shows that both Q37 and Q38 yielded no significant difference ( $p > 0.01$ ) between the institutions (see Appendix 6BNEW).

From the data on the library represented as a “physical space” (statements Q37#1 to Q37#8), the library as “a place for quiet reading” (Q37#1) was dominant across the three institutions (Q37#1: MNU  $m=4.34$ , VC  $m=4.73$ , Curtin  $m=4.02$ ). This was the highest *mean* for any of the predefined answers from MNU and VC, while Curtin participants placed the most prominence on the library as “a place to house library’s physical collection” (Q37#5,  $m=4.51$ ). The library as “a place that provides online access to its information resources” with lots of computers was also highly nominated (Q37#6: MNU  $m=3.90$ , VC  $m=3.66$ , Curtin  $m=4.21$ ). Overall, a significantly lower prominence was placed by all participants for the library to provide “printing and photocopying facilities” (Q37#3: MNU  $m=3.39$ , VC  $m=1.61$ , Curtin  $m=3.08$ ). Additionally, the data indicate an ideal library does not necessarily have to be “a place to meet and collaborate with other colleagues” (Q37#2: MNU  $m=3.56$ , VC  $m=3.61$ , Curtin  $m=3.10$ ).

The data on the library represented as an “information resource” (statements Q38#1 to Q38#4) indicate that, the ideal library should have physical books and it is desirable to have everything online (Q38#3: MNU  $m=4.26$ , VC  $m=4.44$ , Curtin  $m=4.23$ ). A similar rating was given to the library to have all of its content searchable online without having to search book stacks (Q38#2: MNU  $m=4.11$ , VC  $m=4.67$ , Curtin  $m=4.04$ ). As can be seen from the ratings (Q38#1), the need to have physical books exists (MNU  $m=3.70$ , VC  $m=2.70$ , Curtin  $m=3.47$ ), but is not as strong as the need for online access. Also of interest is the comparatively high ranking by MNU ( $m=4.25$ ) and Curtin ( $m=3.77$ ) for the library catalogue to be similar to the Google search engine. One Curtin undergraduate added further clarity into this statement:

That question about functioning like a Google-like search engine for libraries is really tricky! Google is great for those who understand how its algorithms work to one's advantage but it's not great for absolutely "every" kind of search.

For both questions, the participants were given the option to add their own answer in case the predefined answers did not capture their perceptions. To this effect, 34 participants selected a rating for Q37#9 “other” and 38 participants selected a rating for Q38#5 “other”. Only 20 participants (MNU  $n=3$ , Curtin  $n=17$ ) added any text; these are reproduced in Table 6.17.

Table 6.17. Additional comments about an ideal library

Institution	Text	Category
MNU	Student Oriented Philosophy	Postgraduate
MNU	Updated version of Text book	Postgraduate
MNU	the librarians should be trained in a way such that they can help us to find the relevant books at the times, no library catalogue, no internet connection	Postgraduate
Curtin	A place for study and working	Staff
Curtin	Alternative work space	Staff
Curtin	needs to have a mix of physical and online resources	Staff
Curtin	a place for training staff and students to use online tools	Staff
Curtin	Library should have access to all well-known journal databases and NOT to be bias in selecting databases (e.g. Curtin does not have access to PubMed database)	Staff
Curtin	should provide multiple database searches at one time	Staff
Curtin	I love books	Postgraduate
Curtin	database	Postgraduate
Curtin	A place where I can receive help from staff and assistants as required	Postgraduate
Curtin	From within the library space, library staff manage and organise core scholarly resources - such as online journal subscriptions, online databases and core print resources.	Postgraduate
Curtin	A place with whiteboards	Postgraduate
Curtin	Libraries relax me	Postgraduate
Curtin	The library should index material in experimental/flexible ways, such as allowing readers to document why the resource was useful to them	Postgraduate
Curtin	I love finding information in hard copy - give me a good book any day	Postgraduate
Curtin	place for quiet studying, Mobile phone free	Undergraduate
Curtin	A place to learn together as a community	Undergraduate
Curtin	Ease of use for books and online	Undergraduate

Notable comments include, the library as a quiet place for study, an alternative workspace, a place for information retrieval related training or assistance, a place for unrestricted access to databases, a place to access physical books, and as a collaborative space.

### 6.2.6.3. Information literacy and awareness

Q39 sought to understand an overall pattern of information awareness and competency as well as a general perception of the participants’ level of satisfaction with the information sources at their disposal. The participants were given the following statements with a scale of *strongly agree, agree, somewhat agree, neither agree nor disagree, somewhat disagree, disagree, strongly disagree, and not applicable*:

- Would you say you are experienced at searching the library catalogue?
- Are you satisfied with the level of access to information resource (physical as well online) from your library?
- Do you perceive a need for academic libraries?
- Would you say you are efficient in searching information through the internet?
- Do you believe *googling* meets your information needs?

The data is summarised and illustrated in Figure 6.44.

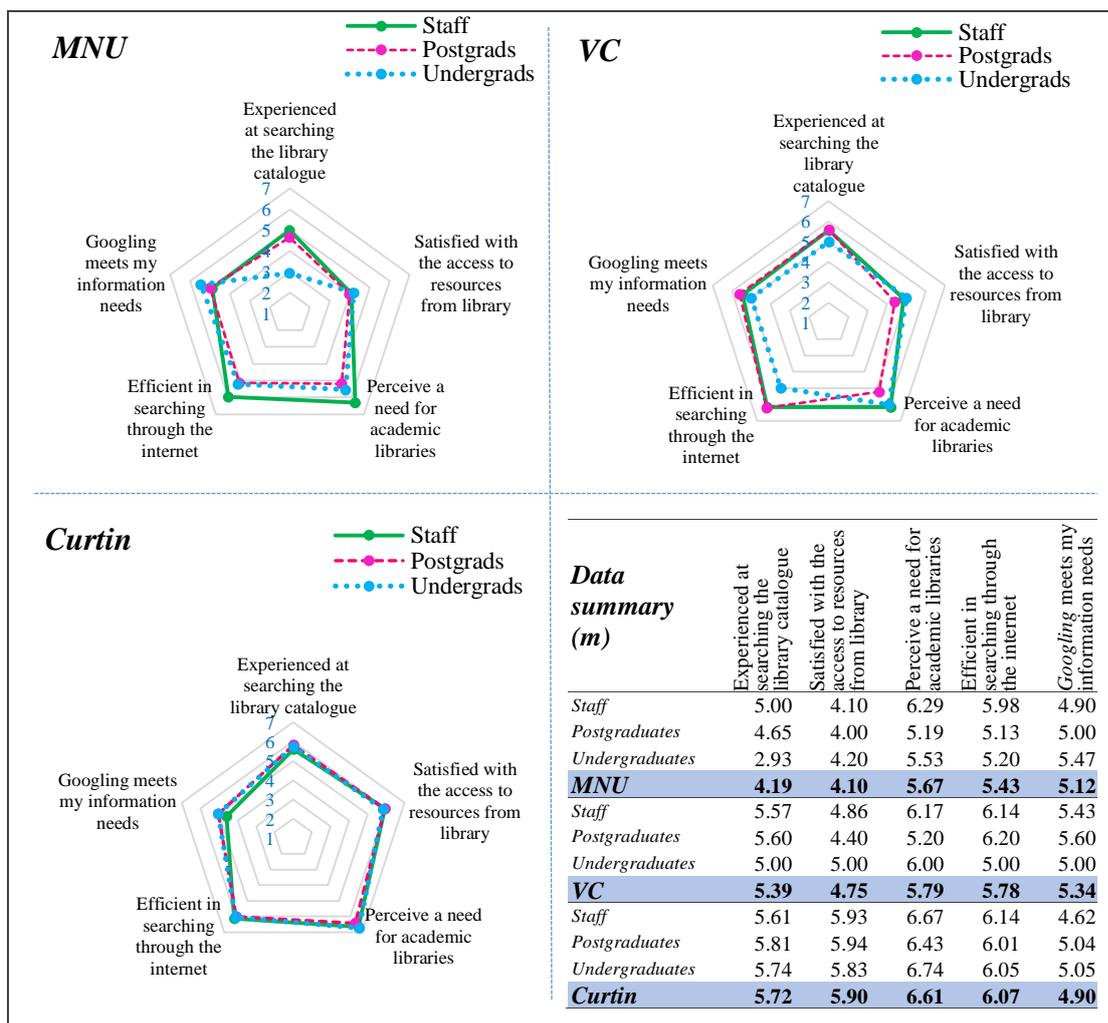


Figure 6.44. Information awareness, competency, and satisfaction with library and googling. The data is represented as the mean ( $m$ ) of the scale responses: 7=strongly agree, 6=agree, 5=somewhat agree, 4=neutral, 3=somewhat disagree, 2=disagree, 1=strongly disagree

The data indicate that in comparison to their Maldivian counterparts, more Curtin participants perceived that they were experienced at searching the library catalogue (MNU  $m=4.19$ , VC  $m=5.39$ , Curtin  $m=5.72$ ). Overall satisfaction with the level of

access to information sources (both physical and online) from their library was also highest for Curtin participants ( $m=5.90$ ) with the least satisfaction expressed by MNU ( $m=4.10$ ) and slightly higher by VC ( $m=4.75$ ).

Staff participants from all three institutions unanimously perceived the need for academic libraries (MNU  $m=5.67$ , VC  $m=5.79$ , Curtin  $m=6.61$ ), while the student perceptions from MNU and VC (specially the postgraduates) bordered on the *neither agree nor disagree* for the need for academic libraries. The difference between MNU versus Curtin is statistically significant ( $p < 0.01$ ) for the statements on satisfaction with the library, perceived need for academic libraries, and efficiency in searching the internet.

The question about individual perception about their efficiency in searching for information through the internet yielded more agreement from Curtin participants ( $m=6.07$ ), and was consistent across the staff and student groups, in comparison to MNU participants. In contrast, the perception that *googling* meets their information needs was slightly higher for Maldives participants (MNU  $m=5.12$ , VC  $m=5.34$ ) compared to their Curtin counterparts ( $m=4.90$ ).

The overall perception from the three institutions was that they *somewhat agree* that *googling* meets their information needs. From the data it cannot be ascertained whether these responses are mutually exclusive to what they can retrieve from the library in conjunction with *googled* results, or whether this response is reflecting on Google as a stand-alone information source.

#### **6.2.6.4. Interpretation of the term ‘googling’**

Q40 sought to understand how the participants interpret the term *googling* and other associated terms like *google it* or *googled*. To this effect, the participants were given a choice of three predefined explanations for these terms:

- **Statement #1:** Searching for something specifically using the Google search engine;
- **Statement #2:** Searching online on the internet (not necessarily specific to Google searches alone); and,

- **Statement #3:** Searching for something online (any online platform including different search engines, using specific webpages, searching online on library databases, etc.).

The data is included in Table 6.18 and illustrated in Figure 6.45.

Table 6.18. Interpretation of the *googling* and associated terms

Participants		Statement #1 [n (%)]	Statement #2 [n (%)]	Statement #3 [n (%)]	Non-Response [n (%)]	Total [n]
MNU	Staff	25 (54.3)	8 (17.4)	8 (17.4)	5 (10.9)	46
	Postgraduates	9 (47.4)	3 (15.8)	4 (21.1)	3 (15.8)	19
	Undergraduates	8 (42.1)	6 (31.6)	1 (5.3)	4 (21.1)	19
	<b>MNU Total</b>	<b>42 (50.0)</b>	<b>17 (20.2)</b>	<b>3 (15.5)</b>	<b>12 (14.3)</b>	<b>84</b>
VC	Staff	3 (30.0)	1 (10.0)	3 (30.0)	3 (30.0)	10
	Postgraduates	4 (57.1)	0	2 (28.6)	1 (14.3)	7
	Undergraduates	1 (100.0)	0	0	0	1
	<b>VC Total</b>	<b>8 (44.4)</b>	<b>1 (5.6)</b>	<b>5 (27.8)</b>	<b>4 (22.2)</b>	<b>18</b>
Curtin	Staff	23 (54.8)	18 (42.9)	1 (2.4)	0	42
	Postgraduates	50 (48.1)	38 (36.5)	13 (12.5)	3 (2.9)	104
	Undergraduates	12 (63.2)	36 (36.8)	0	0	19
	<b>Curtin Total</b>	<b>85 (51.5)</b>	<b>63 (38.2)</b>	<b>14 (8.5)</b>	<b>3 (1.8)</b>	<b>165</b>

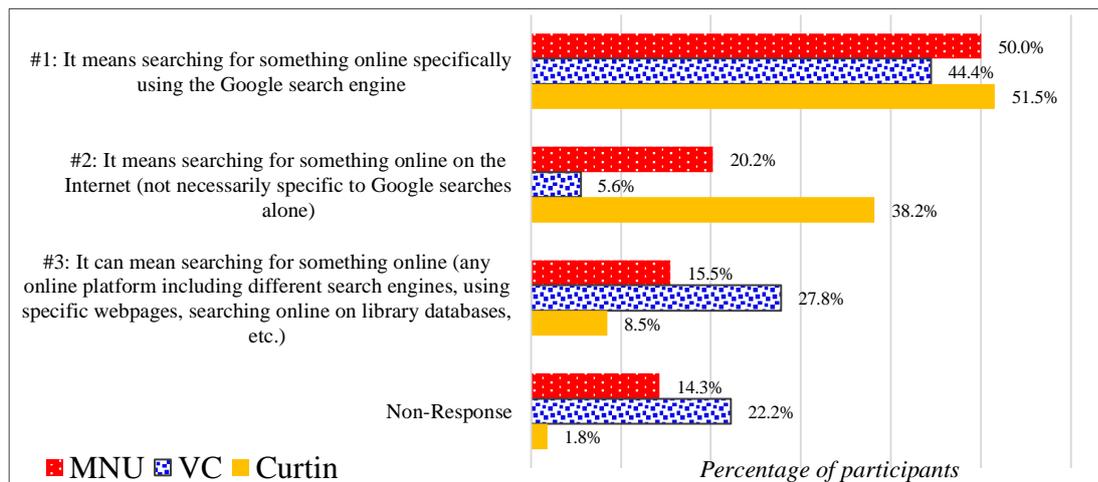


Figure 6.45. Participants' interpretation of *googling* and associated terms

Approximately half of the participants (MNU 50%, VC 44.4%, and Curtin 51.5%) stated that they interpret *googling* and the associated terms literally to mean the use of Google. Of the remaining participants, 14.3% MNU, 22.2% VC, and 1.8% of Curtin participants did not respond to the statement. The rest of the participants associated the term to searching the *internet* (MNU 20.2%, VC 5.6%, Curtin 38.2%), or any *online* search including journal databases (MNU 15.5%, VC 27.8%, Curtin 8.5%).

An “other” option was not provided for this question, and in hindsight it is believed allowing open response might have been useful. Nonetheless, the responses as outlined above serve the purpose of the question and highlights that only half of the participants use *googling* in literal terms (that is searching using Google) and the rest have mixed perceptions on it – this perception is uniform across the three institutions.

#### **6.2.6.5. *How the library needs to evolve to remain relevant***

The last question (Q41) asked the participants what they would like to change in their library for it to remain relevant to their needs. The question was open-ended, and 176 (MNU  $n=55$ , VC  $n=10$ , Curtin  $n=111$ ) of the 267 participants added a comment. The comments were coded for themes using the NVivo™ data analysis tool.

All comments were firstly coded for “positive” or “negative” perception towards the library. A positive coding was attributed if the participant had added a specific comment to show that the library met their needs at an expected level, and was coded as negative if the overall connotation indicated the need for substantial enhancements. All MNU and VC comments, except for one MNU, carried a negative connotation. In contrast, most comments from Curtin participants reflected a positive attitude towards the library, with 39 Curtin participants specifically highlighting that nothing required significant change.

Figures 6.47 and 6.48 are system generated word clouds on the comments using NVivo™. The first figure is a combination of MNU and VC data, and the second figure captures Curtin responses.



## Resources

A need for **more resources** was the central premise for 28 MNU, 6 VC, and 4 Curtin participants, and the bulk of these stated “books” which was not limited to online or physical books. A specific need for **online books/eBooks** was highlighted mostly by Curtin participants. A need for better access to **online journals** was mostly highlighted by MNU participants, with only 6 of the 165 Curtin participants highlighting limitations with the current journal databases.

The library is essential as an online source for academic journals. However it is subscribing to less and less journals which makes it less useful and relevant. I often find that I need a paper that is not available through the library because it no longer subscribes. However, if I google the paper title and/or the author, I usually find that I can access the paper through other means such as the author's homepage or other webpages like academia.com. (Curtin-Staff)

Interestingly, there was a number of Curtin participants, mostly staff, who highlighted a need for **physical books** while acknowledging that the resources were available online.

Happy with the current services provided online but would like some physical books as not all reading can be done using eBooks alone. (Curtin-staff)

Another significant theme that emerged from Curtin participants was that of an appropriate level of **library access to online students**. Many acknowledged that there were a great deal of resources available online, nonetheless—in addition to more eBooks—the highlight was for enhancements like online access to other university libraries and more library workshops to be offered online.

All my students are online and therefore there needs to be more workshops and how to guides set up to assist students that are not located in Perth and therefore will never get a chance to visit the library. Some are available (so don't get me wrong) but so many workshops only have the "attend the library" solution. (Curtin-Staff)

## Online library

A need for all library content to be accessible from anywhere as a **virtual library (digital library)** was expressed by a few and not limited to online students. There

was an emphasis on digitisation of all library content, with one Curtin participant stating all content should be PDF downloadable.

Make the entire catalogue digital. I have had situation when I needed a source with urgency but it was borrowed. (Curtin-Postgraduate)

The physical collection has to be converted to e-books. (MNU-Staff)

As an extension to this online theme there was also the need for **virtual library support**.

As an online student, sometimes I panic if I can't find the articles I need for assignments, and I feel there is no one to ask for help as one could in a physical library. 24 hour access to online librarian help would be great for me. (Curtin-Undergraduate)

### **Physical library**

A few participants highlighted the significance of **library staff**, more so from MNU and VC compared to Curtin. Curtin participants commented on the librarian's role positively while MNU and VC participants were critical of librarians.

I rely on online searches, sometimes then requesting access to a physical journal etc. The librarians are fantastic because not everything can be found this way, so I would ask for the librarian support to remain. (Curtin-Staff)

Need librarians who are more efficient. (MNU-Staff)

Capacity building for library staff. (VC-Staff)

Another area that received major suggestions for improvements was **library space**. Most of the comments from MNU to this effect were about requiring group study spaces. Curtin participants highlighted the library was often crowded and noisy especially in the areas with computers. There was also requests from three MNU staff participants for collaborative spaces for academics, with also a staff requesting to "make [the library] more welcoming".

A few participants also highlighted **facilities/services** that can be introduced or enhanced, like "more vending machines" (Curtin-Postgraduate), and "lower... price of copying and printing" (Curtin-Postgraduate), and "attractive comfortable cabins for study" (Curtin-Postgraduate), and "computers and printers" (MNU-Staff). Three

participants commented on improvements to the borrowing duration with two MNU students highlighting a need for extended borrowing for [physical] books, and a Curtin student highlighting the need for a longer duration for eBooks.

A few MNU and VC participants commented on the limitations of current **opening hours**. None of the Curtin participants commented on this, which is explicable given the Curtin main library is open 24 hours every day of the week during semester.

A library service that was highlighted were the **information sessions** and/or workshops offered through the library on information skills as well as reference support. Comments on these were more from MNU and VC proportionally compared to Curtin participants, and is reflective of the availability or lack thereof of similar support services.

A need to enhance the library **infrastructure for online access** to resources including “public computers and Wi-Fi” (MNU-Staff) was also highlighted by a few participants, more so from MNU.

It would be very helpful if our library have computer systems. Although we have a computer lab separately, most of the time it is full. (MNU-Postgraduate)

### **Search interface**

More Curtin participants highlighted the need for enhancements in the search functionality of the library online resources through **streamlined searching** and a clutter free library website.

If the library’s database searches were as easy as Google, I would go to that first. At the moment they are tucked into the library services page and then it's unclear which databases I should search - I shouldn't have to choose. My search should just be a search of every database and relevance by my keywords should be automatic - just like Google! (Curtin-Staff)

Suggestion on improving the search feature of the **online catalogue** was quite prominent from the Curtin participants, while both MNU and VC participants highlighted the need for the introduction of an online catalogue. Notably, MNU’s monograph collection is searchable through an OPAC and VC lacks an online

catalogue. On the contrary, Curtin uses a discovery tool as their catalogue, which searches across the monograph collections as well as all subscribed databases.

The notion of **Google-like library searching** was also prominent among comments from Curtin participants and these were linked to the enhancement to the online catalogue/discoverability of resources.

Library online search facilities need to be simplified a bit - sometimes too many levels need to be clicked through to obtain similar results to those I can achieve using Google Scholar, which often seems more straightforward. (Curtin-Staff)

Also of interest was the use of the term “search engine” in reference to library online catalogue.

Curtin search engine should be more effective than now as putting keywords doesn't give expected results. (Curtin-Staff)

[Need] more subscriptions to e-Journals ... [and] fully automated search engine... (VC-Staff)

The search engine is really cumbersome ... the library search engine should function more like Google but with some great advanced features for specific parameters if needed. (Curtin-Staff)

These responses highlight that the library, the internet, Google, and any other search interface on the Web are fluid and interchangeable concepts as far as some participants are concerned.

### **6.3 Summary**

The online survey reported here was conducted over a duration of two months, recruiting academic staff, postgraduates and final-year undergraduate students at MNU, VC, and Curtin University.

The findings show that the initial search strategy in an academic information seeking situation is quite similar across the three institutions, with a high reliance on online searching, specifically using Google. While library databases are slightly more relied upon than Google by Curtin participants, MNU and VC relies mostly on Google. The physical library collection is the least relied upon information source, more so by Curtin participants. The most common explanation for this low use of the library is

the notion that there is adequate access to information resources without using the library. For Curtin participants this meant their library services are also predominantly online, while for MNU and VC participants the reason was that the library does not have sufficient resources. Interestingly over half of MNU and VC participants indicated rare use or no use of the journal databases made available to them through their library, citing difficulty in access, which requires multiple login credentials. Consequently, more staff and postgraduates participants from MNU and VC pay for online articles compared to their Curtin counterparts.

The data also indicate Google use is significantly higher than any other search engine. A significant proportion of participants across the three institutions adopted using Google with no clear reason as to why they use it. The data indicate the adoption of Google to have followed closely with the inception and popularity of the Google search engine in the late 1990s, and is relative to the age of the participants. The most highly used Google platform is the Google general search interface, closely followed by Google Scholar, with slightly less use of Google Books. Also, those who use these search platforms are generally satisfied with the search results. There is unanimous acknowledgement that the main reason they search with Google is for the ease of use followed closely with convenience linked to its simple search interface. Approximately half of the participants believe the first page of retrieved results displayed on Google usually contains enough reliable links. This perception is more so by undergraduate students. The data also indicate that more staff and postgraduate students usually go through as many results pages as required until they get something useful. There are no significant differences across the institutions in these perceptions.

Data gathered to understand the scholarly needs of the participants indicate a significantly low number of research and publications emanating from MNU and VC compared to Curtin participants. Additionally, the publication platform for the majority of Curtin participants was indicated as peer-reviewed reputed journals, with a significantly low percentage of MNU and VC participants' publications appearing in reputed journals. This can be linked to the significantly high level of access to research articles reported by Curtin participants while their MNU and VC

counterparts indicated their level of access varies, as they sometimes face difficulty getting the journal articles needed for their academic tasks.

Data for search habits and preferences show the majority of the participants across the three institutions place the most importance on the relevance of the article to the search topic, followed by online full-text availability, and the quality/quantity of information provided in the abstract. The reputation of the publisher/journal, and the journal impact factor have lesser importance in deciding what articles to read. Significantly, most participants perceive the availability of the article as a PDF file as an important factor, and this is also reflected in their search strategy. While the majority of the participants reported using keywords from the assignments or research topic, a significant proportion of participants use the word “PDF” in their search term.

While there is a high reliance on Google and online searching (loosely defined by participants as *googling*), the general perception across all participants is that *googling* meets their information needs only to a certain extent. More participants from MNU and VC are of the view that Google is an alternative to the library, while more Curtin participants perceive Google as a supplement. Accordingly, most Curtin participants demonstrate a strong need for academic libraries, while MNU and VC participants perceive a lesser need, more so by the students. Based on their feedback on what an ideal library is, it can be inferred that these perceptions are tied in with the level of current access they have to library/scholarly resources. Participants describe an ideal library as a place for quiet reading, with a combination of physical as well as online resources, and also as a technological/collaborative hub. Strikingly, the ideal library catalogue search is expected to be a more Google-like search interface.

The findings in this chapter, along with the findings from Phase I and II presented in Chapter 5, will be discussed further in Chapter 7.

## Chapter 7: Discussion

This research investigated the *googling* phenomenon using multiple cases from two diverse economies: the Maldives, as a developing country, and Australia, as a developed country. Chapter 4 presented a background description of these countries and the institutions selected for the research. Chapter 5 reported the findings from the interviews with the Maldives academic community, and Chapter 6 reported the findings from the survey conducted in both the Maldives and Australia. This chapter discusses these findings using the adopted theoretical framework that was presented in Chapter 3, and in conjunction with the literature reviewed in Chapter 2. Figure 7.1 presents a summary of the research design.

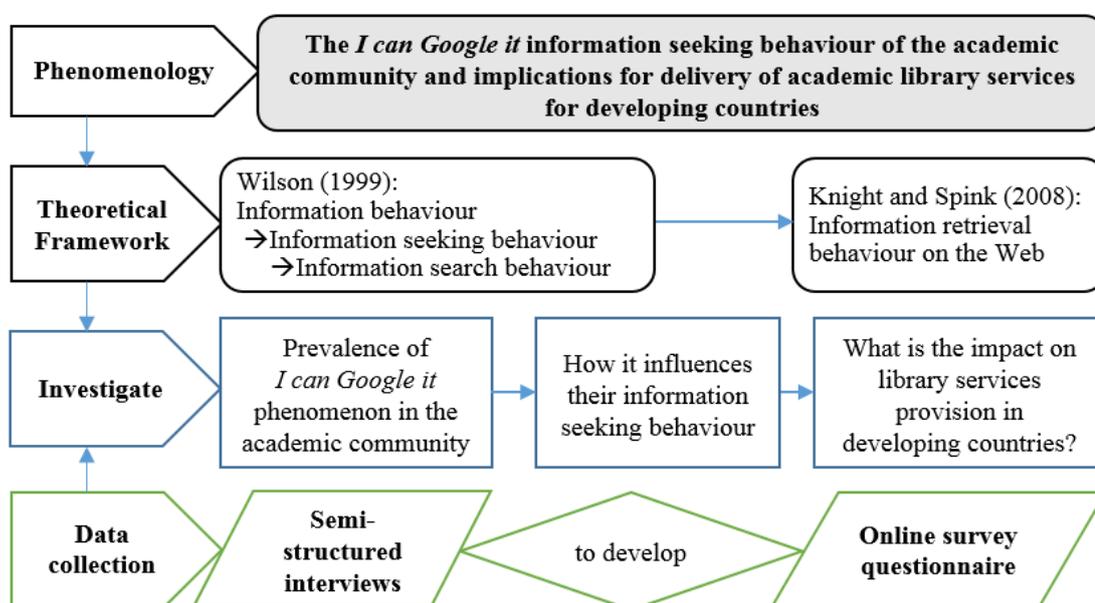


Figure 7.1. The research design

This discussion firstly summarises the adopted theoretical framework for the research. Secondly, findings about the perceptions of *googling* are contextualised. Then, the discussion addresses objectives 1 to 3 of the investigation, which are to:

- Understand the characteristics of the *I can Google it* information seeking behaviour of the academic staff and students;
- Investigate how this phenomenon impacts on the provision of academic library services; and,
- Examine the similarities of the *googling* phenomenon across economically diverse nations.

These objectives are addressed using the information behaviour theoretical framework, where applicable. The chapter concludes with a brief summary of the discussion.

### 7.1 Theoretical framework

The theoretical framework utilised for this study is situated in the information behaviour discourse. As outlined in section 3.3, the research uses a hermeneutic phenomenological approach. Therefore, Wilson’s (1999), and Knight and Spink’s (2008) information behaviour theoretical models were utilised to guide the inquiry, and not to test a hypothesis.

Wilson’s (1999) proposition of information *search* behaviour as a subset of information *seeking* behaviour (presented in Figure 3.1) was adopted as the overarching framework. Further, where applicable, concepts from Knight and Spink’s (2008) macro model of human information retrieval behaviour on the Web (presented in Figure 3.2) were also used, for its inclusivity of major works on information seeking behaviour. The adopted specific concepts include: user perceptions of self, system and cognitive style in their overall information seeking approach; browsing and navigating interactions, and query formulation and search engine interactions; and, user judgements and tactics in information retrieval. This is illustrated in Figure 7.2.

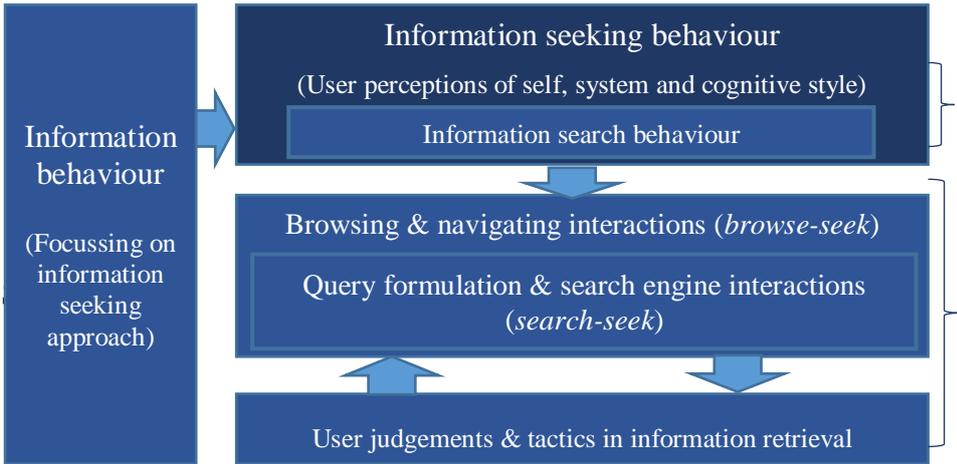


Figure 7.2. Theoretical concepts explored to guide data collection

These concepts are used in the discussions in section 7.3. The next section presents a discussion on the participants’ perceptions and understanding of Google and online searching.

## 7.2 What is *googling*?

As Quint (2002) indicated, terms like *to google* and *googling* have associated meanings with searching online as well as to research itself. Current scholarly discourse is unable to confirm exactly what users mean when they use these terms. The survey data from both countries (Table 6.18) indicate that 50% of the participants interpret *googling* and associated terms, to mean using the Google search engine, while the remaining 50% perceive it differently. A number of participants reported that *googling* means searching on the internet. Interestingly, some participants used the term *googling* to mean searching for something on any online platform including different search engines, specific webpages, or searching online using library databases.

Furthermore, while Google Scholar is not technically a database, but a search tool, users generally perceive it to be equivalent to a scholarly bibliographic database, such as ProQuest, that is subscribed to and offered through a library. The interviews with the Maldives community revealed numerous references like “full-text is not there in Google for some articles”. The findings presented earlier (particularly in section 5.2.1.5) reveal this perception is not just limited to students within the Maldives academic community. Dalal *et al.* (2015) implied a similar perception, stating that students in their investigation perceived “that scholarly articles reside *in* Google or Google Scholar, or that a discovery tool is simply a very large database” (p. 674). Haglund and Olsson (2008, with reference to Fry, 2006) highlighted academic researchers earlier carried a misconception about Google being similar to a bibliographic database. However, Haglund and Olsson (2008) observed that the Swedish academic researchers included in their observational study understood the difference between Google and bibliographic databases even though the users referred to all search platforms as “search engines” (p. 56).

Similarly, the interview findings from the Maldives case studies provide evidence that participants used the term *search engine* even when they were referring to online library search platforms. Based on the interviews, it can also be deduced that the participants had little understanding of the functional differences of Google and library databases. While this finding is established as conclusive from the Maldives’

cases, this cannot be generalised to the Australian case, as they were not the subjects of in-depth interviewing.

While the survey data did not provide further insights, the interview data from the Maldives academic community indicated *google*, *online*, *web*, and *internet* are words used interchangeably, and also inconsistently, in their reference to online searching. In the interviews it was found that participants had difficulty pinpointing what *googling* really meant. Some participants assumed others to be using *googled*/*googling* to mean online search while, according to them, they themselves used the term to indicate the specific use of Google. Some participants explained that Google was the only search engine used by many and therefore it was natural to say *I googled*, which on the one hand refers specifically to the use of the Google search engine, and on the other hand it also refers to online searching.

Furthermore, the *find it* link resolvers activated through Google Scholar to link retrieved results to online resources contribute to a further blurring of the distinction between online search boundaries (Dalal *et al.*, 2015). These resources can be found in university repositories, subscribed databases accessible through library discovery tools, or academic social media platforms such as ResearchGate. In this respect, the high reliance on Google shown by the Curtin academic community needs to be seen in the context of the level of access to scholarly material through the University's Library. As was seen in the background to the cases (section 4.2.4), Curtin Library subscribes to an extensive list of scholarly databases all of which are simultaneously searchable using their catalogue discovery tool. These resources are also discoverable through Google Scholar as Curtin Library has enabled a link resolver that links Google search results to Curtin Library resources. Therefore, in this instance, while users appear to be retrieving library material, they are in reality retrieving it mostly through the Google search platform and thereby increasing the pervasiveness of *googling*. As Zimmer (2008) stated, Google is ubiquitous and has become the prevailing Web interface. From the interview findings and anecdotal information, it was ascertained that Mozilla Firefox™ with Google as its default search engine, was the most used Web browser while some used Internet Explorer™ and Chrome™. These findings are consistent with Webcertain's (2014) report that 90% of the market share of searching is dominated by Google.

Vaidhyathan (2011) uses the term “googlization” to define the phenomenon of Google becoming indistinguishable from the web/internet, and online databases, that results in a transformation of personal information habits centred on Google. A similar observation was presented by Rowlands *et al.* (2008, citing Large, 2006), stating that for the Google generation “the search engine, whether Yahoo! or Google, becomes the primary brand that they associate with the internet” (p. 296). Rowlands *et al.* (2008) defined the Google generation to include anyone born after 1993 but contended that “the demographics of internet and media consumption are rapidly eroding this presumed generational difference” (p. 301). The data in Figure 6.24 show the age of participants and the time-frame of becoming aware of Google as a search interface has a strong correlation. However, further cross-tabulations (presented in Figure 7.3) regarding participants’ perception on whether *googling* means the specific use of Google or any general online searching, indicates these perceptions do not have any significant relation to their age. In fact, even those participants who were born in the 1950s (currently aged 61+) indicate taking up Google as early as between 1997 to 2004, and may also associate *googling* to any online search.

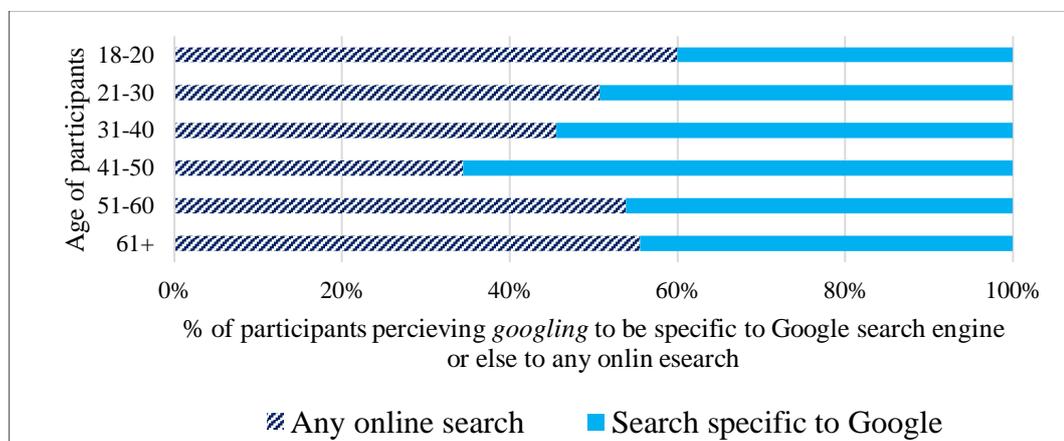


Figure 7.3. Age of the participants and their perception on whether *googling* refers specifically to the use of Google search engine

With most of the interview participants, it was evidenced that *googling* is ingrained into their behavioural mindset without much consideration (Table 5.1, and Figure 6.25). The findings also support Fry and Schroeder’s (2008) observation that users have a preconceived trust in Google as reliable, even if it is not always effective in full-text retrieval. As stated by Hillis *et al.* (2013) and Willson (2017), through its intelligent search algorithms, Google will in most cases retrieve results that meet

users' information needs and expectations. Therefore, eliminating the need for users to look for alternative search platforms, except when a full-text resource is locked behind publisher paywalls.

In summary, the findings are indicative that the term *googling* is often a reference to online searching. According to the research participants, *to google* means to conduct an online search; for 50% of the participants it means using the Google search engine specifically, and for others it means using any online search interface. The pervasiveness of the Google search tools, specifically Google Scholar, and how it is embedded within library search databases, ultimately leads to the blurring of online search boundaries and search engines for users. Inadvertently, it highlights the strength of Google search tools and devalues library search tools; and therefore the role of libraries. The next section discusses how users perceive they approach information seeking in the *googling* phenomenon.

### **7.3 Information seeking behaviour in the googling phenomenon**

Knight and Spink (2008) state, the users' perception of self, system and cognitive styles and their information needs dictate how they seek information. Cognitive style can be defined as the individual user's preferred information seeking/searching methods (Knight & Spink's, 2008).

#### **7.3.1 Browsing, navigating interactions, and query formulations**

Query formulation, is part of the process of browsing and navigating through the sources in the users' information seeking process. Knight and Spink (2008) explain that users' information retrieval strategies are influenced by a "pre-existing preference to browse-seek (information seeking behaviour) or search-seek (information searching behaviour)" (p. 229). In the following discussion, these two strategies are presented together, as the findings warrant they be treated as such. This is also reflective of Wilson's (1999) information behaviour model that situates information *search* behaviour as a subset of information *seeking* behaviour.

In the information behaviour literature, activities in the initial search for information are referred to as *starting*. As highlighted in the literature review, *starting* was presented as one of the six characteristics of the information retrieval behaviour

model conceptualised by Ellis (1989). The concept of starting encapsulates activities carried out to form an understanding of the topic under review. Ellis's proposed model is integrated into Knight and Spink's (2008) macro model within its 'information seeking behaviour' strategies.

As seen in the findings, users gather a general understanding on the topic they are investigating by *googling* for the topic (Figure 6.28). Furthermore, Google is the starting information source for their academic information seeking (Figure 6.18), and a significant prominence is placed on Google to locate journal articles (Figure 6.19). This is reflective of existing research that highlight the user preference for using Google when commencing a new topic or search (Burns, 2014; D'Couto & Rosenhan, 2015; Haglund & Olsson, 2008; Hsin *et al.*, 2016). As Jamali and Asadi (2010), and Du and Evans (2011) conclude, the centrality of Google as the start of an academic information search also extends to scientists and researchers.

This starting of a search, including browsing and navigation is initiated through simple query formulations. From the survey data, the evidence indicates that users opt to use words/phrases from their research topic (Figure 6.33). While this investigation does not focus on users' information needs, but rather concentrates on how they approach fulfilling their needs, it is important to note that Vakkari (2003) contends that the information search approach is informed by users' task information needs. A task in an academic setting is influenced by the institution's teaching and research requirements. The interview data (particularly in sections 5.2.2.3 & 5.2.2.4) verifies this concept, and offers evidence that users repeat this simple keyword searching based on their research topics by continuously refining the terms based on the results they retrieve. Haglund and Olsson (2008) referred to this approach of searching as "trial and error" search methodology (p. 55) because it is not well thought out. The keyword-based enquiries, as opposed to the utilisation of subject categories or *advanced searching*, has been criticised by some scholars. For instance Mann (2008, cited in Hillis *et al.*, 2013, p. 159) stated, "keyword-based enquiries except by chance...do not allow you to recognize related source whose terms you cannot think of beforehand". Hillis *et al.* (2013) extends this concept and claims that Google's algorithms that use the searchers' earlier search history, results in

“individuated truthiness...[and] limits the capacity to generate an overview of the subject area, in turn limiting the potential for wider access to knowledge” (p. 159).

On the contrary, the participants appear to believe a Google search offers them a better overview of the subject area than a library search does. The interview data implies that users do not have high expectations of obtaining precise ‘hits’ when they start a search on Google for academic purposes. However, they believe the Google search interface will help them to discover what is available and in the process help them refine their search terms. This concept of continuous refinement can be equated to Vakkari’s (2016) proposition of searching as a learning outcome. As seen in the findings (Figure 6.27) participants in general are satisfied with the results retrieved through the Google platforms that they use; this infers a satisfaction in their search approach. The interview data further verified that users prefer *googling*, compared to the use of the library, because the retrieved results from Google offer a broad understanding of the searched topic.

The findings (Figure 6.38) show that users, especially staff and postgraduates, quite often browse through only the first few page of results. This supports Nicholas and Clark’s (2015) observation that “most people only ever look at the first page of Google results” (p. 24). Nonetheless, the findings are conclusive that users are not dependent only on their first page of the retrieved results. Contrarily, the interview findings show that users refine their search terms as often as required and refine their search until they are happy with the results retrieved. If there are relevant results amongst the first couple of retrieved results pages (noting that Google search interface displays 10 results per page), the users go through as many pages as it takes until their information need is satisfied.

Furthermore, the interview findings show that advanced search options are hardly used by the Maldives participants, with a number of staff explicitly stating that they do understand advanced search options, but they are often satisfied with keyword searching. On the contrary, the survey findings (Figure 6.33) show that while the participants’ main search strategy is to use simple keywords, participants also indicate they sometimes do utilise advanced search options. With the MNU participants, this perception is observed mainly from the staff participants. This could be attributed to the participants’ prior exposure to university education. Notably,

Curtin staff use advanced search options less than students do. Interestingly, Curtin undergraduate students indicate they use advanced search options often. Given the research is not experimental, it cannot ascertain the actual search behaviour. Earlier observational studies around this issue report minimal use of advanced searching. For instance, Haglund & Olsson (2008) reported that advanced searching was seldom observed from the researchers in their investigation, and when used it was often unsuccessful. Likewise, Dalal *et al.* (2015) reported that while undergraduates and postgraduates in their experimental research were somewhat aware of Boolean searching, they failed to use it effectively even when used. Similarly, Nicholas and Clark (2015), reporting from an analysis of search logs, highlighted that users predominantly relied on simple keyword searching and rarely used advanced search options.

Further to this, the interview findings show that the staff and students from the Maldives academic community, mostly the students, do not distinguish between the Google search interfaces: Google general search, Google Scholar, and Google Books. The interview data indicate users generally search on the Google general search interface, which seamlessly takes them to Google Scholar and Google Books. Some users appear aware of this transition, while others have no knowledge about it. Similarly, the survey data (Figure 6.26) show that the Google general search platform appears to be as popular as Google Scholar.

In summary, it is conclusive that the Google search interface is the starting point and preferred information source of academic research for staff and students from the three institutions. The Google general search interface was widely used in the Maldives, whilst in comparison Google Scholar was used slightly more in Australia. It can also be concluded, that users employ search methods such as browsing and navigating through results retrieved based on query formulations as a continuous process for determining whether the retrieved results match the user's information need. Nonetheless, this does not negate the need for further user judgements and search tactics in their endeavour to narrow down the retrieved results, as well as source/retrieve full-text resources.

### 7.3.2 User judgements and tactics in information retrieval

Further search behavioural outcomes on queried results can be equated to the variables presented at levels two and three on Knight and Spinks's (2008) macro model (Figure 3.2). Based on the findings, it is believed that the *system feedback*, *user judgements* and *user tactics* are all intertwined (as presented in Figure 7.2), and therefore they are discussed together.

The findings reveal that users determine the quality of online information retrieval by assessing whether the retrieved results meet their criteria for the search topic (Figure 6.32). These findings align with Case's (2006) observation that "information seeking is more closely tied to the concept of 'need' than it is to the notion of 'information'" (p. 80). The conventional quality judgements such as journal impact factor, reputation of the publisher, journal, or author are given only 'somewhat importance'. The findings are also consistent with Jamali *et al.* (2014) in that, participants from the developing country cited slightly more reliance on external criteria such as journal reputation and impact factor (Figure 6.32).

Conversely, the reliance on keyword searching and refining (presented in section 7.31) indicates a high user dependence on the snippets of information provided with the retrieved results. This can be deduced as the first step of determining or judging what to read or explore further. Furthermore, the high reliance on Google Books (Figure 6.26) and the satisfaction by those who use it (Figure 6.27), especially from the Maldives' participants in the absence of a wider access to eBooks, is noteworthy. An example of snippets from Google Books is shown in Figure 7.4.

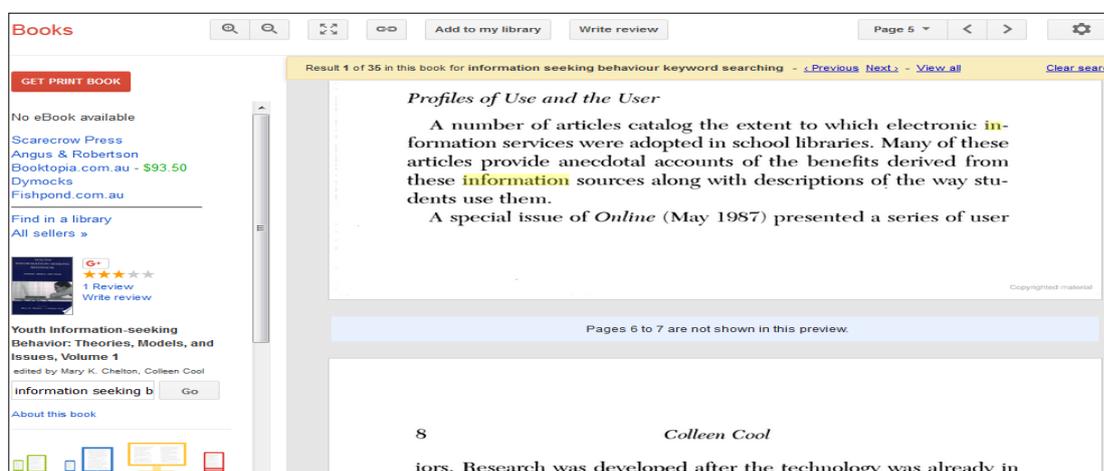


Figure 7.4. Google Books snippet display (a screen capture from Google Books displaying snippets of information around the keywords searched on)

How much of the full-text is read in contrast to the use of snippet-skim-reading techniques is not apparent, and is not the focus of this enquiry. However, understanding the reading patterns of users in future research would help to further conceptualise information seeking behaviour in the *googling* phenomenon, and also offer insights into information literacy training. Hillis *et al.* (2013, p. 173) equated this skim reading behaviour to a search culture, and referred to it as “the reliance on indexicality—the trace and ‘snippets’ of information”. The inference is that meaning is construed by reading snippets around the key terms and ignoring the rest of the text of the book/article in question. Interestingly, the interviewed participants, including academic staff and students, highlighted time pressures and intensive work and study schedules when referring to the need for fast access to information. This is consistent with D’Couto and Rosenhan’s (2015) observations, which identified time pressures as a significant factor that shapes the information behaviour of academic student researchers. Likewise, the findings of this research further indicate that the most important criteria in selecting an article to read, as cited by the survey participants, were the presence of an abstract, and the online full-text availability of the document (Figure 6.33). This response was similar across the three institutions and there was no distinction between staff and students. It can be assumed that online full-text articles are preferred as this enables a quick search of keywords that encourages skim-reading.

Another interesting observation was the value placed on the portable document format (PDF) for article selection. Dalal *et al.* (2015) highlighted that the students in their investigation expressed displeasure when the library discovery tool failed to link their search results to PDF files. Likewise, the survey participants from the Maldives confirm they use a search strategy that seeks PDF file formats (Figure 6.33), while the interview findings reveal that users often use the word ‘PDF’ in the search term. Curtin survey participants do not report the same degree of use of this search strategy. Nonetheless, the participants from all three institutions cited the availability of a PDF as an important criterion when selecting an article to read (Figure 6.32). What is evident is that, this practice of adding ‘PDF’ as part of the search query executed on the Google general search interface, retrieves scholarly-looking documents, similar to those retrieved through a search on Google Scholar.

The reasoning for the preference of PDF files was not addressed explicitly in the survey. Therefore it can only be inferred that, in addition to the search functionality, PDF files were preferred for its easier print/read/download functionality than other online formats. Mizrachi (2015) reporting on undergraduate students reading patterns, revealed students preferred print material where annotating was required, but preferred the flexibility offered by PDF when considering the cost of printing coupled with portability. However, as seen from the interview data, some participants, notably undergraduates from the Maldives, believe that PDF is an indication of quality (section 5.2.2.5). The quality was not necessarily attributed only to the quality of the reading experience from the PDF, but also to the publication/content quality. This is not surprising. Head and Eisenberg (2009) reported that undergraduate students often failed to use appropriate criteria in assessing the scholarly nature of literature. However, the findings of this research are significant because the implied perception is not only limited to undergraduates interviewed from the Maldives academic community, but also to some academic staff.

While it is not conclusive, similar superficial judgements appear to be common among students in their evaluation of quality and reliability of articles. Thereby leading to an over-simplification of the online search process, and a high dependency on the relevance ranking of search engines to determine reliability (Asher *et al.*, 2013). The interview findings from one of the senior staff participants from the Maldives community reveal that they do not limit their searches to just Google Scholar, but search widely on the Google general search interface. The reason for this was explained as an observed awareness that Google Scholar was limited to PDF files, thereby excluding important academic online discussions appearing on blogs and discussion forums, as well as non-PDF scholarly papers. As was identified in the review of literature, unlike traditional databases that index scholarly material through human-intermediated review process, Google Scholar retrieves scholarly-looking material available on the web. Google Scholar inclusion criteria are focused mainly on documents that are formatted in a typical journal article layout, with a distinct title, author affiliation, include a bibliography, and files with a '.PDF' extension (Google Scholar, 2017). Caulfield (2005) reported that with the increase of online resources, the challenge for the user is not about the lack of access to literature but is

more about intellectual access. That is, when retrieving information resources through search engines including Google, users have to be more vigilant in determining the authenticity of the resource, than when retrieving resources from journal databases.

In summary, user judgements and tactics in information retrieval in the *googling* phenomenon is mostly concentrated around an individual's judgement of whether the retrieved results satisfy the information need. This is ascertained through abstract and/or snippet skim reading. In deciding what search results to pursue further, the most important criteria are the availability of the abstract and online full-text availability, followed by the availability of the document as a PDF file. The findings indicate a belief that the reputation of the publisher, the journal, or the impact factor are not necessarily the most important criteria when seeking reliable scholarly literature. A significant finding from the Maldives cases was of a search strategy that uses 'PDF' in the search query formulation in academic information seeking. On one hand this can be interpreted as a weakness in information literacy. On the contrary, this search strategy could infer a further simplification of one-point searching on the Google general search interface, without searching separately on Google Scholar.

### **7.3.3 Convenience and least effort**

Ease of use and convenience are popular explanations as to the methods users are willing to use in their information seeking endeavours. Connaway *et al.* (2011) explained that if access to information was not convenient, the user would rather look for an alternative. The findings support this notion. When asked for reasons why the participants conduct their search on Google, over 75% of the survey participants identified with sentiments of *strongly agree* or *agree* with statements that identify ease of use or convenience (Figure 6.28). These include "it is the easier information search option", and "it saves time as I can access it anywhere anytime". These responses are similar across the three cases studied.

The in-depth interviews with the Maldives community have yielded useful findings about the significance of the time factor. Some participants cite the comparatively hectic schedule that warrants a quick access to 'good-enough' information resources. As pointed out by a staff participant from VC, most of their students study in block-

mode courses while engaged in fulltime employment, and therefore expect lecturers to provide their reading materials. From a developed country context, the preference of ease of access has been explained from the *digital natives*' perspective, where those born into the net-generation have a natural affinity with digital technologies. In this respect, Judd and Kennedy (2010) associated high dependence on the internet with the right-now-access mentality of the net-generation. It can be argued that this is true even in the Maldives' context given its ICT-savvy population with universal access to the internet and mobile telephony (Riyaz & Smith, 2012). Equipped with ubiquitous internet access and continuous exposure to a one-stop search experience, user behaviour is shaped to expect immediate gratification in academic information seeking (D'Couto & Rosenhan, 2015).

Furthermore, as was discussed earlier in section 7.2.1, the preference for convenience and online access is not a generational phenomenon. The interview findings reveal that there is a general belief that everything is available online, or should be available online. As Hillis *et al.* (2013) state "if it is not on Google it doesn't exist has become a truism" (p. 181). Similarly, the findings from the interviews (section 5.2.5.5) with the Maldives academic community highlight an acute lack of reliable online local literature. While users can search further on Google search interfaces for alternative material published elsewhere in the English language, the lack of local online literature frustrates the Maldives' academic community.

In addition to the convenience of time and effort required to access reading material, the findings highlight a distinct preference for simple Google-like search platforms. One of the main reasons for using Google as identified by the survey participants is that the "Google search platform is clutter free and simple to use" (Figure 6.28). This is similar to Fry *et al.*'s (2008) observation that users understand that not all results retrieved from a Google search are relevant and that more effort is required to evaluate the quality of the content. Nonetheless, users prefer conducting their search on Google in comparison to library databases because of the "clean interface" of Google (Fry *et al.*, 2008, p. 267). Likewise, the interviewed participants from the Maldives describe Google as the easiest information search platform, and as a discovery tool that searches across all possible information sources using a simple

interface. The concept of Google as a discovery tool will be discussed later in section 7.3.5.

In summary, these findings highlight that convenience is an important determinant in information seeking. It also validates Zipf’s principle of least effort (1949, cited and supported by Brophy & Bawden, 2005; Case, 2005) as an explanation of the preference for convenient one-stop online search platforms rather than using library portals that have limited discoverability to resources held by individual libraries.

### 7.3.4 Google versus the library as an information source

The survey findings from the Maldives and Australia report Google as the preferred intermediary between the user and information, irrespective of whether the affiliated library is well-resourced or not (Figures 6.18 and 6.19). The high use of Google search interfaces is not necessarily because of a lack of resources from their affiliated academic libraries. Nonetheless, the low use of the library has relevance to its inadequacies in being able to meet users’ information needs.

As evidenced in Figures 6.20, 6.21, and 6.39, the library was among the research participants’ top three preferred information sources, while all participants also demonstrated a high use (Figure 6.26) and satisfaction with Google search platforms (Figure 6.27). This data is cross tabulated further in Table 7.1.

*Table 7.1. Frequency of use and satisfaction with Google versus library databases*

	<i>Frequency of use* (%)</i>			<i>Satisfaction with the identified information sources (%)</i>					
	<i>MNU</i>	<i>VC</i>	<i>Curtin</i>	<i>Google search**</i>			<i>Library databases**</i>		
	<i>MNU</i>	<i>VC</i>	<i>Curtin</i>	<i>MNU</i>	<i>VC</i>	<i>Curtin</i>	<i>MNU</i>	<i>VC</i>	<i>Curtin</i>
EBSCO	<b>61</b>	40	39	80	83	79	52	80	93
ProQuest	14	38	<b>65</b>	100	60	82	33	100	95
Science Direct	23	29	51	81	100	79	50	75	94
LexisNexis	8	0	4	80	0	100	100	0	83
HINARI	40	7	3	79	100	100	50	0	80
Science Finder	12	0	10	100	0	93	43	0	93
MEDLINE	23	15	21	71	100	73	43	0	90
JSTOR	24	46	37	87	83	83	33	100	93
Google	<b>92</b>	<b>92</b>	64	91	91	91	47	82	92
Google Scholar	<b>81</b>	<b>86</b>	<b>77</b>	85	91	83	50	80	93
Library Catalogue	27	<b>57</b>	<b>80</b>	74	86	82	63	100	94

*Note.*

All figures are presented as the percentage of participants who responded to that particular question.

\* A combination of those who answered *very often* or *often* (Q34)

\*\* A combination of *extremely satisfied* and *moderately satisfied* (in Q17b, Q16c) for those who selected either *very often* or *often* for each of the source on the first column.

The Google general search interface and Google Scholar were the top two most popular information sources for MNU and VC participants. This was followed by the use of an institutional subscribed database, EBSCO by MNU and JSTOR by VC participants, as the third most preferred information source. Conversely, the Curtin Library catalogue was cited as the most used by Curtin participants, followed closely by Google Scholar as the second popular source. The third highly used information source by Curtin participants was attributed to a specific library database, ProQuest.

These findings are reflective of what is offered by the respective libraries as presented in the background to the cases in Chapter 4 (summarised in Table 4.7). As outlined by Adam (2012) and verified through the interviewed participants, MNU subscribes to three scholarly databases: EBSCO, HINARI, and LexisNexis. These databases as well as the library monograph online catalogue have to be searched separately in the absence of a federated search option<sup>19</sup>. This disconnect between the search platforms clarifies the low use of the library catalogue (27%) compared to the individual databases. Also of significance is the low use of other MNU subscribed databases. The low use of LexisNexis (8%) can be explained by the low representation in the sample from the Faculty of Law and from the Business School. Nonetheless, the low use of HINARI (40%) is noteworthy given that the bulk of the participants from MNU were from the Faculty of Health (Figure 6.11). HINARI is mostly an allied health oriented, subsidised database that also offers eBooks and has been in use at the Faculty since 2001 (Riyaz, 2013).

As seen in the data presented in Table 7.1, the MNU participants who indicated using the listed library sources often, also indicated a general satisfaction with Google search interfaces, with about 50% or fewer participants showing satisfaction with library databases in general. These findings are consistent with the only comparative prior study, which highlighted that 40% of those who visited the MNU Central Library were satisfied with the databases and 60% of the visitors never used the databases (Mohamed, 2010).

Contrary to MNU, VC survey participants indicated a higher use of the library catalogue and a higher satisfaction with the library databases. There is no prior

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<sup>19</sup> The researcher is aware that EBSCO discovery tool has been implemented at MNU library in 2017. The data reported in this thesis was collected in 2015 and 2016 before this change occurred.

published data on the VC library. The VC's interview participants clarified that the VC subscribes to JSTOR only, and that staff and the students enrolled in the Open University of Malaysia (OUM) affiliated courses through VC are given access to OUM library databases, which requires a separate registration process through the student services. JSTOR and OUM databases have to be searched separately, with OUM offering a federated search across their entire library content. It was also clarified that the VC library does not have an online catalogue of their monograph collection, and that VC staff and students often refer to OUM databases as their online library. Therefore, even though the survey participants responded to using the 'online library' catalogue (Table 7.1), this is actually in reference to the OUM journal databases and/or OUM online library and not to the VC library catalogue.

The disconnect of the databases, the protracted registration process, and the consequent effort required, were cited by the interview participants from MNU and VC as reasons for the limited use of library databases and the library catalogue. The same perceptions were also observed from the survey participants. The interview participants, who used the library databases, specifically at MNU, confirmed that there was a satisfactory level of access to scholarly publications through the library, if one had the patience to search through the different databases individually.

On the other hand, the Curtin Library catalogue provides a single search gateway to the Library's extensive collection of scholarly databases, their monograph collection, as well as Google Scholar. This is facilitated through their online library catalogue that embeds a discovery tool (Wells, 2016), and explains why the library catalogue is the most popular (80%) information source for Curtin participants. It is also of interest that while the use of Google general search is not as high in comparison to MNU or VC participants, a significant proportion of Curtin participants (64%) do use it. This is high in comparison to their third most cited academic resource (ProQuest: 65%).

These findings are generally similar to comparative studies. For example, De Groote *et al.* (2014) reported that apart from the use of the MEDLINE™ database, the most often used information source was Google and Google Scholar. De Groote *et al.*'s study investigated the information seeking behaviour of academics at the University of Illinois Health Sciences Faculty.

While Google is the starting point of information seeking for both the information-poor and the information-rich case studies in this research, Google is not the preferred search platform for specific searches by the Curtin academic community. More Curtin participants use their online library catalogue more often to search for specific journal articles, while this practice is contrastingly low for the MNU participants who are highly reliant on Google. As outlined in section 4.2.4, Curtin Library continuously reinvents itself to meet its users' needs. Moss (2015, citing Hernon and Matthews, 2013) highlighted that just like online shopping does not extinguish physical shops, libraries will not cease to be relevant. It is a matter of reinventing and offering a range of services, which libraries in developing countries find difficult to cater for, given the limitations of financial and other resources (Riyaz & Smith, 2012). Given this void, it is natural that the Maldives academic community choose to rely on the freely available alternatives through Google search interfaces. These can be further clarified by Connaway *et al.*'s (2011) explanation of convenience as a 'situational criterion', where information need and how information is sought is reliant on information availability and accessibility.

Based on the data (Table 7.1, second section) it is noteworthy that even though the library databases for MNU and VC are limited in comparison to Curtin, the satisfaction with Google Scholar's search results are quite similar across the three institutions. The findings from the interviews in the Maldives indicate that users believe they are able to satisfy their information needs by using Google/Google Scholar, irrespective of the general belief that there is better access to scholarly literature through library databases (Burns, 2014). Likewise, Adriaanse and Rensleigh (2011) concluded that Google Scholar was not yet a substitute but a supplementary free resource to that of the library. The research findings presented above infer that this perception is shifting.

The findings reveal that participants from the Maldives academic community predominantly see Google as an alternative to the library while most Curtin participants see Google as a supplement (Table 6.16). It is also noteworthy, however, that 26% of Curtin participants identified Google as an alternative to the library. Additionally, an emerging perception, reflected by the research participants, is that of Google taking the conventional place of the library as the central information source,

with the library seen as a supplement to Google. This can be attributed to the increase in the online resources through open access publishing modalities and/or through the prominence of academic social media sites such as ResearchGate (Nicholas & Clark, 2015). As reported by Jamali and Nabavi (2015), based on their experimental research, 60% of search results retrieved through Google Scholar contained online full-text articles. To access the remaining 40% of articles, users would have to resort to other alternative means of access including going through a library or pay for access.

The findings from this research infer that users increasingly forgo the library and settle for alternative sources of articles that are easily accessible online. These findings confirm prior research that reports academic information seeking is centred quite heavily on online information sources specifically on Google (e.g. Fast & Campbell, 2004; Griffiths & Brophy, 2005; Jamali & Asadi, 2010; Nicholas & Clark, 2015). The increasing shift in perspective and the overturning of roles indicate that libraries are under pressure to adopt Google search principles (Miller & Pellen, 2009). However, while ease of access and least effort explains the popularity of Google, this does not diminish the importance of libraries especially in fulfilling full-text access requirements for scholarly information (Burns, 2014; D’Couto & Rosenhan, 2015; Thomas & Johnson, 2015).

In summary, Google or online searching is the central and preferred method of approaching information seeking. Participants from the Australian case demonstrated a higher dependence on their affiliated library while the participants from the Maldives’ case studies demonstrated a significantly lower preference. Likewise, the Maldives academic community considers Google as an alternative to the library, whereas the Australian academic community considers Google as a supplement. These distinctions were mostly based on the strength of the online collection offered through the respective libraries. Specifically, Curtin Library’s one-stop search interface, also with seamless integration between Google Scholar and the library collections was a key factor. Comparatively, the inferior technical provisions and search functionalities from the Maldives academic libraries contribute to the reliance on Google as an alternative to the library.

### 7.3.5 Google as a discovery tool and library as an information service

The findings indicate that users prefer Google for the one-stop discoverability role it plays in locating information from a wide variety of information sources on related search terms. This is consistent with other studies that associate Google to a discovery tool (e.g. Adriaanse & Rensleigh, 2011; Asher *et al.*, 2013; Du & Evans, 2011; Howland *et al.*, 2009).

The interview participants described Google as a ‘path finder’ that informs them what is available, and shows emerging research trends in their interest areas, all from the one search portal. The participants highlighted that these results could range from published material in a variety of databases and repositories, to ongoing discussions on the topic in platforms such as online forums and blogs. This is consistent with Ross and Sennyey’s (2008) observation that “for all its faults and limitations, [Google]...allows us to seamlessly search a wide variety of information from PubMed and Open Worldcat to Science Direct and Blackwell and links to the underlying articles” (p. 148).

The implementation of discovery tools in online library catalogues is trending to enable library catalogue search features to be more ‘Google-like’. Consequently, these library search interfaces retrieve results from the internet that do not always contain full-text, unless the users are mindful of the filters they have enabled. These changes are still new even in advanced libraries, thus research is yet to ascertain if this is what users really want (Dalal *et al.*, 2015). Pointedly, the comments from the Curtin survey participants about what they would like to see improved in the library highlights dissatisfaction with the way the new library catalogue search appears to retrieve sources that do not have full-text.

While this changing dynamic from traditional library OPACs to discovery tools was not a focus of this research, the findings indicate that participants are not overly bothered if Google does not retrieve the full-text of preferred articles at the exploratory phase of their search. Rather, they search further on Google to find ‘good-enough’ alternative articles that contain full-text. The interview findings from the Maldives are conclusive that users will refine their search queries as many times as required until they find something useful. Similar findings are reported by Fry *et al.* (2008) who state that when searching on Google users are willing to tolerate

irrelevance in search results, because they do not find fault with Google as a search interface, instead, users find fault in their search strategy.

On the contrary, when users search on the library catalogue, they are looking for the full-text of specific articles or books and they do not necessarily use the library catalogue as a discovery tool. Similarly, as detailed in section 7.3.1, the findings show that users do not make use of advanced search options due to the additional ‘work’ it requires. Similarly, Dalal *et al.* (2015) state that the need to enable the filters on library discovery tools results in a similar tepid reaction from users towards the new library catalogues.

The findings (Table 6.19, section 6.2.6.5), specifically from the Curtin survey participants, provide evidence that users do expect the library catalogue to search in a manner similar to Google. These findings also indicate this desire does not mean they want the library catalogue to do the exact same thing as Google does by searching the entire web. In contrast, there is an indication that there is a desire for the library catalogue to retrieve precise results, through a simple search interface like Google, to content held by the library. The survey participants attributed Google-likeness to the design and functionality of the interface, for efficient searches across all library databases and other library collections, which presents one click access to the retrieved results. This supports similar earlier studies that report that users, including students, are aware that a library database search is bound to retrieve more reliable and relevant content than searches on Google (Asher *et al.*, 2013; Fry *et al.*, 2008; Georgas, 2013).

While the findings provide evidence, in particular from the Curtin participants, that the library is relied upon as an online information source (Figures 6.18), they also indicate a very low use of the library’s physical collection. One explanation for this could be the increase in use of the physical library as an individual/collaborative study space, as well as a network hub to access online information resources through its networked infrastructure as well as Wi-Fi access (Haglund & Olsson, 2008). The findings (Figure 6.43) highlight a common perception across the three case studies that the ideal library is a place for quiet reading and also with reliable internet access. The interview findings from the Maldives academic community is conclusive that the library is mainly used by the undergraduates and very rarely, if at all, by the

academics. Haglund and Olsson (2008, p. 56) observed that the academic researchers in their investigation did not consider the library was a researcher's domain anymore, but considered it to be a "living room" for undergraduate students.

Furthermore, the interview findings (5.2.3.2) from the Maldives case studies show a hesitation in the academic community to approach library staff. This is explained mostly by a perception that library staff in general are not skilled enough to help. Conversations with the interviewed LIS participants revealed that Maldives academic libraries were sparsely staffed. Most staff at the service desk possessed a general school education as their highest qualification and only one library staff member at MNU, and none at VC, possessed a university qualification in LIS. Coupled with this, the lack of reference librarians further limited the value of interaction with library staff.

The survey findings (Figure 6.29) highlight that assistance from librarians is not highly sought, by the Curtin academic community either. This is similar to Haglund and Olsson's (2008) observation that academic researchers in their study bypassed traditional reference library services. Curtin Library has already addressed this trend by largely integrating the reference librarian roles into advanced library catalogues using discovery tools, coupled with further online support (Wells, 2016). As highlighted by Connaway *et al.* (2011), both the convenience of online access plus the effectiveness of the online search tools overcomes the need to contact the library staff.

Nonetheless, this argument fails to explain the low contact with library staff by the research participants from the Maldives, where online library access is minimal. This low reliance on library staff reported by both Maldives' institutions could be reflective of library anxiety as detailed by Bostick (1993), Jerabek *et al.* (2001) and Onwuegbuzie *et al.* (2004). The premise of library anxiety is that users generally are reluctant to appear incompetent in front of the library staff, and therefore, many users avoid interacting with them. As seen specifically in the interview findings from the Maldives, the participants in general felt the library was unwelcoming. However, one academic highlighted how their perception changed after becoming better acquainted with the library staff. This is consistent with D'Couto and Rosenhan's (2015) observation that students in their study were not eager to contact library staff, while

those who had interacted with librarians generally had positive experiences. Therefore it can be inferred, that without this individualised experience, the natural preference is on searching online at one's own convenience and privacy without a human intermediary (Figure 6.18, 6.28). D'Couto and Rosenhan (2015) describe this as an "I can figure it out" self-service mentality (p. 565). Therein, is the appeal for Google as a discovery tool, and consequently a desire for the library search platforms to be more Google-like.

In summary, Google has replaced the role of traditional human reference librarians. It is conclusive that users generally bypass reference librarians in their information seeking endeavours. This is replaced by the Google search interface, which is perceived as a discovery tool that gathers relevant reliable information resources even if they are only for citation. Users are willing to invest time and effort to search further on Google in order to locate alternative articles that offer full-text access. At the same time, users would prefer the library to fulfil their full-text requirements. However, the tendency is for the users to bypass the library and settle for alternative resources if they are not able to have instant online access or if the process is deemed to require a lot of effort.

### **7.3.6 Research culture influences on the googling phenomenon**

The findings demonstrate Google is the most highly used information source by both academics and students (Figure 6.36), which is somewhat different to the evidence from prior research. Several earlier research studies demonstrated differences in researcher/academics and university students' information seeking behaviour, showing that undergraduate students in particular were more inclined to use Google (Catalano, 2013). Likewise, Jamali and Asadi (2010) stated that according to the academic physicists and astronomers interviewed for their study, 46% of the respondents never used Google Scholar for identifying research articles, and that finding journal articles through Google was a serendipitous occurrence when searching for something else. The difference in these earlier studies with the findings presented here can be attributed to the increasing popularity of Google Scholar; due to the increase in scholarly content freely available on the internet through open source initiatives as well as academic social media sites like ResearchGate (Jamali &

Nabavi, 2015). Consequently, this denotes a paradigm shift in researchers' information seeking behaviour in the last few years.

For the Maldives participants, there is a slightly lower use of Google Scholar and Google Books by undergraduates in comparison to postgraduates and staff. One of the undergraduate interview participants explained that the physical book was often required for concentrated study, even though electronic versions were preferred for quick references. While the survey questionnaire did not ask for further clarification on reading habits, the outcome (Figure 6.26) is reflective of prior studies. The findings by Mizrachi (2015) investigating reading format preferences and behaviours of undergraduates at the University of California concluded that post-doctoral researchers have the highest preference for eBooks, followed by graduate students, faculty and lecturers. The undergraduates least preferred using electronic books, reporting a higher preference for print material. Mizrachi (2015) attributed this to the undergraduates' need to read/refer textbooks extensively contrary to the postgraduates' selective reading approach.

Another significant difference across the participant groups, as discussed earlier (in sections 7.3.3 & 7.3.4), is the high prevalence for the Maldives academic community settling for alternative articles. They rarely check with their affiliated library to see if it is available through their databases. The reasons they cite were a distrust that the search will be successful, coupled with the cumbersome process of accessing the databases one by one. The survey data (Figure 6.40) is reflective of these limitations with significantly more participants from MNU and VC indicating that they purchase articles online when absolutely required.

The ability to forgo the most relevant articles and settle for alternatives can be linked to the required research rigour of the participants. As seen in the background to the cases from the Maldives (sections 4.1.6 and 4.1.7), they lack a robust research culture, which can be attributed to the lack of an academic appraisal system requiring publications (Navarro & Shareef, 2011). In contrast, the survey findings (Table 6.12 and Figure 6.30) reveal that more Curtin staff and students have publications to their name and 77% of these publications are in peer-reviewed reputed journals. Contrarily, fewer MNU and VC participants have published and fewer of these publications (40% and 25% respectively) are in peer-reviewed journals.

In summary, the differences across the MNU and VC responses against the Curtin responses can be associated largely with the level of sophistication of their respective libraries and the information needs. The differences in participant perceptions from the three institutions can be a reflection of MNU/VC being relatively new tertiary institutions, also with a significantly lower research focus and therefore lacking academic rigour in comparison to Curtin.

### **7.3.7 An I can Google it attitude**

As seen in the discussion so far in this chapter, the findings are conclusive that Google search interfaces play a central role in the information seeking behaviour of the studied academic communities. The interview data with the Maldives academic community confirms the existence of an *I can Google it* mindset with a strong indication of the bypassing of academic libraries. A number of the postgraduate and undergraduate students interviewed had completed their course units and were waiting for their formal graduation, and some indicated they had successfully completed their education without using the library. This notion was also validated by the LIS participants as well as by several academics who indicated never using the physical library, nor the scholarly databases on offer.

While the survey data from the three institutions do not validate this, the proportion of participants who indicated they perceive Google to be an alternative to the library (MNU 45%, VC 50%, Curtin 26%, see Table 6.16) can be inferred to mean an *I can Google it* attitude prevails in all three institutions, even if at varying degrees.

In summary, the three cases from both countries indicate a strong dependence on Google with a set of common characteristics that can be attributed to this prevalent *googling* phenomenon. These can be broadly grouped into six key characteristics:

- A blurring of online search boundaries where users do not distinguish between search engines, websites, journal databases, or the library catalogue;
- A preference for online information discovery, predominantly using Google search interfaces, as the start of academic information seeking;
- A search strategy that is mostly based on trial and error using simple search queries, informed by the academic task;
- An expectation for immediate gratification with least effort expended;

- User perception of competence and self-efficacy in online searching, without relying on human intermediaries; and,
- A perception that everything is, or should be, available online and discoverable using the Google search interface.

The findings also infer that information seeking behaviour is influenced firstly, by the users' task information need, which is influenced by the institutions' teaching requirements and research culture. Secondly, it is influenced by the available information sources.

## 7.4 Summary

In concluding this chapter, it is important to reflect on what these findings signify for service provision in academic libraries and information provision. One central reason to study information seeking behaviour with regard to the *googling phenomenon* is so that service provision is reflective of the user needs and perceptions. The findings demonstrate how the information behaviour of the individual is influenced by what information sources are readily available and accessible. Consequently, given the near-universal 'free' access to the Google search engine and the associated search platforms, Google is positioned to become the foremost 'go-to' information source by the academic communities.

The findings from the comparative case studies across the three institutions comprising of academic staff, postgraduate and final-year undergraduate students, conclude that within a given institution there is very little difference between these groups in their information seeking behaviour. This is more so between postgraduate students and academics. The undergraduate students included in this investigation were in their last year of study, and it could be assumed that by this time the students imitate the information seeking behaviour passed onto them by their teaching staff and support network.

The next and final chapter summarises the main findings of this study, and outlines recommendations for the participating academic libraries and highlights further areas of research based on these findings.

## Chapter 8: Conclusion

This chapter concludes the thesis on the *googling* phenomenon investigated using multiple cases from two diverse countries. Maldives was selected as a developing country and Australia as a developed country. The chapter firstly presents a summary of the key findings arising from the research, followed by an overview of the significance of the findings as well as the research limitations. Recommendations arising from the findings for the sample institutional libraries are also outlined, as are potential areas for further research. The final concluding section is a closure to this thesis.

### 8.1 Key findings

This research investigated the information seeking behaviour of the academic community comparing their information source preferences: Google versus the academic library. Phenomenological data was collected from academic staff and students at three selected tertiary education institutions: two from the Maldives and one from Australia. The researcher sought answers for the following two research questions.

- How prevalent is the *I can Google it* attitude among the academic community and how does this phenomenon influence the academic information seeking behaviour?
- What is the impact of this *googling* phenomenon on the provision of academic library services, and are these similar across diverse economies?

The findings infer that the *googling* phenomenon entails an underlying *I can Google it* attitude. This attitude is more prevalent in the cases studied from the Maldives. The main reason for this can be explained by the perceived, and to a significant extent actual, superiority of what a Google search is able to retrieve in comparison to a search using the institutional library catalogue or the limited scholarly databases on offer.

Therefore, while there are differences across the two countries in terms of level of access, the findings from both support the existence of similar perceptions on the use of Google and the library as an information source. Accordingly, academic

information seeking is centred on the use of Google search interfaces, and signifies a high user confidence in *googling* to meet their needs. The one significant difference across the two countries is the limited level of access to scholarly resources through the Maldives' libraries owing to financial limitations that inhibits subscriptions to extensive journal databases. Secondly, the implied limitations of the skillset of library staff coupled with the technological limitations in enhancing the library search functionality further prohibits accessing the limited resources. Consequently, the academic community from the Maldives are more prone to limit their information seeking to what is available on the web, mostly accessed through Google search interfaces. Conversely, the academic community from Australia, while they rely highly on Google as a discovery tool, also use the library's online search tool to retrieve full-text resources.

In summary, the main characteristics of *I can Google it* information seeking behaviour identified in the academic community can be described as:

- *Blurred online search boundaries.*  
*Googling* does not necessarily mean the use of Google search engine alone, instead it refers to general online searching. Terms like *to google* and *I googled* are often synonymous with the use of the internet or the web.
- *Start search using Google general search interface or Google Scholar, and use library to fulfil full-text needs.*  
Google is the preferred initial search platform, mostly used for the online discovery of a wide variety of resources. The library is relied upon for the fulfilment of full-text needs and/or specific searches. These findings are consistent with prior research (Asher *et al.*, 2013; D'Couto & Rosenhan, 2015; Du & Evans, 2011; Howland, 2009; Jamali & Asadi, 2010).
- *Task-based simple keyword search queries.*  
Users start a search with phrases or keywords from the research topic/task and the keywords are refined based on the snippet-skimming of the first 10-20 retrieved results. Haglund & Ollson (2008) termed this as a trial and error search strategy.

- *Least effort and immediate gratification.*  
Users do not have the patience to go through lengthy access protocols and procedures, and have a right-now-access mentality with least effort expended. Convenience is preferred and Google is attributed as a one-stop easy search option (Connaway *et al.*, 2011; D’Couto & Rosenhan, 2015). This results in users searching online to find alternative article/resources that meet their needs, or else in some situations they choose for pay-access rather than going through the library if the library is deemed to be unreliable.
- *User self-efficacy: An ‘I can figure it out’ self-service mentality.*  
In general, users believe they are competent in searching online. There is also a preference to be self-dependent or else depend on their friends/colleagues’ network, with most users avoiding contacting a librarian directly. Thereby, users bypass the traditional human reference librarians to assist them with their information needs. Based on the findings it can be inferred that this is because the Google search interface, through its powerful search algorithm, empowers users to confidently conduct their searches online.
- *If it is not online, it does not exist.*  
This entails a perception that everything is available online and discoverable using the Google search interface (Hillis *et al.*, 2013). While it is desired, users do not expect to have access to full-text for all relevant results retrieved through Google. Contrarily, users are content that Google enables a comprehensive search of citations of everything that is published/written in the area in which the user is interested.

The findings lead to the conclusion that Google is shaping users’ information behaviour. As seen in the literature review, Google has tapped into the values traditionally attributed to libraries and perfected their search interface to meet user preferences. The most significant of these being the convenience of retrieving relevant and reliable research material without a human intermediary between the user and the information. In short, Google online technology has effectively replaced the traditional reference librarian!

Accordingly, the main impact of the *googling* phenomenon on academic library service provisions can be summarised as:

- *Lost monopoly of academic resources.*  
The academic library is no longer the starting place for searching for scholarly literature. Users prefer searching on Google for its wider discoverability of resources. Furthermore, users generally perceive using the library requires more effort than a Google search, and increasingly prefer searching further on Google for alternative articles.
- *The library is expected to fulfil gaps in online full-text access.*  
Users ideally expect the library to be able to provide access to full-text resources when Google is unable to do so. Thereby, the importance of a well-organised and resourced library is more important than ever before, even though it is becoming increasingly invisible as an institution.
- *A need for innovative information literacy training initiatives.*  
The inferences about the research participants' limited awareness about search engines highlight a void in relevant and timely user education, especially in the Maldives case studies. Users need to understand how Google differs and also links to library databases and online catalogues. It is not enough to offer information sessions on effective search skills for bibliographic databases. These sessions also need to incorporate Google Scholar search skills with information on the inclusion criteria of both scholarly databases and Google Scholar.
- *Expectations for Google-like library search interface.*  
There is a tendency to measure all online search interfaces against the functionality of the Google search engine, which offers a clutter free interface that yields relevant results through simple keyword searching. Likewise, when users search using the library search interface, they expect it to be a simple search across all the content held by the library that retrieves results relevant to the individual user.
- *The physical library as a communal hub with 24/7/365 access.*  
The library is considered less of a researcher's reading space and more of a

student meeting place, with academics preferring online access to literature to visiting the library. Given this prevalence for online resources, libraries now need to cater to diverse user needs. These include, collaborative student work spaces, an adequate up-to-date networked computing infrastructure, quiet reading spaces, and flexible opening hours to address the anytime access mentality.

- *Demand for eBooks and/or digitisation of reading material.*

While there is a preference for physical material for concentrated reading, users mostly want books and journal articles in an electronic format. Therefore, libraries have to seek alternative ways of securing electronic access to books and journals, as well as embarking on strategic digitisation of material held in the library in physical format, to ensure library resources are utilised.

The overall inference from the Maldives cases studies is that the Maldives academic community carries a negative perspective about the library. The participants perceive the library as an entity with limited usability and ability to fulfil users' information needs. Therefore, making Google a plausible alternative to the academic library. The Australian case study however, reveals the academic community having a positive perspective towards the library with reliance on Google at times as a parallel information source and at other times as a supplement to the library.

The overall research findings are summarised in Figure 8.1.

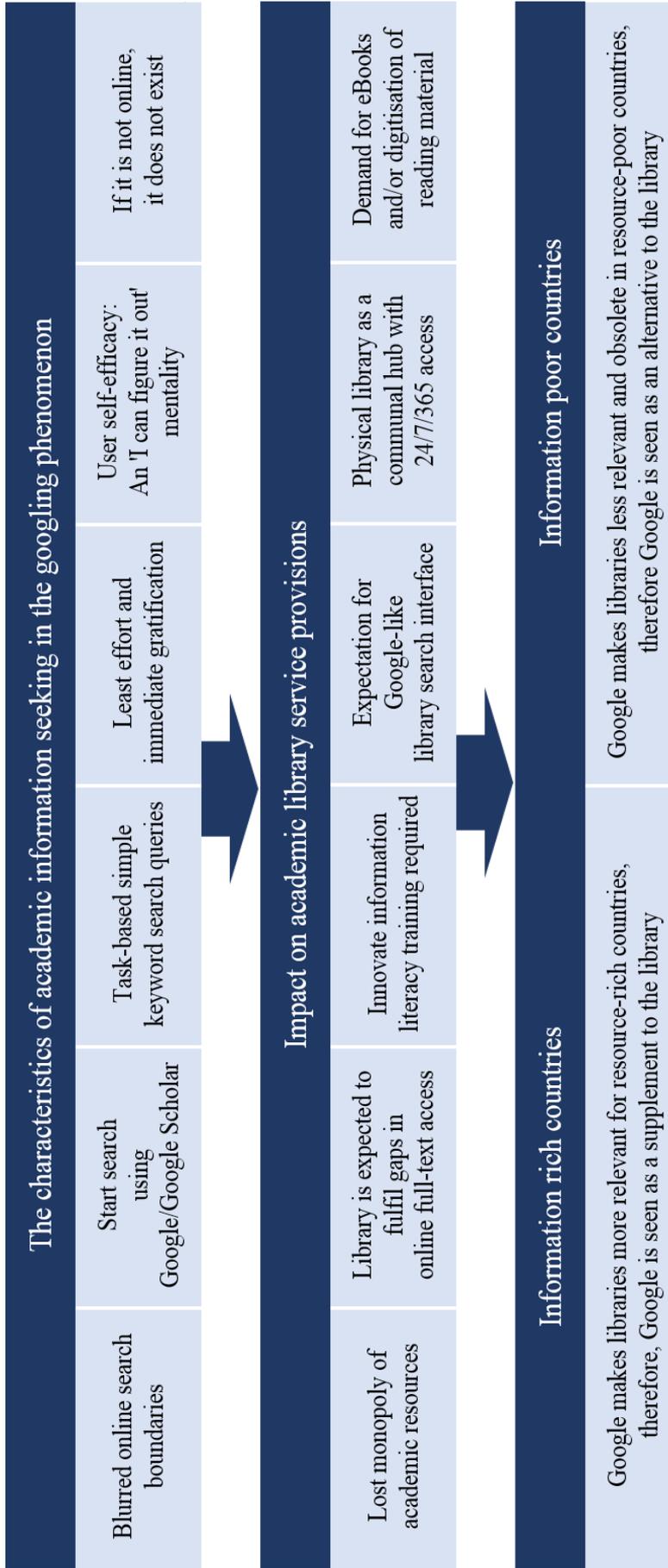


Figure 8.1. The characteristics of academic information seeking in the *googling* phenomenon, and its impact on academic library service provisions

## 8.2 Significance of the findings

The research has resulted in a number of important outcomes that further enhance an understanding of information seeking behaviour and the *googling* phenomenon.

These can be broadly grouped into four significant findings:

- The googling phenomenon is not just limited to the use of the Google search engine, but includes any online search;
- Google is seen as an alternative to the library where the library is not adequately resourced;
- Google and the library are considered complementary sources where the library is adequately resourced to fulfil the gaps in access to full-text; and,
- A prevalence of an *I can Google it* attitude among the academic community.

The findings highlight that Google and Google Scholar are among the top three most often utilised information sources in the three institutions included in this study. With the information-rich (Curtin University) an equally high reliance placed is on the library databases to source research articles that cannot be freely accessed online. For the information-poor (MNU and VC community) the tendency is to bypass these pay-walled articles because of the perceived, as well as actual, limited access to scholarly articles through their affiliated library.

More significantly, the findings highlight that libraries in the Maldives struggle to provide the same level of access to resources compared to their counterparts in developed countries, and therefore the characteristics of the libraries differ. Nonetheless, the user perception and information seeking approach of the users are similar across both countries.

The findings are valuable for the Maldives LIS sector and highlights a need for speedier digitisation of local resources as well as the adoption of strategies and innovative approaches to ensure better access to scholarly information resources. The lack of interlibrary collaborations and library consortia, and partnerships nationally and internationally, further narrows the resource base these libraries can offer their users.

This is the first systematic investigation in to information seeking behaviour in the Maldives academic community. Therefore, it offers substantial insights into these users' perceptions as well as the perception of LIS professionals from the Maldives. It is believed the findings will be useful in charting the future of the Maldives library and information services sector. Additionally, the findings will be useful for other similar developing countries.

From a developed country perspective like that of Australia, the findings presented in this thesis have further supported the view that users opt for convenient access to resources while also wanting access to credible resources. Users do not have a problem using library services as long as they are not complicated. This highlights the precarious situation the academic libraries are in as institutions of learning. In this respect, the research findings draw attention to the speed of change occurring in the information landscape in the *googling* phenomenon and therefore are of value to library and information science as an academic discipline.

### **8.3 Significance of the theoretical framework**

In addition to offering explanations for the *googling* phenomenon from two diverse countries, the findings also offer insights into the theory of information behaviour.

In terms of situating information seeking behaviour in a theoretical framework, it can be concluded that Wilson's (1999) information behaviour model offers a concise explanation, where information search behaviour is situated as a subset of information seeking behaviour. Knight and Spink's (2008) model, while it integrates and validates most of the information behaviour models, the separation of information *seeking* behaviour and information *searching* behaviour as two alternative branches within information behaviour does not accurately reflect how information is sought in the *googling* phenomenon. If searching on Google was to be investigated with the purpose of understanding the steps taken in searching and the process of searching, looking at information searching behaviour as an abstract concept will perhaps be useful. Nonetheless, because this research is from a phenomenological approach trying to understand the place of Google and the library in the context of academic information seeking through perceptions of the academic

community, it is not specific to the actual search that is carried out on the system end – the system being the Google search engine.

The findings show that when faced with an academic information need, users describe a process that simultaneously browses, navigates, formulates queries, interacts with the system, and also evaluates the output. In fact, the findings indicate query formulation is an inherent process where users search with simple keywords pertaining to their task requirements, with continuous refinements. These refinements are firstly based on superficial evaluations of the brief output of the results, and with further refinements depending on the rigour required for the activity. The refinement (query formulation) is for the most part a hit and miss endeavour, where keywords are based on a judgement passed on the results retrieved from the first couple of Google result pages that confirm if the user should revise the keywords. The search process is not only limited to Google searches, but also extends to library sources where available and feasible, as well as interactions with friends and colleagues networks. These are all approaches to information seeking and not limited to the F

## **8.4 Limitations of the research**

Issues that emerged during the execution of the interviews and the survey implementation phase were reflected upon separately in Chapters 5 (section 5.1.6) and 6 (sections 6.1.2 and 6.1.3) respectively. The discussed below are overarching issues and address the extent to which the results from this study can be generalised.

### **8.4.1 Country cases**

It is acknowledged that the composition of more Higher Degree by Research (HDR) students within the Curtin University participants (40%) in comparison to MNU (1%) and VC (0%) has the potential to skew the results, as arguably HDR students' information needs and their information seeking behaviour could vary from course work students. Similarly, the staff participants from MNU and VC are mostly engaged with undergraduate level teaching with only 2.2% MNU and 0% VC staff involved with HDR courses. Contrarily, 26.9% of Curtin staff participants are engaged with HDRs. These differences could have implications on the participants' research rigour and therefore impact their information seeking behaviour.

#### **8.4.2 Generalisation of results from the survey**

While Curtin University is an advanced institution in a developed country, 33% of the student population is non-Australian, mostly from China, Malaysia, India, and Indonesia. Therefore, this might present limitations in isolating information seeking behaviour to the country context and generalisation could be problematic.

Nonetheless, it is also recognised that this will be largely unavoidable with the current internationalisation of higher education especially in developed countries.

It is also acknowledged that the survey sample is small (summarised earlier in Table 6.5) especially from the student population. The staff sample was slightly larger with 23% from MNU, 13.3% from VC and 2.3% of the staff population recruited from Curtin University. While the numbers are sufficient for an exploration, the sample size is not large enough to generalise the results across the institutions.

The survey instrument was found to have limited reliability with overall internal consistency, with a Chronbach's alpha coefficient  $>.70$ , for 10 of the 17 Likert scale questions. This limitation could be attributed partly to the small sample size and partly to the nature of some questions. For instance, question 17 asks about general internet searching versus Google search results. It needs to be noted that the question would be confusing to answer if users do not make distinction across the two variables, which in fact is the premise of the research. The overall findings from the research shows there is a blurred interpretation on what *googling* entails.

#### **8.5 Further observations and general recommendations**

The main point emerging from this investigation with implications for library service delivery is the need for libraries, especially in developing countries, to increase their online presence, enhance and streamline online search platforms, and offer services that support the online preferred search approach of their users. The implications for developed country libraries is the requirement to simplify their online library search interface to offer Google-like simple search functionalities, but limited to full-text resources that are held by the library. Based on the findings, the following recommendations are believed to be of value to the institutions included in this investigation.

### **8.5.1 MNU and VC Library**

The findings show that the MNU Library subscribes to a wider suite of scholarly databases compared to the VC Library. Also the interview data, especially from the staff that use the MNU library databases, reveal that there is an acceptable level of access to resources, even though it is not as extensive as the Curtin Library resources. The main problem was the protracted process of securing login credentials, as well as the effort intensive requirement to search across the three different databases and the online monograph catalogue separately. Therefore, a recommendation arising from the findings is the need to address these functional issues, to offer federated searching across the library resources.

One main observation about the VC Library was confusion among the participants as to what their library was. Firstly, this confusion was because of the disassociation of the library in the registration process for the academic community to secure access to the databases. Secondly, the staff and students who have access to the OUM Library have better access to full-text scholarly resources compared to the VC students who are not part of OUM courses. Clearer communication about the level of library access to the different groups within VC is recommended. Additionally, given the small number of non-OUM affiliated students within VC, extending the OUM resources to all VC students appears to be a possibility with further formal collaboration. Furthermore, similar to the MNU situation, the VC Library needs to offer a streamlined registration process to access the databases. Additionally, addressing the lack of an online library catalogue of the library's monograph collection need immediate attention.

Further to this, increasing the eBook collection for both MNU and VC Libraries is important to address the inferred snippet-skim-reading information seeking behaviour when using Google Books. While this investigation does not look at the quality of teaching and learning, the implied skim reading could have some negative impacts on scholarship. Securing eBooks for the core texts, would address this limitation and address complaints of the limited number of copies of important textbooks.

Additionally, introducing interlibrary borrowing facilities across the libraries in the nation as well as facilitating a document delivery option to meet specialised

information requests, either through partnership with libraries in the country and/or overseas library partnerships will help raise the profile of the libraries. Curtin University, with its extensive resource base, has reciprocal borrowing arrangements for their users with other universities in Western Australia. Taking this into context, and the small scale of the Maldives' academic libraries, it is recommended the MNU Library lead the way in forming similar partnerships in the Maldives.

Likewise, digitising existing local literature and making it available online on a user-friendly retrieval model is important to ensure the literature is utilised, especially by the academic community. This is an area that is of mutual benefit for MNU and VC as the most prominent higher education providers in the Maldives. This is important in the endeavour to strengthen the research culture and scholarly communication process of local researchers. A collaborative effort by both institutions in partnership with other relevant stakeholders is recommended.

Moreover, the interview findings from the LIS participants highlighted a number of challenges they face in their effort to improve library service delivery. These include: financial limitations; limited institutional support for the library's information literacy initiatives; limited technical knowhow as well as infrastructure to introduce/enhance online search functionalities; and, invisibility of the library as a key component of the teaching and learning endeavour of the institution. Addressing these are essential for the academic library to remain relevant as well as to meet user needs in fulfilling their full-text requirements.

The recommendations listed above to a large extent relate to the availability of financial resources. Nonetheless, they can be prioritised and addressed strategically with an empowered and knowledgeable workforce. The planning and implementation of similar changes require a qualified library workforce who have the necessary skills and experience to deal with the evolving changes in the library and information services sector. These tasks include, and are not limited to, navigating through the subscription process to online scholarly databases and eBooks, library automation and digitisation work, planning and executing information literacy initiatives, especially to cater to an audience that prefers online self-paced learning, and designing/implementing/enhancing library online search functionalities to be more Google-like so as to meet user needs.

### **8.5.2 Curtin University Library**

The Curtin University Library is perceived positively by its user community with only minor recommendations for changes highlighted by the participants. The one significant recommendation concerns the online library catalogue search interface. While users prefer Google for the ease of searching plus its role as a discovery tool, the library is relied upon for full-text retrieval through library databases. The findings, also supported by Dalal *et al.*'s (2015), suggest that libraries replicating Google and replacing federated library catalogues with discovery tools confuses users. This is because discovery tools search not only the material held by the library, but also searches the Web much like Google Scholar does. The findings show that when users express a desire for the library catalogue to be more Google-like, the implication is more on the functionality of the search. These include a desire for the search interface to be simpler with less clutter on the search page, a need for a similar relevance ranking algorithm as used by Google, and a seamless transition to the full-text resource from the results page. Retrieving results from the library search interface that leads users to citations or pay-walled content frustrates users. Users understand facing similar issues when searching with Google, but when they search using the library the expectation is seamless access to the full-text resource.

## **8.6 Future research**

The central focus of this research was to study the Maldives academic community's information seeking behaviour in the context of the *googling* phenomenon. Given the shortage of research literature on the Maldives LIS sector or information seeking behaviour, this research addressed the academic library services very broadly in order to conceptualise the current situation. The following are areas of research that could be further explored based on the findings.

While this investigation did not attempt to conceptualise an information seeking model, the findings suggest the existing information behaviour models need to be revisited to encapsulate the information seeking behaviour in the *googling* phenomenon. As was identified, Wilson's (1999) model is still relevant as an overarching conceptualisation of information behaviour, embedded by information search behaviour as a subset of information seeking behaviour. Likewise, Knight and Spink's (2008) macro model of information seeking on the Web captures the

complexities of search strategies by individuals. A further empirical study on grounding the characteristics of the *googling* phenomenon presented in this thesis can be useful in advancing the information seeking behaviour discourse.

Additionally, a quantitative/experimental investigation to ascertain the actual level of access to scholarly resources by the Maldivian academic community would be of value to extend the user perceptions presented in this thesis. In this respect, Jamali and Nabavi's (2015) experimental research can offer a valid methodological approach. Accordingly, a selection of articles and/or book chapters authored by a sample of Maldivian scholars from the MNU and VC, and published in reputed international journals, could be used as the sample search set. A title search can be conducted on the institutional library databases and Google Scholar to analyse how many of the search items can be retrieved from both or either of the sources.

Furthermore, the findings about users' preferences for full-text online material, combined with the students' high reliance on Google Books, especially from the Maldives case studies, suggest skim reading is practiced to a large extent. This was not explored in more detail as it was beyond the scope of this research. Nonetheless, following this up to understand how much full-text reading is carried out or whether reading habits have changed to that of predominantly skim-reading can be a useful exercise. Most importantly, the snippet-skim-reading aspect will be of value for educationists in their endeavour to strengthen student learning outcomes. From an LIS perspective, it could be useful to explore whether in the digital world there is too much information and we need to practice skim reading in order to complete the required academic tasks. More importantly, it raises the question of the need for libraries to invest in full-text books if it satisfies the academic community to get by with snippet-skim-reading.

The interview findings as well as some textual feedback from the survey questionnaires imply users do not necessarily understand the distinction between a Web browser, a search engine, or a website. Likewise, there was confusion between the different Google platforms (Google general search, Google Scholar, and Google Books) plus how Google Scholar directs users to library databases and online catalogues through its *find it* resolvers. This was not part of the research exploration and was not specifically covered in the questionnaire, and therefore cannot be

reported here with certainty. However, this confusion and lack of understanding was observed with some interview participants. This is an area that requires research from an LIS perspective, specifically on information literacy, so as to ensure users are able to make the best use of these online resources.

Further to this, the interviewed LIS participants highlighted their frustration at the lack of support for their information literacy initiatives. A further exploration of how information literacy is incorporated into the academic curriculum at MNU and VC can offer further insights into strategising library information literacy training. Furthermore, the findings show that users prefer online information access at the users' convenience. Therefore, the online delivery of information literacy training that can be consumed with the least effort is assumed to be the best approach. A further investigation into this is recommended.

Finally, given the acute shortage of accessible scholarly literature by the Maldives community, coupled with the frustration of securing local content, it is prudent to investigate the research and publication situation in the Maldives, with a special focus on the role of local intuitional repositories.

## **8.7 Concluding thoughts**

In conclusion, the findings indicate that in the developed country context, the library adds value to Google searches through their subscriptions to scholarly databases and the link resolvers that seamlessly bridge between the Google search results and the library scholarly databases. On the contrary, the findings from the Maldives' case studies infer that the relevancy of the library as an information source is at a precarious point in developing countries. This is because of the mismatch in their service provision to how information is sought by the academic community.

Further, it can be concluded that Google makes libraries in developed countries more relevant and useful, while making libraries in developing countries obsolete. This is because these resource poor countries are not able to compete with Google in their accumulation of scholarly databases nor in the enhancement of the efficiency of their library search interfaces. The adage that if it is not available online, it does not exist resonates in this situation. The MNU and VC communities are able to fulfil their academic commitments by relying on alternative (good-enough) resources emanating

from other countries that they can search online. Nonetheless, an absence (or shortage) of a digital presence for the limited local literature/research publications frustrates users as they are forced to enter the physical library space or else depend on substandard personal websites or blogs for local content.

The findings demonstrate how a universal phenomenon differs across economically diverse countries and how *googling* makes libraries more relevant in resource-rich countries while it makes libraries less relevant in resource-poor countries. This dichotomy is significant mainly because the library as an establishment is meant to be a force that reduces the information divide. The research findings has significance specifically for the Maldives academic sector, especially in library service provisions. It also adds to the limited research base within the information sector of the Maldives. Furthermore, the findings will be of value to other developing countries. At the same time, the research has also added further context to the already rich research findings on academic information seeking and the role of Google in resource rich countries.

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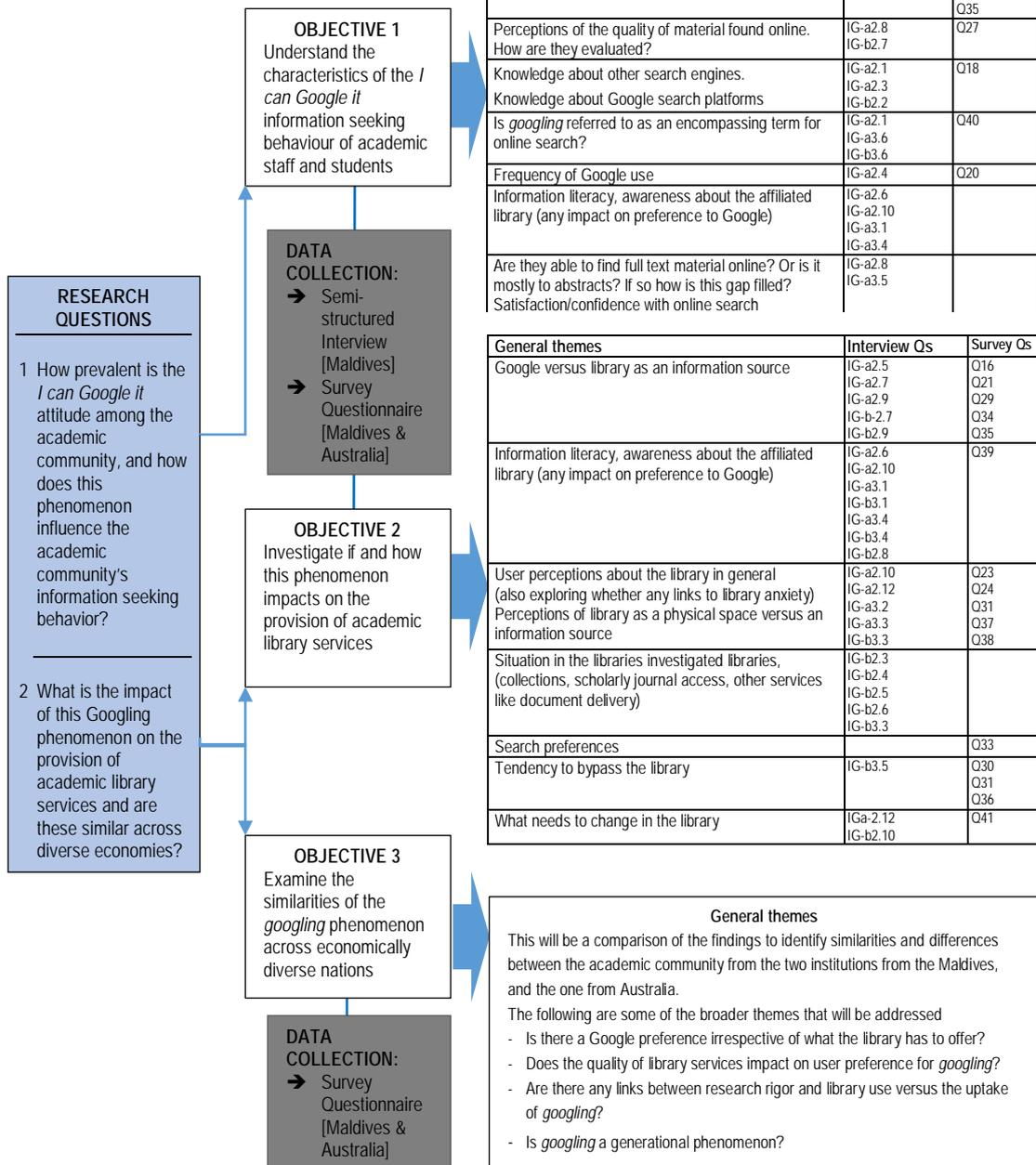
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# APPENDIX 3A

## Mapping research questions and the objectives to the data collection methods

DATA COLLECTION PHASES	
<b>PHASE I</b>	Nov 2014 to Jan 2015
Interview academic staff and students in the Maldives' tertiary education sector. (2 academic staff, 2 postgraduates, 2 final-year undergraduates from each of the following institution in the Maldives)	
<ul style="list-style-type: none"> <li>- The Maldives National University</li> <li>- Villa College</li> </ul>	
<b>PHASE II</b>	Jan 2015
Interview library and information science professionals in the same institutions, after completing Phase I (1 librarian from each institution)	
<b>PHASE III</b>	Oct 2016
Online survey questionnaire with a target to recruit 10-15% of the academic community from:	
<ul style="list-style-type: none"> <li>- The Maldives National University</li> <li>- Villa College, Maldives</li> <li>- Curtin University, Western Australia</li> </ul>	



**Notes:**

IG-a: Question number for the semi-structured interview guide for Phase I

IG-b: Question number for the semi-structured interview guide Phase II

Q: Question number from the survey questionnaire for Phase III

# APPENDIX 3B

## Semi-structured interview guides (Phase I & II)

### [IG-a] Interview guide for academic staff & students (Maldives)

#### Closed questions [ice breaker and basic information]

1.1 Participant name: \_\_\_\_\_ Gender/age: \_\_\_\_\_ Date of interview: \_\_\_\_\_

1.2 Faculty (institution): \_\_\_\_\_

1.3 Highest Education Qualification attained: \_\_\_\_\_

1.4 Institutes attended for tertiary education: \_\_\_\_\_

#### [Questions 1.5-1.7 below are for Staff ONLY]

1.5 Courses/Subjects taught (level of course):  
\_\_\_\_\_

1.6 Publications history in brief  
\_\_\_\_\_

1.7 Number of years of experience  
\_\_\_\_\_

#### [Questions 1.5-1.7 below are for Students ONLY]

Enrolled course (name & level):  
\_\_\_\_\_

Number of years completed:  
\_\_\_\_\_

Past educational history:  
\_\_\_\_\_

#### Conversation prompts

- 2.1 Say for example you are searching for information for a research assignment/project/article/publication. I'd like you to think about the last similar effort. How would you have normally started a search like this?
- 2.2 How long have you been familiar with Google and what do you think of Google as a search engine?
- 2.3 Do you know other search engines? How do you compare those to Google?
- 2.4 How often do you use Google in your information seeking activities related to your academic work?
- 2.5 To what extent do you use your library facility? When? How often? Compared to Google!
- 2.6 Does your library subscribe to scholarly databases? Which ones?
- 2.7 Where do you think you are more likely to find what you are actually looking for, the library or on the internet?
- 2.8 Think of those instances where you have found information for your academic work through Google.
  - a. What do you think about the quality of information retrieved?
  - b. How many result pages do you usually look through?
- 2.9 Do you see googling as an alternative to the library?

2.10 Information literacy & research rigor

**FOR STUDENTS:**

- a. Did you receive an induction to the library and its resources? [ask for elaborations]
- b. Did you receive information sessions on how to search library databases like EBSCO?
- c. How much emphasis is placed by lecturers on using library databases?

**FOR STAFF:**

- a. How much emphasis do you place on your students to use library databases?
- b. For you, how important are things like journal impact factor and journal rankings?

2.11 In general, what do you think about the library as a physical space and what do you think about the library as an information resource in the current online environment?

2.12 In your personal opinion, what changes are required to make your library more relevant?

**Questions to wrap up the interview – asked as closed ended but probe for reasons**

*Use these scales if only they are not able to give a straight forward answer. The purpose of asking is to get a response that can be categorised as below.*

Please indicate your level of agreement with the following statements using a scale of 1 to 5, where 5 is strong agreement <i>(Only if these have not come up in the conversation)</i>	Strongly Agree 5	Agree 4	Neither 3	Disagree 2	Strongly Disagree 1
3.1 Would you say you are experienced at searching the library catalogue?					
3.2 Are you satisfied with the level of access to information sources (physical as well as online) from your library?					
3.3 Do you perceive a need for academic libraries?					
3.4 Would you say you are efficient in searching information through the Internet?					
3.5 Do you believe Googling meets your information needs?					

3.6 Can you briefly explain what you understand by the term 'Googling'?

3.7 Is there any other information you would like to add regarding your use of Google to meet your information needs?

## [IG-b] Interview Guide for LIS Professionals (Maldives)

### Closed questions [ice breaker and basic information]

- 1.1 Participant name: \_\_\_\_\_ Date of interview: \_\_\_\_\_
- 1.2 Institution: \_\_\_\_\_
- 1.3 Highest Education Qualification attained: \_\_\_\_\_
- 1.4 Institutes attended for tertiary education: \_\_\_\_\_
- 1.5 Publications history in brief: \_\_\_\_\_

### Conversation prompts

- 2.1 Say for example you are searching for information for a research assignment/project/article/publication. I'd like you to think about the last similar effort. How would you have normally started a search like this?
- 2.2 Do you think your user community approaches information seeking activities the same way?
- 2.3 Does your library subscribe to scholarly databases? Which ones?
- 2.4 Do you think your clientele have access to enough scholarly literature through your library?
- 2.5 Where do you think students and staff are more likely to find what they are looking for, the library or the web?
- 2.6 If they are unable to find the full text in your library, how do you go about addressing it?  
[Verification of availability of document delivery / interlibrary loan]
- 2.7 What do you think about the quality of information retrieved through Google?
  - a. How scholarly are they? Are users educated on how to evaluate its authority / relevancy / scholarliness?
  - b. Googling might work adequately when searching for international literature. What is the level of access to local literature?
- 2.8 Information literacy
  - a. Does the library provide an induction to the library and its resources? [ask for elaborations]
  - b. Does the library provide information sessions on how to search library databases like EBSCO/OPAC?
  - c. How much emphasis do you think is placed by lecturers for students to use library databases?
- 2.9 In general, what do you think about the library as a physical space and what do you think about the library as an information resource in the current online environment?
- 2.10 In your personal opinion, what changes are required to make your library more in synch with the current user community?

## Questions to wrap up the interview – asked as closed ended but probe for reasons

Use these scales if only they are not able to give a straight forward answer. The purpose of asking is to get a response that can be categorised as below.

Please indicate your level of agreement with the following statements using a scale of 1 to 5, where 5 is strong agreement <i>(Only if these have not come up in the conversation)</i>	Strongly Agree 5	Agree 4	Neither 3	Disagree 2	Strongly Disagree 1
3.1 Would you say your users in general are experienced at searching the library catalogue?					
3.2 Are you satisfied with the level of access provided to information sources from your library?					
3.3 Do you perceive a need for academic libraries to exist?					
3.4 Would you say your users in general are efficient in searching through the Internet?					
3.5 Do you believe there is an "I can Google it" attitude among the users in general?					

3.6 Can you briefly explain what you understand by the term 'Googling'?

3.7 Is there any other information you would like to add about the information behaviour of your user community in their information seeking?

# APPENDIX 3C

## Qualtrics™ online survey questionnaire

The backend version with the skip-questions shown

Carry Forward  
Selected Choices from "Please select your current status from the foll..."

Part I

### About this Survey

**Introduction**  
This research attempts to study the Googling phenomenon in the context of the academic community's information seeking activities.  
As such, what I seek from you are:

- your experiences and perceptions about Google as a source of information access,
- how and when you use Google to meet information needs,
- your level of satisfaction in meeting your information needs through Google and/or your library,
- your experiences and perception of the library services at your disposal and how you perceive it to change or should change

**Target population**  
Responses are sought from tertiary students and academic staff at:  
The Maldives National University, Villa College, and Curtin University.

**Procedure**  
It will take approximately 15 minutes to complete this questionnaire. Questions are designed to determine your perceptions, there are no right or wrong answers. Most of the questions are multiple choice answers.

**Benefits/Compensation and Risks/Discomforts**  
There is no direct compensation or benefit to you as an individual. However, it is hoped that through your participation, we will learn more about information seeking behavior of the academic community and thereby influence information services provision to you or future staff and/or students like yourself.  
Risks from involvement in this study is minimal, if at all.

**Confidentiality**  
Please be assured that the survey link is designed to be anonymous, hence it is not possible to identify you. Information you provide will be confidential and will only be reported in an aggregate format. The research data will be kept in a secure place and will not be released to a third party or used for any purpose other than this research and any subsequent publication emanating from it.

**Participation**  
Your participation is entirely voluntary. You have the right to withdraw at anytime or refuse to participate. Your consent to participate is acknowledged when you submit the survey.

**Questions about the research**  
This research is sponsored through Curtin International Postgraduate Research Scholarship. I am a research student at Department of Information Studies, School of Media, Culture, and Creative Arts, Curtin University. My research profile can be found at <http://hgso.curtin.edu.au/research/>

If you have questions regarding this research, you may contact me as the principal investigator, through e-mail at [aminath.riyaz@postgrad.curtin.edu.au](mailto:aminath.riyaz@postgrad.curtin.edu.au) or tel +61451665181. Alternatively, you could contact Dr. Pauline Joseph, the key research supervisor, through e-mail at [p.joseph@curtin.edu.au](mailto:p.joseph@curtin.edu.au) or tel +61 8 9266 7180.

This research has been approved by the Curtin University Human Research Ethics Committee (Approval Number: RD-32-14-01). If needed, verification of approval can be obtained either by writing to the Committee, c/o Office of Research and Development, Curtin University, GPO Box U1987, Perth, WA 6845 or by telephoning +61 8 9266 2784 or by emailing [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au).

Your participation in this research will be very much appreciated.

Q1 Please select your current status from the following (If more than one category is applicable to you, select the role you have had for more years than the other).

 *After clicking on the response, please click the arrow on the bottom of the page to continue.*

\* Academic Staff / Research Staff

PhD / Doctorate student

Masters Student

Postgraduate Certificate or Postgraduate Diploma student

Final year, Undergraduate (First Degree / Bachelor) student

× None of the above

---

 Condition: None of the above Is Selected. Skip To: End of Survey. Options ▾

 Display This Question:  
If Please select your current status from the following (If more than one category is applicable to... Academic Staff / Research Staff Is Selected ▾

---

Q2 What level of courses do you teach/ supervise? (Select all that apply)

  Certificate/Diploma/Advanced Diploma

\*  Undergraduate

Postgraduate coursework

Higher Degree by Research (MPhil / Doctorate / PhD)

Other (Please specify)

---

 Display This Question:  
If Please select your current status from the following (If more than one category is applicable to... Academic Staff / Research Staff Is Selected ▾

---

Q3 How many years have you spent in teaching at tertiary level?

  over 21 years

\*  16-20 years

11-15 years

6-10 years

less than 6 years

---

 Display This Question:  
If Please select your current status from the following (If more than one category is applicable to... PhD / Doctorate student Is Selected  
Or Please select your current status from the following (If more than one category is applicable to... Masters Student Is Selected ▾  
Or Please select your current status from the following (If more than one category is applicable to... Postgraduate Certificate or Postgraduate Diploma student Is Selected

---

Q4 How many years have you completed in the current enrollment?

  In my first year of studies

1 year completed

2 years completed

3 years completed

4 years or more completed

Display This Question:  
 If Please select your current status from the following (If more than one category is applicable to... Academic Staff / Research Staff Is Not Selected

Q5 Please indicate your study mode (If your course is a mix of different approaches, select the one that is most prominent) PLEASE NOTE YOU CANNOT, UNFORTUNATELY, UNDO A RESPONSE ON THIS QUESTION. IF YOU ACCIDENTALLY CLICK AN INCORRECT RESPONSE, PLEASE ADD YOUR RESPONSE IN THE "OTHER" OPTION. MANY THANKS)

	Study mode	
	Full-time	Part-time
On campus - at the main campus	<input type="radio"/>	<input type="radio"/>
On campus - at a regional campus	<input type="radio"/>	<input type="radio"/>
Online	<input type="radio"/>	<input type="radio"/>
Block mode - at the main campus	<input type="radio"/>	<input type="radio"/>
Block mode - at a regional campus	<input type="radio"/>	<input type="radio"/>
Other (please specify) <input type="text"/>	<input type="radio"/>	<input type="radio"/>

Q6 What University/College are you affiliated to? (If more than one, select the one that applies to the response you selected about your status in the earlier question; i.e. academic staff or student)

- The Maldives National University (MNU)
- Villa College (VC)
- Curtin University
- × None of the above

Condition: None of the above Is Selected. Skip To: End of Survey. Options

Display This Question:  
 If What University/College are you affiliated to? (If more than one, select the one that applies to... The Maldives National University (MNU) Is Selected

Q7 What faculty/department do you belong to at MNU?

- Centre for Maritime Studies (CMS)
- Centre for Open learning (COL)
- Faculty of Arts (FA)
- Faculty of Education (FE)
- Faculty of Engineering Technology (FET)
- Faculty of Health Sciences (FHS)
- Faculty of Islamic Studies (FIS)
- Faculty of Hospitality & Tourism Studies (FHTS)
- Faculty of Science (FS)
- Faculty of Shariah & Law (FSL)
- Foundation Studies
- MNU Business School
- Research Centre
- Other (please specify)

▼
 Display This Question:  
 If What University/College are you affiliated to? (If more than one, select the one that applies to... Villa College (VC) Is Selected)

↳

Q8 What Faculty/Department at VC do you belong to?

⚙️

- Faculty of Educational Studies (FES)
- Faculty of Business Management (FBM)
- Faculty of Law
- Institute for Research & Innovation (IRI)
- Faculty of Marine Studies (FMS)
- Faculty of Hospitality Management and Tourism Studies (FHMTS)
- Faculty of Information Communications Technology (FICT)
- Faculty of Shariah and Islamic Studies (FSIS)
- Other (Please specify)

---

▼
 Display This Question:  
 If What University/College are you affiliated to? (If more than one, select the one that applies to... Curtin University Is Selected)

↳

Q9 What Faculty at Curtin University do you belong to?

⚙️

- Faculty of Humanities
- Faculty of Health Sciences
- Faculty of Science and Engineering
- Centre for Aboriginal Studies
- Curtin Business School

---

▼
 Display This Question:  
 If Please select your current status from the following (If more than one category is applicable to... Academic Staff / Research Staff Is Selected)

↳

Q10 What is your main work location?

⚙️

- A regional campus
- Main campus

⚠️

---

Q11 What is your age?

⚙️

18-20	21-30	31-40	41-50	51-60	61-70	71 and above
<input type="radio"/>						

---

Q12 What is your gender?

⚙️

Male	Female
<input type="radio"/>	<input type="radio"/>

Q13 What is the highest qualification you have achieved?

- PhD / Doctorate
- Masters
- Postgraduate Certificate / Postgraduate Diploma
- Bachelor Degree (First Degree)
- Diploma / Advanced Diploma
- Certificate / Advanced Certificate
- Secondary (O'Level) / Higher Secondary (A'Level)
- Other (please specify)

Part II This section contains questions that tries to understand your information seeking habits in general. Please provide your perception and opinions as accurately as possible.

Q14 When you are looking for information for academic purposes (e.g. research / assignment / project / article / publication) how would you normally **start a search**? (Please respond to all statements)

	Most often	Often	Sometimes	Rarely	Never
Use library's physical collection (books)	<input type="radio"/>				
Search on the Internet	<input type="radio"/>				
Search using Google	<input type="radio"/>				
Search on library's online catalog	<input type="radio"/>				
Search library's online collection (databases and/or ebooks)	<input type="radio"/>				
Ask a librarian	<input type="radio"/>				
Other (please specify) <input type="text"/>	<input type="radio"/>				

Q15 What are the primary methods you use to **identify the location/access point of journal articles** you wish to obtain? (Please respond to all statements)

	Most often	Often	Sometimes	Rarely	Never	× Not applicable
Carry out a search on a search engine (e.g. Google, Yahoo)	<input type="radio"/>					
Searching the list of e-journals from the library's web page	<input type="radio"/>					
Clicking on "Find it @ ..." when in a database	<input type="radio"/>					
Searching the library catalog to identify the library's print or online location	<input type="radio"/>					
Using bookmarks on my Internet web browser	<input type="radio"/>					
Other (please specify) <input type="text"/>	<input type="radio"/>					

Q16 How satisfied are you with the library at the institute you are affiliated with? (Please respond to all statements)

	Extremely satisfied	Moderately satisfied	Slightly satisfied	Neutral	Slightly dissatisfied	Moderately dissatisfied	Extremely dissatisfied	× Not applicable
Physical library collection (e.g. books, audio visual material)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Online book collection (ebooks)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Online journals (databases)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Library space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
General environment / ambiance of the library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Computing facilities in the library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Level of assistance by library staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Additional facilities provided to meet academic needs (e.g. reference support)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					

Q17 How satisfied are you with your Internet searches when seeking academic information? (Please respond to all statements)

	Extremely satisfied	Moderately satisfied	Neutral	Moderately dissatisfied	Extremely dissatisfied	× Not applicable
General internet searches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google search results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other search engine results (please specify another search engine that you use other than Google)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part III This section contains questions specifically to gather information about your use of Google search engine.



Display This Question:

↳ If When you are looking for information for academic purposes (e.g. research / assignment / project... Search using Google Is Less Than 5

Q18 When did you first start using Google? (Even if you can't recall an exact year, make the best guess)

- Around 1997 to 2000
- Around 2001 to 2004
- Around 2005 to 2008
- After 2009

Display This Question:  
 If When you are looking for information for academic purposes (e.g. research / assignment / project... Search on the Internet Is Less Than or Equal to 4

How did you come to know of Google? (Select one response)

Q19



- It was the search engine being used by people in my network
- I was told by someone that Google is the most reliable search engine
- It was the page that comes on the internet browser
- I just use Google, I don't know the exact reason
- Other (please specify)

Display This Question:  
 If When you are looking for information for academic purposes (e.g. research / assignment / project... Search using Google Is Less Than or Equal to 4

How are your Google searches carried out and how satisfied are you with those?

Q20



	How often do you use these?				How satisfied are you with the search results?			
	Often	Sometimes	Rarely	Never	Very satisfied	Satisfied	Not satisfied	Not Applicable
Google (Google.com)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google Books (books.google.com)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Google Scholar (scholar.google.com)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify) <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is the main reason you search with Google?

Q21



	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
It is helpful to understand the context of the topic	<input type="radio"/>				
It is the easiest information search option	<input type="radio"/>				
Google search platform is clutter free and simple to use	<input type="radio"/>				
It is the default search page that comes up on when I open the computer/device or smartphone browser	<input type="radio"/>				
There is no better option	<input type="radio"/>				
The library does not have enough resources	<input type="radio"/>				
The library is resourced, but I prefer searching online	<input type="radio"/>				
It saves time as I can access it anywhere, anytime	<input type="radio"/>				

Part IV

The following set of questions tries to understand your information needs and perceptions on information sources. (Please attempt all questions).



Display This Question:

If Please select your current status from the following (if more than one category is applicable to... Academic Staff / Research Staff Is Selected

Q22

How much emphasis do you place on your students to use the library? (Please indicate your answer for each type of library resources/services listed)



	A great deal	A lot	A moderate amount	A little	None at all	That service/resource not available
Library's physical collection	<input type="radio"/>					
Library online databases	<input type="radio"/>					
Library Orientation	<input type="radio"/>					
Library workshops (e.g. database searching skills)	<input type="radio"/>					
Further assistance from librarians	<input type="radio"/>					
Subject guides	<input type="radio"/>					

Display This Question:

If Please select your current status from the following (if more than one category is applicable to... PhD / Doctorate student Is Selected  
Or Please select your current status from the following (if more than one category is applicable to... Masters Student Is Selected  
Or Please select your current status from the following (if more than one category is applicable to... Postgraduate Certificate or Postgraduate Diploma student Is Selected  
Or Please select your current status from the following (if more than one category is applicable to... Final year, Undergraduate (First Degree / Bachelor) student Is Selected

Q23

How much emphasis do your lecturers place on you to use the library? (Please indicate your response for each type of resource/service listed)



	A great deal	A lot	A moderate amount	A little	None at all	That service/resource not available
Library's physical collection	<input type="radio"/>					
Library online databases (example EBSCO)	<input type="radio"/>					
Library Orientation	<input type="radio"/>					
Library workshops (e.g. database searching skills)	<input type="radio"/>					
Further assistance from librarians	<input type="radio"/>					
Referencing tools (e.g. EndNote software, reference guides)	<input type="radio"/>					
Subject guides	<input type="radio"/>					

Q24

Have you published any of your writings?



- Yes  
 No

Please indicate the platform where you published. (Select all that apply)

Q25



- In a newspaper / magazine / newsletter
- In a local journal or book chapter
- In an international journal that didn't give me much hassle in getting the paper through
- In a peer-reviewed reputed journal
- As a book or book chapter with a reputed publisher
- Online on my blog or webpage

How would you describe your current level of access to research articles?

Q26



- Excellent (I have access to all the journal articles I need)
- Good (I have access to most of the journal articles I need)
- Varies (I sometimes have difficulty getting the journal articles I need)
- Poor (I frequently have difficulty getting the journal articles I need)
- Very poor (I always have great difficulty getting the journal articles I need)

----- Page Break -----

These questions are designed to gather specific information about your individual search habits and preferences.

Part V



What are the criteria you use in selecting an article to read?

Q27



	Very important	Somewhat important	Not important
Relevance of the article to the search topic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality / quantity of information provided in the abstract	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impact factor of the journal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reputation of the journal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reputation of the article	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reputation of the author	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reputation of the publisher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Full-text availability online	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability as a PDF document	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify) <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q28

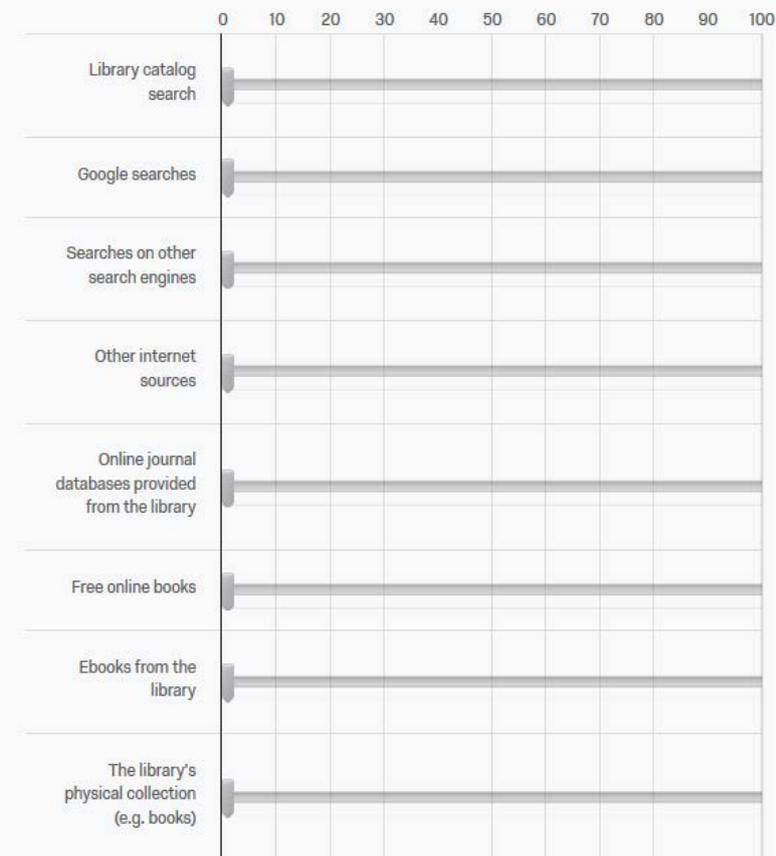
When you search on the internet for academic purposes, what strategy do you use to phrase your search term?



	Most often	Often	Sometimes	Rarely	Never
Use main words from the assignment or research topic at hand	<input type="radio"/>				
Search specifically for PDF	<input type="radio"/>				
Search for specific authors	<input type="radio"/>				
Use advanced search options to narrow down searches	<input type="radio"/>				
Search for specific titles of journal articles or book titles	<input type="radio"/>				
Other (please specify) <input type="text"/>	<input type="radio"/>				

Q29

Using the slide bar, indicate your usage of each information source for your academic related information seeking. (You don't necessarily have to tally up your responses to 100. Think of your level of reliance and slide the bar to show a representation of each in comparison)



Q30

How often do you use your library?



	Very often	Often	Sometimes	Rarely	Never
Physical visits to the library	<input type="radio"/>				
Online use of the library databases	<input type="radio"/>				
Use of additional services like information workshops, reference assistance, etc	<input type="radio"/>				

Display This Question:  
 If How often do you use your library? - Rarely Is Selected  
 Or How often do you use your library? - Never Is Selected

What are the reasons for your rare use or lack of use of the the library services? (Select all the apply)

Q31



- The library does not have a sufficient amount of books to cover my information needs
- The library does not have enough copies of important books
- I have access to adequate information sources without using the library
- I am not familiar with library policies
- The library does not have enough study space (silent rooms, desks, carrels)
- The library does not arrange instructional activities (tours, lectures) on how to use the library catalog
- The library atmosphere is not too welcoming
- The library services I require are available online, and I know how to use these resources
- The library staff are not approachable
- The library does not have enough full-text electronic journals related to my area of study
- I prefer ebooks/online books and the library does not have adequate ebooks
- The library is just too difficult to use
- I am an online student and do not have access to the physical library due to my location
- I am an online student and there is no need to be on campus, and therefore I don't use the physical library
- I don't study on campus and therefore I am not able to access the library's physical collection neither the online collection
- Other (please specify)

When you do a Google search for academic purposes, how many result pages do you click through? (10 results are listed per page on Google). Please respond to all statements.

Q32



	Most of the time	Sometimes	Rarely	Not at all
First page usually contains enough reliable links	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I browse through about 3 pages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I go through as many result pages as required until I get something useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:  
 If When you do a Google search for academic purposes, how many result pages do you click through? (1... I go through as many result pages as required until I get something useful Is Less Than or Equal to 3  
 Or When you do a Google search for academic purposes, how many result pages do you click through? (1... I browse through about 3 pages Is Greater Than or Equal to 2

(For the following question, please select the most applicable statement below.)

Q33



- I go through 3 or more result pages, because:
- All retrieved results are useful, even to some extent. I browse through until my information need is satisfied
  - I believe the search terms I used might not be reflective of all possible related results/sources out there
  - Even if I know the results listed further down the pages lose relevance most of the time, I browse through them in case there is something that has been missed
  - I want to get a feel of the kinds of terminology being used in the area that I am searching
  - I believe free content are sometimes ranked lower in search results

Q34

How often have you used the following to find information for academic purposes?



	Very often	Often	Sometimes	Rarely	Never
EBSCO	<input type="radio"/>				
ProQuest	<input type="radio"/>				
ScienceDirect	<input type="radio"/>				
LexisNexis	<input type="radio"/>				
HINARI	<input type="radio"/>				
Science Finder	<input type="radio"/>				
MEDLINE	<input type="radio"/>				
JSTOR	<input type="radio"/>				
Google	<input type="radio"/>				
Google Scholar	<input type="radio"/>				
Library catalog	<input type="radio"/>				
Other (please name any other database that you use often)	<input type="radio"/>				

Q35

How often do you rely on the following to source reading material for your academic information needs?



	Quite Often	Often	Sometimes	Rarely	Never	× Not applicable
Colleagues in the same institute	<input type="radio"/>					
Friends / Colleagues in other local institutes	<input type="radio"/>					
Friends / Colleagues in other overseas institutes	<input type="radio"/>					
Requests for information through the library using document delivery or inter library loan services	<input type="radio"/>					
Purchase articles from online sources	<input type="radio"/>					

Page Break

Part VI

This is the last section in the questionnaire. Thank you for your patience. The following set of questions attempts to understand your interpretation of Library versus Google/Internet.



Q36

Do you perceive Google as an alternative to the library in your academic information seeking activities? (Please select one statement that you can agree with the most)



- Yes, it is an alternative. I don't need the library.
- Yes, it is an alternative because the library's collection is not adequate for my needs
- Yes, to some extent it is an alternative.
- No, it is a supplement to the library. Library is still required as the first point of call
- No, it is a supplement to the library. Library is required as the authoritative information source.
- No, Google is not an alternative to the library. What I need from a library is not the same as what I expect from a Google search.
- None of the above matches your thoughts closely? (Please state what you think)

Q37

Not taking any particular library in context, what is your perception about an ideal library as a **physical space**? (Show your agreement with the statement through the number of stars. The more you agree, the more stars)



- A place for quiet reading ★★★★★
- A place to meet and collaborate with other colleagues/peers in the academic network ★★★★★
- A place for printing and photocopying facilities ★★★★★
- A place with facilities for reliable internet access ★★★★★
- A place to house library's physical collection (books, audiovisuals, etc) ★★★★★
- A place that provides online access to information resources (lots of computers and other digital devices) ★★★★★
- A place that needs to remain open for use anytime of the day ★★★★★
- I don't have too many thoughts on what a library needs to do as a space. But I need the library to be there ★★★★★
- Other (please state and rate)  ★★★★★

Q38

Not taking any particular library in context, what is your perception about an ideal library as an **information resource**? (Show your agreement with the statement through the number of stars. The more you agree, the more stars)



- The library needs to have books. I want to flip through books ★★★★★
- The library needs to have all of its content searchable online without having to go through book stacks ★★★★★
- The library should have physical books. It is also desirable to have everything online ★★★★★
- The library catalog search feature should function like Google search engine ★★★★★
- Other (please state and rate)  ★★★★★

Q39

Please indicate your level of agreement with the following statements.



	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree	× Not applicable
Would you say you are experienced at searching the library catalogue?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are you satisfied with the level of access to information source (physical as well online) from your library?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you perceive a need for academic libraries?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Would you say you are efficient in searching information through the internet?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you believe Googling meets your information needs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q40 What is your personal interpretation of the term "Googling" or "Google it!" or "I Googled"?
 

- It means searching for something online specifically using the Google search engine
- It means searching for something online on the Internet (not necessarily specific to Google searches alone)
- It can mean searching for something online (any online platform including different search engines, using specific webpages, searching online on library databases, etc)

---

Q41 This is the last question :) I appreciate your time and input.
 

Please explain briefly how your library needs to change to remain relevant to your needs and requirements. What would help you to better utilize the library resources?

---

*That's the end of the questionnaire. Your responses will be submitted once you click the arrow on the right. Thank you :)*

**Notes.**

The above is a screen capture of the back-end of the questionnaire displaying the skip logic of the questions. It also shows that

- Q1 and Q6 were set as filter questions. Selection of "None of the above" in either of the questions will terminate the survey for that participant.
- Display logic ("display this question") was set in to 15 of the 41 Questions (Q2, Q3, Q4, Q5, Q7, Q8, Q9, Q18, Q19, Q20, Q22, Q23, Q25, Q31, Q33). Therefore, these questions required an answer for the participant to proceed with the survey.
- The symbol  against the question indicates a validation option was set in to "force response". Question #01, #02, #03, #10, #23, & #36 were set to force a response.

# APPENDIX 3D

## Reliability statistics for the constructs

Construct	Number of items	Cronbach's Alpha **	Cronbach's Alpha based on standardised items **	Cronbach's Alpha SI (MNU)	Cronbach's Alpha SI (VC)	Cronbach's Alpha SI (Curtin)
Start a search (Q14)	7	<b>.180</b>	<b>.241</b>	.510	-1.953	.335
Identify location of journals (Q15)	6	<b>-1.65</b>	<b>-.091</b>	.594	.519	-1.028
Satisfaction with institutional library (Q16)	9	<b>.908</b>	<b>.903</b>	<b>.855</b>	<b>.840</b>	<b>.936</b>
Satisfaction with internet searches (Q17)	3	<b>.735</b>	<b>.750</b>	<b>.706</b>	<b>.734</b>	<b>.780</b>
Main reason for searching with Google (Q21)	8	<b>.699</b>	<b>.730</b>	.632	.658	<b>.762</b>
Emphasis on students to use the library by Faculty – Faculty (Q22)	6	<b>.835</b>	<b>.831</b>	<b>.827</b>	<b>.717</b>	<b>.837</b>
Emphasis on students to use the library by Faculty – Student (Q23)	7	<b>.879</b>	<b>.880</b>	<b>.838</b>	.477	<b>.893</b>
Criteria used in selecting an article (Q27)	10	<b>.711</b>	<b>.706</b>	<b>.790</b>	<b>.980</b>	.645
Phrasing search terms (Q28)	6	<b>.491</b>	<b>.481</b>	.402	.606	.526
Usage of information sources (Q29)	8	<b>.706</b>	<b>.700</b>	.673	.648	<b>.766</b>
Frequency of library use (Q30)	3	<b>.354</b>	<b>.352</b>	.433	.488	.472
Number of results pages browsed on Google (Q32)	3	<b>-.442</b>	<b>-.449</b>	-2.56	-.135	-.631
Usage of scholarly databases (Q34)	12	<b>.592</b>	<b>.626</b>	.670	.195	<b>.714</b>
Informal information channels (Q35)	5	<b>.790</b>	<b>.790</b>	<b>.829</b>	<b>.730</b>	<b>.776</b>
Perceptions of an ideal library as a physical space (Q37)	9	<b>.791</b>	<b>.825</b>	.574	<b>.882</b>	<b>.850</b>
Perceptions of an ideal library as a physical space (Q38)	5	<b>.623</b>	<b>.648</b>	.607	--	.683
Personal perceptions on individual information literacy (Q39)	5	<b>.616</b>	<b>.635</b>	.462	<b>.792</b>	.650

# APPENDIX 3E

## Approval of the Curtin University Human Research Ethics Committee (RD-32-14)



### Memorandum

<b>To</b>	Aminath Riyaz, Department of Information Studies
<b>From</b>	Professor Peter O'Leary, Chair Human Research Ethics Committee
<b>Subject</b>	Protocol Approval <b>RD-32-14</b>
<b>Date</b>	3 November 2014
<b>Copy</b>	Dr Pauline Joseph, Department of Information Studies

Office of Research and Development  
**Human Research Ethics Committee**

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FACSIMILE 9266 3793

EMAIL hrec@curtin.edu.au

Thank you for your "Form C Application for Approval of Research with Low Risk (Ethical Requirements)" for the project titled "An investigation into the 'I can Google it' information seeking behaviour of the academic community and the implications for the delivery of academic library services for developing countries". On behalf of the Human Research Ethics Committee I am authorised to inform you that the project is approved.

Approval of this project is for a period of four years **04-11-14 to 04-11-18**.

The approval number for your project is **RD-32-14**. Please quote this number in any future correspondence.

Your approval has the following conditions:

- i) Annual progress reports on the project must be submitted to the Ethics Office.
- ii) **It is your responsibility, as the researcher, to meet the conditions outlined above and to retain the necessary records demonstrating that these have been completed. See: Western Australian University Sector Disposal Authority (WAUSDA).**

#### Applicants should note the following:

It is the policy of the HREC to conduct random audits on a percentage of approved projects. These audits may be conducted at any time after the project starts. In cases where the HREC considers that there may be a risk of adverse events, or where participants may be especially vulnerable, the HREC may request the chief investigator to provide an outcomes report, including information on follow-up of participants.

The attached **Progress Report** should be completed and returned to the Secretary, HREC, C/- Office of Research & Development annually.

Our website [https://research.curtin.edu.au/guides/ethics/low\\_risk\\_hrec\\_forms.cfm](https://research.curtin.edu.au/guides/ethics/low_risk_hrec_forms.cfm) contains all other relevant forms including:

- Completion Report (to be completed when a project has ceased)
- Amendment Request (to be completed at any time changes/amendments occur)
- Adverse Event Notification Form (if a serious or unexpected adverse event occurs)
- Western Australian University Sector Disposal Authority (WAUSDA)

Yours sincerely,

Professor Peter O'Leary  
Chair Human Research Ethics Committee

Please Note: The following standard statement must be included in the information sheet to participants:

*This study has been approved under Curtin University's process for low-risk Studies (Approval Number **RD-32-14**). This process complies with the National Statement on Ethical Conduct in Human Research (paragraph 5.1.7 and paragraphs 5.1.18-5.1.21). For further information on this study contact the researchers named above or the Curtin University Human Research Ethics Committee. c/- Office of Research and Development, Curtin University, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au).*

# APPENDIX 3F

## Amendment Approval: Human Research Ethics Committee (RD-32-14-01)



Office of Research and Development

GPO Box U1987  
Perth Western Australia 6845

Telephone +61 8 9266 7863  
Facsimile +61 8 9266 3793  
Web [research.curtin.edu.au](http://research.curtin.edu.au)

06-Sep-2016

Name: Pauline Joseph  
Department/School: Department of Information Studies  
Email: [P.Joseph@curtin.edu.au](mailto:P.Joseph@curtin.edu.au)

Dear Pauline Joseph

**RE: Amendment approval**  
**Approval number: RD-32-14**

Thank you for submitting an amendment request to the Human Research Ethics Office for the project **An investigation into the 'I can Google it' information seeking behaviour of the academic community and the implications for the delivery of academic library services for developing countries.**

Your amendment request has been reviewed and the review outcome is: **Approved**

The amendment approval number is RD-32-14-01 approved on 06-Sep-2016.

The following amendments were approved:  
the online survey questionnaire as submitted.

Any special conditions noted in the original approval letter still apply.

### Standard conditions of approval

1. Research must be conducted according to the approved proposal
2. Report in a timely manner anything that might warrant review of ethical approval of the project including:
  - proposed changes to the approved proposal or conduct of the study
  - unanticipated problems that might affect continued ethical acceptability of the project
  - major deviations from the approved proposal and/or regulatory guidelines
  - serious adverse events
3. Amendments to the proposal must be approved by the Human Research Ethics Office before they are implemented (except where an amendment is undertaken to eliminate an immediate risk to participants)
4. An annual progress report must be submitted to the Human Research Ethics Office on or before the anniversary of approval and a completion report submitted on completion of the project
5. Personnel working on this project must be adequately qualified by education, training and experience for their role, or supervised
6. Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, that bears on this project
7. Changes to personnel working on this project must be reported to the Human Research Ethics Office
8. Data and primary materials must be retained and stored in accordance with the [Western Australian University Sector Disposal Authority \(WAUSDA\)](#) and the [Curtin University Research Data and Primary Materials policy](#)
9. Where practicable, results of the research should be made available to the research participants in a timely and clear manner
10. Unless prohibited by contractual obligations, results of the research should be disseminated in a manner that will allow public scrutiny; the Human Research Ethics Office must be informed of any constraints on publication
11. Ethics approval is dependent upon ongoing compliance of the research with the [Australian Code for the Responsible Conduct of Research](#), the [National Statement on Ethical Conduct in Human Research](#), applicable legal requirements, and with Curtin University policies, procedures and governance requirements
12. The Human Research Ethics Office may conduct audits on a portion of approved projects.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au) or on 9266 2784.

Yours sincerely

Dr Catherine Ganglell  
Manager, Research Integrity

# APPENDIX 3G

## Approval from MNU for participation in the research



بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

Ali Shareef, *PhD*  
Deputy Vice Chancellor,  
Academic Affairs

Office of the Deputy Vice Chancellor  
Central Administrative Office  
Radhdhehahi Hin'gun,  
Male' 2003,  
Republic of Maldives  
Phone: +(960) 3345121  
Fax: +(960) 3344091

27<sup>th</sup> November 2014

**Ms Aminath Riyaz**  
Doctoral Candidate  
Department of Information Studies  
School of Media, Culture and Creative Arts  
Curtin University  
Kent Street Bentley, Western Australia, WA 6102

Dear Ms Riyaz

*Approval of participation in your PhD research*

I thank you for your letter dated 20<sup>th</sup> November 2014, seeking approval from The Maldives National University (MNU) to participate in your PhD research at Curtin University.

I am pleased to inform you that approval is hereby granted for you to undertake data collection at MNU, in accordance to the Research Ethics Guidelines of the University. Please find enclosed the signed Consent Form.

However, before your data collection begins, we would require you to send us the data collection instruments for each phase of the data collection process, including the relevant information, consent forms for participants and the interview schedules.

Please also note that if after granting this approval, any of the data collection protocols and/or data collected are different from that has been initially proposed, MNU reserves the right to withdraw this approval and stop using any of the data collected at MNU.

I wish you success in your research.

A Shareef



# APPENDIX 3H

## Approval from VC for participation in the research

Faculty of Humanities  
School of Media, Culture and Creative Arts



### Consent Form

I have received information about the study on the *Googling Phenomenon ('I Can Google it' information seeking behaviour)*, to be conducted by Aminath Riyaz, from Curtin University. I have been informed of and understand the purpose of the study. I have been informed that the Villa College was selected purposefully, as it is the most prominent private tertiary institute in the country.

I have been informed that the target community for the study are the academic staff, postgraduate students, and students in undergraduate degrees in their final year of study.

I have been informed that the participation in the study is voluntary and understand that the participants can withdraw at any time without prejudice. I also have been informed that the participants will not be personally identified in the reporting of the findings in the dissertation or resulting publications based on the interview or the survey data.

I am aware that participant recruitment will be carried out by the researcher with little or no intervention from the Villa College.

I [name] Ahmed Ali Didi, [date] 31/12/2014 complete this form consenting for the use of **Villa College** as a target population and consent for the researcher to carry out the data collection in accordance to ethics guidelines.

Authorised signature:

A handwritten signature in blue ink, appearing to be "Ahmed Ali Didi", written over a horizontal line.

Designation:

DIRECTOR

Authorised seal/stamp (if applicable):

Date:

31/12/2014



# APPENDIX 3I

## Approval from Curtin University to recruit Curtin staff and student as research participants

**1. Project Title:**

An investigation into the 'I can Google it' information seeking behaviour of the academic community and the implications for the delivery of academic library services for developing countries.

**2. Investigator Name(s):**

- Aminath Riyaz (PhD Student – Primary contact)
- Dr. Pauline Joseph (main supervisor)
- Dr. Paul Genoni (co-supervisor)

**3. Contact details of primary contact**

- Email: [aminath.riyaz@postgrad.curtin.edu.au](mailto:aminath.riyaz@postgrad.curtin.edu.au)
- Mobile: +61 451 665 181

**4. School/Department**

- Department of Information Studies / School of Media, Culture & Creative Studies

**5. Summary of Project**

Research evidence suggests that Google search engine has become the main information mediator for the academic community. Research also suggests Google has gained popularity over traditional library sources, mostly based on ease of use and reliability, but not an authority. These research primarily evaluates the relevancy of results retrieved through Google compared to library sources. Additionally, with the Net generation's reliance on online media, there is anecdotal evidence of an 'I can Google it' user mindset that hinges on bypassing libraries. There is no evidence of any similar research taking a phenomenological approach; nor has there been any attempt to understand the phenomenon from different economic perspectives.

**6. Aims of the project**

- Understand the extent of this Googling phenomenon through the perceptions of information users in an academic setting;
- Evaluate if the perception translates to reality;
- Investigate the implications on academic library service provision; and
- Examine the extent of cohesion of this phenomenon across different economies.

**7. Participant Type, Proposed Sample size and recruitment methods**

- There are three phases of data collection for this research. These are summarised in Table 1 below. This application for approval addresses #3 of Phase Three.

DATE COLLECTION STEPS	TARGET POPULATION & DATA COLLECTION METHODS
<p><b>PHASE ONE</b> --- 12 interviews (Nov 2014 to Jan 2015) Interview with academic staff and students in the Maldives higher education sector. (2 staff, 2 postgrads, 2 final year undergrads from each institute)</p> <ol style="list-style-type: none"> <li>1. The Maldives National University</li> <li>2. Villa College</li> </ol> <p><b>PHASE TWO</b> --- 3 interviews (Jan 2014 to Feb 2015) Interview with library and information studies professionals (1 staff from each institute)</p> <ol style="list-style-type: none"> <li>1. The Maldives National university</li> <li>2. Villa College</li> <li>3. Curtin University</li> </ol> <p><b>PHASE THREE</b> --- approximately a total of 5000 survey respondents Online survey questionnaire, aiming a 30% response rate, from:</p> <ol style="list-style-type: none"> <li>1. The Maldives National university (Oct-Nov 2016)</li> <li>2. Villa College (Oct-Nov 2016)</li> <li>3. Curtin University (Oct-Nov 2016)</li> </ol>	<p><b>1. Target Institutes</b></p> <ol style="list-style-type: none"> <li>1.1 The Maldives National University, Maldives (Phase 1, 2, &amp; 3)</li> <li>1.2 Villa College, Maldives (Phase 1, 2, &amp; 3)</li> <li>1.3 Curtin University, Western Australia (Phase 2, &amp; 3)</li> </ol> <p><b>2. Target groups</b></p> <ol style="list-style-type: none"> <li>2.1 Academic Staff</li> <li>2.2 Postgraduate students</li> <li>2.3 Undergraduate students <u>in last year of studies</u></li> <li>2.4 Library Professionals</li> </ol> <p><b>3. Data collection methods</b></p> <ol style="list-style-type: none"> <li>3.1 Face-to-face-interviews (all target groups from 1.1 and 1.2; and group 2.4 from 1.3)</li> <li>3.2 Online survey (all target groups except 2.4 from all 3 institutes)</li> </ol>

Table 1: Summary of data collection phases, sample selection, and data collection methods

**Population:**

All academic staff, postgraduate students, and undergraduate students in their final year of study from the institutions identified in Heading number 1, in Table 1 above.

**Proposed sample size & recruitment method**

The survey questionnaire will be posted online using Qualtrics. The survey will be promoted through flyers and posters, and also through staff and student online platforms. An overall initial optimistic target is to recruit at least 30% of the population. However this optimistic figure is set specifically for the Maldives as the target population is relatively smaller and therefore reachable compared to Curtin University's population. A 15% response rate will be satisfactory for Curtin.

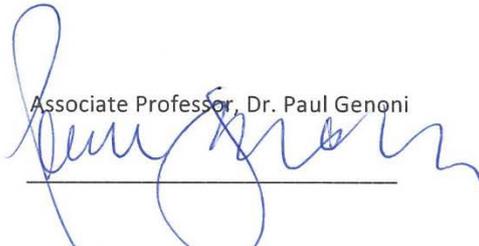
**8. Project timing**

- The ideal recruitment timing for the survey is October 2016.
- The plan is to use a 3 week bracket (Week 10 to 12) for the initial response, with further follow-up reminder e-mails where appropriate. The tentative cut off for survey response is November 30, 2016

**9. Details of incentives/prizes**

- No incentives are set

**10. Approved by:**

- Senior Head of Area
  - Name: Associate Professor, Dr. Paul Genoni
  - Signature: 

**11. Ethics approval number**

This research proposal has passed through candidacy and Ethics has been approved for Phase 1 and 2 of the research (approval #RD-32-14, 3 November 2014).

For Phase 3 data collection, an amendment to ethics is required and it is anticipated to submit the application by 18 August 2016.

# APPENDIX 3J

## Amendment Approval: Human Research Ethics Committee (RD-32-14-02)



Office of Research and Development

GPO Box U1987  
Perth Western Australia 6845

Telephone +61 8 9266 7863  
Facsimile +61 8 9266 3793  
Web [research.curtin.edu.au](http://research.curtin.edu.au)

22-Nov-2016

Name: Pauline Joseph  
Department/School: Department of Information Studies  
Email: [P.Joseph@curtin.edu.au](mailto:P.Joseph@curtin.edu.au)

Dear Pauline Joseph

**RE: Amendment approval**  
**Approval number: RD-32-14**

Thank you for submitting an amendment request to the Human Research Ethics Office for the project **An investigation into the 'I can Google it' information seeking behaviour of the academic community and the implications for the delivery of academic library services for developing countries.**

Your amendment request has been reviewed and the review outcome is: **Approved**

The amendment approval number is RD-32-14-02 approved on 22-Nov-2016.

The following amendments were approved:  
the use of an email to go out to all HDR students through the Office of Research and Development.

Any special conditions noted in the original approval letter still apply.

### Standard conditions of approval

1. Research must be conducted according to the approved proposal
2. Report in a timely manner anything that might warrant review of ethical approval of the project including:
  - proposed changes to the approved proposal or conduct of the study
  - unanticipated problems that might affect continued ethical acceptability of the project
  - major deviations from the approved proposal and/or regulatory guidelines
  - serious adverse events
3. Amendments to the proposal must be approved by the Human Research Ethics Office before they are implemented (except where an amendment is undertaken to eliminate an immediate risk to participants)
4. An annual progress report must be submitted to the Human Research Ethics Office on or before the anniversary of approval and a completion report submitted on completion of the project
5. Personnel working on this project must be adequately qualified by education, training and experience for their role, or supervised
6. Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, that bears on this project
7. Changes to personnel working on this project must be reported to the Human Research Ethics Office
8. Data and primary materials must be retained and stored in accordance with the [Western Australian University Sector Disposal Authority \(WAUSDA\)](#) and the [Curtin University Research Data and Primary Materials policy](#)
9. Where practicable, results of the research should be made available to the research participants in a timely and clear manner
10. Unless prohibited by contractual obligations, results of the research should be disseminated in a manner that will allow public scrutiny; the Human Research Ethics Office must be informed of any constraints on publication
11. Ethics approval is dependent upon ongoing compliance of the research with the [Australian Code for the Responsible Conduct of Research](#), the [National Statement on Ethical Conduct in Human Research](#), applicable legal requirements, and with Curtin University policies, procedures and governance requirements
12. The Human Research Ethics Office may conduct audits on a portion of approved projects.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au) or on 9266 2784.

Yours sincerely

Dr Catherine Gangell  
Manager, Research Integrity

# APPENDIX 3K

## Template of the information letter and consent form

### Letter to the academic staff and students

Faculty of Humanities  
School of Media, Culture and Creative Arts



November 25, 2014

### Participant Information Sheet and Consent Form - Interviews

Dear [REDACTED]

I am seeking your participation in this research that investigates the 'I can Google it' information seeking behaviour of the academic community and the implications for the delivery of academic library services for developing countries.

This research is sponsored by Curtin University through its Curtin International Postgraduate Research Scholarship.

I am a research student at Curtin University at the Department of Information Studies, School of Media, Culture, and Creative Arts. My research profile can be found at <http://hgsa.curtin.edu.au/research/>

My research takes a phenomenological approach to study the Googling phenomenon in the context of the academic community in their information seeking activities, and as such tries to understand the phenomenon through the perception of the people experiencing it. What I seek from you are:

- your experiences and opinions about Googling as a source of information access,
- how and when you use Google to meet information needs,
- your level of satisfaction in meeting your information needs through Google and/or your library,
- your experiences and perception of the library services at your disposal and how you perceive it to change or should change

The interview session will be between 30 to 40 minutes and it will be recorded, with your permission, to ensure accuracy of data analysis and reporting. The interview will be conducted mainly in the language you are most comfortable with (Dhivehi or English). The interview recordings will be transcribed in the English language, by the researcher herself, without involving a third party, to ensure accuracy and confidentiality. If you wish to, you will be provided with a copy of the transcript to review with an opportunity to clarify where necessary.

Please be assured that your identity will be anonymous in the reporting of the findings in my dissertation as well as any resulting publications. The research data will be kept in a secure place and will not be released to a third party or used for any purpose other than for my research. Your participation is entirely voluntary. Your consent to participate is acknowledged when you decide to complete the interview session and sign the consent sheet.

If you have any questions regarding this research, please contact me by email at [aminath.riyaz@postgrad.curtin.edu.au](mailto:aminath.riyaz@postgrad.curtin.edu.au). Alternatively, you could also contact my research supervisor, Dr. Pauline Joseph, through e-mail at [p.joseph@curtin.edu.au](mailto:p.joseph@curtin.edu.au) or Tel +61 8 9266 7180.

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number: RD-32-14). If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/o Office of Research and Development, Curtin University, GPO Box U1987, Perth, WA 6845 or by telephoning 9266 2784 or by emailing [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au).

Thank you for your time and assistance. Please sign the consent form on the next page.

Kind Regards,

A handwritten signature in blue ink, appearing to read "Aminath Riyaz".

Aminath Riyaz (MPhil, M.Com)  
Research Student (Doctor of Philosophy)  
Department of Information Studies,  
School of Media, Culture and Creative Arts  
Curtin University, Kent Street, Bentley, Western Australia 6102

## Letter to the LIS professionals

Faculty of Humanities  
School of Media, Culture and Creative Arts



January 18, 2015

### Participant Information Sheet and Consent Form - Interviews

Dear [REDACTED]

I am seeking your participation in this research that investigates the '*can Google it*' information seeking behaviour of the academic community and the implications for the delivery of academic library services for developing countries.

This research is sponsored by Curtin University through its Curtin International Postgraduate Research Scholarship.

I am a research student at Curtin University at the Department of Information Studies, School of Media, Culture, and Creative Arts. My research profile can be found at <http://hgsa.curtin.edu.au/research/>

My research takes a phenomenological approach to study the Googling phenomenon in the context of the academic community in their information seeking activities, and as such tries to understand the phenomenon through the perception of the people experiencing it. What I seek from you are:

- your experiences and opinions about Googling as a source of information access,
- how and when you use Google to meet information needs,
- your level of satisfaction in meeting your information needs through Google and/or your library,
- your experiences and perception of the information seeking behaviour of your library clients, and
- your perception on how your library caters to the information needs of your clientele.

The interview session will be between 30 to 40 minutes and it will be recorded, with your permission, to ensure accuracy of data analysis and reporting. The interview will be conducted mainly in the language you are most comfortable with (Dhivehi or English). The interview recordings will be transcribed in the English language, by the researcher herself, without involving a third party, to ensure accuracy and confidentiality. If you wish to, you will be provided with a copy of the transcript to review with an opportunity to clarify where necessary.

Please be assured that your identity will be anonymous in the reporting of the findings in my dissertation as well as any resulting publications. The research data will be kept in a secure place and will not be released to a third party or used for any purpose other than for my research. Your participation is entirely voluntary. Your consent to participate is acknowledged when you decide to complete the interview session and sign the consent sheet.

If you have any questions regarding this research, please contact me by email at [aminaath.rivaz@postgrad.curtin.edu.au](mailto:aminaath.rivaz@postgrad.curtin.edu.au). Alternatively, you could also contact my research supervisor, Dr. Pauline Joseph, through e-mail at [p.joseph@curtin.edu.au](mailto:p.joseph@curtin.edu.au) or Tel +61 8 9266 7180.

This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number: RD-32-14). If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/o Office of Research and Development, Curtin University, GPO Box U1987, Perth, WA 6845 or by telephoning 9266 2784 or by emailing [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au).

Thank you for your time and assistance. Please sign the consent form on the next page.

Kind Regards,

A handwritten signature in blue ink, appearing to read "Aminath Riyaz".

Aminath Riyaz (MPhil, M.Com)  
Research Student (Doctor of Philosophy)  
Department of Information Studies,  
School of Media, Culture and Creative Arts  
Curtin University, Kent Street, Bentley, Western Australia 6102

Consent form for all interview participants

Faculty of Humanities  
School of Media, Culture and Creative Arts



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**Consent Form**

I have received information about the study on the *Googling Phenomenon* ('I can Google it' information seeking behaviour), to be conducted by Aminath Riyaz, from Curtin University. I have been informed of and understand the purpose of the study.

I have been informed that the participation in the study is voluntary and understand that I can withdraw at any time without prejudice. I also have been informed that I will not be personally identified in the reporting of the findings based on this interview.

I have been informed about the optional audio recording of the interview for the purpose of accurate data collection and analysis.

I am also aware that I have the option to review the transcript of the conversation, via e-mail communication sent to [e-mail address] \_\_\_\_\_.

I [name] \_\_\_\_\_, [date] \_\_\_\_\_ complete this consent form **agreeing** participation in this interview and **agree** to the audio recording.

I [name] \_\_\_\_\_, [date] \_\_\_\_\_ complete this consent form **agreeing** participation in this interview but **do not** agree to the audio recording.

Interviewee's (participant) signature: \_\_\_\_\_

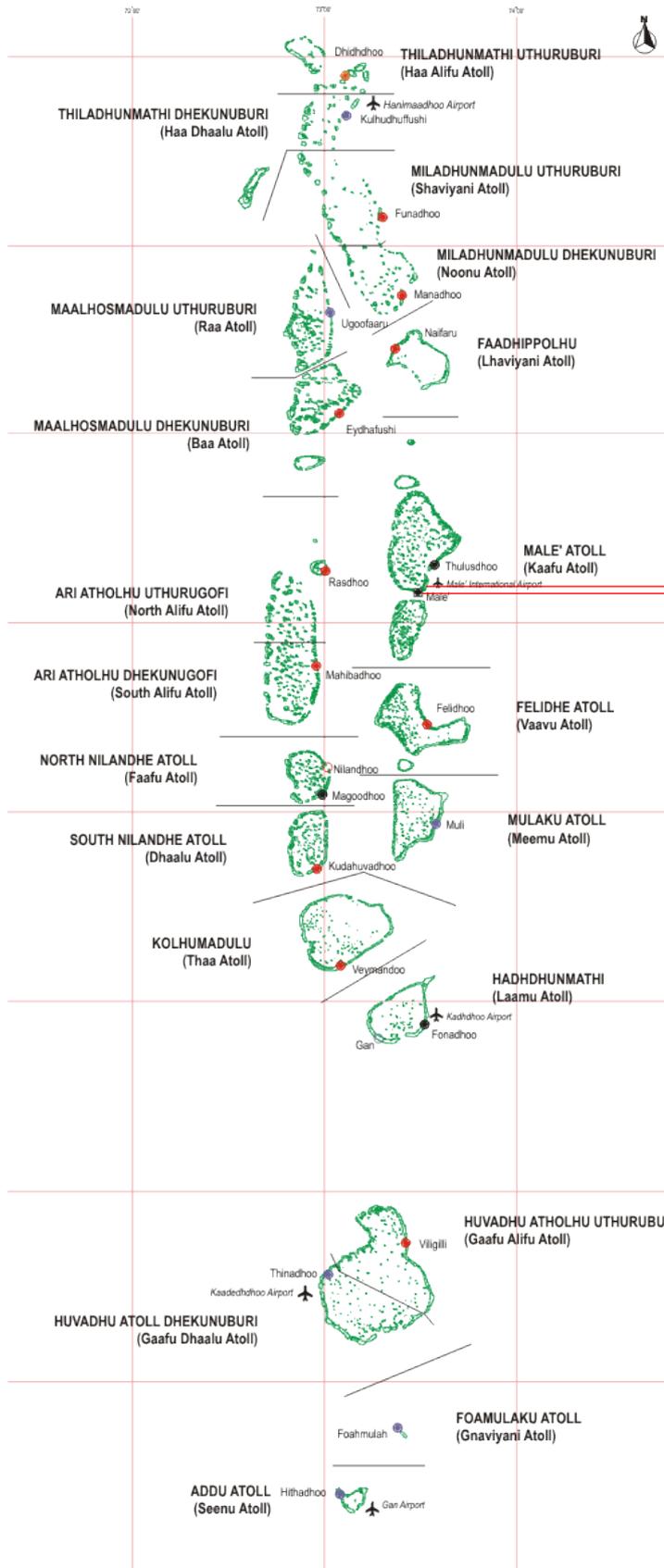
Date: \_\_\_\_\_

Interviewer's (researcher) signature: \_\_\_\_\_

Date: \_\_\_\_\_

# APPENDIX 4A

## Map of the Maldives<sup>1</sup>



Travel between Malé city and the airport is by ferry, which on average is a 20 minutes journey. The airport is an island itself.

*The Maldives extends over a distance of 765 kilometres from north to south, and 121 kilometres from east to west.*

*The country is made up of 26 atolls with a total of 1,192 islands. Islands average only two square kilometres in area. Only 188 of these islands are inhabited.*

Population size of the islands	Number of islands
73 to 500	57
501 to 1,000	66 islands
1,001 to 2,000	45 islands
2,001 to 5,000	16 islands
5,001 to 10,000	2 islands
10,001 to 100,000	1 island
Over 100,000	1 island (Male' capital island)

Source: NBS (2016)

<sup>1</sup> Map of the Maldives retrieved from [http://www.atolls.gov.mv/atoll\\_navigate.asp](http://www.atolls.gov.mv/atoll_navigate.asp)

<sup>2</sup> World map retrieved from <http://guesthouses-in-maldives.net/where-is-maldives-located/>

<sup>3</sup> Photo of Malé retrieved from <http://goingawesomeplaces.com/conrad-maldives-touring-the-capital-city-of-male/>

## APPENDIX 4B

### Snapshots of the MNU Library



Figure 4B.1. Outside the Central Library



Figure 4B.2. Entrance to the Central Library



Figure 4B.3. Central Library, OPAC computers



Figure 4B.4. Central Library, level 2 reading area



Figure 4B.5. Central Library, printing area



Figure 4B.6. Hithadhoo Campus Library (remote)



Figure 4B.7. Hithadhoo Campus Library (remote)



Figure 4B.8. Business Library

#### Note.

MNU Library is made up of the Central Library and three branch libraries on the mainland (Malé), and three smaller branch libraries in the regional (remote) campuses. The photos have been sourced through MNU Library staff.

## APPENDIX 4C

### Snapshots of the VC Library



Figure 4C.1. Outside the Villa College



Figure 4C.2. VC Library



Figure 4C.3. VC Library



Figure 4C.4. VC Library

*Note.*

The VC Library is relatively small. The space seen in the photos are all the reading areas. Photos have been sourced from VC website ([www.villacollege.edu.mv](http://www.villacollege.edu.mv)) and online newspapers.

## APPENDIX 4D

### Snapshots of the Curtin University Library



Figure 4D.1. Library enquiries & express zone



Figure 4D.2. Library café, level 2



Figure 4D.3. Library iZone, level 2

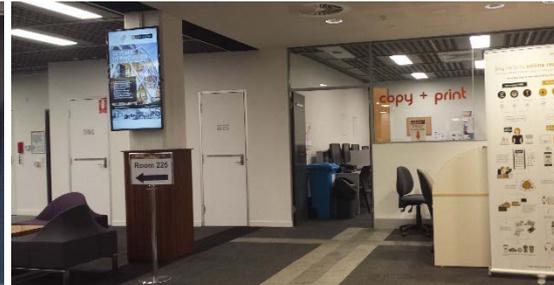


Figure 4D.4. Library copy and print room, level 2



Figure 4D.5. Collaborative reading area, level 2



Figure 4D.6. Computer zone, level 3



Figure 4D.7. Private study pods, level 4



Figure 4D.8. Collection and reading space, level 4



Figure 4D.9. Collaborative space, level 5



Figure 4D.10. Silent reading area, level 6

#### Note.

Robertson Library is Curtin University's main library located on its Bentley campus. There are other library branches in remote locations, and one in the Perth central business district.

## APPENDIX 5A

### Summary of interviewee demographics with their reference codes

Ref. Code	Highest prior Qualification	Gender	Age	Number of years in tertiary teaching (staff) / Current enrolment duration (students)	Prior tertiary education exposure (overseas marked)	Research publications
<i>Staff01</i>	Masters	F	38	4 years	Bachelor Degree onshore; Master's Degree overseas	1 local publication
<i>Staff02</i>	PhD	M	40	5 years	Bachelor Degree, Masters Degree, & PhD overseas	5 international publications
<i>Staff03</i>	Masters	F	37	6 years	Bachelor Degree & Masters Degree onshore	1 local publication
<i>Staff05</i>	Masters	M	37	5 years	Bachelor Degree & Masters Degree overseas	0 local publication
<i>Staff15</i>	PhD	F	39	1.5 years	Bachelor Degree, Masters Degree, & PhD overseas	2 international publications
<i>PG09</i>	Bachelor	F	29	Masters (completed waiting for results)	Diploma onshore; Bachelor overseas	-
<i>PG10</i>	Bachelor	F	32	Masters (completed waiting for results)	Diploma & Bachelor Degree onshore	-
<i>PG04</i>	Bachelor	M	43	Masters (1.5 of 2 years completed)	Bachelor Degree overseas	1 local publication
<i>PG07</i>	Bachelor	M	35	Masters (1 of 2 years completed)	Diploma & Bachelor Degree onshore	-
<i>UG06</i>	Advanced Certificate	M	44	Bachelors (3 years completed and waiting for results)	Advanced Certificate onshore	-
<i>UG12</i>	GCE A' Level	M	22	Bachelors (2.5 of 3 years completed)	-	-
<i>UG08</i>	Diploma	M	35	Bachelors (completed and waiting for results)	Diploma onshore	-
<i>UG11</i>	Diploma	M	25	Bachelors (completed and waiting for results)	Diploma onshore	-
<i>LIS13</i>	Diploma	F	-	-	-	-
<i>LIS14</i>	Bachelor	F	-	-	Bachelor Degree overseas	1 local publication

# APPENDIX 5B

## Standardised questions/themes coded on NVivo™ and the resulting nodes and references

Nodes				
Name	Sources	References	C	
StandardisedQuestions		15	5887	5
1.2 Institution		15	46	
1.3 Highest Education Qualification attained		15	90	
1.4 Institutes attended for tertiary education		15	155	
1.5a Staff~ Courses~subjects taught		6	86	
1.5b Staff~ teaching experience		4	60	
1.5c Students~ Enrolled course		8	126	
1.5d LIS Work experience		2	10	
1.5d Student Work experience		7	51	
1.6a Publications history		15	201	
1.6b Students~ Number of years completed in enrolment		5	28	
2.1 How would you normally start a search~		15	315	
2.10 Do you see googling as an alternative to the library~		13	101	
2.10a How would you rate the services at your library~		15	208	
2.11 e Journal impact factor and journal rankings		12	89	
2.11 Information literacy & research rigour		15	246	
2.11a Induction to library and its resources		14	152	
2.11c How much emphasis is placed by lecturers on using library datab		6	45	
2.11d Lecturers' view on their level of emphasis on students to use the l		5	46	
2.11e LIS view on level of emphasis on students to use the library		2	17	
2.11f Reading habits		15	210	
2.12 In general what do you think about the library as a physical space		14	209	
2.12b What changes would you like to see in your library~		13	173	
2.1LIS Do you think your customers approaches information seeking act		2	17	
2.2 How long have you been familiar with Google and what do you thin		13	175	
2.3 Do you know other search engines~		13	142	
2.4 How often do you use Google in your information seeking activities		12	162	
2.4LIS Do you think your clientele has access to enough scholarly literat		1	18	
2.5 To what extent do you use your library facility~ How~ When~ How		13	264	
2.6 Does your library subscribe to scholarly databases~ Which ones~		15	253	
2.7 Where do you think you are more likely to find what you are actuall		14	221	
2.7LIS Where do you think you are more likely to find what you are actu		1	15	
2.8 Are you able to find enough full-text resources on the web~		15	239	
2.8b How do you go about getting full text of good articles that you fin		15	304	
2.9 What do you think about the quality of information retrieved throug		15	132	
2.9d How many result pages do you usually look through on Google~		14	177	

2.9e Do you use Google Scholar and Google Books~	15	222
2.9LIS Googling might work for international literature. What is the level	2	22
3.1 LIS Would you say your users in general are experienced at searchin	2	15
3.1 Would you say you are experienced at searching the library catalog	12	116
3.2 Are you satisfied with the level of access to information sources (ph	12	82
3.2 LIS Are you satisfied with the level of access provided to informatio	2	14
3.3 Do you perceive a need for academic libraries~	12	100
3.3 LIS Do you perceive a need for academic libraries~	2	27
3.4 LIS Would you say your users are efficient in searching information t	2	12
3.4 Would you say you are efficient in searching information through th	12	74
3.5 Do you believe Googling meets your information needs~	12	78
3.5 LIS Do you believe there is an "I can Google it" attitude among the	2	16
3.6 Can you briefly explain what you understand by the term 'Googling'	14	167
3.7 Additional information	13	159

### Summary of number of autocoded Nodes and associated References

The screenshot shows the NVivo Pro interface with a table titled 'Internals' displaying the following data:

Name	Nodes	References	Created On
01 Staff1VC		392	1177 5/07/2017 6:32 AM
02 Staff2VC		327	964 5/07/2017 6:38 AM
03 Staff3MNU		449	1389 5/07/2017 6:38 AM
04 PG1MNU		320	953 5/07/2017 6:38 AM
05 Safft4MNU		394	1164 5/07/2017 6:38 AM
06 UG1VC		352	1062 5/07/2017 6:38 AM
07 PG2MNU		406	1237 5/07/2017 6:38 AM
08 UG2MNU		521	1562 5/07/2017 6:38 AM
09 PG3VC		441	1334 5/07/2017 6:38 AM
10 PG4VC		404	1218 5/07/2017 6:38 AM
11 UG3MNU		344	1028 5/07/2017 6:38 AM
12 UG4VC		363	1084 5/07/2017 6:38 AM
13 ILSVC		279	830 5/07/2017 6:38 AM
14 ILSMNU		335	1008 5/07/2017 6:38 AM
15 Staff5MNU		331	996 5/07/2017 6:38 AM

# APPENDIX 5C

## A sample of NVivo™ report for one of the nodes

<Internals\\01 Staff1VC> - § 30 references coded [7.95% Coverage]  
References 1-30 - 7.95% Coverage

### 2.1 How would you normally start a search?

F: I start looking for information online.

A: what do you mean by online?

F: Google books and also because I am based in villa college/here, we have access to the OUM database. That's Open University of Malaysia. And to Villa College we also have access to JSTOR. So those are the three sources I have access to. And then there's the library. I use the library rarely. Mostly I am dependent on the online sources.

A: how do you search these online sources? Do you go to specific sites?

F: yes I search the databases individually. I go to OUM database and search through that and also individually search JSTOR. And in OUM there is education proQuest database. So I use that specifically. And from Google books, for Google items. I also search generally as well.

A: General search?

F: Yes searching through Google. Typing in the general search box. But in the selection process I do check whether there are peer-reviewed articles. Whether it is a published article or not.

...

<Internals\\02 Staff2VC> - § 11 references coded [5.10% Coverage]  
References 1-11 - 5.10% Coverage

### 2.1 How would you normally start a search?

A: The purpose of all this conversation is to understand how information is sought in the academic context; for academic purposes. I think it will be best to take an example. Can you tell me how you approach information seeking? You can answer that based on your time studying for PhD or any other research related work.

N: When I am writing a paper, I look for the most recent and most topic related paper. From that point it is easy to niche it to target my contribution to further that topic. So I try to find the most relevant paper to my topic. And when I look at your information sheet, I notice that it is very much linked to Google - in the sense based on Google. In truth that is my starting point.

We can most probably find all we need from the University library.

A: You are referring to University as the specific place you studied at, or in general?

...

<Internals\\03 Staff3MNU> - § 29 references coded [5.95% Coverage]  
References 1-29 - 5.95% Coverage

### 2.1 How would you normally start a search?

...

A: What kind of information are you looking for?

Z: Lesson plans, how thematic units are organised. From the libraries I am mostly looking for writings related to Dhivehi language and culture, history and communication; to understand the context of cultural activities. For example, how toddy tapping is carried out, how mat weaving is carried out etcetera

A: So you are using the libraries for that information. Also the internet?

### 2.1 How would you normally start a search?

A: When you use the library, how do you approach it? How do you begin the search?

Z: I go the library and talk to the librarian. And they will direct us to the numbers [classification number] that I should be looking at for similar content. And also, there could be references in some readings to another article or book. In those cases, I go and ask where I can find that book. They also do find the book for me.

# APPENDIX 5C

A: So is it most often that you look for specific titles from the library? Or is it topic wise?  
Z: Both ways. Sometimes I have no idea what is available. So I go to the library and sit there and do the research - going through the books. And sometimes I use the terms and search for important citations given on the reference list of appropriate articles.  
A: In terms of searching - are you referring to the Internet?  
Z: Yes.  
A: You search on the internet, for the specific title, and then look for that book in the library?  
Z: Yes.  
...

<Internals\04 PG1MNU> - § 8 references coded [3.14% Coverage]  
References 1-8 - 3.14% Coverage

## 2.1 How would you normally start a search?

A: I want to mainly understand the information seeking aspects. I think it will be easier if we take an example. We can talk about the current textbook you are doing. Or we can talk about the columns you write for the newspaper. Or assignments for the master's program. Can you give me an example which required a literature review?  
F: If we are talking about literature review, I think it will be ideal to talk about assignments for the master's program.  
...  
A: How do you determine the reliability?  
F: I just have to read it. Even for us, the errors are not visible when we just skim through the articles. Have to go into detail.

<Internals\05 Safft4MNU> - § 16 references coded [3.73% Coverage]  
References 1-11 - 2.54% Coverage

## 2.1 How would you normally start a search?

Can you share with me an instance when you needed to seek information in an academic context?  
Z: In the university... [Not clear what is being said]  
A: Was that at MNU?  
Z: Yes  
A: Is there any particular project during studies or even for teaching purposes, where you were required to do a thorough literature search?  
...  
A: So to write that proposal, you had to find articles? How did you approach that?  
Z: I used EBSCO and academia and things like that. The major issue was cost. We have to buy isn't it? So I was looking for free full text material. It was very limited.  
...

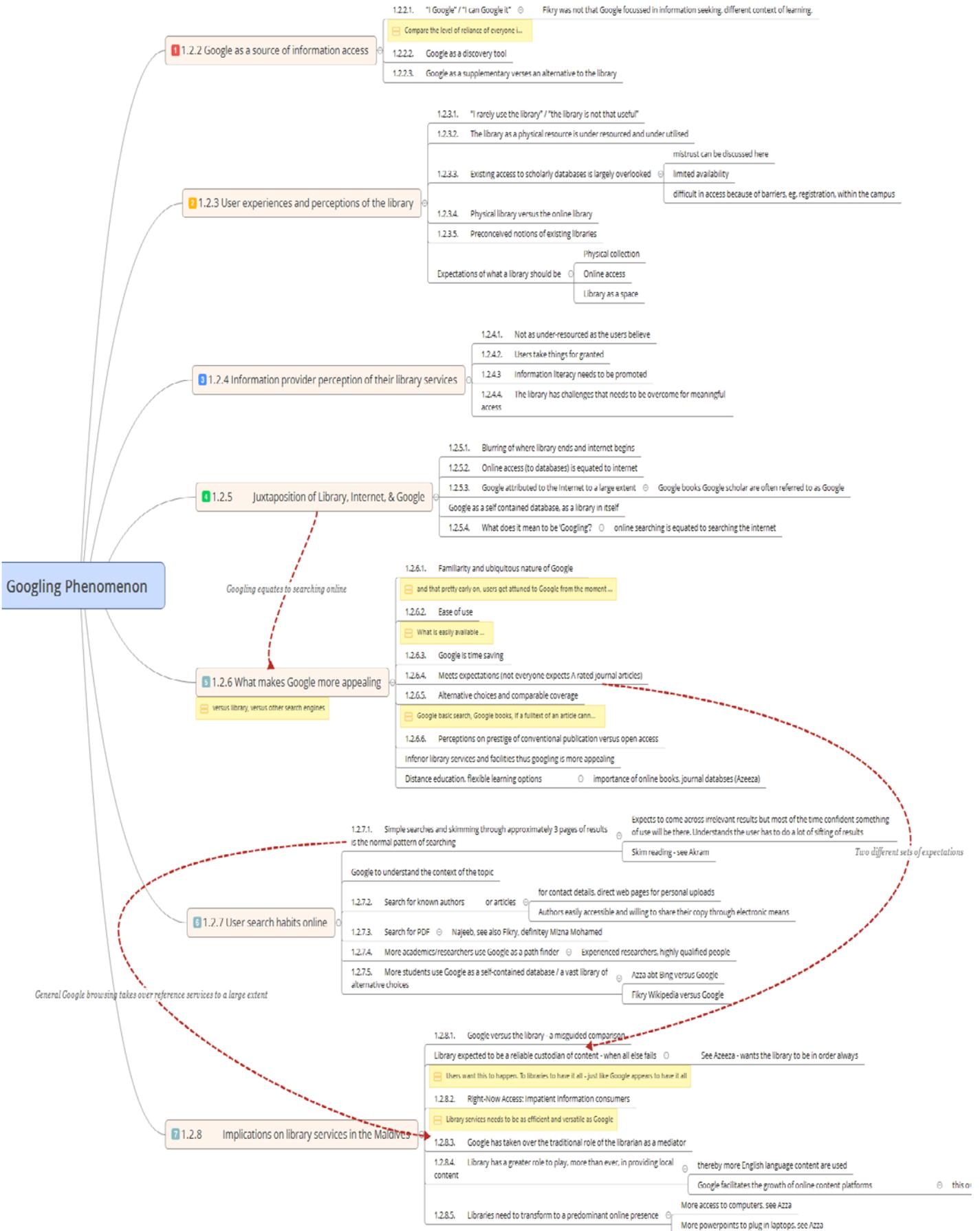
References 12-16 - 1.19% Coverage

## 2.1 How would you normally start a search?

A: When you started searching, how did you do it? Which platform? Library database or just the internet? How did you start?  
Z: university database.... [Not clear what is being said]... Google, data... advanced search hardly use... when used it is more effective.  
A: But usually you use free text?  
..

# APPENDIX 5D

## Mind map for the analysis of interview data



## APPENDIX 5E

### Matrix for the reporting of interview findings against the associated 'nodes' from NVivo™ analysis

<i>Main sections</i>	<i>Matching nodes</i>
<b>1. Googling as a source of information access</b>	
Discovery tool & Starting Point	2.1
Google synonymous with online/internet/web - adoption of Google (familiarity, frequency of use) - what is meant by 'googling'	2.2 (T5.1), 2.4 (S5.2.1.4) 3.6 (T5.2)
- awareness of other search engines	2.3 (T5.3)
Google meets expectations - Google as a complement/supplement to the library - Google as an alternative to the library - Googling meets needs (what are the needs then?)	2.10 2.10 3.5 (F5.2)
<b>2. Search strategies in the googling environment</b>	
Use of scholarly databases	2.6 & 2.4LIS (T5.4, T5.5)
The choice of Google platforms	2.9e
Number of result pages browsed through and the use of keywords (search terms)	2.9d (T5.6) Manual coding for: 'keyword', 'search strategy', 'PDF', 'search terms';
Quality assessment of retrieved material	2.9 (A5.10/T5.7),
Overcoming limited access to full-text scholarly material	2.8 & 2.8b (T5.8), 3.4
<b>3. Perceptions about the library as an information resource</b>	
I rarely use the library / the library is not that useful	2.5 (T5.9)
Low appeal for the physical library	2.12 2.10a (S5.2.3.2)
Mismatch between user expectation of a library and what is at their disposal	(S5.2.3.3) 2.7
[perhaps need to address: Low awareness about the library services]	2.11a
<b>4. Perceptions on user information behaviour</b>	
LIS perceptions about user IB	2.1LIS, 2.4LIS, 2.7LIS, 3.1LIS & 3.4LIS (T5.10)
'I can Google it' attitude	3.5LIS
<b>5. Changes required for library to stay relevant</b>	
Ideal Library	2.12, 3.3
Changes to the MNU / VC Library	2.12b
Challenges face by the MNU and VC Libraries - Promotion (lack) of library by academics	3.2LIS? 2.11c & 2.11d, 2.11e 3.3LIS, 2.9LIS, 3.7

Notes: T= Table  
F=Figure  
S=Section of thesis

# APPENDIX 6A

## Survey promotional material

### Survey Flyer



## I CAN GOOGLE IT

Help us understand the Googling phenomenon of the academic community and to understand the future of academic libraries.

Who is the survey for?

- Postgraduate Students
- Undergraduate Students in their last year of study
- Academic Staff

At:  
Curtin University  
The Maldives National University  
Villa College

Follow any of the links below to complete the 15-minute online [Qualtrics](#) survey.



<https://www.facebook.com/GooglingPhenomenon>



[https://curtin.au1.qualtrics.com/SE/?SID=SV\\_ocZ9S6lZYYaMyQR](https://curtin.au1.qualtrics.com/SE/?SID=SV_ocZ9S6lZYYaMyQR)



<https://twitter.com/GooglingLibrary>  
Twitter handle: #GooglingPhenomenon

For further information, please contact the principal investigator via email -- [aminath.riyaz@postgrad.curtin.edu.au](mailto:aminath.riyaz@postgrad.curtin.edu.au)

**Do you Google  
your way through  
University?**

**How important is  
your University  
library for your  
academic work?**

**Do you find  
information for  
your assignments /  
research papers  
by Googling?**

**Your feedback is  
very important**

The research has been approved by the Human Research Ethics Committee, Office of Research and Development, CURTIN UNIVERSITY (Approval number: RD-32-14 & RD-32-14-01)



**Curtin University**

**Snapshot from Ads Manager on Facebook page, 10 October 2016**

The screenshot shows the Facebook Ads Manager interface for a promotion titled "Unofficial: Googling". The promotion is active and has a budget of \$70.00, running for 14 days. It targets men and women aged 18-65+ in 2 locations with 5 interests. The promotion has reached 7,166 people and has 437 likes. A suggested page for "Unofficial: Googling" is shown, featuring a sponsored post with a keyboard image and a search button. The post text reads: "An investigation into the 'I can Google it' information seeking behaviour of the academic...". The page has 473 likes.

**Twitter handle**

The screenshot shows the Twitter profile for @GooglingLibrary. The profile bio states: "I'm a researcher at Curtin University, Western Australia, trying to study the Googling phenomenon as an embodiment of information seeking behaviour." The profile includes a location of Perth, Western Australia, a link to the Facebook page, and a join date of September 2016. The profile statistics are: 43 tweets, 34 following, 7 followers, 1 like, and 0 moments. A pinned tweet from September 29, 2016, asks for help from academic staff and students to understand the Googling Phenomenon, with a link to a survey: [curtin.au1.qualtrics.com/SE?SID=SV\\_0cZ9](http://curtin.au1.qualtrics.com/SE?SID=SV_0cZ9). Another tweet from October 17, 2016, mentions a Goodreads review of "Reinventing Reference" by Katie Elson Anderson.

## *Curtin staff news: Call for participation*

-you-google/

Getting Started Web Slice Gallery

 Curtin University  SEARCH Curtin Home Library

### STAFF NEWS

# Do you Google?

---

Monday 3 October 2016

Posted in [Research](#)

Interested in helping make sense of the Googling Phenomenon?

Researchers from the Department of Information Studies are seeking to understand how Googling influence the information seeking behaviour of students and academic staff, and also perceptions of library services.

The Phase III of data collection runs from 1 to 28 October and involves a 15 minute online survey. The survey is open for Curtin Academic staff, Postgraduate students, and Undergraduate students in their last year of study.

**If you are interested in taking part please [click here](#).**

You can also find the survey link on [twitter @GooglingLibrary](#).  
The survey link is also available on <https://www.facebook.com/GooglingPhenomenon/>

Participate and help spread the word.

If you need further information you may contact Aminath Riyaz at [aminath.riyaz@postgrad.curtin.edu.au](mailto:aminath.riyaz@postgrad.curtin.edu.au), or Dr Pauline Joseph at [p.joseph@curtin.edu.au](mailto:p.joseph@curtin.edu.au)

*This project has been approved by the Human Research Ethics Committee. (Approval Number: RD32-14-01)*

**Summary of t-test (ANOVA, Bonferroni) using SPSS**

Question number	Anova (sig.)	Bonferroni (Sig.)		
	Between groups	MNU vs. VC	VC vs. Curtin	MNU vs. Curtin
Q14 1	.016	1.000	.581	.018
Q14 2	.006	1.000	.667	.006
Q14 3	.000	.024	.970	.000
Q14 4	.002	1.000	.144	.000
Q14 5	.001	1.000	.151	.001
Q14 6	.000	.127	1.000	.000
Q15 1	.010	.019	.269	.084
Q15 2	.000	1.000	.289	.000
Q15 3	.001	.631	1.000	.001
Q15 4	.000	.197	.221	.000
Q15 5	.000	1.000	.042	.000
Q16 1	.000	1.000	.032	.000
Q16 2	.000	.001	1.000	.000
Q16 3	.000	.001	1.000	.000
Q16 4	.000	1.000	.002	.000
Q16 5	.000	1.000	.014	.000
Q16 6	.000	.106	.012	.000
Q16 7	.000	1.000	.262	.000
Q16 8	.000	.590	.152	.000
Q17 1	.441	1.000	1.000	.612
Q17 2	.303	1.000	1.000	.438
Q17 3	.933	1.000	1.000	1.000
Q18	.209	.257	.570	1.000
Q19	.790	1.000	1.000	1.000
Q20 1	.049	1.000	1.000	.045
Q20 2	.000	1.000	0.10	.000
Q20 3	.618	1.000	1.000	1.000
Q21 1	.530	1.000	1.000	.092
Q21 2	.001	1.000	.195	.147
Q21 3	.672	1.000	1.000	1.000
Q21 1	.205	1.000	.395	.699
Q21 2	.430	1.000	1.000	.598
Q21 3	.354	1.000	1.000	.547
Q21 4	.516	1.000	.895	1.000
Q21 5	.174	1.000	1.000	.188
Q21 6	.000	.032	.234	.000
Q21 7	.190	.331	.978	.534
Q21 8	.027	1.000	.312	.050
Q22 1	.000	1.000	.002	.000
Q22 2	.189	.524	.211	1.000
Q22 3	.003	1.000	.180	.003
Q22 4	.336	1.000	1.000	.423
Q22 5	.122	1.000	.407	.209
Q22 6	.012	1.000	.214	.014
Q23 1	.000	.664	1.000	.000
Q23 2	.733	1.000	1.000	1.000
Q23 3	.003	1.000	.454	.004
Q23 4	.649	1.000	1.000	1.000
Q23 5	.160	.333	.881	.405
Q23 6	.840	1.000	1.000	1.000
Q23 7	.079	1.000	.323	.250
Q24	.000	1.000	.104	.001
Q25	.020	.094	.020	.907
Q26	.000	1.000	.000	.000
Q27 1	.020	.269	1.000	.023
Q27 2	.764	1.000	1.000	1.000
Q27 3	.000	1.000	.008	.000

## APPENDIX 6B (Page 2 of 2)

Q27 4	.000	.322	1.000	.000
Q27 5	.023	.191	.183	.094
Q27 6	.071	1.000	.473	.129
Q27 7	.145	1.000	.557	.295
Q27 8	.947	1.000	1.000	1.000
Q27 9	.200	.326	.925	.592
Q28 1	.985	1.000	1.000	1.000
Q28 2	.000	.921	.000	.000
Q28 3	.015	.461	1.000	.013
Q28 4	.474	.848	1.000	1.000
Q28 5	.827	1.000	1.000	1.000
Q29 1	.000	.126	.308	.000
Q29 2	.001	1.000	.663	.001
Q29 3	.049	.671	1.000	.047
Q29 4	.009	1.000	.093	.028
Q29 5	.267	1.000	1.000	.337
Q29 6	.000	.751	.003	.000
Q29 7	.002	.002	.051	.077
Q29 8	.100	1.000	1.000	.098
Q30 1	.000	.429	1.000	.000
Q30 2	.000	.514	.018	.000
Q30 3	.032	.085	.027	1.000
Q32 1	.543	.812	1.000	1.000
Q32 2	.799	1.000	1.000	1.000
Q32 3	.058	.176	.059	1.000
Q34 1	.000	.485	1.000	.000
Q34 2	.000	.041	.063	.000
Q34 3	.000	1.000	.062	.000
Q34 4	.003	.168	1.000	.003
Q34 5	.000	.002	.057	.000
Q35 6	.315	.408	.448	1.000
Q34 7	.523	.767	.949	1.000
Q34 8	.002	.020	.617	.006
Q34 9	.000	1.000	.074	.000
Q34 10	.650	1.000	1.000	1.000
Q34 11	.000	.154	.071	.000
Q34 12	.136	1.000	.412	.329
Q35 1	.129	1.000	.832	.184
Q35 2	.020	.158	.023	.589
Q35 3	.419	1.000	1.000	.817
Q35 4	.331	1.000	1.000	.412
Q35 5	.015	1.000	.872	.014
Q37 1	.074	.815	.164	.387
Q37 2	.087	1.000	1.000	.082
Q37 3	.004	1.000	.073	.016
Q37 4	.354	1.000	1.000	.504
Q37 5	.812	1.000	1.000	1.000
Q37 6	.776	1.000	1.000	1.000
Q37 7	.834	1.000	1.000	1.000
Q37 8	.218	.260	.500	1.000
Q37 9	.051	.074	.045	1.000
Q38 1	.795	1.000	1.000	1.000
Q38 2	.740	1.000	1.000	1.000
Q38 3	.989	1.000	1.000	1.000
Q38 4	.136	.537	1.000	.203
Q39 1	.000	.409	.391	.192
Q39 2	.000	.331	.002	.000
Q39 3	.000	1.000	.033	.000
Q39 4	.011	.413	1.000	.010
Q39 5	.489	1.000	.747	1.000

Note. A  $p$ -value < 0.01 indicates statistically significant difference between groups

# APPENDIX 6C

## Datasheet for Q14

(in reference to Figure 6.18, included as a sample datasheet)

Q14: When you are looking for information for academic purposes (e.g. research / assignment / project / article / publication) how would you normally **start a search**? (please respond to all statements)

### MNU participants

MNU - Staff	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online cattalo [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	26	59.1	3.0	30	65.2	3.3	6	14.0	0.7	2	4.8	0.2	3	7.0	0.3	13	28.9	1.4
Often	4	12	27.3	1.1	12	26.1	1.0	13	30.2	1.2	2	4.8	0.2	10	23.3	0.9	13	28.9	1.2
Sometimes	3	5	11.4	0.3	3	6.5	0.2	18	41.9	1.3	8	19.0	0.6	14	32.6	1.0	17	37.8	1.1
Rarely	2	1	2.3	0.0	1	2.2	0.0	4	9.3	0.2	14	33.3	0.7	14	32.6	0.7	2	4.4	0.1
Never	1	0	0.0	0.0	0	0.0	0.0	2	4.7	0.0	16	38.1	0.4	2	4.7	0.0	0	0.0	0.0
<b>Total</b>		<b>44</b>	<b>100</b>	<b>4.4</b>	<b>46</b>	<b>100</b>	<b>4.5</b>	<b>43</b>	<b>100</b>	<b>3.4</b>	<b>42</b>	<b>100</b>	<b>2.0</b>	<b>43</b>	<b>100</b>	<b>3.0</b>	<b>45</b>	<b>100</b>	<b>3.8</b>

MNU - Postgrads	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	8	44.4	2.2	13	72.2	3.6	2	11.8	0.6	1	5.6	0.3	1	5.3	0.3	4	22.2	1.1
Often	4	6	33.3	1.3	2	11.1	0.4	3	17.6	0.7	2	11.1	0.4	2	10.5	0.4	2	11.1	0.4
Sometimes	3	2	11.1	0.3	2	11.1	0.3	6	35.3	1.1	5	27.8	0.8	7	36.8	1.1	7	38.9	1.2
Rarely	2	2	11.1	0.2	0	0.0	0.0	4	23.5	0.5	4	22.2	0.4	6	31.6	0.6	4	22.2	0.4
Never	1	0	0.0	0.0	1	5.6	0.1	2	11.8	0.1	6	33.3	0.3	3	15.8	0.2	1	5.6	0.1
<b>Total</b>		<b>18</b>	<b>100</b>	<b>4.1</b>	<b>18</b>	<b>100</b>	<b>4.4</b>	<b>17</b>	<b>100</b>	<b>2.9</b>	<b>18</b>	<b>100</b>	<b>2.3</b>	<b>19</b>	<b>100</b>	<b>2.6</b>	<b>18</b>	<b>100</b>	<b>3.2</b>

MNU - Undergrads	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	13	72.2	3.6	12	75.0	3.8	0	0.0	0.0	0	0.0	0.0	2	11.1	0.6	5	29.4	1.5
Often	4	4	22.2	0.9	2	12.5	0.5	1	5.9	0.2	0	0.0	0.0	1	5.6	0.2	2	11.8	0.5
Sometimes	3	0	0.0	0.0	1	6.3	0.2	5	29.4	0.9	5	29.4	0.9	7	38.9	1.2	4	23.5	0.7
Rarely	2	1	5.6	0.1	1	6.3	0.1	3	17.6	0.4	4	23.5	0.5	3	16.7	0.3	3	17.6	0.4
Never	1	0	0.0	0.0	0	0.0	0.0	8	47.1	0.5	8	47.1	0.5	5	27.8	0.3	3	17.6	0.2
<b>Total</b>		<b>18</b>	<b>100</b>	<b>4.6</b>	<b>16</b>	<b>100</b>	<b>4.6</b>	<b>17</b>	<b>100</b>	<b>1.9</b>	<b>17</b>	<b>100</b>	<b>1.8</b>	<b>18</b>	<b>100</b>	<b>2.6</b>	<b>17</b>	<b>100</b>	<b>3.2</b>

All three groups combined stats

Combined total	80		4.4	80		4.5	77		2.8	77		2.1	80		2.7	80		3.4
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Note:

n = number of participants, m = mean

The combined m value is an average of the mean for the category

Q14: When you are looking for information for academic purposes (e.g. research / assignment / project / article / publication) how would you normally **start a search** ? (please respond to all statements)

### VC participants

VC - Staff	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	6	60.0	3.0	6	60.0	3.0	3	30.0	1.5	0	0.0	0.0	0	0.0	0.0	7	70.0	3.5
Often	4	3	30.0	1.2	1	10.0	0.4	2	20.0	0.8	1	10.0	0.4	1	10.0	0.4	0	0.0	0.0
Sometimes	3	1	10.0	0.3	2	20.0	0.6	3	30.0	0.9	2	20.0	0.6	6	60.0	1.8	2	20.0	0.6
Rarely	2	0	0.0	0.0	1	10.0	0.2	1	10.0	0.2	5	50.0	1.0	2	20.0	0.4	0	0.0	0.0
Never	1	0	0.0	0.0	0	0.0	0.0	1	10.0	0.1	2	20.0	0.2	1	10.0	0.1	1	10.0	0.1
<b>Total</b>		<b>10</b>	<b>100</b>	<b>4.5</b>	<b>10</b>	<b>100</b>	<b>4.2</b>	<b>10</b>	<b>100</b>	<b>3.5</b>	<b>10</b>	<b>100</b>	<b>2.2</b>	<b>10</b>	<b>100</b>	<b>2.7</b>	<b>10</b>	<b>100</b>	<b>4.2</b>

VC - Postgrads	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	4	66.7	3.3	5	83.3	4.2	3	50.0	2.5	0	0.0	0.0	1	14.3	0.7	2	33.3	1.7
Often	4	1	16.7	0.7	0	0.0	0.0	2	33.3	1.3	0	0.0	0.0	0	0.0	0.0	3	50.0	2.0
Sometimes	3	0	0.0	0.0	1	16.7	0.5	1	16.7	0.5	1	20.0	0.6	4	57.1	1.7	1	16.7	0.5
Rarely	2	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	3	60.0	1.2	1	14.3	0.3	0	0.0	0.0
Never	1	1	16.7	0.2	0	0.0	0.0	0	0.0	0.0	1	20.0	0.2	1	14.3	0.1	0	0.0	0.0
<b>Total</b>		<b>6</b>	<b>100</b>	<b>4.2</b>	<b>6</b>	<b>100</b>	<b>4.7</b>	<b>6</b>	<b>100</b>	<b>4.3</b>	<b>5</b>	<b>100</b>	<b>2.0</b>	<b>7</b>	<b>100</b>	<b>2.9</b>	<b>6</b>	<b>100</b>	<b>4.2</b>

VC - Undergrads	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	0	0.0	0.0	1	100	5.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Often	4	1	100	4.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Sometimes	3	0	0.0	0.0	0	0.0	0.0	1	100	3.0	0	0.0	0.0	1	100	3.0	1	100	3.0
Rarely	2	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	1	100	2.0	0	0.0	0.0	0	0.0	0.0
Never	1	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
<b>Total</b>		<b>1</b>	<b>100</b>	<b>4.0</b>	<b>1</b>	<b>100</b>	<b>5.0</b>	<b>1</b>	<b>100</b>	<b>3.0</b>	<b>1</b>	<b>100</b>	<b>2.0</b>	<b>1</b>	<b>100</b>	<b>3.0</b>	<b>1</b>	<b>100</b>	<b>3.0</b>

Combined total	17		4.2	17		4.6	17		3.6	16		2.1	18		2.9	17		3.8
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Q14: When you are looking for information for academic purposes (e.g. research / assignment / project / article / publication) how would you normally **start a search** ? (please respond to all statements)

### Curtin participants

Curtin - Staff	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	15	38.5	1.9	17	40.5	2.0	11	26.8	1.3	0	0.0	0.0	0	0.0	0.0	15	36.6	1.8
Often	4	14	35.9	1.4	12	28.6	1.1	16	39.0	1.6	0	0.0	0.0	6	14.6	0.6	16	39.0	1.6
Sometimes	3	6	15.4	0.5	12	28.6	0.9	8	19.5	0.6	6	15.0	0.5	14	34.1	1.0	6	14.6	0.4
Rarely	2	3	7.7	0.2	1	2.4	0.0	3	7.3	0.1	18	45.0	0.9	11	26.8	0.5	3	7.3	0.1
Never	1	1	2.6	0.0	0	0.0	0.0	3	7.3	0.1	16	40.0	0.4	10	24.4	0.2	1	2.4	0.0
<b>Total</b>		<b>39</b>	<b>100</b>	<b>4.0</b>	<b>42</b>	<b>100</b>	<b>4.1</b>	<b>41</b>	<b>100</b>	<b>3.7</b>	<b>40</b>	<b>100</b>	<b>1.8</b>	<b>41</b>	<b>100</b>	<b>2.4</b>	<b>41</b>	<b>100</b>	<b>4.0</b>

Curtin - Postgrads	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	43	41.7	2.1	50	48.1	2.4	46	45.5	2.3	0	0.0	0.0	3	3.0	0.2	49	48.0	2.4
Often	4	31	30.1	1.2	28	26.9	1.1	28	27.7	1.1	1	1.0	0.0	9	9.1	0.4	27	26.5	1.1
Sometimes	3	20	19.4	0.6	15	14.4	0.4	21	20.8	0.6	14	14.0	0.4	20	20.2	0.6	19	18.6	0.6
Rarely	2	9	8.7	0.2	9	8.7	0.2	4	4.0	0.1	34	34.0	0.7	39	39.4	0.8	7	6.9	0.1
Never	1	0	0.0	0.0	2	1.9	0.0	2	2.0	0.0	51	51.0	0.5	28	28.3	0.3	0	0.0	0.0
<b>Total</b>		<b>103</b>	<b>100</b>	<b>4.0</b>	<b>104</b>	<b>100</b>	<b>4.1</b>	<b>101</b>	<b>100</b>	<b>4.1</b>	<b>100</b>	<b>100</b>	<b>1.7</b>	<b>99</b>	<b>100</b>	<b>2.2</b>	<b>102</b>	<b>100</b>	<b>4.2</b>

Curtin - Undergrads	Scale	Search on the internet [a]			Search using Google [b]			Search on library's online catalogue [c]			Ask a librarian [d]			Use library's physical collection [e]			Search on library's online collection [f]		
		n	%	m	n	%	m	n	%	m	n	%	m	n	%	m	n	%	m
Most often	5	10	55.6	2.8	10	55.6	2.8	13	68.4	3.4	0	0.0	0.0	3	16.7	0.8	9	50.0	2.5
Often	4	1	5.6	0.2	4	22.2	0.9	1	5.3	0.2	0	0.0	0.0	0	0.0	0.0	4	22.2	0.9
Sometimes	3	4	22.2	0.7	2	11.1	0.3	5	26.3	0.8	2	12.5	0.4	3	16.7	0.5	5	27.8	0.8
Rarely	2	2	11.1	0.2	2	11.1	0.2	0	0.0	0.0	6	37.5	0.8	4	22.2	0.4	0	0.0	0.0
Never	1	1	5.6	0.1	0	0.0	0.0	0	0.0	0.0	8	50.0	0.5	8	44.4	0.4	0	0.0	0.0
<b>Total</b>		<b>18</b>	<b>100</b>	<b>3.9</b>	<b>18</b>	<b>100</b>	<b>4.2</b>	<b>19</b>	<b>100</b>	<b>4.4</b>	<b>16</b>	<b>100</b>	<b>1.6</b>	<b>18</b>	<b>100</b>	<b>2.2</b>	<b>18</b>	<b>100</b>	<b>4.2</b>

Combined total	160		4.0	164		4.1	161		4.1	156		1.7	158		2.3	161		4.1
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## APPENDIX 6D

### “Other search engines” listed by the participants (Q17)

Answers as were given (not corrected for spelling)	MNU	VC	Curtin	Total
Baidu, Qwant			1	1
BASE – Bielefeld Academic Search Engine			1	1
Bing	1		6	7
Bing, Yahoo	1			1
Data base	1			1
dogpile	1			1
DuckDuckGo			3	3
ebsco	1			1
Ecosia			1	1
Evidence base search engines			1	1
Firefox			1	1
Go to databases relevant to my area			1	1
Google Scholar	1	1	11	13
Google scholar is the only applicable search engine			1	1
Library databases			1	1
Nomr		1		1
OER commas, Goodreads.com	1			1
Ovid, Medline, PubMed etc			1	1
PubMed			2	2
Science direct			1	1
Scifinder			1	1
Trove			1	1
Web databases	1			1
Web of Science, Scopus, Google, Scholar, PubMed, Pubmed Central			1	1
Yahoo	2		1	3
<b>Total</b>	<b>10</b>	<b>2</b>	<b>36</b>	<b>48</b>

## APPENDIX 6E

### Extracted data from Q41 (open-ended question)

#	Institu.	Q41 text	Group
1	Curtin	The library meets my needs at this time. My only suggestion would be to make the search engine similar to Google which may speed up searches for relevant materials.	Postgrad
2	Curtin	The Curtin Library has a good collection of online articles. But it would be helpful to have more online books as well. (there are many good books that are not available online). I prefer going to a physical library but distance, travel and personal commitments have made it nearly impossible to travel all the way to the library. In addition to the above online library saves time in locating books.	Postgrad
3	Curtin	Have all the resources in PDF format and available to download.	Postgrad
4	Curtin	We have to log-in to use the online library, and the session requires frequent log-ins. I find this constant "your session has expired, please log-in" disturbs the search process. / I am new to the academic research platform, and thus have not encountered many issues with Curtin University's on-line library.	Postgrad
5	Curtin	More e-books available	Postgrad
6	Curtin	I only use it on-line, so the library needs to stay up-to-date with all relevant on-line material, peer-reviewed journal articles and provided free access to these for its students.	Postgrad
7	Curtin	Q39 are questions, not statements. The allowed answers are very confusing!!!	Postgrad
8	Curtin	attractive comfortable cabins for study	Postgrad
9	Curtin	More digitized with great opportunity to download soft copy of the material.	Postgrad
10	Curtin	The library is often too crowded and noisy. especially where the computers are located. It would be great if a specific space would be considered for PhD students and more quiet with enough available computers	Postgrad
11	Curtin	It would be good if the library was networked more seamlessly with other academic libraries (around Australia at least). It would be good if it was a more appealing space, although I do not live in Perth, so don't get there, but it is a particularly unattractive building.	Postgrad
12	Curtin	As long as the library provides access to databases I'll be happy	Postgrad
13	Curtin	My dreaming library should provide online access to all kinds of information in a simple way like Google with no financial and copyright barriers. The building should be located in a spacious park. In that park, there should be at least three buildings: first, main library building with collections and access to the internet and databases , quiet reading rooms, and staff office; second, gazebo where people can discuss and have access to the internet in relaxing way and enjoy the fresh air of the nature, third: a cafe, where we can order drinks and foods, with access to internet and also some light readings like newspapers, magazines, and fictions. The design of the building should be open and integrated with the nature, like the wall should be made of glasses so we can see the garden outside. In the center of the park , there should be a big pool with colourfur fishes, birds, and ducks.	Postgrad
14	Curtin	If a greater deal of books were available as e-books and there wasn't a time limit on borrowing these, that would be helpful. In more creative areas, there's a need for other kinds of books than scientific books - I understand the library cannot purchase all the books published but it would be great if there were better online/e-book selections available to students.	Postgrad
15	Curtin	As an remote student I would like to have access to other interstate universities' librari	Postgrad

#	Institu.	Q41 text	Group
16	Curtin	Most of the academic references I need I can source through the library. It is an excellent resource. I have also had a lot of help from the School's librarian (School of social work). / I tried to order a couple more up to date editions of a couple of books I needed - but the requests haven't been approved. I imagine this could be related to the costs of the books - even if purchased as an on-line resource - maybe it was too expensive. / I would perhaps come to the library more often to browse items on the shelf , but I live too far away for regular visits. // I would like it if there were more on-line e-books. Rather than trying to access books on reserve which are hard to obtain. / Overall however, there is so much available that for my research purposes, I am managing okay with what is there.	Postgrad
17	Curtin	I'm sorry I can't add anything - I work primarily from home although earlier in my research journey I spent many wonderful hours at the library.	Postgrad
18	Curtin	I'm v happy with my library (but not your spelling of utilise!). // I see google as being different to google scholar and have filled this out on that basis. Good luck!	Postgrad
19	Curtin	As an information source, the library already serves me well. I am happy with my ability to search the catalogues and find physical books and online journals. // As a physical space, the library currently has a very good use of space as a sort of social place (for those who want that kind of social-studying feel) at Curtin. Access to computers is usually easy adequate, since many people now use laptops anyway (which makes access to power points more important now). Areas for group work are plentiful. Areas for silent study are available for more intensive study. I cannot imagine what could help me better utilise the library resources. // Im aware of the resources available. I either dont have a use for them, or I do and I use them already.	Postgrad
20	Curtin	I really like my library actually although I am able to find almost everything online googling. But I believe that rather than having a good library, having a good academic staff to help us out is more important. A good academic staff is a good walking library who is able to give you whatever information you want in just seconds by filtering through his/her knowledge.	Postgrad
21	Curtin	more vending machines should be put there.	Postgrad
22	Curtin	Being specific with my subject I am satisfied with the online resources in the Curtin libr	Postgrad
23	Curtin	No need for anything just lower the price of copying and printing ??.	Postgrad
24	Curtin	if anything could be done to make the catalogue search better that would be so great! / I find the search function awkward and any improvement would be very welcome!	Postgrad
25	Curtin	Recently published books are often not found in the library although they could have been purchased in the electronic form. When the library changed location of some of its services online a few months ago, no notification or instruction was sent to the users. Having more computers would help as often there is no space to work (too crowded). Would also be good to search all available libraries (all unies that participate in document delivery) through one catalogue, having to choose a specific one or "all" as needed. Otherwise it takes time to find that particular link to do it.	Postgrad
26	Curtin	More access to journal subscriptions.	Postgrad
27	Curtin	I think we need less of the pyhsical resources as more journals are on-line with full text.	Postgrad
28	Curtin	i like the fact that I can recommend books- they almost always purchase them which is great because otherwise they would not have nearly enough for my studies.	Postgrad
29	Curtin	When requesting books/articles/photocopies, it would be useful if they were the correct ones.	Postgrad
30	Curtin	I am very happy with the Robertson Library at Curtin. They have teams dedicated to each school, and the librarians are prompt in responding to questions. I think it is excellent	Postgrad
31	Curtin	Make the entire catalog digital. I have had situation when I needed a source with urgency but it was borrowed.	Postgrad

#	Institu.	Q41 text	Group
32	Curtin	The most important thing is to increase the library's online functionality. To meet the needs of the ever changing flood of information.	Postgrad
33	Curtin	better search function for its contents	Postgrad
34	Curtin	The University Library is continually changing to meet the teaching needs of academic staff and the learning requirements of students by providing adequate spaces, computers and online resources. For research staff and students, access to key online resources containing peer-review literature and authoritative data sources will continue to be relevant.	Postgrad
35	Curtin	I would like to have more space on the library	Postgrad
36	Curtin	More resources and books/journals online. I study part-time and cannot physically get to the library because of work commitments. I need information to be available online so I can access it from elsewhere.	Postgrad
37	Curtin	My library needs to have librarians being more interactive with users. I think there is still a perception that you are "on your own" and you need to work it out for yourself. This can be very daunting in an academic sense. I end up using google when I am frustrated with not having my search needs met. Web pages themselves don't have good search engines. Google is more efficient when you know what you are looking for.	Postgrad
38	Curtin	The search engine. I use Google Scholar as a starting point because it is easy to navigate and seems to come up with more relevant articles. Using key terms seems to be more effective on Google Scholar than it is on the Curtin library catalogue. // If more books were accessible electronically, I would use it more. At the moment, most books I'm interested in are only accessible (for free) through Google Books...which misses pages.	Postgrad
39	Curtin	More information, resources and facilities	Postgrad
40	Curtin	I am not sure. It needs to continue what it has been doing now. I think many research students are not aware of impact factor, predatory journals etc. I believe library can play a role in educating the early researchers on these areas	Postgrad
41	Curtin	The library should have a chat line not specifically to ask questions of a librarian but just a chance to connect and 'meet' a librarian online and general research questions etc.	Postgrad
42	Curtin	Being able to read ebooks offline or on mobile apps	Postgrad
43	Curtin	Perhaps better associations and connections with various journal publishers in order to circumvent paywalled articles.	Postgrad
44	Curtin	I am happy with Curtin Library. // PS I did my prac there too, and the staff were very professional and very friendly!	Postgrad
45	Curtin	As I am an online student, I don't think I can answer this question. // My experience of the Curtin Uni library as an online student has been very positive.	Postgrad
46	Curtin	I am a "googlaholic" to be honest. However, I am still in favor of reading a book physically. Can't deny the importance of library. There will be not much change needed to Curtin Library, except that I wish to have more access to online books, as sometimes, due to the schedule, I can't go to library to borrow books.	Postgrad
47	Curtin	Ensure that the correct editions of textbooks required for units are available as e-books. Workshops available outside regular working hours (as many online students are online due to also working full time).	Postgrad
48	Curtin	none	Postgrad
49	Curtin	I don't see my library (i.e. the Curtin University Robertson Library) as needing to change. / Online access is very good, access to the physical stacks is also good, and I feel that all the required journals and databases etc that I need for my research are provided by the library. Plus the atmosphere and ambience is very quiet and academic and the staff are helpful whenever I have needed them (which is not very often).	Postgrad

#	Institu.	Q41 text	Group
50	Curtin	The hardest things to search for are indicators that a text (usually book) will or won't contain explanatory content about a particular topic, in a manner that will elaborate on the standard content one might find in an encyclopaedia. Most time spent searching is wasted on evaluating results which merely reiterate what one has already read. It is obviously difficult to teach a computer to make qualitative judgements about content, but it is easy to store the feedback of previous readers. If this feedback were somehow put in standardised formats, such as, "Complete derivation of [insert famous equation] contained herein", or "Disappointingly terse description of [insert phenomenon here]", along with generic information about the type of reader (i.e. "3rd year student" or "Expert"), then progress might be on the cards. The current searching options are a bit of a joke, because they are limited by matching keywords, subject areas, etc. It is often obvious what the subject one wants to read about it; what is difficult is finding a text that approaches/discussed the subject in a manner useful to you. We must remember that most journal articles are not worth reading, because they do not contain sufficient instruction to allow non-experts to understand them with a moderate amount of effort. Books, on the other hand, are the source from which people usually LEARN, and what makes a useful book useful is not the collection of keywords which categorise it.	Postgrad
51	Curtin	Use of better seo to improve searches and relevance.	Postgrad
52	Curtin	The Curtin library website is quite jumbled. It needs to be cleaner and more intuitive as it is easy to get lost in, linkd take you back to where you started. It is messy. / It needs a major clean-up	Postgrad
53	Curtin	I think Curtin Library is doing a good job already. The online provision is easy to use and offers most texts I need.	Postgrad
54	Curtin	Very occasionally I have to go to the state library to access items that can't be made available online for copyright reasons.	Postgrad
55	Curtin	Simpler interface amd less clutter. People like Google because it works and because you rarely need to look past the first page of results to get ther information you need. I personally am willing to navigate to the databases link in an academic library, choose the database I want and search it using it's advanced search function, but only for the purposes of having academic information I can trust for assignments. I can completely understand why the average person doesn't want to do that. For a start, it requires knowing which databases might contain relevant information and recalling what they are named. // Don't get rid of advanced searching functions and databases - they have their place for more precise searching. But Google is now the gold standard for information seeking, all other search interfaces have to be as simple and efficient to keep up.	Postgrad
56	Curtin	Considering a number of its courses are offered completely online, the resources required to study these courses and subjects have not kept up. More resources need to be available online. // In regards to what is available online, it would be helpful to have resources clustered together for each subject and then sorted into the week it's required. Hours are lost by each student having to independently searching, finding, accessing, downloading and saving 20 odd resources per week per subject.	Postgrad
57	Curtin	As an online student it would really help me if everything the library owned was available online, but I know that isn't realistic.	Postgrad
58	Curtin	Because I'm not in Perth and can't get access to physical books in the library, more e-books would be handy. I really appreciate the e-books the library currently has for my course. This service makes my study feel less isolated and I have similar access to the resources that internal students have.	Postgrad
59	Curtin	places for collaboration as well as private and quiet study / while physical books are terrific, having the ability to "go to the library" in an online capacity if unable to make it to the physical library on a particular day.	Postgrad

#	Institu.	Q41 text	Group
60	Curtin	As a Library studies student I feel it isn't that helpful for me to answer this question as I am privy to how much work is going on behind the scenes to change and adapt the library structure and services. / / If anything, they need to tie in more with the administration of the whole university - working to secure support and buy-in for digital scholarship services and more resources.	Postgrad
61	Curtin	Assist and collect the monographs availability in the library where the e-copies are not.	Postgrad
62	Curtin	Physical space that accommodates younger generations. / Outreach programs to its user communities.	Postgrad
63	Curtin	Easier online catalogue searches i.e. integrate google search engine into the library online catalogue not the other way around. That will be the sweetspot for researches as it provides the ease of use and direct access to required resources. Having said that it will not replace google entirely. Some contents such as lectures slides from other universities/organisations only shows up in google that doesn't quite belong to be housed in the library.	Postgrad
64	Curtin	The library is awesome! I love the use of the find it button\ when using google scholar.	Postgrad
65	Curtin	The academic library needs to promote its links to the public library so that students when they leave the university, remember that library resources are not just for the academic, but rather are vital for the ongoing education and entertainment of individuals throughout their lives. Some of the International students who come to Curtin University come from countries where public libraries are either unknown or have been devastated by war, or censorship. By using academic libraries and skilled use of freely available search engines such as Google, the International students can take home knowledge of information resources for the general population of their country.	Postgrad
66	Curtin	/ The libraries I use now are sufficient and are keeping up with trends and the latest technology therefore I am utilizing them a lot, if they remain on this path I will continue to use them.	Postgrad
67	Curtin	In my opinion, the library needs to create specific databases for each unit. Have the wider catalogues available of course, but for ease of initial research databases relevant to each particular unit of study makes for less frustration, this could mean that more students would happily use their university library because access and actual results, would show the student that they could actually find what they were searching for. This would/could be that other online searches may be reduced, because they would not be needed as much.	Undergrad
68	Curtin	As an online student, sometimes I panic if I can't find the articles I need for assignments, and I feel there is no one to ask for help as one could in a physical library. 24 hour access to online (instant messaging type of help) librarian help would be great for me. It is when I cannot find information on the University library website that I usually turn to the internet, which only sometimes returns the information I need. I have to say though over the 5 years I have studied with Curtin Uni that the library resources have improved and become more accessible, or at least seem to have. It could just be that I have become more confident using the library and internet in general, I am not sure. Online study groups would be great too, I am part of study groups for each unit on Facebook and they are wonderful most of the time, giving us online students who want to connect with other students, the opportunity. It would make the study experience more fun and inclusive if the Uni library had a 'space' where we could do the same thing without the negative aspects of FB, such as lack of privacy etc.	Undergrad
69	Curtin	As an online student, I would like to be able to access more ebooks. Whilst there are many journal articles to explore sometimes, especially when starting research books can give a great overview of a topic as journal articles tend to have a more narrow and specific view.	Undergrad
70	Curtin	Unsure.	Undergrad

#	Institu.	Q41 text	Group
71	Curtin	There should be balance of both physical information and online materials so that our clients can understand the advance technology as well as the clients can support their findings with physical evidence that is also available in the library.	Undergrad
72	Curtin	Despite the explosion of electronic resources and on-line material, I still believe there is a place for academic libraries filled with tangible information sources; books etc. I feel that if the libraries continue to hold content that is up to date and relevant students will still use library facilities. I myself, find it so much easier to read out of a course book, to be able to flick through its pages and see what else is in there is a benefit to me. I find valuable information this way as apposed to reading the same book on-line. / I really like how the Curtin library does study courses this allows me to keep up to date with endnote and searching techniques etc. / The library as a space issue is very timely as there is definitely a transition phase currently underway that will see libraries becoming a place to meet, use resources, use the cafe and to enjoy just sitting in. I do not think of a library as a place for solely just reading books and studying anymore.	Undergrad
73	Curtin	Libraries need to have ample space for students to study. Lots of desks and quiet spaces.	Undergrad
74	Curtin	The field I am studying (Librarianship and Corporate Information management) often has articles/books available online through the catalogue, but when you follow them through it is available for purchase, not access. I would like an easy way to let people know I want this article. // I would also like to be able to report errors with links/cataloging from the search results page.	Undergrad
75	Curtin	I have been happy with the online resources available from Curtin to use. Occasionally I have turned to Google Scholar, the internet or the local university online library to find a resource that is not available at Curtin. I have also visited the local university library to borrow physical books on the odd occasion when a specific title was not available online. It is frustrating for an online student not to have the books available online that tutors recommend to read or when journals are no longer subscribed to by the library that have previously been available and are needed again.	Undergrad
76	Curtin	N/a	Undergrad
77	Curtin	I am a Curtin Uni student studying online through Open University Australia. I find the library online catalogue to be fantastic and could not do without it. However, I do get occasionally frustrated that some of the items I need are only available as physical books and I have no way of borrowing these as I live in Melbourne. If there was some way to get an electronic copy that would help immensely. Or if Curtin was affiliated with academic libraries in Melbourne that I could assess that would also be useful to obtain a physical copy. I have tried Library Link Victoria to source academic books and found it to be slow and unreliable.	Undergrad
78	Curtin	the library needs to have quiet zones with sound proof barriers needed to eliminate the noise. introduce more patrols to eliminate a congregate of people talking near the study rooms.	Undergrad
79	Curtin	Curtin library is a sound academic resource. It has a broad selection of resources online through its discovery layer which I appreciate as I study distance education. I think there is some scope to highlight and point students to open-access academic options online. At present a fair proportion of articles are from the bundled deals the library has with publishers (I would think). The cost is astronomical I'm sure. // In general, students want it now. Clicking around the library interface can be quite daunting - especially for new Undergrads. It takes time to become proficient with the online catalogue. This is an important skill though and faculty are also responsible, along with librarians, for making sure students can use it well. // Information literacy - as in understanding how to identify whether an open-access or googled article has academic rigour and impact value is another bone-ofcontention. I don't think enough students are given the tools to work this stuff out and many struggle with poor resources in the beginning.	Undergrad

#	Institu.	Q41 text	Group
80	Curtin	As an online undergraduate, Curtin's library resources are extensive and meet most of my course research requirements. More and more core texts are being made available for online access, which was a problem 2 or 3 years ago. Sometimes the catalogue search can be counter intuitive even for those being trained to use them professionally, so it would be useful to provide a 'Google search' window to simplify initial searches for the less experienced researcher.	Undergrad
81	Curtin	Curtin search engine should be more effective than now as putting keywords doesn't give expected results. / Curtin journal database is bias to some area where you find lots of journals and weak in other areas where not having all access to the major databases (e.g Curtin does not have access to PubMed database). Now Curtin should have this because of the new launch of the new Medical School.	Staff
82	Curtin	I think the library resource is adequate. It could of course be better. The problem I think lies in the inability or unwillingness of students to understand and use the library. All kinds of crap comes out when you do a google search. Students too often don't understand the difference in scholarly quality between something written in a peer reviewed journal (which you will most reliably get through a library search) & some relatively anonymous blog.	Staff
83	Curtin	Hard copies and e-copies of books are necessary. E-books are good for searching in, querying and teaching, but cannot be read from cover to cover in the same way as hardcopy books when undertaking research, which means being able to read all day and night under all conditions (eg sunlight, lying down, in places where there is no wifi, etc..)	Staff
84	Curtin	The library itself I find good, to better utilise it as a resource I am more heavily impacted by external factors. There are times when it is very busy and the spaces are all taken, at night the library is located in the middle of campus so there is nowhere close to park and it does not feel safe to walk across campus to get there.	Staff
85	Curtin	Our library is excellent- I just need more time to write more papers!!	Staff
86	Curtin	The search engine is really cumbersome - I agree so strongly with the above statement that the library search engine should function more like google but with some great advanced features for specific parameters if needed. As for the physical library, more books of an academic rather than general nature. There just aren't enough books there -more on line. That's ok but then the space would need to be useful for reading and it really isn't. // I would love to see a completely new approach taken to the physical space and how books are accessed. In building book delivery drones that you can search and order from relaxation reading pods - more *comfortable* private spaces for reading etc.	Staff
87	Curtin	I find the library service to be responsive to my needs. and it provides essential access to on-line information sources (and occasionally physical sources). Improving the search capability of the library catalogue would probably be useful, but I am most often using databases (particularly WoS) to access information and the library provides that access very effectively, and links into the journal content smoothly.	Staff
88	Curtin	As explained elsewhere my students are usually online so I need online resources. Even when I have taught on campus students may not have a lot of time on campus so they need online resources. Being on campus is not encouraged at Bentley with expensive parking.	Staff
89	Curtin	I am completely satisfied with the service and resources provided at my institutional library. It is difficult to fault it on any level. The biggest issue for me is to ensure HDR students are appropriately trained to access and effectively use library resources - especially part-time students with limited study time. The library staff run regular workshops but I think students still underestimate the benefits of effectively using a university library.	Staff

#	Institu.	Q41 text	Group
90	Curtin	I do not have too much of an opinion on this as I hardly use the library physically. I obtain most of my information through the internet and the library is doing a fantastic job in getting excess to the scientific journals that I need for my research.	Staff
91	Curtin	more e-books available. // reading e-books online is still very clunky and slow.	Staff
92	Curtin	Should have diverse and more collections from a variety of sources / Should have more subscriptions to journals	Staff
93	Curtin	More online services	Staff
94	Curtin	Ensure access to a wide variety of journal databases to ensure access to all relevant journal articles.	Staff
95	Curtin	The library catalogue is too many "clicks" away and often have to put in extra password etc. very time consuming when you just want a quick ref.	Staff
96	Curtin	I appreciate online journals and e-books being made available through the University's library catalogue. This is useful for accessing information from anywhere in the world, and for searching. However, this does not replace physical copies of texts. For extended periods of reading, it is easier, more comfortable and productive for me to read off a physical hardcopy. I am unlikely to read an entire e-book. I will, however, do so with a hardcopy of that text. Additionally, for relevant journal articles I do not read them off the screen but end up printing them on paper. Physical copies of texts should not disappear with the rise of digital copies of texts. // I do find the library computers old and slow, and rarely use them for searching. I end up doing this at home/office before coming to the library.	Staff
97	Curtin	The library could invest in more ebooks and journals ÷ not because I personally prefer them but because the students expect to be given all their readings on line. You can put an entire ebook on a reading list and it is easily obtainable; you can't put an entire book in E-reserve because of the copyright limitations.	Staff
98	Curtin	Provide access to recently published material for research and teaching purposes (update information)	Staff
99	Curtin	I think there is a lot of material in the library that is out of date, and should be dumped. i also feel the search facilities ought to be more comprehensive, and to expand way beyond the library's collection.	Staff
100	Curtin	The library does not seem to be providing as much current hard copy and I vastly prefer hard copy for research and reading. Online copy is good for quick checks but I do not read as quickly or efficiently online. Books forever, please. // Using google is really undermining my students research skills and knowledge. They seem unable to recognise validity, reliability and relevance when they use a google search.	Staff
101	Curtin	I don't believe it needs to change that much. I quite like it the way it is, from the response to recommended purchase and document delivery to book collection. I would like it to check that e-books purchased do actually perform as I often try and print out chapters and find it not possible. My eyesight is poor and I don't read well off the screen. // It would be nice to have shelter on the walk to the library as some days it is a struggle getting there. Or better yet, help lugging books to return. I believe libraries should always have hard copy books rather than rely solely on e-books. The latter is convenient but it isn't tech-proof nor is does it provide equitable access. //	Staff
102	Curtin	Happy with the current services provided online but would like some physical books as not all reading can be done using ebooks alone. I miss options to purchase paper books for my teaching. Also, require subscriptions to Standards online, currently not all Standards are subscribed.	Staff
103	Curtin	I rely on online searches, sometimes then requesting access to a physical journal etc. The librarians are fantastic because not everything can be found this way, so I would ask for the librarian support to remain.	Staff

#	Institu.	Q41 text	Group
104	Curtin	I don't use the library physically, unless it's a training course. If the libraries database searches were as easy as google, I would go to that first. At the moment they are tucked into the library services page and then it's unclear which databases I should search - I shouldn't have to choose. My search should just be a search of every database and relevance by my key words should be automatic - just like google!	Staff
105	Curtin	Just as clarity for qu 40: a general google search (whatever engine) is not relevant to academic work, however, google scholar can be a good tool for academics as a quick option when looking for a specific article, or when trying to get a general understanding of an issue. // I use library database searches to identify and access scientific journal publications relevant to my work. In the past, it was possible to search multiple databases in one search. This option has now disappeared which has made database searching more cumbersome and time consuming. It would be great if this option was reinstated.	Staff
106	Curtin	Libraries are one of my favourite spaces. I love books and being around books, the chance to explore and discover by chance. That's why I think libraries are important :)	Staff
107	Curtin	More online content - ebooks, instead of physical text books, for my undergraduate students. Library online search facilities need to be simplified a bit - sometimes too many levels need to be clicked through to obtain similar results to those I can achieve using Google scholar, which often seems more straightforward.	Staff
108	Curtin	All my students are online and therefore there needs to be more workshops and how to guides set up to assist students that are not located in Perth and therefore will never get a chance to visit the library. Some are available (so don't get me wrong) but so many workshops only have the "attend the library" solution. SPSS is also a big thing that any online student misses out on.	Staff
109	Curtin	The library is essential as an online source for academic journals. However it is subscribing to less and less journals which makes it less useful and relevant. I often find that I need a paper that is not available through the library because it no longer subscribes. However, if I google the paper title and/or the author, I usually find that I can access the paper through other means such as the author's home page or other web pages like academia.com.	Staff
110	Curtin	Generally, I am satisfied with the library services that I have used. I am for the most part a self-sufficient academic information searcher. I am old school and learned advanced searching techniques when online databases first became available. // I recommend workshops for students to attend to learn advanced searching techniques and use of EndNote etc. // I have and would consult a librarian to help refine my search strategy when I wish to conduct a systematic review/ meta-analysis. // Continued digital access to a wide range of full-text articles is essential to my research.	Staff
111	Curtin	All new texts should be available as ebooks. This means the text can be readily available for anyone who need to access it. I feel this is important because; // 1) You don't have to wait till the book is available to loan to access it. / 2) You can access the text 24/7. / 3) You don't have to physically loan out the book and carry it around with you. / 4) Multiple people can loan out the text at one time ( i.e. In a teaching context )	Staff
112	MNU	More books, better facilities, friendly staff	Postgrad
113	MNU	Access to internet / Enough books / Photo copy and printing facilities available	Postgrad
114	MNU	Needs more physical resources (books) in the library / should have access to better internet sources / needs to create more awareness about library services / needs more space and silent rooms in the library / should extend the book returning period	Postgrad
115	MNU	I would love to see lots of copies of the books which are relevant to what I am studying and most importantly books that are up to date and of latest version	Postgrad
116	MNU	need more resources, better place to work with internet	Postgrad
117	MNU	A modern library. More suitable to this generation students	Postgrad

#	Institu.	Q41 text	Group
118	MNU	Need more books and better arrangement and easy excess. Need easy way to search for books and journal. Silent and alone space to read.	Postgrad
119	MNU	It would be very helpful if our library has computer systems.. although we have a computer lab separately, most of the time it is full.. having computers in the library will allow us to use it any time without any difficulty... / / It was a pleasure answering these questions.. / Thank you	Postgrad
120	MNU	Need to have internet facilities inside the library	Postgrad
121	MNU	make it a bit easy to look for books, now very cluttered. catalog is still very confusing.	Postgrad
122	MNU	Database needed which allows to access more journals. /	Postgrad
123	MNU	Keep trained staffs who knows how to deliver the service.	Postgrad
124	MNU	Facility for photocopying, scanning and online searching, should be available. There should be recent editions of cord texts of all subjects made available both physical and online copies	Staff
125	MNU	Better access to journals relevant to my field of teaching. The library needs to be open for longer hours especially during the students exam periods, preferably until midnight. More space for students group study. It should be a more relaxed environment for academics as well as students.	Staff
126	MNU	need to run more workshops on topics like referencing.	Staff
127	MNU	More ebooks and online journal articles	Staff
128	MNU	More online and physical books and journals in the hospitality and tourism feild.	Staff
129	MNU	Library needs to have most recent books in the field. Also it is important to have almost all the journals and newsletters, leaflets. / If I participate in more workshops, I would be able to do better than now. If we have user friendly system to to find library collections, that will be very helpful.	Staff
130	MNU	more books related to fields of study	Staff
131	MNU	I have the ebooks I need for teaching purposed. Currently, I am not working on any research for publication. / I think the management need to encourage the academic staff to do more research work, and that would create demand for relevant library resources.	Staff
132	MNU	* Library needs to have on line searchable catalog with status of the physical copies available / * Library needs to have regular sessions, on using the on line database effectively and efficiently. / * Library must have some comfortable space where we can spend time with physical books	Staff
133	MNU	the library should have more text books, and access to better online resources	Staff
134	MNU	A large, well represented collection in good condition, and access to a number of data bases, public computers and Wifi, and also conducting various programming/events for students as well as staff	Staff
135	MNU	More academic help for the library uses. / More place for the academic discussions. / More open areas. /	Staff
136	MNU	We need a good database of reputable journals.	Staff
137	MNU	keep more books and articles available. /	Staff
138	MNU	Library should be equipped with more relevant books and journals to the user need. / / Should be equipped with facilities such as computers and printers. /	Staff
139	MNU	To acquire more e-books and provide reference service. / I believe library should do more marketing to promote its resources and services.	Staff
140	MNU	It should have more copies of books. / It would be better if the library is more spacious and have special rooms for discussions. / Need librarians who are more efficient .	Staff
141	MNU	More books, internet search, library catalogue search are all important for the library	Staff
142	MNU	They need to improve thier space, make it more welcoming. Improve staff...at the moment not very helpful. They need more physical and online resources.	Staff

#	Institu.	Q41 text	Group
143	MNU	Need physical space for students to study. / Need Convenient and comfortable physical environment. / Need computer and fast reliable internet resources / Wide range of database access / Friendly, helpful library staff /	Staff
144	MNU	Need good collection of books both online and hard copy. / Need more assistance from the library staff. / The display and arrangement could be more convenient.	Staff
145	MNU	be in contact with the academic staff: for example, identify the library needs of each staff and let them know when new books in their fields arrives at the library. Library needs to be more proactive, Collect readings that would interest the staff or on any courses that would be introduced at the university.	Staff
146	MNU	Bring in current books / register to websites that offers instructor manuals or instructor support and give its access to instructors	Staff
147	MNU	the library needs updated information sources in the form of books as well as online resources with better access to quality and good databases with better access to journal articles.	Staff
148	MNU	Access to more data bases / Access to online books / Workshops on searching articles through data base.	Staff
149	MNU	It is satisfactory now. Better , more books are made available, even though, everything is available on line.	Staff
150	MNU	The physical collection has to be converted to e-books.	Staff
151	MNU	Increase opening hours, especially weekends and public holidays / Internet Service / Stationary Service, Study Rooms / Discussion rooms / Academic advisors / either can hire / / /	Staff
152	MNU	more online resources.	Staff
153	MNU	The library at the campuses need to have more copies of the core texts. It is usually difficult to get hold of text books that have been specifically named as core texts for a particular course. More additional reading material, books, journals etc need to be available.	Staff
154	MNU	Needs more online journals. Fast internet speed. Longer hours to be opened. More help to be given to students/staff in the form of workshops	Staff
155	MNU	adequate amount of books and quality books should be availaibe / - a computer can be placed to search for the books to see where it is /B163	Undergrad
156	MNU	it need to have some easy way to find books i need.	Undergrad
157	MNU	make resources, journals, articles etc available online freely	Undergrad
158	MNU	This survey is too long. No interest to give other feedback ??	Undergrad
159	MNU	Allow lending book for more time that are limited in the library	Undergrad
160	MNU	A library should be a place that can be both physically and virtually accessible. A virtual reality environment would enhance the usage of library material.	Undergrad
161	MNU	Good librarians.. librarians who know to answer any book related question asked by students.. the librarians should be very thorough about the books and can tell the type of books the students are searching in less time	Undergrad
162	MNU	enough space so that more students can stay in the library and study there. increase the number of books available for the students.	Undergrad
163	MNU	Tours, workshops specially about online facilities.	Undergrad
164	MNU	Enough amount of books for students and access to more health related databases	Undergrad
165	MNU	Availability of relevant books	Undergrad
166	MNU	Library needs to be more spacious. / Students should be informed how to use the online catalog. / Need more computers in the library as well as in the computer lab. computers which is really in working condition. / Install a better way to search for related books.	Undergrad
167	VC	It should be easily accessible whenever needed. / Enough information should be available for the students to access in the program taught in the College both online n physical books, journals etc. / Enough online access should be provided in the library.	Undergrad
168	VC	need more online books	staff

#	Institu.	Q41 text	Group
169	VC	In this digital age of tablets, mobiles, kindles and all possible electronic devices to aid the student/scholars' need in search for the necessary information should be as elegant as possible. // In this dynamic and challenging world searching for information should be minimized as much as possible. A physical location of library is necessary but the virtual location and access would be more helpful. // Many thanks.	staff
170	VC	More copies of books as well as to online resources.	staff
171	VC	More subscriptions to e-Journals / - More capacity and infrastructure development of the library area to meet to students needs / - Fully automated search engine / - Capacity building for library staff / Ensure, as much as possible, current material are available to students and staff. / Regular sessions to inform students and staff of available resources.	staff
172	VC	Needs space. Should be open for long hours and specially on weekends	Postgrad
173	VC	I would appreciate if we have adequate online books	Postgrad
174	VC	More resources both quantity and quality	Postgrad
175	VC	It should have more reliable and informative resources and also would be better if it gives referencing service	Postgrad