

**AN ASSESSMENT OF INFORMATION LITERACY COMPETENCY
AMONG INTERNATIONAL STUDENTS IN UNIVERSITY OF
MALAYA**

ISMA'ILA ISA ZURU

**FACULTY OF COMPUTER SCIENCE AND INFORMATION
TECHNOLOGY
UNIVERSITI MALAYA
KUALA LUMPUR
2017**

**AN ASSESSMENT OF INFORMATION LITERACY
COMPETENCY AMONG INTERNATIONAL STUDENTS IN
UNIVERSITY OF MALAYA**

ISMA'ILA ISA ZURU

**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF LIBRARY AND INFORMATION SCIENCE**

**FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
UNIVERSITY OF MALAYA
KUALA LUMPUR
2017**

**UNIVERSITY MALAYA
ORIGINAL LITERACY WORK DECLARATION**

Name of Candidate: Isma'ila Isa Zuru

Registration/matric No.: WGB 120014

Name of Degree: Masters of Library and Information science

Title of Dissertation: Assessment of Information Literacy among International students in University of Malaya

Field of study: Information Literacy

I do solemnly and sincerely declare that:

- (1) I am the sole author/writer of this work:
- (2) This work is original
- (3) Any use of any work in which copyright exist was done by way of fair dealing and for permitted purposes and any excerpt or extract from, or reference to or reproduction of any copyright work has been disclosed expressly and sufficiently and the title of the Work and its authorship has been acknowledged in this work:
- (4) I do not have any actual knowledge nor do I ought reasonably to know that the making of this work constitutes an infringement of any copyright Work:
- (5) I hereby assign all and every rights in the copyright to this work to the University Malaya ("UM"), who henceforth shall be the owner of the copyright in this work and that any reproduction or use in any form or by any means whatsoever is prohibited without the written consent of UM having been first had an obtained.
- (6) I am fully aware that if in the course of making this Work I have infringed any copyright whether intentionally or otherwise, I may be subject to legal action or any other action as may be determined by UM.

Candidate's Signature

Date:

Subscribed and solemnly declared before,

Witness's Signature

Date

Name;
Designation

ABSTRACT

This study focused on information literacy competency among international postgraduate students in University of Malaya. The aim of the study was to understand if there are differences in information literacy competency among international postgraduate students. Several studies have been conducted with regards to information literacy competency among international students in several countries and institutions. Few have been conducted in the University of Malaya with regards to information literacy competency among international postgraduate students. This is the justification for this research was to look at information literacy competency among international postgraduate students in the University of Malaya. A survey method was used during the study with a self-report questionnaire containing 40 items on a likert scale of 1-5. An inferential statistics was conducted to analyze the dependent and independent variables. The latest version of SPSS was used for the analysis of data collected. An independent sample *t* test was conducted and in some instances a one way anova was used to analyze the findings. The result of the study indicated that there is a significant mean difference in terms of information literacy competency among international students. The differences are between the variables age, gender, program of study, country official language and mode of study. This study justified the findings on previous studies on the differences in information literacy competency among international students in different countries and institutions.

ABSTRAK

Kajian ini memberi tumpuan kepada maklumat literasi kompetensi pelajar siswazah antarabangsa di Universiti Malaya. Tujuan kajian ini adalah untuk memahami jika terdapat perbezaan dalam literasi maklumat kompetensi pelajar siswazah antarabangsa. Beberapa kajian telah dijalankan berkaitan dengan literasi maklumat kompetensi pelajar antarabangsa di beberapa negara dan institusi. Tidak banyah telah dijalankan di Universiti Malaya berkaitan dengan kompetensi literasi maklumat di kalangan pelajar lepasan ijazah antarabangsa. Ini adalah justifikasi untuk kajian ini, untuk melihat maklumat literasi kompetensi pelajar siswazah antarabangsa di Universiti Malaya. Kaedah tinjauan digunakan semasa kajian dengan soal selidik laporan sendiri yang mengandungi 40 item pada skala likert 1-5. Analisis inferensi telah dijalankan untuk menganalisis pembolehubah bersandar dan bebas. Versi terbaru SPSS telah digunakan untuk analisis data yang dikumpul. Ujian sampel t bebas telah dijalankan dan dalam keadaan tertentu satu anova digunakan untuk menganalisis dapatan kajian. Hasil kajian menunjukkan bahawa terdapat perbezaan min yang signifikan dari segi kompetensi literasi maklumat di kalangan pelajar antarabangsa. Perbezaan antara pembolehubah umur, jantina, program pengajian, negara bahasa rasmi dan mod pengajian. Kajian ini wajar dapatan kajian-kajian lepas pada perbezaan dalam literasi maklumat kompetensi pelajar antarabangsa di negara-negara dan institusi yang berbeza

ACKNOWLEDGEMENT

First and foremost, I want to give praise to Almighty Allah for the successful completion of this dissertation. My profound gratitude goes to my supervisor (Associate Professor Dr. Noor Harun Abdul karim) for all the time, advise and unending recommendation, am so proud to have worked with you. Thank you very much for all the assistance and understanding. To all my lecturers, (Dr. Diljit Singh, Professor Zainab, Associate Professor Abrizah, Dr. Kiran, Dr. Harun and Dr. Ida), you were all more than lecturers to me; you were model and sources of inspiration. Thank you for all the knowledge you have impacted on me. It was such an honor and privilege associating with all of you. To Dr. Nura and family, Dr. Bello, Dr. Isa, Dr. Sanni, Malam Gwani and all the individuals that assisted in one way or the other towards the success of this program. My course mates, Agif, kamisah, Ain, Min, Azim and Jasveen thank you for all the good times spent together. Shida and Agif you stand tallest among them, you will live forever in my memory. My sponsors (Kebbi state University and Education Tax Fund) I am also grateful to you all. To my University Librarian (S.A Aliero), thanks for all the guidance and support. My flat mates (Muhammad, Ali and Yusuf), thanks for all the funny times we shared together. University of Malaya, I have nothing to say than thank you a million times for teaching me a hell lots of activities, am honored and proud to be Alumni. All staff members of FSKTM, you played a major role in the success of my program am also indebted to you. Bala and Adamu thanks for all the struggles together. The Chonoko family's contribution to my education was immense, am also grateful to them. My Niece (Vanessa), life was different without you. I really missed you. Ali Baba Dauda and Musa Giade you stood out. Your efforts are really appreciated. Finally, the angel of my life (Maryam Musa Saad) thanks for all the love and understanding. You are a darling.

DEDICATION

This work is dedicated to my late father SSgt Isa Zuru (retired) for laying the foundation for me and to my mum Rabi Isa for taken over from where he stopped.

Universiti Malaya

TABLE OF CONTENTS

Abstract.....	iii
Abstrak.....	iv
Acknowledgement.....	v
Dedication.....	vi
Table of contents.....	vii
List of figures.....	x
List of tables.....	xi
List of symbols and abbreviations.....	xii
CHAPTER 1: INTRODUCTION.....	1
1.1 Background.....	1
1.2 Statement of problem.....	5
1.3 Research objectives.....	9
1.4 Research questions.....	10
1.5 Hypothesis.....	11
1.7 Significance of study.....	11
1.8 Limitations of study.....	12
1.9 Organization of the dissertation.....	13
CHAPTER TWO.....	14
2.1 Introduction.....	14
2.2 Concept of literacy	14
2.3 Basic concepts of information literacy.....	17
2.4 Information literacy programs in University of Malaya.....	21
2.5 Importance of information literacy to students.....	22

2.6	Information literacy and globalization.....	26
2.7	Information literacy among international students.....	28
2.8	Assessment of information literacy.....	35
2.9	Summary.....	37

CHAPTER 3: METHODOLOGY.....40

3.1	Introduction	40
3.2	Research Design.....	40
3.3	Population.....	40
3.4	Sampling technique.....	41
3.5	Data collection technique	41
3.6	Data analytical techniques.....	42
3.7	Instrument.....	42
3.8	Instrument validation.....	45
	3.8.1 Study one.....	45
	3.8.2 Study two.....	45
	3.8.3 Result of pilot test.....	46
3.9	Research Scope.....	48
3.10	Conceptual framework.....	48
3.11	Operational definition of terms.....	49

CHAPTER 4: DATA ANALYSIS.....51

4.1	Introduction	51
4.2	Demographic profile of respondents.....	51
4.3	Exploratory factor analysis.....	55
	4.3.1 Construct validation of information literacy competency	

instrument.....	55
4.4 Internal reliability of the items underlying each factor.....	56
4.5 Normality (test) Distribution.....	58
4.5.1 Measurement of central tendency.....	58
4.5.2 Measures of variability.....	60
4.5.3 Skewness and Kurtosis.....	61
4.5.4 Kolmogorovs-Smirnov Shapiro-Wilk.....	62
4.6 Parametric test.....	63
4.6.1 Age and Information literacy competency.....	63
4.6.2 Gender and information literacy.....	65
4.6.3 Program of study and information literacy.....	66
4.6.4 Faculty and information literacy.....	67
4.6.5 Mode of study and information literacy.....	69
4.6.6 Country's official language and information literacy competency.....	70
4.7 Summary.....	72

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction	74
5.2 Summary.....	74
5.3 Conclusion.....	79
5.4 Recommendation.....	79
5.5 Implication.....	81
References.....	82
Appendix.....	97

List of figures	Page no.
Figure 3.1 Conceptual framework	49
Figure 4.1 Histogram	60

Universiti Malaya

List of Tables	Page no.
Table 2.1 Summary of related literature	37
Table 4.1 Age of respondents	51
Table 4.2 Gender of respondents	52
Table 4.3 Program of study	52
Table 4.4 Faculties of respondents	53
Table 4.5 Mode of study	54
Table 4.6 Country's official language	54
Table 4.7 Descriptions of factor from principle component analysis	56
Table 4.8 Information literacy competency variables (Cronbach alpha)	57
Table 4.9 Measurement of central tendency	59
Table 4.10 Descriptive statistics of kurtosis and skewness	61
Table 4.11 The Kolmogorov-Smirnov and Shapiro-Wilk test	62
Table 4.12 Age and information literacy competency	64
Table 4.13 Gender and information literacy competency	65
Table 4.14 Program of study and information literacy competency	67
Table 4.15 Faculty and information literacy competency	68
Table 4.16 Mode of study and information literacy competency	70
Table 4.17 Country's official language	71
Table 4.18 Summary of findings	72

List of symbols and abbreviations

Abbreviation	Descriptions
ALA	American Library Association
ACRL	Association of College and Research Librarians
CILIP	Chattered Institute of Library and Information Professionals
COAG	Council of Australian Government
ESOS	Education Service for Overseas students
ICAI	Information Competency Assessment Instrument
IL	Information Literacy
MIT	Massachusetts Institute of Technology
MTCU	Ministry of Training Colleges and Universities
PSE	Post-Secondary Environment
SAILS	Standard Assessment of Information Literacy Skills
SPSS	Statistical Package for the Social Sciences
TRAILS	Tool for real time Assessment of Information Literacy Skills
UM	University of Malaya
UNESCO	United Nations Educational, Scientific and Cultural Organization
WAAL	Wisconsin Association of Academic Librarians

CHAPTER 1

INTRODUCTION

1.1 Background of the study

The fundamental concern of this study is to examine information literacy competence among international students in University of Malaya. The concept of Information literacy was first established in 1974 by Paul Zurkowski, the President of the information Industry Association of the United States of America. Bruce (2004) suggested that information literacy has evolved in different stages and has increasingly affected the way information is received, perceived, presented as well as disseminated. Information literacy is defined by many scholars in different perspectives but the general perception is that which deals with the ability of individual to acquire knowledge, to be able to make use of the knowledge in seeking, retrieving and utilizing available information for maximum productivity (Doyle 1994) and CILIP 2004). In another dimension, the American Library Association (1998) sees information literacy in the perspective of the abilities that give individuals the potential to recognize their information need with the knowledge and ability to locate, assess, evaluate and use the information efficiently. However, WAAL (1998) defines information literacy as the ability to identify the needed information, understand how it is organized, identify the best out of the available sources, locate those sources, evaluate them critically and share the information.

Summarily, it is essential to note that information literacy gives an individual the potential to recognize his information needs, locate and evaluate the information for effective and efficient utilization.

The utilization of information literacy transcends mere academic skill, but it explores the realization of fact which is used more often than not in every discussion. According to Ranaweera (2008), it is very subtle for someone to achieve his full potential without been information literate. This is because information literacy empowers people to become self-sufficient in facing the challenges of globalization and the advancement of digital technology in the ever increasing changing information world. According to the American Library Association Information Literacy Committee (1989), an information literate person is any person that has learned how to learn. He has learned how knowledge is organized, how to find the information and how to use it in such a way that other people can also learn from him.

Information literacy has evolved over time. First it started with the “alphabetical literacy” (a situation where an individual is able to recognize alphabets or letters without adding them). The second stage is the “functional literacy stage”, (Todd, 2010). In this stage, the individual recipient could add up letters and give them meanings. The third stage is the “social literacy” where the individual can read and write alphabets. Another significant segment is the ‘information literacy stage” where the individual learner can read, understand, and interpret meaning of a phenomenon. In this category, the learner searches for information, retrieves and utilizes it. The “digital information literacy” is the stage whereby the recipient of knowledge can make use of the computer and the web in searching for all his information resources with ease.

Finally, the “media and information literacy stage” is the final stage where a person, apart from using the web search engine, could also use social media for the information level, (Todd, 2010).

From the foregone conclusion, it is pertinent to comprehend that the need for information literacy has been highlighted. According to Ranaweera (2008), information literacy is helpful to every individual in the sense that it will make people to succeed both in academics and their day to day activities. Therefore, it is adequate to construe the assistance to be rendered by information literacy in improving the society's quality of life, and in building a formidable democratic society. Abid (2004) in his publication entitled "information literacy for lifelong learning" explains that information literacy has an aim to develop critical understanding and active participation of individuals in both academic and their day to day activities. It therefore concluded that information literacy is a pivot for human development through solving of societal menace. In addition, it gives people the capacity to be able to interpret and make responsible judgments as users of information resource. He added that an information literate society or individual will be able to become producer of information in their own right which will in return make them to become more powerful participants in their society or in academic environment. Abid (2004) reiterated that digital media in particular has the potential to significantly increase the active participation and creation of an environment of bewildering choices. In the same streamline, information literacy plays for a lifelong learning can never be over emphasized.

This is because it as a common discipline paramount to all learning environments and levels of education. Despite the differences in learning styles, system of education and levels of development from one country to another differs.

Therefore, information literacy enables learners to acquaint themselves with frontiers of investigation. It makes users of information literacy to become self-directed and assume greater height control over their individual learning.

With the proliferating degree of information storage, retrieval has evolved at a relatively high speed, so the need to be information literate is therefore increasing. Information is been increasingly codified in different formats from print to soft copies, as a result in which new skills become more important in order to be able to catch up with the new trends. These sets of skills are important these days because they give an individual the potential ability to search, retrieve, organize, and use information to solve problems.

According to Catts (2010), in this era, post-secondary school education has the responsibility to prepare graduates with new skills, a broader knowledge base and a range of competencies in order to allow them to enter into a more complex and interdependent world. According to Virkus (2011), many authors are of the opinion that every member of a society needs an increasing and a more sophisticated set of information literacy competence for information finding, handling and usage. This therefore makes a case for an assessment of information literacy among international students in University of Malaya

This emphasizes on the need for everyone to be information literate regardless of whether a student or not is very significant. ALA (1989), pointed out that information literacy is a prerequisite for lifelong learning, and to Banjong and Olson (2016), it is a requirement of been an active, effective and responsible citizen. To Boekhorst and Britz

(2004), it is a way of achieving self-actualization and to Bundy (2004) it is a way of achieving a social inclusion.

Corrall (2008) believed information will help in bridging the digital divide, strengthening the employability of a workforce, counter information overload and support evidence based policy and decisions in government and professions. Information literacy therefore should be perceived as an ongoing process that should be facilitated throughout a whole life (Virkus, 2006).

1.2 Statement of the problem

Several studies (Hughes and Bruce, 2013; Howard, 2012) advanced by researchers have found numerous gaps among international students with regards to information literacy competency. These problems are found to be more pronounced among students from developing countries as posited by Wang et al (2011). In their studies on international students' use of online information resources, she found out that international students tend to face a wide range of challenges as they pursue their academic goals in a culturally unfamiliar environment or social milieu. These challenges are marked by social, educational, and linguistic differences between the home and host country which also add layers of complexity to their study experience as emphasized. These difficulties may be compounded by limitations in their previous library experience, use of electronic resources and information literacy.

Another study conducted by Council of Australian Government COAG (2014) found out issue of quality and accessibility of information sources as some of the major issues confronting International students. Furthermore, in another study conducted by

Education Services for Overseas Students ESOS (2011) also corroborated the COAG findings which further recommended that international students need comprehensive and up-to-date information for studying, living and working in new challenging environment.

The problem addressed by this research is that of information literacy competency among international postgraduate students who face linguistic, cultural, and technological challenges that negatively affect their ability to effectively search for information, retrieve information and use information properly in their research and academic studies. Librarians agree that international students face several problems in using the library, including language and communication problems, adjusting to a new educational setting, the library system, and other cultural adjustments (Baron & Strout-Dapaz, 2001). In this regard, Baruzzi and Calcagno (2015) argue that international students usually lack the basic knowledge of understanding what is available to them and may have problems in understanding how libraries in other countries are arranged and often have limited knowledge about what is available to them through the library and may have experienced a very different type of library system at home.

The information literacy competency issue of international students affects different group of people on campus. The first groups of people who are affected by this problem are international students themselves. Lacking research and information literacy skills, international students may not be able to effectively locate, retrieve, and properly use information for their research and academic studies. Therefore, oftentimes these groups of library users are not effectively utilizing library resources available for them and may develop a low level of motivation and self-efficacy in communicating with librarians and faculty. (Baron & Strout-Dapaz, 2001).

Moreover, understanding the challenges of these students and exploring the factors associated with these challenges can be helpful to improve their motivation and self-efficacy levels and assist them to adjust to the campus culture. Additionally, this will help the university and library to better understand the academic needs of this group of students and assist them in learning and mastering the information literacy skills they need to succeed in their academic studies.

The second group of people who are affected by this issue are the faculty members who deal with international students and the academic problems they experience in their classes, (Morrissey and Given 2006). Oftentimes, international students do not know how to use and cite information sources properly in their academic writings and faculty members do not like to see these students struggling in their classes and submitting assignments and research papers that may have clear evidence of plagiarism, whether intentional or unintentional. Therefore, a good number of faculty members collaborate with the university library and partner with academic librarians to understand the academic needs of students and incorporate information literacy skills into the curriculum of their courses in order to assist their students, including international students to learn these necessary skills. In this regard, Morrissey and Given (2006) argue that understanding the needs of students from particular countries enables librarians to meet these students' information needs. They maintain that librarians should contact professors as they can provide substantial information about the skill levels of their students.

The third groups of people who are affected by this problem are academic librarians who deal with international students and are supposed to provide them with effective library services. The literature covering services to international students clearly support

libraries taking an active role with international students, especially that effective reference and instructional services can help international students find the help they need and raise their comfort levels (Baron & Strout-Dapaz, 2001).

Therefore, to help international students to use library resources effectively and master information literacy skills, librarians have to give international students special attention to meet their unique and complicated needs. In this sense, Cuiying (2007) pointed out that research indicated that librarians need to consider the characteristics of these learners and understand their learning styles, language proficiency, and their subjects of interests in order to design effective teaching materials for this group of students.

Few scholars have conducted studies on the information literacy skills training programs conducted at the University of Malaya's library. Chan (2003) evaluated the undergraduates' perceptions at the end of second semester 1999/2000 academic session and the first semester 2000/2001 session. However, Chan (2003) only focused on the perceived usefulness of the information literacy skills. In another study, Sharif and Zainab (2004) explored the undergraduates' perceptions of the information literacy skills training at the Faculty of Computer Science and Information Technology. Their study was mainly concerned about how the undergraduates perceived information literacy skills in using the internet as a source to locate and retrieve information for their final year research projects. Nor Edzan (2007) also assessed the perceptions of final-year undergraduates on the information literacy program. Sharif and Zainab's (2008) study revealed the information seeking behavior of the students and the problems encountered while writing their final year project proposals. Sharif and Zainab (2009) also investigated the information seeking behavior of final-year undergraduates. Their

study was concerned about how the students perceived information literacy when searching, evaluating, and using information in to their final year projects.

However, little is known with regards to information literacy competency among international postgraduate students in University of Malaya. This created a gap that needs to be filled. With the influx of international students to University of Malaya for studies, there is the need for the university to understand how the students relate to their new academic environment. This study, therefore, will use a survey method to assess the competency of international postgraduate students in University of Malaya. This therefore, justifies the need to conduct a similar research on international students' information literacy competency in University of Malaya. This is the justification and need for conducting this research.

1.3 Research objectives

The general objective of conducting this research is to understand the information literacy competency of international postgraduate students in university of Malaya according to demographical and socio cultural environment variables. These objectives were divided into six. The following are the objectives of the study.

1. To understand if there are differences in information literacy competency among respondents in the age group of 18-23, 24- 29, 30-35, 36-40 and 41.
2. To understand if there are differences in information literacy competency between male and female respondents.
3. To understand if there are differences in information literacy competency between PhD and masters students.

4. To understand if there are differences in information literacy competency between mixed mode, research mode and course work respondents.
5. To understand if there are differences between Faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia, Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, and Building and Environmental respondents..
6. To understand if there are differences between non-native and native speakers of English language.

1.4 Research questions

1. Are there differences in information literacy competency among respondents in the age group of 18-23, 24- 29, 30-35, 36-40 and 41 and above?
2. Are there differences in information literacy competency between male and female respondents?
3. Are there differences in information literacy competency between masters and PhD respondents?
4. Are there differences in information literacy competency between mixed mode, research mode, and coursework respondents?
5. Are there differences in information literacy skills between faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia, Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, and Building and Environmental respondents.
6. Are there differences in information literacy between native speakers and non-native speakers of English language?

1.5 Null Hypothesis

1. H1. There are no differences in information literacy competency between respondents on the age group of 18-23, 24- 29, 30-35, 36-40 and 41 and above.
2. H2 There are no differences in information literacy competency between male and female respondents.
3. H3 There are no differences in information literacy competency between masters and PhD respondents.
4. H4 There are no differences in information literacy competency between mixed mode, research mode and coursework respondents.
5. H5 There are no differences in information literacy skills between faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia, Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, and Building and Environmental respondents
6. H6 There are no differences in information literacy competency between non-native and native speakers of English language.

1.7 Significance of the study

The present study explained the information literacy competency of international postgraduate students in general. This research has the potentials to contribute to theories related to library services for international postgraduate students as well as practices related to planning specific library services and library instructions for this group of users. The data collected in this study will serve as indicators of international

postgraduate students' current information literacy competencies related to the general research skills. This study may prove significant in contributing to the overlooked area of research related to the unique research and information literacy needs of the international postgraduate students. The findings of the study can be used to make recommendations about future planning for library outreach as well as the utilization of library services for international students in general and international postgraduate students in particular. The perceptions of international postgraduate students can also be useful in providing insights that academic librarians can benefit from in creating and developing customized support and library services for international students and addressing related knowledge gaps. Results of this study will be of interest to any faculty involved in information literacy instructional programs, lecturers, students, library administration and program review personnel.

1.8 Limitations of the study

The following are limitations associated with this study:

1. The survey in this study was distributed to students using their university e-mail account. Using this method alone may have had negative effect on the response rate. Using more than one mode can improve response rate (Dillman, Smyth, & Christian, 2009; Fowler, 2009).
2. The response rate was 271 out of 341 given a response rate of 79.4% which is also a limitation to this study.

1.9 Organization of the dissertation

This study is compartmentalized into five chapters each dealing with different sub-topical issues. Chapter one discussed background to the study which included statement of problem where references were made to previous studies which indicated that problem of information literacy among international students exists. This is a justification why this study should be conducted from the start. The next section dwelled on the objective of the study. In this section, the study explained what the study sought ought to achieve. The research questions highlighted what the study intends to understand or know about at the end of the dissertation. Chapter two examined the literature on previous works that have been conducted by various authors. In addition, resources were consulted from different sources such as journal articles, dissertation, conference proceedings etc. In validation of the reliability of the study, variables were sorted out which formed the basis for designing of the questionnaire and conceptual framework. For comprehensive explanation, chapter two was subdivided into; introduction, some basic concepts of information literacy, information, Internationalization of education, information literacy among international students, assessment of information literacy and summary. Chapter three highlighted the research design adopted by the author which is interpreted in quantitative nature. The population of the study was explained. Sample size, sampling technique, data analytic technique, data instrument, and conceptual framework were discussed. Data presentation and analysis was presented in chapter four of the study while chapter five comprises of the research findings, recommendation and conclusion.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

This chapter aims to highlight several journal articles, dissertation/thesis and other relevant information materials. The idea is to generate literature review on what other scholars, teachers, students and researchers have written or have found with regards to the factors that have influence on the study of information literacy competency among international students. This help to create a base record for the study.

2.2 Concept of literacy

To learn how to read in a language different from one's mother tongue, (in other words second language) is a challenging task. The challenge is more compounded when an individual attended school that lacks the resources to provide access to high quality and standard materials to make literacy and learning better (Kumar, 2012). As a result of this, many children from developing countries of the world tend to loose significantly the opportunities in life, when their schools cannot provide them with standardized literacy instructions (Kumar, (2012). The British Council estimates that wages differs between salaried professionals that has English language skills with those who do not have in developing countries like Nigeria, Bangladesh and Cameroun with those endowed with English language proficiency with higher record of 20-30%. In some countries like Morocco, according to the report, switching from the initial official language which was French to the native or local language resulted in 50% reduction in economic returns for schools. In countries like India, English is the most prominent

language. For example in India, schooling in local language channels an individual towards a working class job while schooling is more expensive in English language schools. This is because there significantly increases in the chance of gaining white collar job particularly with literate in English language.

Reading skills which involves vocabulary knowledge plays a significant role in enhancing the ability to read and comprehend longer passages and texts. For instance, literacy is usually associated with people from developing countries of the world. A country like Canada has an estimated literacy rate of 50% (Munteanu, 2014). They lacked the basic literacy skill required to cope with the basic challenges of today's developed society. Basic skills such as understanding basic arithmetic and using everyday items are challenges specifically and interaction. These basic literacy skills are fundamental obstacle in acquiring formal education and everyday activities such as bus schedules, reading food labels, news articles, or medical information as stated by Munteanu (2014).

In 2000, some of the world's richest countries have nearly 25% of adults which were considered to be illiterate. For example in Canada, 50% of adults were considered to be of low literacy skills (Munteanu, 2014). As the literacy based demand of today's society is increasingly limited in their ability to use, understand, find, produce and benefit from textual information required in daily activities at work place or at home. Digital technologies have transformed what it means for people to be literate in the contemporary period. In the last three years alone, over 685 articles and books have been written or published in relation to the concept of literacy (Malaklourthu and Selan, 2011). Each of these write-ups tried to reiterate particularly on the concept of literacy. About 35 different types of literacy were highlighted, these includes: digital literacy,

information literacy, to newer concept like trans-literacy etc. The assimilation of all these types of literacy has become very subtle and complex. Each of these concepts has developed within a particular historical context by some people and organizations according to Howard (2012).

The origin of the term “literacy” itself is relatively new and was originally coined towards the end of the nineteenth century. It was initially used to express an achievement or possession of what was seen as a necessity. It was based on people’s ability to decode and encode text (Gurak et al, 2001). It was replaced by a situation whereby being literate is expressed by having a higher level of cognitive ability where scholars make judgments about the superiority of one culture above another (Gurak et al, 2011).

In the 1970 the term “literacy” became prominent in educational discourse among intellectual and professional to distinguish literate from the illiterate. The definition of literacy henceforth expands not only to mean encoding and decoding printed text words, but it does consider reading and writing as a meaning of making activity with different texts requiring background and skills if they are to be properly understood.

In the 1980’s, the term literacy was fractured into various subject literacies. These effectively changed the meaning to mean competence or proficiency in some associated subject area as pointed out by Lankshear and Knobel (2008). For example, if an individual comprehend the techniques of farming, such person is supposed on the other hand to be a farming literate, if he is an environmental literate this means that the individual knows how well to handle his or her immediate environment. Computer literacy on the other hand became increasingly prevalent to encapsulate the skills and

competences necessary to effectively use computers and software packages as argued by Gillen (2009).

It should be noted that internet became stabilized in the 1990's this brought about tremendous changes in literacy to more "softer" skills and competence which is required to cope with the perceived explosion in information and worries about credibility of internet sources. In 1999, Glister made the term "digital literacy" more popular in his book of the same title. However, the academic library community promoted the concept of "information literacy" Gibson (2007) among intellectual users and academics. Within the academic environment, there was an increasing recognition that the prevailing technical treatment of literacy was deliberately misleading and needed to be challenged (Crowther, et al. 2001). Rather than focus on a set of skills and competencies, it was attributed to a social practice where some conceptions of literacy are more powerful and imposed on other cultures or classes (Kapitzke, 2003). Another concept is the development of a new movement known as the new literacy studies movement which was coined by Breivk et al. (1989) and popularized by Street 1996. It was not until the 21st century that the beginning of what has now become known as "Web 2.0" O' come into existence (O' Reilly, 2005).

2.3 Basic concepts of information literacy

Traditionally, to be literate means to have the ability to read and write. But there are many other types of literacy. These include web literacy, mechanical literacy, media literacy, functional literacy etc. Information literacy combine the aforementioned types of literacy and to some extent, it even goes beyond them according to Ranaweera (2010).

Information literacy involves sets of attitude and skills for it to be effective. These skills enable the literate person to be able to understand what he wants in terms of his information needs, how to access, analyze and use it for the purpose it is meant for (ALA, 1989). In the word of Ranaweera (2010), he attributed the information era due to the expansion of information and its sources. In order to survive this digital era, one has to equip himself with all the necessary information literacy skills pertinent to the comprehension of the intricacies. These skills when acquired will make the individual in preparedness to adapt to any intellectual environment they may find themselves. In other words, it will make them to become an information literate compliant in any form.

Despite information literacy been in a wider significance within the educational sector, it has evolve from librarianship practice. It evolves to solve the problem of information overload which is as a result of rapid developments in terms of digital technologies (Andretta, 2005).

Information literacy is defined by several writers and associations. American Library Association, (1998) defines information literacy as a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed Information. Another definition given by Doyle (1992), he perceives information literacy as an individual's ability to access, retrieve evaluate, and use information from a variety of sources.

Several studies have tried to explain the basic characteristics of a literate person; these could be found in the works of Hughes et. al (2005); Ojedokun and Lumande (2005); CILIP (2004) Ranaweera, (2010); and Doyle (1994). To UNESCO, Information

literacy includes an individual's knowledge about information concerns and needs, and his ability to identify, locate, evaluate, organize, and effectively create, use, and communicate information to address issues or problems at hand. It is seen as a prerequisite for participating effectively in the information Society, and is part of the basic human right of lifelong learning (UNESCO Prague Declaration, 2003). This plays a leading role in reducing the inequities within and among countries and peoples UNESCO (2003). Accordingly to Bundy (2004) an information literate person is that person who possesses the quality or ability to be able to exhibit the following characteristics as follows:

- i. To recognize the need for accurate and complete information as the basis for decision making.
- ii. To identify potential sources for a given assignment.
- iii. To develop a successful search strategy.
- iv. To evaluate the information received.
- v. To integrate information into existing body of knowledge.
- vi. To use the information in problem solving.

From the above characteristics, it can sum up that information literate people are those who have learned how to learn. They know how to learn because they have learned how knowledge is organized; find information and how to use it in such a way that others can also learn from them. They are people that are prepared for lifelong learning, because they can always find the information needed for any task or decision at hand (A.L.A, 1989). By and large question about information literacy is an interesting one in the sense that it gives people the opportunity to know how relevant it is for us to be information literates.

One of the important of information literacy competency is to give and equip people with the ability to cope with information explosion Johnston and Marsh (2014). This is because it will provide people with the necessary skills needed to recognize when information is needed, where to locate it, and how to utilize it judiciously and effectively. Due to the information explosion, it becomes more complicated to locate, evaluate, use and communicate information. This explosion gives people accessibility to lots of information that is not evaluated unlike the ones in the printed sources. Therefore, the authenticity and reliability of this information is not trustworthy, rather its veracity needs to be required for any trussing (Ranaweera, (2010).

However the importance of information literacy competency cannot be over emphasized because of the significant role it plays in shaping both nation and individuals. It is pertinent to note that the more literate a society is, the higher the level of development to be expected from it. Therefore, information literacy competency plays significant role in determining how human being act and behave. According to Popescu and Erich (2010), a person that possess the ability to know how, where, when and why an Information is published has the potential to be able to adjust to different environment. She reiterates that in the contemporary era of information explosion, the information market is saturated with all sources of data from the internet and the ability to understand, organize, evaluate and utilized Information judiciously is a priority that needs pertinent concern (Limberg et al, 2013).

2.4 Information literacy programmes in University of Malaya

The University of Malaya tried to familiarize its library users with the range of services and resources at their disposal since in the 1970's. At the beginning of each academic session, newly admitted students were taken round the University library in form of tour by a librarian where they were introduced to a wide range of activities provided by the library. Students were also advised to refer to a reference librarian should they have any inquiry with regards to their information needs. This trend continued until 1992 when library automation was introduced to the university library. At this juncture, the university library introduced several user training such as that of OPAC, CD ROM etc. Apart from these, several other programmes were conducted in the faculties of law and education as part of research methodology course. In 1997, information literacy programme was introduced as a one credit course with support from the faculty of computer science and information technology. The essence of this programme was to equip the students with the following:

- a) Equip students with information seeking skills so that they are able to locate, search, evaluate and use information needed efficiently and effectively.
- b) Encourage students to become an independent learner with lifelong learning skills that enables them to make decision making.
- c) Provides students an opportunity to expand and upgrade their current information technology skills through exposing them various IT application.
- d) Gives University of Malaya opportunities to produce quality students who are computer and information literate (Zaiton, Chan and Chall, 1998).

Additionally, in 2014/2015 sessions the library proposed to modify the content of information skills to information literacy skills and compute the course in to the undergraduate students CGPA. With all these series of user education program being carrying out at the University of Malaya's library particularly among undergraduate students we noticed that no study has investigated the perceived usefulness and effectiveness of information literacy skills among the library users. As such of that, the aims of this study is to find out whether the information literacy skills training program offers at the University of Malaya's library is perceived to be useful and effective among those who attended.

2.5 Importance of information literacy to students

Several student learning outcomes, such as student success, engagement and graduate employability are linked to library and information literacy activities (West et al. 2010); Ministry of Training, Colleges and Universities (MTCU), 2009; Knight et. al, 2010). The importance of acquiring skills in information literacy “multiplies the opportunities for students’ self-directed learning, as they become engaged in using a wide variety of information sources to expand their knowledge, ask informed questions, and sharpen their critical thinking skills for further self-directed learning” (Association of Colleges & Research Libraries (ACRL), 2015, p. 3).

Academic performance is directly linked to core skills, such as reading, writing, and thinking critically. As Knight et. al (2010) argues, “Just as writing shapes and enhances thought, clarifies thinking, and facilitates learning, so does information literacy. Both are interdisciplinary, employ technology, and contribute to lifelong learning” (p. 57). The ability to think critically is similarly directly linked with information literacy.

Furthermore, Dziwak (2014) recognized that “student associations, postsecondary institutions and governments are now making increasing efforts to ensure that a quality learning experience is being offered to students throughout their PSE experience, one that includes solid and effective teaching, strong levels of student engagement, deep learning, and value-added skills development” (p. 2). Employability is similarly dependent on graduates who can demonstrate these skills. “Information fluency is the set of requisite 21st century skills needed to succeed in the information economy (Exner, 2014). The Conference Board of Canada (2000) further identifies an individual’s need to be able to manage information as a skill needed for employment. Furthermore, some colleges are required to meet objectives called Employability Skills Standards that include skills related to information literacy, such as communication (reading, writing, presenting), critical thinking and problem solving, and information management (MTCU, 2009).

Several prominent employers have recognized the value of information literacy (Rockman, 2004). Anthony Comper, the president of the Bank of Montreal, told the 1999 commerce graduating class at the University of Toronto that information literacy is essential to future success. Whatever else you bring to the 21st century workplace, however great your technical skills and however attractive your attitude and however deep your commitment to excellence, the bottom line is that to be successful, you need to acquire a high level of information literacy (Ayoub 2016). What we need in the knowledge industries are people who know how to absorb, analyze integrate, and create and effectively convey information – and who know how to use information to bring real value to everything they undertake (Rockman, 2004). To this end, information literacy skills development is not only beneficial to students while in school, but also as they enter the workforce.

Several academic and professional institutions have recognized the importance of information literacy skills acquisition and have strategized how to make this opportunity for skills development available to both faculty and student user groups. ACRL (2008) presents characteristics intended to help those who are interested in developing, assessing, and improving information literacy programs. These best practice characteristics for information literacy programs include the following: mission, goals and objectives, planning, administrative and institutional support, articulation of the curriculum, collaboration, pedagogy, staffing, outreach, and assessment/evaluation (ACRL, 2008). ACRL has developed a hand- on workbook that allows institutions to evaluate their current information literacy strategies so it can help them plan for further information literacy initiatives and programming (ACRL, 2011).

In the contemporary world, it is now widely acknowledged that IL skills play an important role in academic achievement and lifelong learning. It is thus conceived that lack or insufficiency of information skills creates a negative impact in terms of academic, personal and professional advancements among students, professionals and ordinary people (Lwebura & Mugyabuso, 2016). In terms of academic achievement, students and researchers become negatively affected because a lack of IL skills limits them and creates difficulty for effective and efficient ways in searching, retrieving and using relevant information. The ability to search for information by applying appropriate evaluation and analyzing skills is very important (ACRL, 2000).

A number of studies have shown that information users including university students in both developed and developing countries commence university with limited information seeking skills. In their review of entry-level students' research skills,

Salisbury and Karasmani (2011) observed that students were unprepared to meet the needs of first-year research requirements, while Russell and Airasian (2001) identifies significant gaps in information competencies that students demonstrate during high school to university transition. It is from this perspective that Gabridge et al. (2008) observe that even good students in prestigious institutes such as MIT in the US lack sufficient information and research skills for the efficient use of resources offered in their institutions. According to Rowlands et al (2008), students lack an understanding of what constitutes quality scholarly information; they are unable to evaluate the information retrieved, also they are not able to apply sophisticated information-searching strategies to a range of interfaces, favoring instead intuitive process like Google simply because of its assumed simplicity. In general, as pointed out by Salisbury and Ellis (2004), a majority of students face a number of challenges in the process of information search, retrieval and its use.

Among the challenges facing students in their information use are language barriers, computer use skills and general experience in library use Hickok (2011); Li et al. (2010); Pincas, (2001); Song, (2004). For instance, Li et al. (2007) point out that language problems not only make them fearful in terms of communicating but make them endure other inconveniences in their academic studies including the use of library services. Likewise, Baro (2013) in his study of reference and information services in Nigerian libraries identified information illiteracy among library users as a factor hindering the effective utilization of reference services in the library. Bennett and Maton (2008), Kennedy et al. (2007) and Hughes and Bruce (2013) are all of the opinion that differences in learning, information use and digital competency among students is the result of differences in students' social, cultural and linguistic experience. These reasons highlighted the importance of information literacy to be an integral part

of any institution that has a quarter for international students. This in turn would make their studies much easier and convenient.

2.6 Information literacy and globalization

With the advancement in information technology, information literacy has become an important tool for international students to adjust to the changing world of information. The goal of education now has shifted from mere transfer of content to provide future generations with the mastery of all the tools necessary for lifelong learning (Cornali and Tirocchi, 2012). Therefore internationalization of higher education is defined as the process of integrating an international/intercultural dimension into teaching, research and service functions of an institution (Corral, (1997).

From the conceptual analysis it can be summarized to mean the process by which higher education takes a different perception to include a change in its dimension to teaching, research and services. The changes resulting from growing interconnection between different parts of the world involve defining new learning goals that are not confined to national boundaries (Munshi 2016). Institutions are now involved in recruiting potential students from foreign countries with various means of advertising their school programs using various medium. For instance Malaysian institutions are not exempted from this scramble with the government aiming for 200,000 foreign students in Malaysia by 2020 as pointed out by Mokhtar and Yee (2013). In 2012, Malaysian Institutions of higher learning had an estimation of 80,000 international students across the country prominent which consist of China, Iran, Yemen, Indonesia and Nigeria representing more than half of the entire population of the foreign students in Malaysia (Calzada and Marzal, 2013). Sharing of information content as well as the possibility of more extensive interactions at a distance has stimulated the development of cooperative

learning where personalized study plans has become more feasible (Cornali and Tirocchi, (2012).

The growth associated with the utilization ICT has led to a radical transformation of institutions of higher learning. Information literacy becomes more important in this digital age because every now and then more students and researchers are faced with new innovation in information and communication technology.

There are assertion by several authors that in the modern society that everyone needs increase competency for finding, handling, and using information. And the major component for this competency is could be found in information literacy (Virkus, 2011). This is the basis for achieving an individual goal both at academic and non-academic level. In this situation, international students are not exempted from this trend been students learning in foreign countries with a different approach and methodology to education. Therefore, the need to be information literate is highly imperative to achieve the aspired goals at the end of the course of study.

As stated by Corral (2003), this system will strengthen the employability of a workforce and counter information overload. It is also a common discipline to all disciplines, learning environment and all levels of education as asserted by ACRL (2000).

It is interesting to note that the amount of information circulating every day is increasing day in day out so the means of acquiring them therefore becomes important in order to catch up with the speed and changing nature of technology. This therefore gives credence to study information literacy among international students with the aim

of understanding the major challenges they face in studying in foreign countries (Duncan and Varcoe 2012).

2.7 Information literacy among international students

For the purpose of this study, international students refer to student that comes to a country with a foreign passport and a visa purposely for academic pursuit.

It is adequate to know that so many researches have been conducted relating to information literacy competency among international students. These comprises of works of Hughes (2011 and 2013); Salleh, et al. (2011); Gaston et al. (2015); Baro and Eberechukwu (2013). These studies are treaties on information literacy competency that attempts to explicate or understand information literacy from the perspectives of international students.

According to Australian government recognizes the importance of international students as a process of deriving data through the information literacy program that cater for their information needs. The government wants to ensure that all graduates from Australian schools graduated with a very high standard in information literacy. This is why the government decided to identify the need of international students in terms of information literacy. According to council of Australian government (COAG) (2014), the major problem faced by international students in Australian schools is that of quality and accessibility of information. In addition, the Education Services for Overseas Students (ESOS) noticed that students need comprehensive and updated information for studying, living, and working in Australia. Hensley and Love (2011) also noted that international students are more likely to experience problems than local

students in general; and this could be complicated if they have fewer access to the resources that could help them.

Gatson et al (2015) argued that international students still find it very difficult and subtle to study in a foreign country, this is because of entirely new and different method of navigating through various resources. This in turn affects their information seeking behavior.

Agrawal (2012) perceive information sources as carrier of information. These are highly diverse from traditional sources (books) to electronic sources and search engines. This has made information seeking as part of everyday life because of the rapid growth and expansion of these resources. It should also be noted that it has become so important for an individual to equip himself with the necessary skills to utilize these resources (Gaur and Sharma 2012).

The fact that international students live in an entirely alien culture and environment, they are expected to encounter problem which the indigenous students may not face (Andrade, 2006). The difficulties in providing information to international students are also another problem which lecturers usually encounter (Orlu, 2016). Using this as a pretext, some researches try to study what could cause these problems. Their study leads to testing of various attributes in order to provide a sound base for the phenomenon in question.

In a study on information needs of a multi-cultural society like Israel conducted by Greenberg and Barllan (2014) found out that there is a significance difference between students whose first language was used as a means of instructions with those from a

different language background. It was also revealed that when instructions are been issued using a student's second language, special attention should be given to them by library assistance when they are in need of information.

Hickman (2010) in his study on college students' attitude and perception about information literacy, found a significant relationship between computer skills, teaching materials, communication tools, learning experience and information literacy competency.

According to Hughes (2005) one of the most frequent problems international students face is that of language. Lack of adequate English language skills affect some students understanding and interpreting questions asked by their teachers. This in turn affects their ability to search for answers to questions. For instance, scanning through a journal abstract or article could turn to be a herculean task for some of them. This is because of the inherent language barrier. More also, intercultural adaptation is also another problem as highlighted by Gunnarsson et al (2014); Rempel and Davidson (2008). They found out that different cultural body language, gestures, social class and religious differences, traditional passive role of learners and shyness about approaching authority figures for assistance are also a barrier for library access to information seeking behavior.

Another factor is cultural differences some countries tradition of information seeking is word or mouth dependent as these societies tend to be collective in all their affairs (Zoe and Di Martino, 2000). In Australia for example, Kennedy et al (2010), pointed out that the searching strategy for information is based on individual student however, individual research has the potential to complicate issues more on international students

as they will always find it much complex, a system different from their home country. International students also need adjust to problems as they are most likely to be alone with no families group to look up to. Studies show that only few of the international students have the capacity to establish friendship with indigenous students (Hines, 2013). Sawir et al. (2012) reported that this could be as a result of lack of sense of belonging and the “culture shock” they face when arriving to their host country.

Another factor affecting international student’s information literacy level is the variation of their skills. This could be due to change in education system from what is obtainable in their countries (Cury and Cope man, 2005). An example of this problem is a shift from teacher centered model to self-directed style of information seeking. Other problems include demography which comprises of different aspects of the student viz: age, gender, nationality, income, program of study etc.

Age: Cemalcilar, Fabio and Stapleton (2005) in their studies discovered that the younger a student is the higher chances to have an intercultural adaptation which in turn will make him/her feel more comfortable to the academic environment. The better a student feels the more is expected to adapt to the studies environment.

Gender: According to some studies, female international students have higher social-cultural and psychological adaptation scores than their male counterparts (Chen and Williams 2009). Another study however pointed out that women have a lower competency in using computerized library resources (Zoe and Di Martino, (2000). Andrade (2006) found out that male are more satisfied and confident when it comes to online Library use.

Nationality: This refers to country home of the student undertaking research overseas. This is a crucial factor in information literacy assessment. As highlighted earlier, some countries literacy rate and system of education has placed them on a higher advantage than other countries. For example, Leask (2009) explains that students from Africa, south East Asia, and Asia have the greatest difficulty in adjusting to their new academic environment. In addition, students from Canada, USA and all western European countries have little difficulties adjusting to new academic environment.

Level of study: According to study conducted by You (2007), it shows that undergraduate's students have more problems with regards to information literacy than postgraduate students. Also, Chen (2012) discovered that students from wealthier family tend to adapt faster than those from relatively poorer background.

Financial problem: a study by Chen and Wu (2011) reveals that international students from wealthier families tend to have a better chance of adapting to their new environment. He presumed it may have to be with their ability to communicate with family members back home and their ability to travel home at will. This he attributed contributes to their adjustment relatively faster than those from lower earning families. According to Chen and Wu (2010), adjustment in classes is found to be higher among final year students than newly admitted. This has to do with the length of study or stay in the new environment. The longer a student stays the higher his chances of adjusting to his new environment.

Another finding by Hughes (2005) indicated that international students face social, educational, and linguistic problems which in turn have a profound effect on the overall study experience. Curry and Cope man (2007) in their studies on international students

experience in American universities found similarities and differences between native and non-native speakers of English language in terms of the use of academic library. They found out that non-native have library anxiety and problem adjusting to American library system.

Another study on incoming international students conducted by Jackson (2007) suggested that information literacy instruction has shown to reduce anxiety among International students. The findings also shows that information literacy programs such as summer courses, learning instructions, credit earning and non-credit earning courses have proven to be significant in helping international students integrate information skills in American Universities.

Library use strategies have focused on definite areas of application, such as teaching bibliographic instruction to improve international students' performance in writing research papers, (Kyale and Brickman, 2015); (Knight et al, 2010).

A quantitative study on the information seeking behaviors of international students employed a web-based anonymous survey to compare American and international graduate students' information needs, general information searching patterns, and participation in library activities. In addition, it examined the relationships between English language proficiency and both length of stay in the United States and information seeking behaviors as substantiated by Lange et al. (2011). Findings showed that age, language, culture, communication, and technology barriers of international students' access to libraries plummeted with length of stay. Students used various web-based searching tools and resources as often as their American counterparts due in part to the effective role academic libraries played in educating international students in

library use. The authors made recommendations for improving education about library services and information literacy skills. Another study conducted by Kavulya (2003) observed failure from librarian's part to push for information literacy to be a core function of the university library system.

De Jager and Nassimbeni (2005) in their study explicate that Library Association in South Africa have started to lobby for the integration of information literacy instructions as part of the library system. In the same view, Salisbury and Ellis (2004) indicated the significance of information literacy inclusion in library programs contributed significantly to information skills.

Secker et al (2011) conducted their study on the impact of information literacy programs; they indicated that international student's confidence in finding information resources improved significantly after attending information literacy program. A similar improvement was also recorded when searching for materials from the internet. They radically conclude that students improve after attending information literacy classes. Their findings also indicated that students from the faculty of computer science scored higher in the information literacy skills test than students from other faculties. This they presumed may not be unconnected with their computer skills.

Another study by Cannon (2007) also indicated that students who have attended a one semester credit earning course on information literacy scored higher in their exams than those who did not attend. Lastly, in another study, Edzan (2008) found that international students prepare the one-on-one training mode as their favorite method followed by computer assisted instructions.

Several studies have been conducted as explained in the reviewed literature either on information seeking behavior of international students or their information literacy skills. None of the literature reviewed explained information literacy competency of international students in the University of Malaya. This created a gap which this study will explore. This is one of the justifications of this study. It will look at information literacy competency of international postgraduate students in University of Malaya and try to understand how they relate or differ. It will give an insight on how competent in terms of information literacy international postgraduates students in University of Malaya are. It will also give the authority of the University a clue on their students and their information literacy competency.

2.8 Assessment of information literacy competency

This segment of the studies emphasized how information literacy is being evaluated or assessed. The analysis looked at different method of assessing Information literacy, their advantages and disadvantages.

Several assessment tools have been used in assessing information literacy. According to Blevins (2012), some these tools are commercially oriented while some are institutional based.

SAILS: (Standard Assessment of information literacy Skills): This is an online information literacy assessment tool introduced in 2001 by a team of experts in librarianship. The administration of this adduce libraries with gives libraries the opportunity to document skill levels of students in order to provide areas that needs improvement. The tool comprises of a 45 item multiple choice test aligned to the ACRL

standards. It is available on sail website, it saves responses, analyses data and generates a PDF formatted report. It charges the user at the rate of \$4.50 (per head).

TRAILS: (Tool for Real time Assessment of Information literacy) is an information literacy online assessment tool which originates from Kent University Library. Its questions are based on the American Association of School Libraries Standard for 21st century learner as adduced by Burhanna (2010). This tool is divided into several steps with each testing individual's ability to answer questions ranging from where to search for information on a given question to where to find it. Using trails is free for libraries and teachers.

There are other several online information literacy assessment tests available in information literacy test: these could be located James Madison University, Assessment primer, University of Connecticut etc. The information literacy assessment tools have some deficiencies in the sense they specifically assess their students' level of information literacy. They do not measure or analyses the factors that could affect student's information literacy level in general. Some of them are also meant for American standard of information literacy and the questions they ask are biased. Some are free while some client will have to pay in order to subscribe to its usage. Another problem is lack of adaptability. The questions are based on American standard and a student who is not from USA may find the questions more complex difficult. The tools may not be adoptable directly to question factors affecting information literacy among international students. But adequate inference could be drawn in reconstruction of the area of study.

For the purpose of this study, the researcher made use of Information competency assessment instrument (ICAI) developed by Associate Professor R.K Marshal of the university of Illinois in the USA. The instrument contains 40 questions based on Wisconsin Association of Academic Librarians (WAAL). The instrument is on a likert scale of 1-5 (modified) from strongly disagree to strongly agree.

2.9 Summary

The table below provides a summary of some of the findings already discussed in chapter two above.

Table 2.1
Summary of Related Literature

S no	Citation	Findings
1.	Hughes and Bruce (2013)	Language and library experience
2.	COAG (2014)	Need for quality and accessibility of Information
3.	Greenberg and Bar-Ilan, (2013)	Language of instruction
4.	Ishimura and Bartlett (2013)	Differences in mode of teaching
5.	ESOS (2011)	Need for comprehensive and up to date information
6.	Chew et al (2009)	Relationship between computer skills, learning experience and information literacy
7.	Lu (2007)	Intercultural Adaptation
8.	Chen (2010)	Differences in system of education with host country

9.	Cemalcilar, Fablo and Stapleton (2005)	Length of study
10.	Chen (2010)	Gender, wealth or finance
11.	Hanassab (2006)	Nationality
12.	You (2007)	Level of study
13.	Secker, Macrea and Gibson, (2012)	Information literacy instructions
14.	Hughes (2013)	Need for sharing findings and interacting with course mates.

Based on the already reviewed literature, there is a general believe that international students from developing countries tend to have more problems with information literacy than those in developed countries as presented by COAG (2013). Certain factors were found out to be some of the reasons why they lagged behind. These consisted of language barrier, intercultural adaptation, differences in educational system, course components, course instructions, demography, educational level etc.

The several authors discussed above specified variables predominantly on effect of information literacy among international students. Most of the methods of data collection were based on questionnaire distribution system where respondents were asked multiple choice questions. However, the literature did not address the information problems among postgraduate students in Malaysian Universities in particular; it emphasized only on international students in general.

To sum up the analysis, the issues according to various countries were not addressed even though they are all categorized under developing countries appellations; and vary

significantly in various aspects of information literacy. From the above perspective, the related literature reviewed provided an insightful knowledge on the problems of information literacy among international students.

It is against this prism that the studies refilled the inadequacies inherent in the previous literature conducted by other researchers.

Universiti Malaya

CHAPTER 3

METHODOLOGY

3.1 Introduction

Chapter three of this study deals with research methodology. In this chapter, an outline of the research methods such as population, sampling technique and size, instrument of data collection, data collection and analysis were explained.

3.2 Research Design

The research design for this work deals with plan of action on how the research was conducted. The study was conducted using a survey method with a structured questionnaire adopted for data collection. A structured questionnaire was used for data collection. The dependent and independent variables were captured in the questionnaire and the data was analyzed quantitatively.

3.3 Population

Basically, the totality of the units from which the sample is drawn refers to population. In this research, population refers to a collection of individuals in large number that formed the focal point of this study. The study focused on the information literacy competency among postgraduates' international students of University of Malaya (UM). The population of the study is therefore international postgraduate students undergoing different programs in the University. According to UM database the population of postgraduate international students during the research was is 3028. Using Krejcie and Morgan sampling table, the sample of 3028 is 341.

3.4 Sampling Techniques

A sample consists of individuals who will actively participate in a study (Spinger (2010). The reason for sampling in research is because an entire population cannot be studied hence the need for a sample that will represent the population (Creswell, 2014). For the benefit of this study, a random sampling technique in which each individual in the population has an equal probability of being selected (a systematic or probabilistic sample) (Creswell, 2014). The random sampling technique, according to Salkind (2009) is a very common technique in research methods where each member of a group has an equal chance of been selected to participate in a study. Due to the large number of postgraduate students in University of Malaya, it makes random sampling difficult to be conducted so the sample was selected systematically. Alternatively, a systematic sample can have a precious equivalent random sampling, (Fowler, 2009 as cited in Creswell 2014). The sample size of three thousand and twenty eight (3028) according to Kriecie and Morgan's (1970) Population and samples table is three hundred and thirteen (341).

3.5 Data collection techniques

The data was collected online using google form. It was posted to students' University email (siswa mail). The data was collected from January 16th to March 23rd 2017. The questionnaire was divided into two sections: Demographic variable such as age, gender, nationality, faculty etc. The second part comprised of the information competency items numbering 40 on a likert scale of 1-5.

3.6 Data analytic techniques

The data obtained were coded in, and analyzed with the latest version of the Statistical Product and Service Solutions (SPSS) Windows software. This is one of the most powerful and popular statistical program for analyzing data according to Meyers (2013). The software contains statistical and operational research techniques used in social science and the data were analyzed quantitatively to examine the differences among the identified variables. Some data were analyzed systematically to obtain descriptive statistics such as percentage, frequency, and normal distribution. The raw data gathered were further subjected to one of the inferential statistics i.e. parametric test of statistically significant differences in respect of the six null hypotheses formulated in the introductory chapter. Where the independent variable was less than 3, an independent sample t test was conducted to test the difference between the dependent and independent variable. Where the independent variable was more than two, a one way ANOVA was conducted to test the differences between the dependent and independent variable. The results of the data analysis are presented in tabular form wherever necessary.

3.7 Instrument

This is one of the most important parts of any survey research. The validity and reliability of the instrument must be tested and proven to be doing what it is meant to do. This is where content validity, construct validity, reliability etc comes to effect. For the purpose of this survey, the instrument (i.e questionnaire) used is called the 'information competency assessment instrument' (ICAI). The questionnaire was designed by Associate Professor R.K Marshall with the aim of finding an instrument

that will test information literacy competency among students. In order to develop the questionnaire, Wisconsin Association of Academic Librarians (WAAL) information literacy criteria were adopted.

Two studies were conducted during testing of the instrument. Before these studies, a literature was established. Marshall (2002) developed the instrument. In developing it, he used ten areas or criteria considered by Wisconsin Association of Academic Librarians (WAAL) for someone to be information literacy competent. These areas are as follows:

1. Identifying a topic
2. Determining source requirement
3. Know how to search for the information
4. Know how to locate and retrieve information
5. Evaluate the information
6. Synthesize and organize information
7. Understand ethical and legal issues of information
8. Appropriately use mass media for information
9. Present the information
10. Learn from feedback

The instrument is a self-report survey and it consists of 40 items covering areas of concern. The instrument asked participants to rate their feelings on a liker scale of 1-5 from strongly disagree to strongly agree. All the ten criteria of WAAL information literacy competency were represented by four questions each (making the questionnaire 40 items). According to Curzon (1997), an individual needs to first identify a topic first. Statement like “I can take a complex topic and break it down” addresses this area.

Recognition of the different format the information is (like paper, electronic device etc) is the second part of the instrument. Statement like “I know the difference between primary and secondary sources” covers this area. The next is statements on formulating queries and knowledge of search techniques is also important. “I know how to broaden or narrow a search using Boolean operators” is an example of statement on this. Knowing how to locate and retrieve information is another component of being information literacy competent. “I understand the organization of materials in a library” addresses this area. The knowledge of how to evaluate information is the fifth criteria. Example of statement here is “the information I used is complete and reliable”. Organization and synthesization of information is very important (Waal, 1998). “A lot of information I find is irrelevant or unnecessary” is an example of statement that covers this area.

The ability to understand intellectual property right is another criterion. Statements like “I am not sure how to cite all my sources” cover this area. How to use and cite a material properly is part of information literacy competency. Statements in this area include “at times, the producer of information is not clear”. A method on presenting a finished product is another aspect of information literacy competency. “I am confident that my information is clearly and confidently presented” is an example of statement that covers this area. Learning from project and applying the knowledge on future projects is the final component of the information literacy competency. “Feedback is demoralizing to me” is an example of statement in this area.

3.8 Instrument validation

In the process of validating this instrument, the author (R. K Marshall) conducted two different studies. These studies and their findings will be discussed.

3.8.1 Study one

Students from twelve sections of a University participated in this study in 2001. 276 students participated in the survey. For this study, the instrument produced a Cronbach Alpha of .90. In order to test the instrument reliability, the instrument was again distributed to five different classes where students were assigned a major project or presentation. 106 students participated in this study. Total score for the instrument (Alpha = .92, $N = 106$) were correlated with the grade on project (e.g., A = 4, B+ = 3.5) to assess predictive validity. The result was significant ($\rho = .29$, $p < .01$), this shows a low correlation with a definite but small relationship. This indicated predictive and content validity.

3.8.2 Study two

This study was conducted at a Midwestern University in 2005. 520 students were sampled, they were asked to rate their GPA according to a scale of 1 = 2.0 or below, 2 = 2.01-2.49, 3 = 2.5-2.99, 4 = 3.0-3.49, and 5 = 3.5-4.0 ($M = 3.62$ (1.05)). In this study, the instrument demonstrated Cronbach Alpha of .90. When it was correlated with the GPA, the result was significant ($\rho = .109$, $p < .05$) this demonstrate predictive validity.

This instrument has demonstrated a good reliability based on the two studies conducted. The two studies were from two separate groups and institutions. They also varied in terms of age and areas of studies. With a Cronbach Alpha of high eighties and low nineties shows consistent reliability.

The aim of any instrument is to measure validity (Singletary, 1994). With these studies, this instrument has demonstrated validity and reliability. Comparing the score of the students to grade of their final year is a good avenue to check validity of the instrument.

Another argument for validity is comparing the mean of the ICAI scores. The mean score for the 2001 study was $M = 170.65$. The 2005 mean score was $M = 170.23$. Being given to two different groups, at two different times (years), both with a wide diversity of studies and interest shows the stability of the instrument itself.

3.8.3 Result of pilot study test

A pilot study was conducted on the topic of information literacy competency among international student in the University Malaya (UM). 60 questionnaires were distributed to some postgraduate students of the University. Each items extracted more than 0.6 and Chronbach's Alpha value showed 0.748 as indicated in the table below, this shows that all 40 items are reliable and accepted to further this study. However, the findings also showed that dropping any of the forty-item components would not raise the Chronbach's alpha value to any higher than .748. The findings with regard to the Cronbach's alpha internal reliability assessment for the forty item components (loading factors) are shown in table below.

3.8.4 Table 3.1 Number of Items, Factor loading and Cronbach's Alpha Value

No. of Items	Factor loading	Cronbach's Alpha (α)	No. of Items	Factor loading
Item1	.768	.748	Item21	.744
Item2	.808		Item22	.778
Item3	.785		Item23	.858
Item4	.787		Item24	.808
Item5	.806		Item25	.805
Item6	.850		Item26	.825
Item7	.688		Item27	.773
Item8	.683		Item28	.805
Item9	.772		Item29	.695
Item10	.819		Item30	.741
Item11	.627		Item31	.803
Item12	.783		Item32	.751
Item13	.748		Item33	.794
Item14	.809		Item34	.777
Item15	.763		Item35	.762
Item16	.819		Item36	.730
Item17	.801		Item37	.839
Item18	.711		Item38	.734
Item19	.814		Item39	.785
Item20	.697		Item40	.685

As discussed earlier in chapter 3, the questionnaire contains 40 items with each of the ten criteria of WAAL information literacy represented by 4 out of the 40 statements. The 40 items in the questionnaire represent the information literacy competency. Running some one way ANOVA and independent sample *t* test between the independent variable and the information literacy competency items answered the six research questions. Research question number one (Are there differences in information literacy competency among respondents in the age group of 18-23, 24- 29, 30-35, 36-40 and 41 and above) was answered by running a one way ANOVA test between the independent and dependent variables. Where the independent variable is not more than two, an independent sample *t* was conducted to test the differences among the variables. This was how research questions 1-6 were answered.

3.9 Research scope

The scope of this study focus on all international postgraduate students from different countries studying in University of Malaya (PhD and master's Programme).The choice of Postgraduate students has to do with the increasing or higher demand on their academic program.

They necessitated the need for wider range of information resources which comes in different format as such need to know and understand how to utilize these resources. This study strictly concentrated on postgraduate students specifically in University of Malaya. The international students cut across people from different countries of the world with different socio economic, cultural and political background.

3.10 Conceptual framework

The figure below explains the conceptual frame work of the study. The independent variables are on the left side of the diagram (ie age, gender, program of study, and mode of study) while the dependent variable (information literacy competency is on the right hand side. The arrows depict the relationship between the dependent and independent variables.

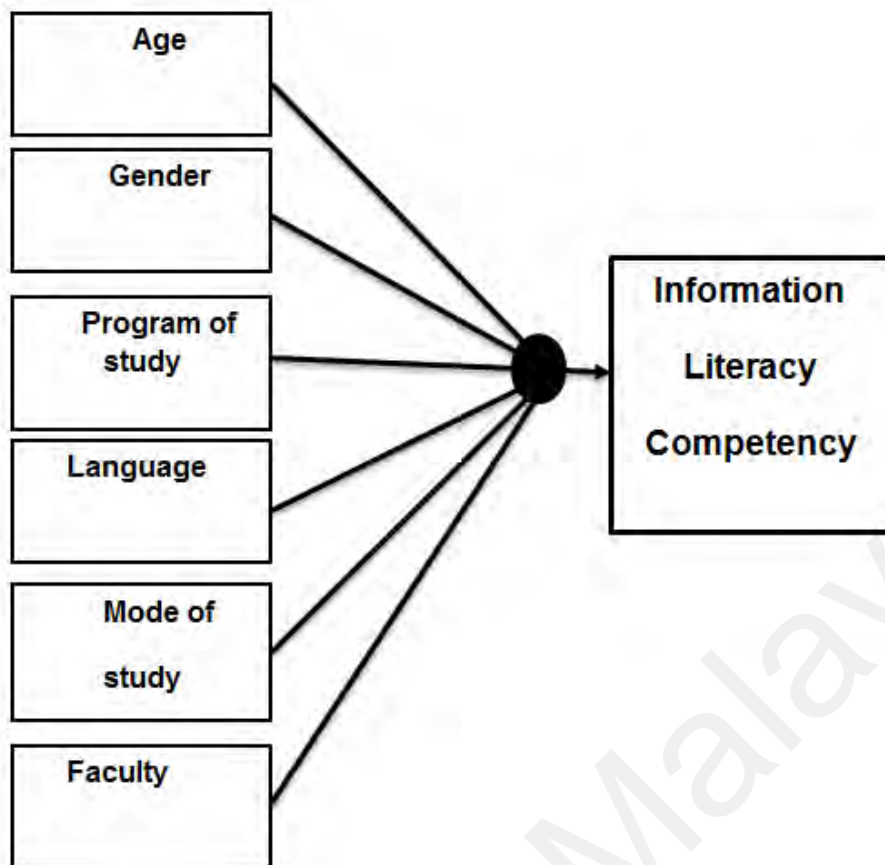


Figure 3.3: Conceptual Framework

3.10 Operational definition of terms

Age: age is the periodization in respondent's lifespan from birth. It can be a barrier to information literacy depending on exposure. By assumption, postgraduate age should be above maturity age. This study used age to mean the age group of 18-23, 24-29, 30-35, 36-40, 41 and above.

Gender: gender is the biological composition of individual outlook. It is biological and divine in nature. It is assumed that sometimes it affect individual understanding of information. The study used gender as categorical variable of male and female.

Programme of Study: This refers to the program of the respondents. Therefore in this study programme of study means PhD or Master's degree.

Language: Language is a competent of people's culture. Information is normally passed through language for one to be informed. Language plays vital roles in information literacy. Therefore, language is used in this study to mean respondent's local language which he uses effectively in communication.

International students: international students in this study mean those students other than the nationals who are pursuing a postgraduate degree in the University of Malaya. Any member of the university who is registered as a postgraduate student and do not hold Malaysian Passport is used in this study as an International Student.

Postgraduate: this is a programme of study level in the University of Malaya. Any degree above the first degree is termed as a postgraduate. So in this study, Postgraduate means master of Doctor and Philosophy (PhD).

Mode of study: in this context, mode of study means programme of the respondents. Here it means coursework, research or mixed modes.

Information literacy competency: a respondents ability to identify a topic, define its requirement, use information technology in solving the problem, locate and retrieve the information and then make use of mass media. It also means the respondents ability to evaluate information resource, organize and synthesize it, present it, understand its ethics and legality and finally learn from the experience.

CHAPTER 4

DATA ANALYSIS

4.1 Introduction

This chapter reports the data collected and the results of the study. The data were analyzed to answer the respective research questions and to test the hypotheses stated in the introductory chapter. The questionnaire consists of five sections with section one describing the demographic information of the respondents, section two constituting the factor analysis, and section three presenting the Chronbach's alpha reliability measures (internal reliability test). Section four presents the normality distribution of the data. Section five presents the parametric test, which includes an independent sample t test and 1-way ANOVA test.

4.2 Demographic Profile of the Respondents.

Table 4.1 Age of respondents

Age	Frequency	Percentage (%)
41andabove	85	31.4
30-35	71	26.2`
24-29	61	22.5
36-40	29	10.7
18-23	25	9.2
Total	271	100.0

Table 4.1 above indicates that 85 of the respondents (31.4%) are on the age bracket of 41 and above making them the highest. They are followed by those on the age bracket of 30-35 (26.2 %). The next are those on the age bracket of 24-29 with 61 frequency representing 22.5 % followed by those on the range of 24-29 on 22.2% The least is 18-23 with a frequency of 25 making it 9.2%.

Table 4.2 Gender of respondents

Gender	Frequency	Percentage (%)
Males	170	62.7
Females	101	31.3
Total	271	100.0

Table 4.2 above indicates that 62.7% of the respondents were male while 31.3% were female representing 170 and 101 respectively.

Table 4.3 Program of study

Program of study	Frequency	Percentage (%)
Masters	152	56.1
PhD	119	43.9
Total	271	100.0

Table 4.3 shows that 152 (56.1%) were masters students while 119 representing 43.9% were PhD candidates.

Table 4.4 Faculties of respondents

Faculty	Frequency	Percentage (%)
Sciences	65	24.0
Computer Science & IT	44	16.2
Art and Social Science	40	14.8
Engineering	20	7.4
Economic and Administration	20	7.4
Law	18	6.6
Business and Accountancy	16	5.9
Language and Linguistics	14	5.2
Medicine	12	4.4
Institute of Asia	11	4.1
Build and Environment	7	2.6
Dentistry	4	1.5
Total	271	100.0

Table 4.4 above indicates that faculty of sciences has the highest respondents at 24.0% followed by computer science and information technology comes with 44 respondents representing 16.2 %. The next faculty is arts and social sciences with a

frequency of 40 (14.8%). The least of all the faculties is that of build environment with a frequency of 7 (2.6%).

Table 4.5 mode of study

Mode of study	Frequency	Percentage (%)
Research mode	131	48.3
Mixed mode	112	41.3
Coursework	28	10.3
<i>Total</i>	<i>271</i>	<i>100.0</i>

Table 4.5 above explains respondents according to their mode of study. In University of Malaya, three modes of studies exist: mixed mode, research and coursework. The result on the table indicates that 48% of the respondents are doing their studies with the research mode method. 46.3% are studying under mixed mode while 10.3 are doing theirs under coursework.

Table 4.6 Country's official language

Country's Official Language	Frequency	Percentage (%)
English	168	62.0
Non English	103	38.0
<i>Total</i>	<i>271</i>	<i>100.0</i>

Table 4.6 above highlights the respondents country's official language, 62% are from English speaking countries while 38% are from non-English speaking countries.

4.3 Section (2): exploratory factor analysis

4.3.1 Construct validation of the information literacy competency instrument

To assess the construct validity of information literacy competency instrument, a principal component exploratory factor analysis was employed on the forty-item. Varimax rotation and a factor loading coefficient of 0.40 or greater were employed as a criterion for deeming a factor loading. The loading practically yielded a 1-factor solution (eigenvalues more than 1.00) that collectively explains the 57.117% of the variance in the information literacy competency construct. However, out of the forty items submitted to a principal component analysis, all were found to have factor loading coefficients that met the 0.40 criterions.

Kaiser-Meryer-Olkin (KMO) was used to measure sampling adequacy and varies zero and one, with values greater than or equal to 0.60 indicating a good fit (Erfanmanesha et al. 2012). In this study, the value of the information literacy competency was 0.933 which is marvelous as suggested by (Kaiser, 1974). Moreover, the significance of the Bartlett's Test of Sphericity of the information literacy competency items was chi-square = 5623.980, df=780, $p < 0.000$, indicating that the items contained adequate common variance for the researcher to proceed with exploratory factor analysis.

Therefore, the findings were easy to interpret. They demonstrate that the information literacy competency construct has a single factor with forty items loaded on it, i.e. no items left. Table 4.7 describes the factors, items loaded on it, their Eigen values as well as the percent of variance explained by each factor.

Table 4.7: Descriptions of Factor from Principle Component Analysis

Factor Description	No. of Items	Eigenvalue	Percent Variance Explained
Information literacy competency	40	14.085	57.117

4.4 Section (3): Internal reliability of the items underlying each factor

A reliability test was carried out to ensure that the instruments and the data collected are reliable for further analysis. As stated by Chin (1991, cited by Chen, 2012), Cronbach's alpha is "the most widely used to measure for showing lower or higher guaranteed level of the internal reliability of indicators for a specific scale." The information literacy skills factor/component has forty items underlying it. The entire item factor/component was submitted to an internal reliability assessment using Cronbach's internal reliability coefficient alpha. The results of running the internal reliability assessment test using Cronbach's alpha revealed the forty (40) items component to have yielded an alpha value of .951, which is above the recommended value of 0.70 as suggested by Nunnally (1979). The findings also showed that dropping any of the forty-item components would not raise the Cronbach's alpha value to any higher than 0.951. The findings with regard to the Cronbach's alpha internal reliability assessment for the forty items/components (loading factors) are shown in table 4.8 below.

Table 4.8: Information literacy competency Variable (Cronbach's Alpha and Factor Loading)

No. of Items	Factor Loading	Cronbach's Alpha
item1	.689	.951
item2	.530	
item3	.648	
item4	.601	
item5	.562	
item6	.626	
item7	.553	
item8	.603	
item9	.615	
item10	.627	
item11	.551	
item12	.567	
item13	.571	
item14	.534	
item15	.585	
item16	.591	
item17	.603	
item18	.552	
item19	.589	
item20	.677	
item21	.639	
item22	.434	
item23	.527	
item24	.525	
item25	.551	
item26	.591	
item27	.529	
item28	.541	
item29	.605	
item30	.597	
item31	.662	
item32	.507	
item33	.460	
item34	.499	
item35	.573	
item36	.627	
item37	.607	
item38	.484	
item39	.577	
item40	.439	

4.5 Section (4): Normality (test) distribution

The purpose of normality distribution test is to help the researcher decide on the inferential statistical techniques, which depends on the normality of data. According to Vogt (2007), normality distribution is “a central step, which should take place before a researcher moves to the actual analysis.” In this regard, the present study adopted measurement of central tendency (MCT), measurement variability, skewness and kurtosis measures as well as Kolmorov-Smirnov and Shapiro-Wilk test to measure a distribution and evaluate the normality of data.

4.5.1 Measurement of central tendency

Assumptions related to frequency statistic: The result shows that the measurement of central tendency (Mean = Mode) was not normally distributed.

The results of information literacy competency variable indicate that the mean is less than the mode ($155.3469 < 200.00$) therefore, the distribution is not normal. Next, the values of Kurtosis and Skewness will be considered. Table 4.5 describes the measurement of central tendency (MCT).

Table 4.9: Measurement of Central Tendency (MCT)

No. of respondents	MCT	Information literacy skills
271	Mean	155.3469
	Median	160.0000 ^a
	Mode	200.00

Universiti Malaysia

4.5.2 Measures of variability

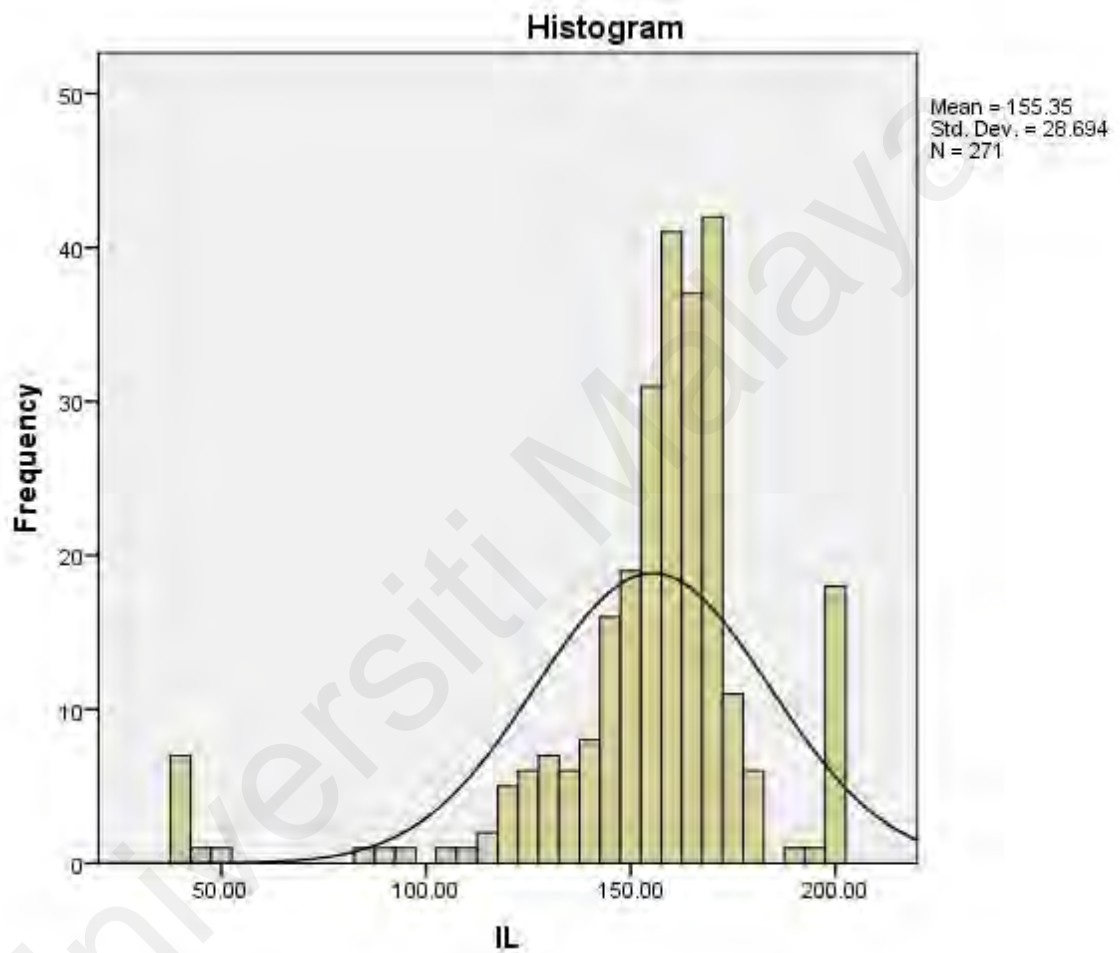


Figure 4.1: Histogram (Information Literacy Competency variable)

In the information literacy competency variable, the standard deviation is strongly more than 1, ($SD = 28.694$), indicating a normal distribution that is negatively skewed. Therefore, the next thing is to consider the value of both skewness and kurtosis to make sure if the data is normally distributed or not. Figure 2 shows the histogram of the information literacy competency variable.

4.5.3 Skewness and Kurtosis

Descriptive statistic was carried out to test the normality of skewness and kurtosis. The assumptions relating to descriptive shows that the information literacy competency variable revealed that, the skewness is more than 1.00 while the kurtosis is also more than 1.00 as indicated in table 4.6. The results show that the distribution is normal, thus the values of skewness and kurtosis were considered. Finally, the study also looks at the result of normality test of the Kolmogorov-Smirnov and Shapiro-Wilk test for proper deliberations of the normality test.

In the information literacy competency variable, the skewness was -2.069 and the kurtosis was 6.456. (See table 4.10).

Table 4.10: Descriptive Statistic of Kurtosis and Skewness

No. of respondents	Descriptive Statistic	Information Literacy competency
271	Skewness	-2.069
	Kurtosis	6.456
	Std. Deviation	28.694

4.5.4 Kolmogorov-Smirnov and Shapiro-Wilk

The descriptive statistics was carried out to test the normality test of Kolmogorov-Smirnov and Shapiro-Wilk. The assumption of Kolmogorov-Smirnov and Shapiro-Wilk shows that the information literacy competency was significant ($p < .05$) therefore the distribution was not normal but, the values of Skewness and kurtosis were indicated normally distributed and standard deviation is more 1 which is also normally distributed. However, the results of this distribution can be trusted because the data population is more than 50. Table 4.11 below describes the Kolmogorov-Smirnov and Shapiro-Wilk test.

Table 4.11: The Kolmogorov-Smirnov and Shapiro-Wilk test

Variable	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Information Literacy competency	.173	271	.000	.792	271	.000

Finally, the study chooses parametric test since the values of skewness and kurtosis as well as standard deviation is more than 1 which is normally distributed.

4.6 Section (5): Parametric test

Two types of parametric test were employed to test the six (6) null hypotheses and answer the six (6) research questions formulated in the introductory chapter.

The statistical tests were independent sample *t* test and One-Way Analysis of Variance (ONE-WAY ANOVA). The rationale for running these parametric tests was based on the normality of the dependent variables (i.e. information literacy competency) on the following independent/antecedent variables: age, gender, program of study, faculties, mode of study and country's official language.

Independent sample *t* test was employed to determine whether any statistically significant mean differences exist in gender, program of study and country's official language with the information literacy skills, while 1-way ANOVA test was employed to examine whether any statistically significant mean differences exist in age, faculties and mode of study with the information literacy.

4.6.1 Age and information literacy competency

This section reports the results of one-way Analysis of variance (1-way ANOVA). One-way analysis of variance is a statistically test used to compare the mean of three or more independent sample groups (Lay and Khoo, 2009).

A one way ANOVA test was used to test age as independent variable and information literacy competency as the dependent variable.

Research question

Are there differences in the information literacy competency between 18 – 23, 24 – 29, 30 – 35, 36 – 40 and 41 and above year’s respondents?

Null hypotheses

There are no differences in the information literacy competency between respondents on the age bracket 18 – 23, 24 – 29, 30 – 35, 36 – 40 and 41 and above year’s respondents.

Table 4.12: Age and Information literacy competency

Age	N	Mean	SD	df	F	Sig.
				4	2.338	.424
18 – 23	25	162.0400	19.85254	266		
24 – 29	61	159.5410	33.64549			
30 – 35	71	152.5915	26.62790			
36 – 40	29	142.7586	31.36041			
41 and above	85	156.9647	26.77127			

The results of running a 1-way ANOVA test revealed significant mean difference existed in information literacy competency, $F(4,266) = .424, p > .05$ between 18-23 respondents (M=162.0400, SD=19.85254), 24-29 respondents (M=159.5410, SD=33.64549), 30-35 respondents (M=152.5915, SD=26.62790), 36-40 respondents

(M=142.7586, SD=31.36041) and 41 and above age of the respondents (M=156.9647, SD=26.77127). Hence, the null hypothesis was rejected. (See table 4.12).

4.6.2 Gender and the information literacy competency

This section reports the results of running the independent sample *t*-test with gender as the dependent variable on the of information literacy competency:

Research question

Are there differences in the information literacy competency between male and female respondents?

Null hypotheses

There are no differences in the information literacy competency between male and female respondents.

Table 4.13: Gender and information literacy competency

Gender	N	Mean	SD	t	df	Sig.
				-.840	269	.402
Male	170	154.2176	32.40671			
Female	101	157.2475	21.03302			

The results of running an independent sample *t*-test revealed significant mean difference existed [$t(269) = -.840, p < .05$] between male respondents ($M=154.2176, SD=32.40671$) and female respondents ($M=157.2475, SD=21.03302$). However, Lavene's test for equality variance shows that there is statistically significant difference ($p = .005 < .05$) in the variance of scores between male and female respondents. This means that male and female respondents have the difference variance in test scores (equal variance not assumed). In other word, null hypothesis which stated that the variance of scores for male respondents is not equal to the variance of test scores for female respondents is not accepted.

4.6.3 Program of study and information literacy competency

This section reports the results of running independent sample *t*-test with program of study as the dependent variable on the information literacy skills

Research question

Are there differences in the information literacy competency between master and PhD students?

Null hypotheses

There are no differences in the information literacy competency between master and PhD students.

Table 4.14: Program of study and Information Literacy competency

Program	N	Mean	SD	t	df.	Sig.
				.927	.269	.268
Master	152	156.7763	30.21254			
PhD.	119	153.5210	26.64323			

The results of running an independent sample *t* test revealed significant mean difference existed [$t(269) = .927, p > .05$] between master respondents ($M=156.7763, SD=30.21254$) and PhD respondents ($M=153.5210, SD=26.64323$) with regards to their scores on the information literacy competency. (See table 4.14). However, the mean score of master respondents is significantly higher than PhD respondents.

4.6.4 Faculty and information literacy competency

This section reports the results of running a one way anova test faculties as the independent variable on the information literacy competency:

Research question

Are there differences in information literacy competency between faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia, Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, and Building and Environmental respondents?

Null hypotheses

There are no differences in information literacy competency between faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia, Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, Building and Environmental respondents.

Table 4.15: Faculty and information literacy competency

Faculties	N	Mean	SD	df	F	Sig.
				11	.416	.948
Computer Science and IT	44	152.0682	45.98958	259	.449	
Language and Linguistics	14	149.7857	18.62661			
Sciences	65	154.9846	34.11217			
Engineering	20	159.6500	18.76524			
Law	18	159.9444	12.88625			
Institute of Asia	11	161.1818	12.06498			
Business and Accountancy	16	160.4375	10.46243			
Dentistry	4	164.7500	8.30161			
Economics and Administration	20	152.2000	28.68999			
Medicine	12	162.0000	11.69304			
Art and Social Science	40	152.6750	21.43612			
Build and Environment	7	153.0000	10.24695			

The results of running a 1-way ANOVA test revealed a statistically significant mean difference existed in information literacy competency, $F(11,259) = .948, p > .05$

between computer science and IT respondents ($M=152.0682$, $SD=45.98958$), language and linguistics respondents ($M=149.7857$, $SD=18.62661$), sciences respondents ($M=154.9846$, $SD=34.11217$), engineering respondents ($M=159.6500$, $SD=18.76524$), law respondents ($M=159.9444$, $SD=12.88625$), institute of Asia respondents ($M=161.1818$, $SD=12.06498$), Business and Accountancy respondents ($M=160.4375$, $SD=10.46243$), Dentistry respondents ($M=164.7500$, $SD=8.30161$), Economics and Administration respondents ($M=152.2000$, $SD=28.68999$), Medicine respondents ($M=162.0000$, $SD=11.69304$), Art and Social Science respondents ($M=152.6750$, $SD=21.43612$) and Build and Environment respondents ($M=153.0000$, $SD=10.24695$). Therefore, the null hypotheses is hereby rejected.

4.6.5 Mode of study and information literacy competency

One-way ANOVA test was used to test mode of study as independent variable and information literacy skills as the dependent variable.

Research question

Are there differences in the information literacy competency between mix-mode, research and course work respondents?

Null hypotheses

There are no differences in the information literacy competency between mix-mode, research and course work respondents.

Table 4.16: Mode of study and Information literacy competency

Mode of study	N	Mean	SD	df	F	Sig.
				2	1.841	.411
mix-mode	112	151.3750	39.66552	268		
Research	28	158.1832	17.58225			
Course work	131	157.9643	12.85383			

The results of running a 1-way ANOVA test revealed statistically significant mean difference existed in information literacy competency, $F(2,268) = .411, p > .05$ between mix-mode respondents ($M=151.3750, SD=39.66552$), research respondents ($M=158.1832, SD=17.58225$), and course work respondents ($M=157.9643, SD=12.85383$). Hence, the null hypothesis was rejected. (See table 4.16).

4.6.6 Country's official language and information literacy competency

This section reports the results of running an independent sample t test with country's official language of the respondents as the dependent variable on the information literacy competency.

Research question

Are there differences in the information literacy competency between those whose country's official language is English and those whose country's official language is not English?

Null hypotheses

There are no differences in the information literacy competency between those whose country's official language is English and those whose country's official language is others.

Table 4.17: Country's official language and information literacy competency

Country's official language	N	Mean	Standard Deviation	t	df	Sig.
				-1.859	269	.064
English	168	152.8214	35.14577			
Non English	103	159.4660	11.37663			

The results of running an independent sample t-test revealed statistically significant mean difference existed [$t(269) = -1.859, p < .01$] between English respondents ($M=152.8214, SD=35.14577$) and non-English respondents ($M=159.4660, SD=11.37663$). with regards to their scores on the information literacy competency. (See table 4.8). However, Lavene's test for equality variance shows that there is statistically significant difference ($p = .000 < .05$) in the variance of scores between male and female respondents. This means that male and female respondents have the difference variance in test scores (equal variance not assumed). In other word, null hypothesis which stated that the variance of scores for male respondents is not equal to the variance of test scores for female respondents failed to be accepted.

4.7 Summary

This chapter reported the data collected and the analysis carried out. Beginning by reporting the demographic information of the participants, the chapter then reports the exploratory factor analysis (internal validity measurement test), Cronbach alpha reliability test, and normality test. Last, it provided an analysis and reports using independent sample *t* test, and 1-way ANOVA from which the hypotheses were tested to answer the research questions.

4.8 Summary of findings

Table 4.18

Hypothesis	Findings
H1. There are no differences in information literacy competency between respondents on the age group of 18-23, 24-29, 30-35, 36-40 and 41 and above.	The one way ANOVA test conducted shows there is significant difference in information literacy competency among respondents in the age brackets. Therefore, the null hypothesis is hereby rejected
2H2 There are no differences in information literacy competency between male and female respondents.	Independent sample <i>t</i> was conducted to test the differences. The result shows that a significant difference exist, therefore the null hypothesis is rejected.
H3 There are no differences in information literacy competency between masters and PhD respondents.	The result of independent <i>t</i> test conducted shows that a significant difference exists between PhD and Masters respondents. This led to the rejection of the null hypothesis
H4 There are no differences in information literacy competency between mixed mode, research mode and coursework respondents	One way ANOVA test conducted indicated a significant difference in information literacy competency exist among the three independent variables. The hypothesis is therefore rejected.
H5 There are no differences in information literacy skills between faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia,	The result of way ANOVA test conducted shows that a significant difference exist among the faculty members. The null hypothesis is thereby rejected

<p>Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, and Building and Environmental respondents</p>	
<p>H6 There are no differences in information literacy competency between non-native and native speakers of English language</p>	<p>An independent sample t test conducted shows a significant difference exists among the native and non-native speakers of English language. The null hypothesis is hereby rejected</p>

Universiti Malaya

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter will attempt to summarize the findings of this research, conclusion, recommendation and possible implications. The chapter will be divided into four segments: summary, conclusion, recommendation and implication.

5.2 Summary

This research started by proposing six research question and six null hypotheses. The research questions were explained as part of chapter one and chapter four (in analysis).

Research question number one:

Are there differences in the information literacy skills between respondents in the age group of 18 – 23, 24 – 29, 30 – 35, 36 – 40 and 41 and above year's respondents?

Null hypotheses

There are no mean differences in the information literacy competency between 18 – 23, 24 – 29, 30 – 35, 36 – 40 and 41 and above year's respondents. The result of this test indicated that a significant mean difference existed among the independent variable under the test. This brought about the rejection of the null hypotheses. Because a significant mean difference was found makes it easier to reject the null hypotheses. This

at the same time corresponded with the findings of Lange et al studies where they found a difference in information literacy competency in ages of respondents. In other words, the objective of testing this null hypothesis was achieved. This is to say objective number one from chapter one have been achieved.

Research question number two:

Are there differences in the information literacy competency between male and female respondents?

Null hypotheses

There are no differences in the information literacy competency between male and female respondents.

The result of the statistical test conducted on this research question and hypotheses testing indicated that a significant difference existed between male and female respondents. This also supports the findings of Chen (2010) where a difference was found to exist between male and female students in her study. This gave the researcher the power to reject the null hypotheses earlier suggested from the beginning of the research. This also clearly indicated that research objective number two is achieved because the statistical analysis was able to indicate whether a difference in information literacy competency exist between male and female respondents.

Research question number three intended to understand or to know if there are difference exists between masters and PhD respondents. The research question and hypothesis are:

Research question three

Are there differences in the information literacy competency between master and PhD students?

Null hypotheses

There are no differences in the information literacy competency between master and PhD students. The statistical test conducted on this variables clearly indicated that a significant difference in terms of information competency exist between Masters and PhD respondent thereby rejecting the null hypothesis. This supports the findings of You (20017) where it found program of study affects information literacy competency among students. In other words, a statistical significant information literacy competency exist therefore the null hypothesis is hereby rejected. Research objective number three is hereby achieved.

Research objective number four was put into test by proposing a null hypothesis. The null hypothesis and research question are as follows:

Research question four

Are there differences in information literacy competency between faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia, Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, and Building and Environmental respondents?

Null hypotheses

There are no differences in information literacy competency between faculty of Computer Science and IT, Language and Linguistics, Sciences, Engineering, Law, Institute of Asia, Business and Accountancy, Dentistry, Economics and Administration, Medicine, Art and Social Science, Building and Environmental respondents.

As with the other four hypotheses testing, this also reveals a significant statistical difference exist between the twelve faculties in UM thereby rejecting the null hypothesis and at the same time answering research objective number four. This also supports the findings of Secker et al. (2011).

Research question five

Research objective number five aimed at understanding if there are differences in information literacy competency between mixed mode, research mode and coursework respondents. The following research question and hypotheses were proposed:

Are there differences in information literacy competency between mixed mode, research mode, and coursework respondents?

There are no differences in information literacy competency between mixed mode, research mode and course work respondents.

The result of one way ANOVA conducted shows significant differences exist between mixed, research mode and coursework respondents. This therefore supports the findings of You (2007). The null hypothesis is hereby rejected and research objective number five achieved.

Research objective number six aimed at understanding if any difference exists between native speakers of English language and non-native speakers.

Research question number six

Are there statistically significant differences in the information literacy competency between those whose country's official language is English and those whose country's official language is non-English?

Null hypotheses

There are no any statistically significant mean differences in the information literacy competency between those whose country's official language is an English and those whose country's official language is non-English.

The result of the statistical test conducted shows that a significant statistical difference exists between the two variables. This supports the findings of Huge and Bruce (2013). Based on this result, the null hypothesis is hereby rejected and the research objectives number six (to understand if there is difference in information literacy competency between native speakers of English language and non-native speakers) is achieved.

5.3 Conclusion

This study was able to understand the differences in information literacy competency among all the variables tested. It showed significant differences exist between all the variables. In doing so, it was able to understand the research objectives, research questions and research hypotheses. It clearly shows a significant differences in information literacy competency between respondents on the ages bracket of 18-23, 24-29, 30-35, 36-40 and 41 and above, between male and female respondents, between the faculties in the University, between native speakers of English and non-native speakers, mode of study and program of study.

The findings coincide with some findings (as reviewed in chapter two) where information literacy competency was found to have differed with age, gender, nationality, program of study, language and mode of study.

The finding will help the management of the University of Malaya organize a more robust information literacy competency program especially for international postgraduate students in the University.

5.4 Recommendations

This study has highlighted some issues with regards to information literacy competency among international postgraduate students in the University of Malaya. It is therefore, necessary to make some recommendations on how to improve on the information literacy competency among postgraduate international students in the area of study.

- i. The University should employ a proactive step or strategy of teaching English language for students from countries which English is not a medium of instruction in their home country. This will help the students cope with the language barrier inhibiting student academic performances in the institution.
- ii. The teaching of library instruction conducted by the University of Malaya should be a core course for all international students. This will help them adjust faster to what is required of them as postgraduate students.
- iii. Seminar and conferences on how to use the available information resources at students' disposal should be encouraged and be conducted on a regular basis.
- iv. More time should be allocated to the use of library skills conducted by the university library.
- v. Special preference should be given in terms of information literacy teachings to international postgraduate students. This is because their demand for knowledge of information literacy is paramount for them to succeed academically.
- vi. More studies should be conducted on all students of University of Malaya to see how information literacy competent they are.
- vii. Other studies should explore on why the differences in information literacy competency exist among the variables. In other words, why information literacy does differs from one variable to another.
- viii. There should be a collaboration between faculty and the University library on the academic needs or demands of international postgraduate students in University of Malaya

- ix. Academic librarians should work out a teaching method that best suit the need of international students.
- x. An exchange program should be introduced where academic librarians from UM could visit other country libraries on a fact finding mission so as to understand if there is anything that they may need to copy from them.
- xi. The use of library should be part of the orientation program for newly admitted postgraduate students at the beginning of every session.
- xii. The library should engage actively in promoting its resources to international students.
- xiii. Further studies should be conducted by the university to understand how and why some variables such as age, gender and nationality relate to information literacy studies.
- xiv. Reference services librarian should provide a special information skills approach to international postgraduate students.

5.5 Implication

International students have problem adjusting to different academic environment. This necessitated the need for them to be given priority when it comes to issues regarding information literacy competency. This study therefore provided an insight on the differences in information literacy competency of international postgraduate students. The research questions investigated focused mainly on the differences in information literacy competency among international postgraduate students.

The findings of this study will help the management of University of Malaya to understand the information literacy competency of international postgraduate students

and know how to approach it. It will also give the management a sense of direction for its information literacy skill classes or session.

Universiti Malaya

REFERENCES

- Abid, A. (2004). UNESCO: *Information literacy for lifelong learning*. Retrieved May 19th 2014 year from http://portal.unesco.org/ci/en/ev.php-URL_ID=19637&URL_DO=DO_TOPIC&URL_SECTION=201.html
- Agarwal, N. K. (2012 November). Information source and its relationship with the context of information seeking behavior. Paper presented at the Proceedings of the 2011 Iconference organized by ACM, Seattle.
- Airasian, P. W., & Russell, M. K. (2001). *Classroom assessment: concepts and applications* (7th edition). New York: McGraw Hill.
- American Library Association Presidential Committee on Information Literacy. (1989). *Final Report*. Chicago: American Library Association.
- Andrade, M. S. (2006). International students in english-speaking universities adjustment factors. *Journal of Research in International Education*, 5(2), 131-154.
- Andretta, S. (2005). *Information literacy: A practitioner's guide*: Atlanta Elsevier.
- Association of College and Research Libraries [ACRL]. (2000). *Information literacy competency standards for higher education*. Retrieved April 20th 2016 from <http://www.ala.org/acrl/standards/informationliteracycompetency>
- Association of College and Research Libraries [ACRL]. (2008). *Standards for distance Learning Library Services*. Retrieved January 13th, 2015 from <http://www.ala.org/acrl/standards/guidelinesdistancelearning>.
- Association of College and Research Libraries. [ACRL]. (2011). *Guidelines for Instruction Programs in Academic Libraries*. Retrieved January 16th 2016 from <http://www.ala.org/acrl/standards/guidelinesinstruction>.
- Association of College and Research Libraries [ACRL]. (2015). *Framework for Information Literacy for Higher Education*. Retrieved August 10th 2014 from <http://www.ala.org/acrl/standards/ilframework>.
- Ayoub, Y. (2016). *An investigation of information literacy of international graduate students: skills, challenges, and needs*: PhD Thesis, University of Florida.

- Banjong, N.D. & Olson M.R. (2016). Issues and trends of international students in United States, *International Journal of Education*, 4, (1), 56-70
- Baro, E. E., Eberechukwu Eze, M., & Nkanu, W. O. (2013). E-library services: challenges and training needs of librarians in Nigeria. *International Digital Library Perspectives*, 29(2), 101-116.
- Baron, S., & Strout-Dapaz, A. (2001). Communicating with and empowering International students with a library skills set. *Reference Services Review*, 29(4), 314-326.
- Baruzzi, A., & Calcagno, T. (2015). Academic librarians and graduate students: An exploratory study portal: *Libraries and the Academy*, 15(3), 393-407.
- Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775-786.
- Boekhorst, A. & Britz, J. (2004). Information literacy at school level: a Comparative study between the Netherlands and South Africa. *South African Journal of Libraries and Information Science*, 70(2), 63-71.
- Booth Library. (2000). *Information Literacy Competency Standards for Higher Education*. Retrieved March 15, 2016 from <http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm>
- Bruce, C. S. (2004). *Information literacy as a catalyst for educational change: A background paper*. Paper commissioned for UNESCO information literacy leadership conference, Prague. Available at http://www.nclis.gov/libinter/infolitconf&meet/papers/bruce_fullpaper.pdf.
- Bundy, A. (2004). *Australian and New Zealand information Literacy framework: principles, standards and practice* (2nd ed.). Adelaide: Australian and New Zealand Institute for information literacy, Available at http://www.caul.edu.au/info_literacy/InfoLiteracyFramework.pdf.
- Burhanna, K. (2010). Assessing collaborative information literacy instructions. Retrieved May 20th, 2014 from <http://www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/pdf/Burhanna%20OCJCLS%20Progr.pdf>.

- Breivik, N., Patricia S., & Gordon, G. (1989). *Information literacy: Revolution in the library*. New York: Macmillan Publishing Company.
- Bryman, A., & Bell, E. (2015). *Business Research Methods*. Oxford: Oxford University Press USA.
- Catts, R. (2010). *UNESCO Information literacy indicators: Validation report*. UNESCO
- Calzada, P. J. & Marzal, M. Á. (2013). Incorporating data literacy into information literacy programs: Core competencies and contents. *Libri*, 63(2), 123-134.
- Cannon, T. H. (2007). Closing the digital divide: An assessment of urban graduate teacher education students' knowledge of information literacy and their readiness to integrate information literacy into their teaching. Unpublished doctoral dissertation. Retrieved from ProQuest Dissertations and Theses Global. (UMI No. 3269251).
- Cemalcilar, F., Fablo, T., & Stepleton, L. M. (2005). Cyber communication: A new opportunity for International students' adaptation. *Journal of International Relations*, 29, (Vol?) 91-110.
- Chan, S.N. (2003). Making information literacy a compulsory subject for undergraduates: the experience of the University of Malaya. *IFLA Journal*, 29(4), 328-335.
- Chen, C. (2010), Information visualization. *Wiley Interdisciplinary Review*, 2(4), 15-26.
- Chen, D.T., Wu, J., & Wang, Y.M. (2011). *Unpacking new media literacy*. Retrieved July 25 2014 from <https://doaj.org/article/554264c11d9b4b8e9c6f4911ee41cdab>.
- Chen, H.L., & Williams, J. P. (2009). Pedagogical design for an online information literacy course: college students' learning experience with multi-modal objects. *The Canadian Journal of Information and Library Science*, 1. (6), 113-125.
- Chen, Y. H. (2012). A Longitudinal study of undergraduate students' perceptions and use patterns of the University libraries Web Portal: Does information literacy instruction play a role? Unpublished Doctoral Dissertation, University at Albany, New York.

- CILIP, (2004), *Information literacy: A Definition*, Retrieved December 16th 2014 from <http://www.cilip.org.uk/cilip/advocacy-awards-and-projects/advocacy-and-campaigns/information-literacy>.
- COAG, (2014), *International students strategy for Australia*. Retrieved October 20th 2014 from <http://events.cdesign.com.au/ei/viewpdf.esp?id=314&file=//srv3/events/eventwin/docs/pdf/isana2012final00044.pdf>.
- Cornali, F., & Tirocchi, S. (2012). Globalization, education, information and communication technologies: what relationships and reciprocal influences? *Procedia-Social and Behavioral Sciences*, 47, 2060-2069.
- Corrall, S. (2008). Information literacy strategy development in higher education: An exploratory study. *International Journal of Information Management*, 28(1), 26-37.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative & mixed modes approach* (4th ed.). California: Sage Thousand Oaks.
- Crowther, J., Hamilton, M., & Tett, L. (2001). *Powerful Literacies*: ERIC. Retrieved November 16th, 2015 from <https://eric.ed.gov/?id=ED452383>.
- Cuiying, Mu (2007). Marketing Academic library resources and information services to International students from Asia. *Reference Services Review*, 35(4), 571-583.
- Curry, A., & Copeman, D. (2005). Reference service to international students: A Field stimulation research study. *The Journal of Academic Librarianship*, 31(5), 409-420.
- Curzon, S. (1997). *Information competence. memorandum*. Retrieved March 21, 2016 from <http://library.csun.edu/susan.curzon/infoprop.html>.
- Danziger, E., & Pederson, E. (1998). Through the looking glass: Literacy, writing Systems and Mirror-image Discrimination. *Written language & literacy*, 1(2), 153-169.
- De Jager, K., & Nassimbeni, M. (2005). Information literacy and quality assurance in South African Higher Education Institutions. *Libri*, 55(1), 31-38.

- Dillman, D. A., Smyth, J. D., & Christian, C. M. (2009). *Internet mail and mixed mode surveys; The tailored design method* (3rd edn.). New Jersey: John Wiley and Son INC.
- Doyle, C. S. (1994). *Information literacy in an information society: A concept for the Information Age*. Pennsylvania: Diane Publishing.
- Duncan, A. L., & Varcoe, J. (2012). *Information literacy competency standards for students: A measure of the effectiveness of information literacy initiatives in higher Education*. Higher Education Quality Council of Ontario.
- Dziwak, K. (2014). Tackling student literacy and numeracy under preparedness in Ontario colleges: access, quality and funding. *College Quarterly*, 17(2), 123-137.
- Education Services for Overseas Students act 2000, Tips and other Measures Bill 2014, Questions and answers*. Australian Government. Retrieved May 17th 2015 from [https://www.google.com.ng/?gfe_rd=cr&ei=qu7bWN6TNZH4iQaYn4TADA&gws_rd=ssl#q=Education+Services+for+Overseas+Students+act+2000,+Tips+and+other+Measures+Bill+2011,+Questions+and+answers.+&*>](https://www.google.com.ng/?gfe_rd=cr&ei=qu7bWN6TNZH4iQaYn4TADA&gws_rd=ssl#q=Education+Services+for+Overseas+Students+act+2000,+Tips+and+other+Measures+Bill+2011,+Questions+and+answers.+&*>https://www.google.com.ng/?gfe_rd=cr&ei=qu7bWN6TNZH4iQaYn4TADA&gws_rd=ssl#q=Education+Services+for+Overseas+Students+act+2000,+Tips+and+other+Measures+Bill+2011,+Questions+and+answers.+&*>)
- Edzan, N. (2008). Information literacy development in Malaysia: A review. *Libri*, 58(4), 265-280.
- Emmanuel, B., & Fyneman, B. (2009). Information literacy among undergraduate students in Niger Delta University. *The Electronic Library*, 27(4), 659-675.
- Exner, N. (2014). Research information literacy: Addressing original researchers' needs. *The Journal of Academic Librarianship*, 40(5), 460-466.
- Fowler, F. J. (2009). *Survey research methods series* (4th ed.). Thousand OAKS, CA Sage publications.
- Gabridge, T., Gaskell, M., & Stout, A. (2008). Information Seeking Through students' eyes: The MIT photo Diary Study. *College & Research Libraries*, 69(6), 510-523.
- Gallacher, I. (2007). Who are Those Guys? The results of a survey studying the information literacy of incoming law students. Retrieved September 13th, 2015 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1004088

- Gaston, N. M., Dorner, D. G., & Johnstone, D. (2015). Spirituality and everyday information behaviour in a Non-Western context: sense-making in Buddhist Laos. *Information Research-an international Electronic Journal*, 20(2), 78-89
- Gaur, H., & Sharma, R. (2012 February). Information seeking behavior of users in University libraries in digital environment. Paper presented at the Proceedings of the International conference and workshop on emerging trends in technology Mumbai.
- Geisler, C., Bazerman, C., Doheny-Farina, S., Gurak, L., Haas, C., Johnson-Eilola, J., Winsor, D. (2001). IText future directions for research on the relationship between information technology and writing. *Journal of Business and Technical Communication*, 15(3), 269-308.
- Gibson, C. (2007). Information literacy and IT fluency: convergences and divergences. *Reference & User Services Quarterly*, 46(3), 23-59.
- Gillen, J. (2009). Literacy practices in Schome Park: a virtual literacy ethnography. *Journal of Research in Reading*, 32(1), 57-74.
- Glister, P. (1999). *Digital literacy*. New York: Wiley.
- Greenberg, R. & Bar-Ilan, J. (2014). Information needs of students in Israel: A case study of a multicultural society. *The Journal of Academic Librarianship*, 40(2), 185-191.
- Gunnarsson, J., Kulesza, W. J., & Pettersson, A. (2014). Teaching international students how to avoid plagiarism: Librarians and Faculty in collaboration. *Journal of Academic Librarianship*, 40(3/4), 413-417.
- Gurak, L., Geisler, C., Doheny. (2011). I text: Future directions for research on the relationship between information technology and writing. *Journal of Supply, special issue*, 15 (3):269-308.
- Hanassab, B. (2006). Diversity, international students and perceived discrimination: Implications for educators and counselors. *Journal of study in International Education* (10), 157-172.

- Hensley, K. K., & Love, E. (2011). A multifaceted model of outreach and instruction for international students. In Jackson, P. & Sullivan, P. (eds.), *International Students and Academic libraries: Initiatives for success* (115-134). Chicago: Association of College and Research Libraries.
- Hickman, G. R. (2010). *Leading organizations: Perspectives for a new era*. Thousand Oaks, California: SAGE Publications.
- Hickok, J. (2011). Knowing their background first: Understanding prior library experiences of international students. In Jackson, P. A., & Sullivan, P. (eds.), *International students and Academic Libraries: Initiatives for success* (1-17). United States: American Library Association.
- Hines, S. S. (2013). A brief history of embedded librarianship. F. (eds.), *Embedded Librarianship* (1-12). Santa Barbara: Libraries Unlimited.
- Hughes, H. & Bruce, C. S. (2013). International Students' experiences of informed learning: A Pedagogical case study. *International Journal of Pedagogies and Learning*, 8(2), 36-42
- Hughes, H. E., Middleton, M. R., Edwards, S. L., Bruce, C. S., & McAllister, L. M. (2005). Information literacy research in Australia 2000-2005. *Bulletin des Bibliothèques de France*, 50(6), 45-55.
- Howard, H. (2012). Looking to the future: Developing Academic skills strategy to ensure information literacy strives in a changing higher Education world. *Journal of Information Literacy*, 6 (1), 72-81.
- Ishimura, Y., & Bartlett, J. C. (2009). Information literacy courses in LIS schools: emerging perspectives for future Education. *Education for Information*, 27(4), 197-216.
- Jackson, P. A. (2007). Integrating information literacy into blackboard: Building campus partnerships for successful student learning. *The Journal of Academic Librarianship*, 33(4), 454-461.
- Johnston, N., & Marsh, S. (2014). Using ebooks and ipad apps to embed information literacy into an EFL foundations course. *New library world*, 115(1/2), 51-60.

- Johnston, N., Partridge, H., & Hughes, H. (2014). Understanding the information literacy experiences of EFL (English as a foreign language) students. *Reference Services Review*, 42(4), 552-568.
- Keiser, H. F. (1974). An Index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Kapitzke, C. (2003). Information literacy: A Positivist epistemology and a politics of information. *Educational Theory*, 53(1), 37-53.
- Kavulya, J. M. (2003). Challenges facing information literacy efforts in Kenya: A Case Study of selected University Libraries in Kenya. *Library Management*, 24(4/5), 67-79
- Kennedy, G., Dalgarno, B., Gray, K., Judd, T., Waycott, J., Bennett, S. J., & Chang, R. (2007). The next generation are not big users of Web 2.0 technologies: Preliminary findings from a large cross-institutional study in providing choices for learners and learning. Proceedings ascilite Singapore. 517-525
- Kennedy, G. E., Judd, T. S., Churchward, A., Gray, K., & Krause, K.-L. (2010). First year students' experiences with technology: Are they really digital natives? *Australasian Journal of Educational Technology*, 24(1), 89-97
- Krejcie R. V, & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Kumar, A., Reddy, P., Tewari, A., Agrawal, R., & Kam, M. (2012). Improving literacy in developing countries using speech recognition-supported games on mobile devices. Paper presented at the Proceedings of the SIGCHI Conference on human factors in computing systems, Canada.
- Kumar, S., & Ochoa, M. (2012). Program-integrated information literacy instruction for online graduate students. *Journal of Library & Information Services in Distance Learning*, 6(2), 67-78.
- Knight, L., Hight, M., & Polfer, L. (2010). Rethinking the library for the international student community. *Reference Services Review*, 38 (4), 581- 605.
- Kvale, S., & Brinkmann, S. (2015). *Interviews: Learning the craft of Qualitative Research Interviewing* (3rd ed.). Thousand Oaks, CA: SAGE Publications.

- Lange, J., Canuel, R., & Fitzgibbons, M. (2011), Tailoring information literacy instructions for continuing education. *Journal of Information Literacy*, 5(2), 76-87
- Lankshear, C., & Knobel, M. (2008). *Digital Literacies: concepts, policies and practices*. California: Peter Lang.
- Lay, A.H., Khoo, C.H. (2009). *Introduction to Statistics in social science research*. Retrieved 17th November 2015 from <http://www.worldcat.org/title/introduction-to-statistical-analysis-in-social-sciences-research/oclc/769059343>.
- Leask, B. (2009). Using formal and informal curricula to improve interactions between home and international students. *Journal of Studies in International Education*, 13(2), 205-221.
- Li, S. C., Pow, J. W., Wong, E. M., & Fung, A. C. (2010). Empowering student learning through tablet PCs: A case study. *Education and Information Technologies*, 15(3), 171-180.
- Limberg, L., Sundin, O., & Talja, S. (2013). Three theoretical perspectives on information literacy. *Human IT: Journal for Information Technology Studies as a Human Science*, 11(2), 34-45
- Lin, T.-B., Mokhtar, I. A., & Wang, L.-Y. (2015). The construct of media and information literacy in Singapore education system: global trends and local policies. *Asia Pacific Journal of Education*, 35(4), 423-437.
- Lwebura, F & Mugyabuso J. (2016). An assessment of information literacy skills among first year postgraduate students at Sokoine University of agriculture, Tanzania. *Journal of Librarianship and Information Science*, 1 (8), 89-98.
- Mohd, S., Mohd S., & Zainab A.N. (2004, October). The Internet as a resource for final year project. Paper presented at the Conference on information literacy-information, learning, innovation: delivering global knowledge, Brunei Darulsalam.
- Mokhtar, A & Yee, C. P. (2013), International Students' Learning experiences at private higher education institutions in Malaysia. Being Book of Proceeding of the Global Summit on Education (GSE 2013).

- Malaklolutun, S., & Selan, P. S. (2011). Adjustment problems among international students in Malaysian private higher education institutions. *Procedia-Social and Behavioral Sciences*, 15, 833-837.
- McInnis Bowers, C. V., Chew, B., Bowers, M. R., Ford, C. E., Smith, C., & Herrington, C. (2009). Interdisciplinary synergy: A partnership between business and library faculty and its effects on students' information literacy. *Journal of Business & Finance Librarianship*, 14(2), 110-127.
- Marshall, R. (2002, December). An instrument to measure information competency. Paper presented at the National Communication Association Conference, New Orleans, Louisiana.
- Marshall, R. (2006). An instrument to measure information competency. *Journal of Literacy and Technology*. Retrieved 13th December 2016 from <http://www.literacyandtechnology.org/>
- Mohd, S. (2008). Ascertaining information literacy and information seeking behaviour of students conducting final year project. Unpublished doctoral thesis, faculty of Computer Science and Information Technology, University of Malaya, Malaysia.
- Morrissey, R. & Given, L. M. (2006). International students and the academic library: A case study. *Canadian Journal of Information and Library Science*, 30(3-4), 221-239.
- Mu, C. (2007). Marketing academic library resources and information services to international students from Asia. *Reference Services Review*, 35(4), 571-583.
- Muema Kavulya, J. (2003). Challenges facing information literacy efforts in Kenya: A case study of selected University libraries in Kenya. *Library Management*, 24(4/5), 216-222.
- Munshi, S. A., & Nagar, P. (2016). Information literacy skills among the postgraduate students at Aligarh Muslim University, India. *Library Philosophy and Practice*. 14, (19), 105-133
- Munteanu, C., Molyneaux, H., Maitland, J., McDonald, D., Leung, R., Fournier, H., & Lumsden, J. (2014). Hidden in plain sight: low-literacy adults in a developed country overcoming social and educational challenges through mobile learning support tools. *Personal and ubiquitous computing*, 18(6), 1455-1469.

- Nunally, J.C. (1979). *Psychometric theory*. New York: McGraw Hill.
- Nelson, K., Courier, M., & Joseph, G. W. (2011). Teaching tip: An investigation of digital literacy needs of students. *Journal of Information Systems Education*, 22(2), 95.
- Nor Edzan, C. (2007). *Modeling an information literacy programme for undergraduates: a soft systems methodology approach*. Unpublished doctoral thesis, University of Malaya, Kuala Lumpur.
- Ojedokun, A. A., & Lumande, E. (2005). The integration of information literacy skills into a credit-earning programme at the University of Botswana. *African Journal of Library, Archives and Information Science*, 15(2), 117-124.
- Orlu, A. D. (2016). Information seeking behavior of masters students: affective and behavioral dimensions. *Library Philosophy and Practice*, 1. (3), 102-115
- O'Reilly, T. (2005). *What is web 2.0?* Retrieved march 18, 2016, from <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html#mememap>.
- Pincas, A. (2001). Culture, cognition and communication in global education. *Distance Education*, 22(1), 30-51.
- Popescu, C., & Erich, A. (2012). Information literacy-a new approach supporting teaching skills development. *Studii de Biblioteconomie și Știința Informării* 10, (16), 133-139.
- Ranaweera, P. (2008). Importance of information literacy skills for an information literate society. Paper presented at NACCLIS, Colombo, Sri Lanka.
- Reddy, Y. M., & Andrade, H. (2010). A review of rubric use in higher education. *Assessment & Evaluation in Higher Education*, 35(4), 435-448.
- Rempel, H. G., & Davidson, J. R. (2008). Providing information literacy instruction to graduate students through literature review workshops. *Issues in Science and Technology Librarianship*. Retrieved January 15th, 2015 from https://works.bepress.com/jeanne_davidson/3/

- Rowlands, I., Nicholas, D., Williams, P., Huntington, P., Fieldhouse, M., Gunter, B., Tenopir, C. (2008). The Google generation: the information behavior of the researcher of the future. Paper presented at the Aslib proceedings 60 (4) 290-310.
- Salisbury, F., & Ellis, J. (2004). Online and face-to-face: evaluating methods for teaching information literacy skills to undergraduate arts students. *Library Review*, 52(5), 209-217.
- Salisbury, F., & Karasmanis, S. (2011). Are they ready? Exploring student information literacy skills in the transition from secondary to tertiary education. *Australian Academic & Research Libraries*, 42(1), 43-58.
- Salkind, N. J. (2009). *Exploring research*. Upper Saddle River, NJ: Prentice Hall.
- Salleh, M. I., Halim, A. F., Yaacob, R., & Yusoff, Z. (2011 February). *Measuring the effect of information literacy on the undergraduates' academic performance in higher education*. Paper presented at the International Conference on social science and humanity, Singapore.
- Sawir, E., Marginson, S., Forbes-Mewett, H., Nyland, C., & Ramia, G. (2012). International student security and English language proficiency. *Journal of Studies in International Education*, 16(5), 434-454.
- Secker, J., & Macrae-Gibson, R. (2011). Evaluating MI512: an information literacy course for PhD students. *Library Review*, 60(2), 96-107.
- Sharif, M., & Zainab, A. N. (2009). An Investigation of information seeking behavior of computer science and information technology undergraduates A qualitative approach. *Malaysian Journal of Library & Information Science*, 14(3), 15-31.
- Singletary, M. (1994). *Mass communication research*. New York: Longman.
- Song, Y.-S. (2004). International business students: a study on their use of electronic library services. *Reference Services Review*, 32(4), 367-373.
- Springer, K. (2010). *Educational research: A contextual approach*. New: Jersey, Wiley.

- Street, B. (1996). Understanding and defining literacy. Background Paper for EFA Global Monitoring Report.
- Todd, R. J. (2010), *Uncovering Information literacy: Mythology, Myopia and movement*. Retrieved August 29th 2015 from http://ozk.unizd.hr/ssus/wp-content/uploads/2012/01/Todd_Zadar_2012_Doctoral_Program.pdf.
- UNESCO, N. (2003). *The Prague Declaration: Towards an Information Literate Society. Paper presented at the UNESCO National Commission on Libraries and Information Science Conference Prague*. Retrieved January 15th 2015 from <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/PragueDeclaration.pdf>.
- Virkus, S. (2006). Development of information-related competencies in European ODL institutions: Senior managers' view. *New Library world*, 107(11), 467-480.
- Virkus, S. (2011). Information literacy as an important competency for the 21st century: conceptual approaches. *Journal of the Bangladesh Association of Young Researchers (JBAYR)*, 1(2), 15-29.
- Vogt, W. P. (2007). *Quantitative research methods for professionals*. Boston: Pearson.
- WAAL Information literacy committee. (1998). *Information literacy competencies and criteria for academic libraries in Wisconsin*. Retrieved November 18, 2016 from: <http://www.wla.lib.wi.us/waal/infolit/ilcc.html>.
- Wang, L., Bruce, C., & Hughes, H. (2011). Sociocultural theories and their application in information literacy research and education. *Australian Academic & Research Libraries*, 42(4), 296-308.
- West, J., Hopper, P., & Hamil, B. (2010). Science Literacy: Is classroom instruction enough? *National Forum of Teacher Educational Journal*. 20, (3),121-135
- Wu, J.-h., & Chen, J.-h. (2010). Research on the instruction design based on information literacy structure features. *Information Science*, 12, 011.
- You, X. (2007). *Rhetorical use of computer literacy in an ESL writing class: Implications for critical pedagogy and ESL writing*. New York: Sage

Yu, H., Abdullah, A., & Saat, R. M. (2014). Overcoming time and ethical constraints in the qualitative data collection process: A case of information literacy research. *Journal of Librarianship and Information Science*, 12, (3), 116-122

Zoe, L. R., & Di Martino, D. (2000). Cultural diversity and end-user searching: An analysis by gender and language background. *Research Strategies*, 17(4), 291-305.

Zurkowski, P. G. (1974). *The information service environment relationships and priorities*. (5). (Report ED 100391), National Commission on Libraries and Information Science, Washington DC.

Universiti Malaysia