Exploring the postgraduate students’ perceptions, usefulness and effectiveness of information literacy skills at University of Malaya library

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The aim of this study was to find out the extent to which the postgraduate students who attended the information skills session at University of Malaya's library perceived the session to be useful as well as effective in their attempts to locate, access and use the information needed so as to avail themselves of the library resources. In order to evaluate the perceived usefulness of information literacy skills and effectiveness of information literacy skills, two scales were adopted from the existing literature on the information literacy skills. Self-report instruments comprising the two scales as well as demographic items were incorporated into the online questionnaire. The study explored the respondents’ perceptions, usefulness and effectiveness of the information literacy skills at University of Malaya's library among those who attended the information skills session in 2014/2015 academic session. To conduct this study, a cross-sectional survey design was carried out to answer the relevant research questions. The data have been generated from the online questionnaire of the sample size of this study. The analysis and interpretations of findings were entirely based on the feedback received from the respondents. This analysis has been conducted using the latest version (22 versions) of SPSS for window software. It is hoped that the management and library instructors of the University of Malaya should conduct a regular assessment of the usefulness and effectiveness of information literacy skills (ILS) among those who attended the training program in order to know whether the training program is perceived to be useful as well as effective in completing their academic activities. This can help the library staff to improve their teaching services.

Key words: information, literacy, skills, perceived, usefulness, effectiveness, University of Malaya library.

INTRODUCTION

The University of Malaya library offers the following classes for its postgraduate students likes EndNote class for citation style, Database class for searching e-resources, WEBPAC class for accessing printed collections in the library. It also teaches students how to evaluate information ethically, as well as general...
searching strategy skills. These programs are conducted in a face-to-face method to postgraduate students. Thus, with all these series of user education program or information skills course being carried out at the University of Malaya’s library particularly among postgraduate students, we noticed that no study investigated the perceived usefulness and effectiveness of information literacy among this users. As such of that, the aims of this study was to find out whether the information literacy skills (ILS) offers at the university of Malaya’s library among postgraduate students is perceived to be useful and effective in attempt to avail themselves with this library resources.

However, considering the availability of information resources existed at the University of Malaya library. The library provides user education program known as information skills session to postgraduate students in order to avail themselves of these information resources. The question that comes to our mind is that; How sure are we that these students perceive information skills session to be useful and effective in their academic activities?

The literature suggests that among those who attend information literacy skills, some are unaware of the searching strategies especially ability to locate, access and use the needed information, (Rehman and Mohammed, 2002; Martin, 2008; Ferguson et al., 2006; Korobili et al., 2008; Madden, 2014).

However, much money, time and effort have also been invested in running information literacy skills in order to equip the students with necessary skills and information that will enable them to access, evaluate and use the needed information efficiently and effectively. Do students find the training to be useful and effective in doing their searching, accessing, evaluating, and using the information resources? In a study by Julien (1998) as cited by Hartmann (2001), the study found out that students may perceive information literacy skills at the beginning of the new academic year to be useful, and very often but they are not aware of their information needs.

Meanwhile, the goal of this study was to discover the postgraduate students’ perceptions, usefulness and effectiveness of information literacy skills and to find out whether the information skills session is useful and effective among those who attended and also to find out whether there is a relationship between perceived usefulness and effectiveness of information literacy skills.

**Perceived usefulness of information literacy skills**

Perceived usefulness can be referred to a person’s perception or the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). This definition was built on a certain concepts. For example, in the concept of computer and information system, Hayashi et al. (2004) define perceived usefulness as a person’s perceptions or belief that using a particular system such as computer applications and information technology to search for relevant websites and online databases would improve his or her educational goals.

Other scholars have investigated the perceived usefulness of information literacy skills among students. For instance, Rehman and Mohammed (2002) studied the usefulness of information literacy skills among freshmen and second-year College of Science students at the University of Kuwait. Majority of the respondents perceived the ILS to be not useful in searching the needed information and in using the CDROMs. This contrasts with the outcomes of Cochrane (2006), who investigated the perceptions of the usefulness of information literacy skills among undergraduates management degree at the University of Queen’s Belfast in Ireland. His findings revealed that most of the respondents perceived the training program to be useful in searching databases, filtering information, using PROMPT, compiling a bibliography, and using gateways (SOSIG).

Detlor et al. (2011) assessed the usefulness of information literacy program among students of the Faculty of Business and Administration at Master University in Canada. The findings showed that most of the respondents perceived the training program to be useful in using online resources and in using criteria to determine the good sources of information. In another study, Julien et al. (2011) investigated the usefulness of the information literacy program among Canadian business students and found that most of the students perceived the program to be useful in using Google and Wikipedia search engines in locating information, and in determining the good source to be used. Similar study was conducted in the USA by Kingsley et al. (2011) who studied the usefulness of information literacy among first-year dental students at the University of Nevada in the USA.

Kingsley et al. (2011) found that most of the students perceived the program as not useful for searching online databases and for compiling bibliographical references. In fact, most of the respondents relied on Google (Google Scholar) in searching for electronic resources. Also, Pinto (2012) performed a similar study on Spanish History students and found that most the students regarded the information literacy skills as not useful in using library resources and in referencing the information resources.

This study urged library instructors to improve the teaching of information literacy program so that the students will benefit more from the library resources. This contrast with the findings of Al-Dalhanie and Rehman (2012), who investigated the students’ perceptions of the usefulness of the information literacy program and most regarded the program to be useful for finding library resources using OPAC and for searching databases for scholarly electronic journals and referencing the
information. In addition, the results of the interview showed that majority of the respondents perceived the training program to be useful in using library resources effectively without having to ask for assistance. Moreover, Hodgens et al. (2012) looked at the usefulness of the information literacy program among postgraduate health promotion department at Queensland University. The results revealed that most of the respondents found the information literacy skills to be useful in locating needed information and in referencing the information consulted. In a study by Zannin-Yost (2012), most of the undergraduate students at the Western Carolina University perceived the information literacy skills to be useful in using scholarly journals for their research and in accessing information in the library without having to look for any personal assistance. This corresponds with the findings of Foo et al. (2013), who studied the usefulness of information literacy skills among social sciences, humanities and art students at the University of Singapore. The results indicated that majority of the respondents found the information literacy skills to be useful in using online public catalogue (OPAC) to access available resources, in finding research topic and research questions using scholarly journals, in referencing the information consulted (proper citation), and in searching needed information using “Advance/Boolean search operator”. This also corresponds with the findings of Mahmood (2013), who studied students’ perceptions of the usefulness of information literacy skills at the University of Punjab in Pakistan. The majority regarded the training program as useful in using a computer and Internet resources as well as in searching online databases.

This finding is consistent with the outcomes of Padme and Dhande (2014), who performed a similar study on the usefulness of the information literacy and computer literacy skills among students at the University of Marathwada in India. Padme and Dhande (2014) found that about half of the respondents (55 percent) perceived information literacy skills to be useful in accessing online databases and in browsing for the needed information. This contrasts with the outcomes of Stewart and Basic (2014), who found that the undergraduate students at the University of Missouri in the USA regarded the information literacy skills as not useful in using bookmarks to capture information for later use.

Despite the earlier mentioned findings very little is known on the perceived usefulness of information literacy skills among undergraduate students and none of these findings revealed the differences of perceived usefulness of information literacy skills among gender and year of study. It is the aim of this study to find out whether information literacy skills is perceived as useful in helping students to finish their courses and research requirements. However, more research needs to be carried out among postgraduates, undergraduates and Diploma students who attended information literacy at the University of Malaya.

Perceived effectiveness of information literacy skills

Perceived effectiveness can be defined as a person’s perceptions, a sum of the satisfaction and perceived performance, which occurred after perceiving a system. It is expressed as a subjective process measure rather than an outcome measure (Lurey and Raisinghani, 2001). Many scholars have investigated the perceived effectiveness of information literacy skills among students. For example, Singh (2005) studied the students’ perception of the effectiveness of information literacy program at the University of Hofstra. The findings showed that most of the respondents perceived information literacy skills to be effective when writing a research assignment. Maybee (2006) explored the undergraduates’ perceptions of the effectiveness of information literacy program at the Oakland Mills College in the USA. The findings showed that most of the respondents perceived information literacy skills to be effective when writing an assignment and conducting online searching. A number of respondents explained how information literacy skills training program assisted them in finishing their assignments on time. Also, Knight (2006) found that the majority of students at the University of Pacific California perceived information literacy skills to be effective when writing their first-year exam courses and research papers as well as when compiling the bibliography using research tools.

Repanovici and Landy (2007) found that majority of students at the University of Transylvania and University of Bergan perceived their information literacy skills to be effective when evaluating information and searching wide range information. The students also gave information literacy skills high conception. These findings are consistent with the outcomes of Alfino et al. (2008), who investigated the effectiveness of information literacy skills among first-year college students at the University of Gonzaga. The results showed that majority of the respondents perceived the training program to be effective when evaluating information and formulating efficient search strategies. The skill enables them to easily find other reference sources and to review a wide range of primary sources of information. Alfino et al. (2008) conclusions supports the findings of Bowler and Street (2008), who studied the effectiveness of information literacy program among history undergraduate students at the Mount Royal College in Canada. In their own investigation, Bowler and Street (2008) found that most of the students perceived the training program to be effective when writing assignments and research papers.

Julien et al. (2011) studied the effectiveness of information literacy program among Canadian Business
students. The results of the study indicated that most of the respondents perceived the training program to be effective when writing assignments and most of them scored a high grade in their courses. These findings correspond to the findings of Mayer and Bowles-Terry (2013), who researched the effectiveness of information literacy program among students at the University of Wyoming. In particular, they found that most of the students perceived the training program to be effective when writing class assignments. Most of these respondents also indicated that attending the information literacy skills training program had enabled them to improve their courses grades.

Bravo et al. (2013) came up with a similar conclusion when they studied the effectiveness of information literacy program among freshmen in the business administration department at the University of Zaragoza in Spain. The study found that most of the respondents perceived information literacy skills to be effective when writing the assignment and when compiling bibliographies. This supports the findings of Klipfel (2014), who evaluated the effectiveness of information literacy program among undergraduate students at the University of North Carolina. In particular, he found that most of the students regarded the training program as effective when writing a research report and when finding information relevant to their studies. On the other hand, Klipfel’s (2014) results contradict the findings of Stewart and Basic (2014), who surveyed the effectiveness of information literacy program among undergraduate students at the University of Missouri in the USA.

In another study, Stewart and Basic (2014) found that most of the respondents perceived information literacy skills to be not effective when evaluating information resources. This was related to the findings of Madden (2014) who assessed the effectiveness of information literacy program among doctoral students in humanities at the University of Cork, Ireland. The results indicated that majority of the respondents perceived information literacy skills to be not effective in appraising the needed information and in accessing a website to locate online resources. In Madden’s second survey on humanities doctorate students who have completed their PG6009 module in full, about 20 of them answered the questionnaires and only one participant said that his research topic has changed. Other 11 (55%) participants indicated their research topic has “somewhat” changed, five (25 percent) indicated “not a lot” has changed and three (15%) indicated “not at all” has changed.

Given the findings and the discussions earlier mentioned, very little is known about the perceived effectiveness of information literacy skills training program among postgraduate students and none of these findings revealed the differences in perceived effectiveness of information literacy skills among gender and year of study. However, more research needs to be carried out among postgraduates, undergraduates and diploma students who attended an information literacy skills training program at University of Malaya’s library.

Research objectives

1. To determine whether demographic variables such as gender and year of study have any effect on the perceived usefulness and perceived effectiveness of information literacy skills.
2. To identify whether a relationship exists between perceived usefulness and perceived effectiveness of the information literacy skills.
3. To explore postgraduate students’ perceptions, usefulness and effectiveness of the information literacy skills.

Research questions

1. Are there differences in perceived usefulness of information literacy skills between males and females?
2. Are there differences in perceived usefulness of information literacy skills between 1st, 2nd, 3rd and 4th year and above of study?
3. Are there differences in perceived effectiveness of information literacy skills between males and females?
4. Are there differences in perceived effectiveness of information literacy skills between 1st, 2nd, 3rd and 4th year and above of study?
5. Is there a relationship in perceived usefulness and perceived effectiveness of information literacy skills?

Significance of the study

The outcome of this study will be of significant to the students of University of Malaya (UM). This is because it will reveal the strength and weaknesses of their postgraduate students regarding the usefulness and effectiveness of information literacy skills. This will enable the University to come up with another measure that is capable of improving postgraduate students’ performance. This is because the improved services will provide standard and up to date information literacy skills that will prepare students for the task ahead of them. It will be of significant to students and the general public who are interested to know the commitment of the University of Malaya regarding teaching of the information literacy skills session to its students. The findings of this study will contribute to the literature of library studies in general and information literacy skills in particular.

Assumptions

This study assumed that the respondents have attended information skills session at University of Malaya’s library.
It assumes that the questionnaire items will be relevant to what respondents are supposed to know about information literacy skills course. It also assumes that the respondents will respond sincerely to the items in the questionnaires.

**Scope and delimitation of the study**

This research is confined to only postgraduate students who have attended the information skills session at University of Malaya’s library in 2014/2015 academic session.

**METHODOLOGY**

The study employed a cross-sectional survey design for the data collection phase. A cross-sectional survey is a type of research design which examines a group of people at a single point in time (Neuman, 2007). For the benefit of this research, two questionnaire scales (i.e. perceived usefulness of information literacy skills and perceived effectiveness of information literacy skills) were developed and adopted from the existing literature on information literacy skills. The perceived usefulness of information literacy skills scale was adopted from Cochrane (2006) study, while the perceived effectiveness of information literacy skills scale was found from various literature of perceived effectiveness of information literacy skills with little modifications to fit the perceived effectiveness of information literacy skills scale and to match it with construct used in this study.

The target population of this study was postgraduate students who attended the information skills session at University of Malaya’s library in 2014/2015 academic session. This refers to the entire postgraduate students from first-year to fourth-and-above-year students. Attendance of information skills session for the first semester of the 2014/2015 sessions was confirmed from the library. The session recorded 127 attendants. These students represented 12 faculties of the University of Malaya, viz: Engineering, Computer Science and Information Technology, Business and Accountancy, Medicine, Dentistry, Economic and Administration, Language and Linguistics, Law, Built Environments, Sciences, Art and Social Sciences and Education.

The sample size of this study was generated via student emails, no gender distribution neither year (i.e. first, second, third, fourth and above year of study respondents); the second sections of the data were generated from 19 items on perceived usefulness and perceived effectiveness of information literacy skills; the third section of data was generated through comments and suggestions from the respondents.

The data obtained were coded in, and analyzed with the latest version of the Statistical Product and Service Solutions (SPSS) Windows software. The software contains statistical and operational research techniques used in social science and the data were analyzed quantitatively to examine the differences and relationships among the identified variables. Some data were analyzed systematically to obtain descriptive statistics such as percentage, frequency and normal distribution.

**RESULTS**

To assess the construct validity of the perceived usefulness of ILS and perceived effectiveness of ILS, a principal component exploratory factor analysis was employed on the 19 item instrument (that is, 13 items from perceived usefulness of ILS and six items from perceived effectiveness ILS). Varimax rotation and a factor loading coefficient of 0.40 or greater were used as a criterion for deeming a factor loading. The loading practically yielded a 1-factor solutions (eigenvalues more than 1.00) that collectively explains the 92.910% of the variance in the perceived usefulness of ILS construct, and the perceived effectiveness of ILS construct also collectively explains the 87.526% of the variance in 1-factor solutions. Out of the 19 items submitted to a principal component analysis, all were found to have factor loading coefficients that met the 0.40 criterions. The results of running a principle component analysis revealed that all items of perceived usefulness of ILS were loaded on a single factor the same with the perceived effectiveness of ILS, where all of the six items were loaded on a single 1 factor.

Kaiser-Meyer-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 perceived usefulness of ILS and the perceived effectiveness of ILS was 0.858, suggesting sampling adequacy. Kaiser (1974) described the following criteria or value: > 0.9 is marvelous, > .8 meritorious, > 0.7 middling, > 0.6 is miserable and < 0.5 is unacceptable. Thus, the present study described the value as meritorious. Additionally, the significance of the Bartlett’s Test of Sphericity of perceived usefulness of ILS items was chi-square = 853.457, df=78, p<0.000, while the perceived effectiveness of ILS items were chi-square = 501.404, df=15, 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 perceived usefulness of ILS construct has a single factor with 13 items loaded on it. The perceived effectiveness of ILS construct has also a single factor with six items loaded on it.

However, a reliability test was carried out to ensure that the instruments and the data collected are reliable for further analysis. According to Chen (1991) cited by Chen (2012), Cronbach’s alpha is “the most widely used to measure showing lower or higher guaranteed level of the internal reliability of indicators for a specific scale.” The perceived usefulness of ILS factor/component has 13 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 13 items component to have yielded an alpha value of 0.910, which is above
the recommended value of 0.70 as suggested by Nunnally (1978). The findings also showed that dropping any of the 13 item components would not raise the Chronbach’s alpha value to any higher than .910. The second factor/component (perceived effectiveness of ILS variable) had six (6) items underlying it. The six-item component was submitted to an internal reliability assessment using Cronbach’s internal reliability coefficient alpha. The results of running an internal reliability assessment test using Cronbach’s alpha revealed the six-item component to have yielded an alpha value of .912, a record above the recommended value of 0.70 as suggested by Nunnaly (1970). Also Gliem and Gliem (2003) suggested the following rules of thumb for Cronbach’s alpha coefficient: ”[alpha] > 0.90 is Excellent, >0.80 is Good, > 0.70 is Accepted, > 0.60 is Questionable, > 0.50 is Poor and < 0.50 is Unaccepted”. The finding also shows that dropping any of the six items would not raise the Chronbach’s alpha value to anything higher than 0.912.

Assumptions related to frequency statistic: The result shows that the measurement of central tendency (Mean = Mode) was not normally distributed. The results of perceived usefulness of ILS variable indicate that the mean is less than the mode (47.7391<5.00) therefore the distribution is not normal. Whereas the result of perceived effectiveness of ILS variable indicates that the mean is less than the mode (22.1478<24.00) therefore the distribution is not normal. Next, the values of Kurtosis and Skewness were considered.

The assumption relating to descriptive shows that in perceived usefulness of ILS variable both skewness and kurtosis is less than 1.00. The same in the perceived effectiveness of ILS variable, both skewness and kurtosis is less than 1.00. The results show that the distribution is not normal, thus the values of skewness and kurtosis were ignored. In perceived usefulness of ILS variable, the skewness was -0.683 and the kurtosis was 0.168. In perceived effectiveness of ILS variable, the skewness was -0.823 and the kurtosis was .551. Finally, the study considers the result of normality test—the Kolmogorov-Smirnov and Shapiro-Wilk test. The assumption of Kolmogorov-Smirnov and Shapiro-Wilk shows that both variables (that is, perceived usefulness of ILS and perceived effectiveness of ILS) were significant (p < .005) therefore the distribution was not normal. However, the results of this distribution can be trusted because the data population is more than 50.

Therefore, the present study decides to choose a nonparametric test as a result of the normality distribution of the data. The statistical tests were Mann-Whitney U test, Kruskal-Wallis test, and Spearman’s rho correlation test. The rationale for running these nonparametric tests was based on the normality of two (2) dependent variables (that is, perceived usefulness of ILS and perceived effectiveness of ILS) on the following independent/antecedent variables: gender and year of study.

The results of running a Mann-Whitney U test revealed no statistically significant mean rank differences in perceived usefulness of information literacy skills ($Z= -1.641, p>.05$) between male respondents (mean rank = 63.23) and female respondents (mean rank = 53.03). Thus, the present study found no statistically significant mean rank differences between male respondents and female respondents with regards to the perceived usefulness of information literacy skills (Table 1).

The results of running the Kruskal-Wallis test revealed no statistically significant mean rank differences in perceived usefulness of information literacy skills, chi-square (3) = 5.796, $p > 0.05$ between first year respondents (mean rank = 55.65), second year respondents (mean rank = 67.32), third year respondents (mean rank = 42.93), and fourth-and-above-year respondent (mean rank = 58.88) (Table 2).

The results of running a Mann-Whitney U test revealed no statistically significant mean rank differences in perceived effectiveness of information literacy skills ($Z= -1.213, p>.05$) between male respondents (mean rank = 61.86) and female respondents (mean rank = 54.34).

Thus, the present study found no statistically significant mean rank differences between male respondents and

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**Table 1. Gender and Perceived Usefulness of ILSTP.**

<table>
<thead>
<tr>
<th>No. of mean rank</th>
<th>Gender</th>
<th>Z</th>
<th>Sig.(2tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>(56) 63.23</td>
<td>(59) 53.03</td>
<td>-1.641</td>
<td>0.101</td>
</tr>
</tbody>
</table>

**Table 2. Year of study and perceived usefulness of ILS.**

<table>
<thead>
<tr>
<th>No. of mean rank</th>
<th>Year of study</th>
<th>Df</th>
<th>Sig.</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(51) 55.65</td>
<td>(34) 67.32</td>
<td>3</td>
<td>0.122</td>
<td>5.796</td>
</tr>
<tr>
<td>(14) 42.93</td>
<td>(16) 58.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fourth and above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(59) 53.03</td>
<td></td>
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</tbody>
</table>

female respondents with regards to the perceived effectiveness of information literacy skills (Table 3).

The results of running the Kruskal-Wallis test revealed no statistically significant mean rank differences in perceived effectiveness of information literacy skills, chi-square (3) = 5.018, p > 0.05 between first year respondents (mean rank = 54.24), second year respondents (mean rank = 65.85), third year respondents (mean rank = 45.68), and fourth-and-above-year respondent (mean rank = 64.09) (Table 4).

The results of running the Spearman’s rho test analysis showed a statistically significant mean positive and large correlation between perceived usefulness of information literacy skills and perceived effectiveness of information literacy skills (n = 115, rho = 0.76, p < 0.001) (Table 5).

However, the perceived usefulness of information literacy skills has a strong relationship/correlation with the perceived effectiveness of information literacy skills. The mean score (3.5038) of perceived usefulness of information literacy skills training program is higher while the mean score (3.6086) of perceived effectiveness of information literacy is also higher, indicating that those with higher perceived usefulness of information literacy skills training program are likely to be those with higher perceived effectiveness of information literacy skills (Table 5).

**DISCUSSIONS**

**Research question 1**

Are there statistically significant mean rank differences in the perceived usefulness of information literacy skills between males and female respondents?

However, the data from this study showed that male and female postgraduate students significantly differed in their perceived usefulness of information literacy skills. Male respondents reported slightly higher in perceived usefulness of information literacy skills at University of Malaya’s library than their female counterparts. This contrasts to the findings of Baro and Fyneman (2009), who studied information literacy program and digital literacy among undergraduate students.

In particular, Baro and Fyneman (2009) found that male respondents are more digital-wise literate than female respondents, but male students are more significant in terms of perceived usefulness of ILS than their female counterparts, especially in search strategy skills. One explanation is that male students are more interested in the information literacy skills session than female students, or that male students are more serious to ask if they do not understand during the session. This corresponds to the findings of Foo et al. (2013) who studied the information literacy skills of humanities, arts, social science in tertiary institutions and found that male respondents had slightly higher score (65.02) than female respondents (64.74) in accessing information, evaluating information, and using the needed information. One explanation is that male respondents may be more hardworking and spend more time in accessing and evaluating information for use.

**Research question 2**

Are there statistically significant mean rank differences in
the perceived usefulness of information literacy skills between the first, second, third, and fourth-and-above year of study?

The present study found no statistically significant mean rank differences between first-year respondents, second-year respondents, third-year respondents, and fourth-year-and-above respondents with regard to the perceived usefulness of information literacy skills. However, the data showed that the first-year, second-year, and fourth-and-above-year postgraduate students slightly differed significantly in their perceived usefulness of information literacy skills. The second-year respondents reported slightly higher in perceived usefulness of information literacy skills at University of Malaya’s library followed by fourth-and-above year, first-year and third-year respondents. This does not support the findings of Yu et al. (2006), who studied the evidence of information skills among engineering students and found a significant difference between second-year and the fourth-year students in perceived usefulness of information literacy skills in relation to a total number of items cited into their research project. The same was also found between first-year and fourth-year students. In addition, second year and fourth-and-above year respondents were higher significant mean rank. One explanation may be there are more needed the session due to the level of their study. The finding also showed that the entire students (in terms of year of study) understood the information literacy skills session. Thus, they were stress-free when using the information needs for their academic activities.

Research question 3

Are there statistically significant mean rank differences in perceived effectiveness of information literacy skills between male and female respondents?

However, the data from this study showed that the male and female postgraduate students slightly differed significantly in their perceived effectiveness of information literacy skills. The male respondents reported slightly higher in perceived effectiveness of information literacy skills at University of Malaya’s library than female counterparts, corresponds to the findings with regard to the perceived usefulness of information literacy skills. In the latter case, the male respondents were marked with slightly higher mean rank than their female counterparts. Julien et al. (2011) assessed the effectiveness of information literacy program and found that female respondents were more significant in terms of perceived effectiveness of information literacy skills especially in saving time locating information resources. The male students also obtained better grades than their male counterparts. In addition, Hupter and Deltor (2006) state a possibility that female students conduct more comprehensive, in-depth information searches, whereas male students invest less time in their search process and are more selective.

Research question 4

Are there statistically significant mean rank differences in perceived effectiveness of information literacy skills between 1st, 2nd, 3rd, and 4th and above year of study?

The present study found no statistically significant mean rank differences between the first-students, the second-year students, the third-year students, and the fourth-and-above students with regard to the perceived effectiveness of information literacy skills. However, the data showed that the first-year, second-year, and fourth-and-above-year postgraduate students slightly differed significantly in their perceived effectiveness of information literacy skills. The second-year respondents reported slightly higher in perceived effectiveness of information literacy skills at University of Malaya’s library followed by the fourth-and-above year, first-year and third-year respondents. The present study discovered that no single study from existing literature discovers the differences in perceived effectiveness of information literacy skills with the postgraduates’ year of study. This finding adds to the existing literature on assessment of perceived effectiveness and respondent’s year of study.

Research question 5

Is there a relationship between perceived usefulness of information literacy skills and perceived effectiveness of the information literacy skills?

The null hypothesis was rejected. However, perceived usefulness of information literacy skills has a strong and large correlation with perceived effectiveness of information literacy skills. This means that those with higher perceived usefulness of information literacy skills are those with higher perceived effectiveness of information literacy skills. The male respondents were more significant in both perceived usefulness of ILS and perceived effectiveness of ILS. This implies the possibility of the students perceiving the information literacy skills to be useful rather than effective.

Respondents’ perceptions of the usefulness of information literacy skills

This section provides the respondents’ perceptions of the usefulness of information literacy skills at University of Malaya library (UML). The results for respondents in planning to search information needs and the findings shows that 49 respondents accounted (42.6%) indicated true, while 37 (32.2%) indicated very true that they
perceived ILS to be useful in planning a search to cater for information needs. Similarly, most of the respondents accounted 51 (44.3%) indicates true and 24 respondents accounted (20.9.4%) indicate somewhat true, while 20 (17.4%) indicates very true that they perceived ILS to be useful in formulating search term when using search engine (for example, Yahoo or Google). This is consistent with the outcomes of the respondents in using search engine to find relevant web sites. The result shows that 52 respondents accounted (45.3%) indicate true that they perceived ILS as useful in using a search engine to formulated websites. This was inconsistent with the findings of respondents in using a gateway (SOSIG) to find relevant websites. The results show that most of the respondents accounted 40 (34.8%) indicate somewhat true that they perceived ILS to be useful in using the gateway (SOSIG) to find relevant websites.

Moreover, the results of formulating search term to use with online databases and the findings show that 48 respondents accounted (41.7%) indicate true that they found ILS to be useful in a formulating search term to use with online databases. Similarly, the results for search online databases to find items (e.g. journal articles) and the findings show that 52 respondents accounted (45.2%) indicate true that they regarded ILS as useful in utilizing the library online databases. These findings show that the respondents are adequately utilizing the University of Malaya library databases. However, the results of using the Pendeta Web-Pac to locate/find relevant items (e.g. Books) and the findings show that 47 respondents accounted (40.9 %) indicates true, 34 respondents accounted (29.6%) indicates very true that they perceived ILS to be useful in using the Pendeta Web-Pac to find library collections (printed resources) in the library. This corresponds to the findings of Al- Daihani and Rehman (2012) and Foo et al. (2013), who found that the majority of their respondents found ILS easy to locate library resources.

The results for determining the criteria to be used in order to filter information and the findings show that 52 (45.2%) indicates true, 31 (27.0%) indicates somewhat true and 19 (16.5%) indicates very true that they perceived ILS to be useful in determining the criteria to filter information before use. This corresponds to the findings of Detlor (2011). The results for describing the bibliographic details of websites and the findings show that 46 represented (40.0%) indicates true, 41 (35.7%) indicates somewhat true that they perceived ILS to be useful in describing the bibliographic details of websites in a systematic way. The results of describing the bibliographic details of the book using APA method and the findings show that 46 (40.0%) indicates true and 37 (32.2%) indicates somewhat true that they perceived ILS to be useful in describing the bibliographic details of books using the APA method. Similarly, the results for describing the bibliographic details of journal articles and the findings show that 46 (40.0%) indicates true and 23 (20.0%) indicates very true and 35 (30.4%) indicates somewhat true that they perceived ILS to be useful in describing the bibliographic details of a journals using APA method. Conversely, these findings show that the postgraduate students need more training on how to describing the bibliographic details of websites, books and journal articles this is because that very few of them indicated very true and true about this information skills session. Hence the researchers recommended the library management to continue organizing seminars and workshop that support students’ needs.

Moreover, the results for systematic method, such as ENDNOTE, to annotate items (for example, a books, a journals, a websites) and the findings show that 48 represented (41.7%) indicate true, 28 (24.3%) indicates somewhat true and 26 (22.6%) very true that they perceived ILS to be useful in using ENDNOTEs to annotate items. Similarly, the results of compiling bibliography in a systematic way and the findings show that most of the respondents 57 (49.6) indicate true and 22 (19.1%) indicate very true while 27 (23.5%) indicated somewhat true that they perceived ILS to be useful in compiling biography in a systematic way (citation style). This corresponds to the findings of Cochrane (2006).

In conclusion, the findings earlier mentioned show the respondents’ perceptions of the usefulness of information literacy skills training program and most of the respondents indicated very true and true that the perceived ILS to be effective when writing an assignment and complete on time. However, this corresponds to the outcomes of Head (2008), Bowler and Street (2008), Gross and Latham (2009), Julien et al. (2011) and Mayer and Bowles-Terry (2013).

Meanwhile, the results for improving the respondents’ grades/research and the findings show that 47 accounted (40.9%) indicates somewhat true, 35 (30.4%) indicates true and 20 (17.4%) indicates very true were perceived ILS as effective, and had enabled them to improve their grades/research. The results for respondents’ ability to

Respondents’ perceptions of the effectiveness of information literacy skills

This section provides the respondents’ perceptions of the effectiveness of information literacy skills (ILS). The results for enabling the respondents to complete an assignment on time indicates that 45 (39.1%) indicates true, and 25 (21.7%) indicates very true that they perceived ILS to be effective when writing an assignment and complete on time. However, this corresponds to the outcomes of Head (2008), Bowler and Street (2008), Gross and Latham (2009), Julien et al. (2011) and Mayer and Bowles-Terry (2013).
search for reading materials in the library and the findings show that 45 (39.1%) indicates true and 34 (29.6%) indicates very true that they found ILS to be effective when searching reading materials in the library. These findings show that most of the respondents perceived training to be effective in completing their course requirements, very few of them indicated not true and not true at all as they found ILS to be ineffective. Furthermore, the results for review of a wide range of information in the library and the findings show that 52 accounted (45.2%) indicates true and 30 (26.1%) indicates very true that they perceived ILSTP as effective when reviewing a wide range of information resources in the library. This corresponds to the findings of Repanovici and Landy (2007).

The results of search strategy skills and the findings show that 56 represented (48.7%) indicates true while 28 (24.3%) indicates very true that they perceived ILS to be effective in effectively conduct online searching. The results for appraise the range of resources that available in the library and the findings show that 53 (46.1%) indicates true, 21 (18.3%) indicates very true and 23 (20.0%) indicates somewhat true that they perceived ILS to be effective when evaluating or appraising the range of information resources that are available in the library. This is consistent with findings of Maybee (2006), Oakleaf (2009) and Stewart and Basic (2014).

Conversely, the findings mentioned earlier revealed the respondents’ perceptions of the effectiveness of ILS and most respondents indicated true and very true that they perceived information literacy skills training program to be effective. This shows that the majority of the respondents perceived information literacy skills as effective in helping them finish their study on time. However, the present study might be helpful to the University of Malaya library (UML) to train their instructors on how to develop curriculum instructions that help the students to be more effective and patronizing the library resources.

Table 7 describes the respondents’ perceptions of the effectiveness of information literacy skills.

**IMPLICATIONS**

The general findings of this study are quite consistent with the previous once. However, based on the reviews derived in the literature review section, the study found that none of those studies discovered the perceived usefulness and perceived effectiveness of information literacy skills with gender and year of study of postgraduate students neither one have found the relationship between perceived usefulness of ILS and perceived effectiveness of ILS. The study

### Table 6. Respondents’ perceptions of the usefulness of ILS.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Very true (%)</th>
<th>True (%)</th>
<th>Somewhat true (%)</th>
<th>Not true (%)</th>
<th>Not True at all (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning a search to cater for my information</td>
<td>37 (32.2)</td>
<td>49 (42.6)</td>
<td>19 (16.5)</td>
<td>4 (3.5)</td>
<td>6 (5.2)</td>
</tr>
<tr>
<td>Trying to formulate search terms to use when using a search engine (for example, Yahoo)</td>
<td>20 (17.4)</td>
<td>51 (44.3)</td>
<td>24 (20.9)</td>
<td>17 (14.8)</td>
<td>3 (2.6)</td>
</tr>
<tr>
<td>Using a search engine to find relevant websites</td>
<td>24 (20.9)</td>
<td>52 (45.3)</td>
<td>27 (23.5)</td>
<td>8 (7.0)</td>
<td>4 (3.5)</td>
</tr>
<tr>
<td>Using gateway (for example, SOSIG) to find relevant websites</td>
<td>12 (10.4)</td>
<td>38 (33.0)</td>
<td>40 (34.8)</td>
<td>16 (13.9)</td>
<td>8 (7.0)</td>
</tr>
<tr>
<td>Formulating search terms to use with an online database (for example, Inform Complete @ProQuest or Academic Search Premier @ABSCO)</td>
<td>28 (24.3)</td>
<td>48 (41.7)</td>
<td>22 (19.1)</td>
<td>14 (12.2)</td>
<td>2 (1.7)</td>
</tr>
<tr>
<td>Searching an online database to find relevant items for example, journal articles</td>
<td>41 (35.7)</td>
<td>52 (45.2)</td>
<td>8 (7.0)</td>
<td>7 (6.1)</td>
<td>6 (5.2)</td>
</tr>
<tr>
<td>Using the Pendeta WEB-PAC to find relevant items for example, books</td>
<td>34 (29.6)</td>
<td>47 (40.9)</td>
<td>20 (17.4)</td>
<td>7 (6.1)</td>
<td>4 (3.5)</td>
</tr>
<tr>
<td>Determining the criteria to be used in order to filter information</td>
<td>19 (16.5)</td>
<td>52 (45.2)</td>
<td>31 (27.0)</td>
<td>8 (7.0)</td>
<td>3 (2.6)</td>
</tr>
<tr>
<td>Describing the ‘bibliographic’ details of website in systematic way</td>
<td>13 (11.3)</td>
<td>46 (40.0)</td>
<td>41 (35.7)</td>
<td>10 (7.1)</td>
<td>8 (6.9)</td>
</tr>
<tr>
<td>Describing the bibliographic details of book using APA method</td>
<td>19 (16.5)</td>
<td>46 (40.0)</td>
<td>37 (32.2)</td>
<td>9 (7.8)</td>
<td>4 (3.5)</td>
</tr>
<tr>
<td>Describing the bibliographic details of journal articles using the APA method</td>
<td>23 (20.0)</td>
<td>46 (40.0)</td>
<td>35 (30.4)</td>
<td>5 (4.3)</td>
<td>5 (4.3)</td>
</tr>
<tr>
<td>Using a systematic method, such as ENDNOTE, to annotate items (e.g. book, a website, journal articles)</td>
<td>26 (22.6)</td>
<td>48 (41.7)</td>
<td>28 (24.3)</td>
<td>8 (7.0)</td>
<td>5 (4.3)</td>
</tr>
<tr>
<td>Compiling a bibliography in a systematic way (citation style)</td>
<td>22 (19.1)</td>
<td>57 (49.6)</td>
<td>27 (23.5)</td>
<td>5 (4.3)</td>
<td>3 (2.6)</td>
</tr>
</tbody>
</table>
also reveals the respondents’ perceptions, usefulness and effectiveness of information literacy skills among those postgraduates who attended in order to help the University of Malaya library to develop and enhance their library teaching instructions. Hence, the findings of the study are very important as it will help University of Malaya library instructors to provide the relevant and the appropriate changes to be made to the information literacy skills curriculum.

It is expected that such changes would result not only in a greater use of library resources and services but also in a higher number of literate information seekers among those who attended. This will help the university managements to know the level of their students in terms of usefulness and effectiveness of information literacy skills.

**CONFLICT OF INTERESTS**

The authors have not declared any conflict of interests.

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