

# Determinants of library use amongst university students

Ze Mei Teoh<sup>1</sup> and Andrew K.G. Tan<sup>2</sup>

<sup>1</sup>School of Mathematical Sciences, Universiti Sains Malaysia,  
11800 Penang, MALAYSIA

<sup>2</sup>School of Social Sciences, Universiti Sains Malaysia,  
11800 Penang, MALAYSIA

e-mail: zeimei87@yahoo.com; atan@usm.my

## ABSTRACT

*The purpose of the study is to examine the factors affecting library use amongst university students. Logistic regression analysis is applied on data collected using stratified random questionnaire-based interviews of 388 students of a public university in Malaysia. Results of the marginal effects indicate that students of Indian and other descent are more likely to use the library than their Malay cohorts. In addition, those who have attended library induction sessions, those who believe that the library provides a useful avenue for them to achieve their academic goals, and frequent online users are more likely to utilize the library than their cohorts, all else equal. Students in their third/fourth/final year of studies have a lower propensity for library visits than their second year counterparts, ceteris paribus. Meanwhile, factors such as gender, parental education, campus residence, field of study, and job status do not affect library utilization in a statistically significant manner. Based on these results, several observations are noted vis-à-vis the determinants of library use amongst university students.*

**Keywords:** Determinants; Library use; Logit analysis; University students; Malaysia.

## INTRODUCTION

The academic library serves an important role in sustaining the primary functions of research and scholarship of higher education. Besides the traditional key purpose of providing access to knowledge, the library also offers a congenial ambience as a meeting place that allows users to complete their assignments or revise their studies. As such, the value of the academic library in institutions of higher learning is well-established (Tenopir 2009).

The primary user base in such higher education settings consists of students, researchers, and academic staff. Nevertheless, the needs of each of these users may vary according to their information or literature-seeking behaviour. The resulting outcome is that the desires of each user group would have to be catered to accordingly. As a result, there exists a need for the continuous assessment of the myriad of services provided by university libraries so as to more effectively sustain its services and programs (Metoyer 2000).

A large body of literature has studied the subject of library and information science in fulfilling its role in university libraries, particularly in Malaysian campuses. These studies, among others, can be broadly categorized into assessments of the e-library (Mokhtar 2003;

Ramayah and Aafaqi 2004; Ismail and Zainab 2005; Ramayah 2006), information search (Zainab 2001; Abdoulaye 2002; Teow and Zainab 2003), organization structures and librarianship (Kassim and Nor 2007; Bakar 2009), research trends (Abdoulaye 2002; 2004), and various forms of performance measures (Adikata and Anwa, 2006; Edzan 2007; Johari and Zainab 2007). However, despite the abundance of studies examining the various functions of university libraries in Malaysia, there exists scant analysis on the determinants of library use amongst university students. For instance, little is known about the utilization rates and profiles of users and non-users of university library facilities. Knowledge of such information is important as the needs and behaviour of each individual user may vary due to their different socio-demographic backgrounds.

In view of the foregoing, this exploratory study aims to augment existing studies by examining the effects and likelihoods of the factors affecting library use, as well as to develop a general profile of library users in a Malaysian public university. A better understanding of the significance and magnitude of these factors may be important to librarians and university policy-makers who are interested in identifying the individual characteristics that determine the users and non-users of university libraries in Malaysia.

## **INSIGHTS FROM THE LITERATURE**

Studies on the determinants of library use have received widespread attention in the empirical literature. For instance, Grimes and Charters (2000), Whitmire (2001; 2003) and Wolf (2005) emphasized the role of one's ethnicity or race on library use. However, most of these studies considered Caucasian-Americans, African-Americans, Hispanics, and other minority groups in their ethnic or race categories. Therefore, the unique racial composition of students in Malaysian universities, consisting of Malay, Chinese, Indian, and a proportion of other races, allows a novel examination of the role of ethnicity in library use.

The role of gender in determining university library use appears to be inconclusive. While Grimes and Charters (2000) and Whitmire (2001) found older minority females to be frequent library users compared to their male counterparts, Jiao and Onwuegbuzie (1997) noted the opposite to be true. Meanwhile, Wolf (2005) found no statistical difference between gender and library use frequency.

The educational background of a student's parents may play a statistically significant role in the likelihood of library visits by the student (Wolf, 2005). This stems from the fact that better educated parents realize the values of the library and may have inculcated this notion in their children in the past. This includes taking their children to the libraries during their formative years, thus, leading to these values being carried over into the university setting.

Williams (1995) and Whitmire (2001) found students' library use is dictated by academic programmes. Specifically, students whose coursework require significant writing of academic papers and reports are found to have a higher frequency of library use. These findings corroborate the earlier assertion of Kramer and Kramer (1968) that undergraduate students in engineering or science programs place less importance in library resources than their cohorts in liberal arts.

First year students (freshmen) are the least likely library users while those in their final year (seniors) of studies are most likely to do so (Williams 1995; Whitmire 2001). This

stems from the belief that students in their initial years of university studies may not be required to write detailed term papers compared to their peers taking upper level courses. In contrast, Geffert and Christensen (1998) noted that freshmen are more likely to use the library than seniors. This is primarily because incoming students are more amenable to library instructions and propaganda, and would thus be more receptive to library visits. Hence, the effect of student's academic year on library utilization appears to be mixed.

Provision of a formal library literacy course is found to be an important factor to maximize utilization of online databases by users in academic institutions (Teow and Zainab 2003; Ismail and Zainab 2005; Edzan 2007). This is because perspective student-users are often from diverse backgrounds and possess varying skill levels and knowledge of the library functions. Thus, when students become more comfortable with the services offered at a library, this would likely lead to a higher willingness of eventual use. Nonetheless, Grimes and Charters (2000) argued that once students are exposed to formal library instruction seminars (e.g. how to use bibliographic tools and databases), the actual time spent in the library decreases significantly as efficiency of student time use of library resources are realized.

Jiao and Onwuegbuzie (1997) and Grimes and Charters (2000) found an inverse relationship between distance to the library from residence and use rate. This outcome can be attributed to the fact that close proximity and ready access lowers the time and transaction costs, and therefore allows for a higher frequency of campus library visits. Nevertheless, D'Elia (1980a; 1980b) stressed that distance to the library and use frequency is only relevant amongst moderate users but not regular users or non-users who never use the library. Meanwhile, Wolf (2005) reported that off-campus students actually use the library more often than their on-campus cohorts as it serves as a rendezvous point during time between classes or a quiet place to study away from home.

As time is a finite resource, university students who hold part-time or full-time jobs face substantial opportunity costs with respect to time available for other activities, such as library visits. As noted by Grimes and Charters (2000) and Whitmire (2001), off-campus work had a strong negative impact on students' academic library use. Wolf (2005) further concluded that even if working students were to use the library, it would most likely be the use of online resources.

The perceived usefulness of goods or service is an important determinant of its behavioural use intention. As such, a user's opinion on the importance or usefulness of the library is essential when studying the determinants of library usage (Majid, Anwar and Eisenschitz, 2001). In corroborating this outcome, Wolf (2005) found that the likelihood of library patronage is often influenced by a student's perception. This arises from the reasoning that students with negative or neutral perceptions of the library are less likely to utilize it compared to those with positive outlooks.

Grimes and Charters (2000) noted that online frequency use affects physical usage of the library as students substitute e-library for time spent in the library. Conversely, Clougherty et al. (1998) stated that undergraduates prefer direct human contact and gravitate toward on-site library services and resources instead of online use. Thus, the effect of being an online user on library use is inconclusive.

## **BACKGROUND SETTING**

Universiti Sains Malaysia (USM), a public university located at the island state of Penang, Malaysia, was established in 1969. The current student population at USM is approximately 20,000 students. With a male-female gender ratio of 30:70, about 62.7% of the students are from the Arts discipline (Literature, Management, Education, Communications, etc.) while 32.7% are in the Science discipline (Computer-Science, Chemistry, Biology, Physics, Pharmacy, etc.). The breakdown of year of study consists of 27.7%, 28.9%, and 43.4% in their first, second, and third/fourth/final year of studies, respectively (Unit Kemasukan USM 2010).

The Perpustakaan Hamzah Sendut I and II (henceforth, referred to as “the library”) are the main libraries in the USM main campus. The *Laporan Tahunan Perpustakaan* (Library Annual Report 2009) listed a total of 22,347 registered members consisting of students, academic and administration staff and the general public, with a total of 898,022 library visits and 288,329 loan transactions. The library invested RM2.3 million for acquisition of books and media resources and RM10 million on journal subscription and electronic databases. With nearly 700,000 books and printed journals, 1.3 million electronic books, 511,515 electronic journals, and about 214,000 media materials, there are also 119 subscribed databases, accessible via the homepage: <http://www.lib.usm.my> (Head, Serials and Documents Division Perpustakaan Hamzah Sendut, pers. comm. 23 June 2011).

## **METHODOLOGY**

The major driving issue in modeling the current study is the dichotomous-outcome of whether an individual utilizes the library ( $Y=1$ ) or not ( $Y=0$ ). In such cases when the dependent variable has a binary outcome, the use of Logit analysis is appropriate as its specification allows for monotonic transformations to guarantee that predictions (probabilities) lie in the unit interval (Greene 2007).

### **The Logit Model**

The Logit model is written as:

$$\text{Log} [P / (1 - P)] = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_n + \varepsilon \quad (1)$$

where,  $P$  = probability of a individual to use the library in the past one month;  $X$  = explanatory variables hypothesized to influence this probability as listed in Table 1;  $\beta_i$  = coefficients for explanatory variables;  $\varepsilon$  = stochastic disturbance term; and  $P/(1 - P)$  = ratio of probability or odds that the individual is a library user.

### **Model Regressors**

The selection of variables hypothesized to affect the likelihood of library use by university students relies primarily on insights from the previous scholarly works of Williams (1995), Grimes and Charters (2000), Whitmire (2001; 2003), and Wolf (2005). Amongst the socio-demographic variables considered are the ethnic groups of MALAY (reference group) and CHINESE, while those of Indian and other ethnic backgrounds are grouped as INDOTH due to their small sample sizes. GENDER of the student is represented by a value of 1 for males and 0 for females. Educational background of the PARENT is denoted by 1 if at least one of

the parents is tertiary educated and 0 otherwise. A value of 1 is assigned for students majoring in ARTS courses and 0 for Science majors. Year of study is listed as YEAR1, YEAR2 (reference group), and YEAR34 to represent students in their first-, second-, third/fourth/final-year of academic scholarship in USM.<sup>1</sup> Students who attended the library induction course (ATTEND) are listed as 1 and 0 otherwise.

Access considerations include location of residence (OFFCAM), and is denoted by 1 for students who stay off-campus and 0 for those who reside in-campus. Students who work (WORK) are represented by 1 and 0 otherwise. Perception of the library is assumed to be influenced by the student’s discernment of the USEFUL-ness of the library and is measured on a scale from 1 (“Not useful”) to 5 (“Extremely useful”). Replies for the top two scales, “Useful” and “Extremely useful”, are coded as 1 to denote the student’s perception that the library is useful in allowing one to realize their academic goals and 0 otherwise. Students’ online use is measured on a scale from 1 (“Never”) to 5 (“Very frequently”). The top two scales (FREQ), “Frequently” and “Very frequently”, are assigned a value of 1 to represent frequent online users and 0 otherwise (Table 1).

Table 1: Definition and Summary Statistics of Variables

Variable	Definition	Mean		
		User	Non-User	Total Sample
<i>Explanatory variables (1=yes; 0=otherwise)</i>				
MALAY	Ethnicity is Malay (reference group)	0.576	0.570	0.575
CHINESE	Ethnicity is Chinese	0.268	0.384	0.294
INDOTH	Ethnicity is Indian/others	0.156	0.047	0.131
GENDER	Gender is male	0.305	0.372	0.320
PARENT	One parent has tertiary education	0.262	0.349	0.281
ATTEND	Attended the library induction course	0.669	0.442	0.619
OFFCAM	Stays off-campus	0.099	0.198	0.121
ARTS	Arts stream student	0.613	0.442	0.575
USEFUL	Believe library useful to achieve academic goal	0.917	0.663	0.861
WORK	Holds a part/full-time job	0.123	0.128	0.124
YEAR1	First year student	0.291	0.244	0.281
YEAR2	Second year student (reference group)	0.411	0.337	0.394
YEAR34	Third/fourth/final year student	0.298	0.419	0.325
FREQ	Frequent online users	0.709	0.407	0.642
Number of observations		302	86	388

**Data**

Data were collected using stratified random questionnaire-based interviews. Given the exploratory nature of the study as well as time and resource constraints, no formal sampling procedures were used to obtain the sample. Nevertheless, efforts were made to stratify the data amongst full-time students in the USM main campus based on gender,

<sup>1</sup> While most undergraduate degree programmes offered at the USM main campus require a minimum full-time residence period of three years, certain degrees such as Education, Architecture, Accountancy and Pharmacy are four-year programmes. However, post-graduate students were not considered in the current study due to the nature of their courses, which are less classroom intensive.

year and field of study. A pilot study was also conducted to pre-test and establish the reliability of the questionnaires as well as to ascertain the presence of any potential problems. A sample of 10 respondents from the School of Social Sciences and School of Mathematics were selected for this initial stage of the study. Based on the pilot study, several parts of the questionnaire were revised for clarity. Having established the reliability and suitability of the questionnaires, the actual interviews were conducted from September to October, 2009 at various locations on-campus.

The questionnaire consists of three sections. In the first section, the student's socio-demographic information such as ethnicity, gender, age, gender, year of study, current grade-point average, faculty/school of study, location of residence, working status, and educational background of the parent were elicited. Other information such as whether the student attended the library induction session during their first year orientation session, ownership of laptops, frequency of online usage, and their general perception of the library were elicited. Finally, respondents were asked whether they utilized the university library during the past one month. Section two of the questionnaire is answered only by library users. Information such as reasons for using the library, frequency and duration of usage were obtained in this section. The third part of the questionnaire is answered only by those who stated that they did not use the library during the past one month. Respondents were asked to provide reasons for their non-usage of the library. A total of 388 observations were retained for the final analysis after deleting those with incomplete information.

### **Characteristics of Survey Respondents**

Descriptive statistics of variables in the statistical model are provided in Table 1 for the total sample and segmented by library users and non-users. From the 388 total respondents, 302 (77.8%) reported having utilized the library in the past one month and 86 (22.2%) did not. The total sample consist of 58% Malay, 29% Chinese, and 13% Indian and other ethnic backgrounds. It is worthwhile to note that although the specific ethnic breakdown of students in USM is unavailable due to the sensitive nature of the information, the above numbers closely correspond to the ethnic population in Malaysia. Males form 32% of the entire sample and 28.1% have at least one parent who is tertiary educated. The majority (61.9%) have previously attended the library induction course and 12% reside off-campus. Approximately 57.5% of the total students are from the Arts stream while the remaining 42.5% are majoring in Science related courses. About 86.1% have a positive image of the library and 12.4% either have part-time or full-time jobs. The breakdown of year of study for the entire sample comprises 28.1% first-year, 39.4% second-year, and 32.5% third/fourth/final-year students. Finally, 64.2% of the total respondents are frequent online users.

## **RESULTS**

Results of the Logit analysis are presented in Table 2, with estimated coefficients, odds ratios, mean samples and marginal effects for the respective variables listed accordingly. The Likelihood Ratio statistics (LR) of the model is 75.34, with p-value of 0.000, thus implying that the data fits the model well as one or more of the total effects in the model are important in predicting the probability of library use. Besides, the model is found to correctly predict 81.44% of the outcomes in the sample, with McFadden's  $R^2 = 0.18$ . Since Logit parameter estimates do not have direct interpretations, the following discussion focuses on the marginal effects of the respective determinants of library patronage.

Five variables (INDOTH, ATTEND, USEFUL, YEAR34, and FREQ) are statistically significant in affecting the likelihood of library use. Specifically, students of Indian or of other ethnic backgrounds are 3.1% more likely to frequent the USM library than their Malay cohorts. On the other hand, being of ethnic Chinese does not affect the probability of library use. This outcome is supported by the fact that of the 54 students of Indian or other ethnicity in the total sample, 47 (92.1%) reported themselves as library users. In contrast, 174 (78.0%) of the 223 ethnic Malay students utilized the library during the survey period. Students who attend the library induction course are 6.0% more likely to patronize the library compared to those who did not, all else constant. This suggests that as students become more familiar with the library via its induction courses, they become more comfortable and knowledgeable of the various resources provided, thus increasing their likelihood of use.

Table 2: Results of Logit Analysis

Variables	Coefficients ( $\beta$ )	Odds Ratio (exp $\beta$ )	Mean Sample	Marginal Effects
INTERCEPT	-0.628 (0.453)	-	-	-
CHINESE <sup>a</sup>	-0.150 (0.340)	0.860	0	-0.007 (0.016)
INDOTH <sup>a</sup>	1.273** (0.584)	3.570	0	0.031** (0.015)
GENDER <sup>a</sup>	-0.249 (0.293)	0.779	0	-0.012 (0.015)
PARENT <sup>a</sup>	-0.278 (0.302)	0.758	0	-0.013 (0.016)
ATTEND <sup>a</sup>	0.936*** (0.286)	2.550	1	0.060** (0.026)
OFFCAM <sup>a</sup>	-0.058 (0.450)	0.944	0	-0.002 (0.020)
ARTS <sup>a</sup>	0.348 (0.290)	1.416	1	0.017 (0.015)
USEFUL <sup>a</sup>	1.380*** (0.353)	3.975	1	0.109** (0.054)
WORK <sup>a</sup>	0.097 (0.422)	1.102	0	0.004 (0.016)
YEAR1 <sup>a</sup>	-0.541 (0.377)	0.582	0	-0.029 (0.021)
YEAR34 <sup>a</sup>	-0.830** (0.345)	0.436	0	-0.051** (0.025)
FREQ <sup>a</sup>	1.058*** (0.286)	2.882	1	0.072** (0.033)
McFadden's R <sup>2</sup>	0.184			
LR statistic (15 df)	75.34			
Probability (LR stat)	0.000			
% correct predictions	81.44%			

Note: <sup>a</sup>For a discrete change of dummy variable from 0 to 1. Standard errors in parenthesis. Asterisks indicate significance levels: \*\*\*=1%, \*\*=5%, and \*=10%.

A positive perception of the library is also an important consideration for library utilization. This is evidenced by the 10.9% higher likelihood of use amongst students with a positive impression of the library and considered it to be useful as opposed to those who do not think highly of its attributes.

Year of study is another key determinant of library use. While first-year students are not statistically significant in their library use patterns, those in their third/fourth/final year of studies are 5.1% less likely to utilize the library compared to their counterparts in their second year of studies, all else equal. This result may be indicative of the type of workload of students in the second-year compared to those in their third/fourth/final-year of studies.

Frequent online users are 7.2% more likely to use the library compared to those who either use it sparingly or do not utilize it at all, other factors constant. While it may have been expected that online users would use e-library services in lieu of physical library attendance, these contradictory results suggest that library patrons may be utilizing it for internet and other electronic media purposes. In fact, from the list of reasons given for using the USM library, 131 (43.4%) of the 302 library users from the total sample stated their intention to use email and electronic resources.

It is worthy to note that socio-demographic variables such as gender and parent's education do not play a statistically significant role in affecting the likelihood of library use. Similarly, other factors such as campus residence, field of study, and working status do not play a contributory role in the probability of library use amongst university students.

## **DISCUSSION AND CONCLUSION**

The findings of this study have important implications in identifying the determinants of library use amongst students in a Malaysian university. In general, Indians and those of other ethnic backgrounds are more likely to utilize the library than their Malay counterparts. Furthermore, the profile of individuals who have a higher propensity to use the academic library consists of those who have attended the library induction course, those who perceive the library to be useful in realizing their academic goals, second year students, and frequent online users, all else equal. Meanwhile, factors such as gender, parental education, place of residence, type of course, working status, do not affect the likelihood of library use. Based on these results, several notable observations are discussed vis-à-vis library use amongst university students.

First, since previous attendance in library induction courses and a positive perception of the library are both found to elevate the likelihood of library utilization, this suggests that familiarity with the resources and services offered by the library could encourage further utilization amongst students. In other words, once students are exposed to the virtues of the library, this would enable them to form a positive opinion, thus further enhancing the propensity of future use. Therefore, university policy-makers can be assured that library induction programs targeting in-coming first year students as part of their orientation course are indeed beneficial in promoting future library use. This follows Callison's (1997) suggestion that more intensive efforts should be made to expand student instruction beyond the one-time induction courses.



Second, while it is expected that e-library services would substitute for actual in-person library attendance, the results of the study indicate otherwise. In fact, virtual facilities may be a complementary measure for the physical nature of the library instead as the results show that students who are frequent online users are also more likely to utilize the library. One possible explanation for this outcome is that students may be using the library for their online needs. Although parts of the USM main campus are WiFi connected, the availability of online services in the library, coupled with the pleasant ambience, allows for a conducive environment to match the students' online needs. As such, university library officials interested in promoting library use amongst its students should invest in both virtual as well as its physical facilities. This includes upgrading the speed and user-friendliness of its online facilities as well as to ensure the adequacy of personal computers as part of library infrastructure expansion plans.

Third, it is interesting to note that third/fourth/final year students are less likely to utilize the library compared to their second year cohorts. This result is in contrast to the findings of Wolf (2005), whereby senior or final year students are more likely to utilize the library for their upper-level project assignments. One plausible explanation is that some of the final year courses in USM involve practical trainings and industrial attachments. Hence, the likelihood for these graduating students to utilize the library is lower compared to those in their second year of studies. Nevertheless, this validation should be viewed with care.

Fourth, although the results suggest that ethnicity plays a significant role in library use decision making and that Malay students are less likely to visit the library than their Indian or other ethnic cohorts, an important caveat is highlighted. The survey period of September to October 2009 involved the Ramadan fasting month from 22 August to 21 September. As individuals were canvassed on their library visits during the previous month, this may possibly explain the lack of library visitation amongst Malay students during the survey period. In this case, while an inference could be made of the possibility of a data collection flaw, it could also be argued that the results, in fact, highlight the significance of ethnic differences in affecting library patronage.

Finally, our study represents one of the first attempts at definitively and econometrically examining the determinants of library use in Malaysian university campuses. With data availability, future studies should replicate our analysis using additional information (e.g. number of hours or time spent in the library, number and level of courses taken, faculty recommendation, student grades) to assess the robustness of our findings. A longer survey period over an entire semester would be beneficial to account for the peaks and troughs encountered during holidays, examinations and other events as well.

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