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To link to this article: https://doi.org/10.1080/00987913.2019.1680248

Published online: 24 Oct 2019.

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Acceptance of Koha Open Source System among Librarians in the Malaysian Academic Libraries: An Exploratory Qualitative Study

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ABSTRACT
This paper reports on a study that explores the requirements and level of acceptance for the Koha open source software implementation in Malaysian academic libraries. This is a qualitative study based on interviews with system librarians from library application and system divisions in 5 Malaysian universities. The interviews were conducted to understand the technology acceptance, system quality and system information, beliefs and attitude of librarians and to provide insight into a user and open system relations. These factors can be critical in order to understand what may hinder the acceptance of open source systems in Malaysia academic libraries. The findings disclose that the level of acceptance of the Koha open source system among Malaysian librarians is high as they are satisfied with the information quality, system quality and system platform. They have positive intentions to use this system and believe it meets their current and future information needs. The requirements of its implementation are focused on perceived usefulness (technology), attitude toward using (users), and perceived ease of use (system). The subsequent influencing factors are a reflection of Koha system stability and users’ acceptance of this system’s information quality, system quality, librarians’ awareness, satisfaction, user confidence level, support for library standards, highly integrated modules, a web-based solution, intention to use a system, and actual usage of an open-source system. Practical implications include cost savings, outsourced system maintenance, and accessibility of the system after office hours. The Koha open-source system is a new paradigm in system solutions for libraries in Malaysia. The results of the current study are applicable to other library settings.

KEYWORDS
academic libraries; Koha; librarians; Malaysia; open source system; proprietary systems

Introduction
The success or failure of an information system depends upon the usability and technology of that system (Ginzberg, 1981). A system pilot test is the key to determine the acceptance of a system. During this process, a system is fully tested with real data to ensure whether the system features meet users’ requirements. Most system-related problems are revealed during the pilot test.

The rapidly changing information environment has encouraged libraries to adopt the latest technologies in order to meet the information needs of their users. Open-source systems have been launched by system developers and adopted by users from the day the technology was introduced. Open source technology has created an opportunity for information system adopters to address information service delivery. The chronology of open-source systems (OSS) in libraries started in 1996. The open-source system by definition is a “free application with a free source code for the users” (Chudnov, 1999). OSS are able to run in various operating systems including Windows, Linux, UNIX, and Mac (Chawner, 2004). In addition, open-source systems are an aid for data management and an information solution for librarians (Bonaccorsi & Rossi, 2003). Developed in 2000 (Jaffe & Careaga, 2007), Koha is an example of an open-source system that has captured the library market worldwide (Abu Bakar, Rahmad, & Mohd Amin, 2015; Biju, Jasimudeen, & Vimal Kumar, 2012; Jasimudeen, 2013; Khatun & Ahmed, 2018; Oberg, 2003; SenthilKumaran & Sreeja, 2017; Tella & Oladeji, 2017).

This exploratory qualitative study was conducted parallel to the Malaysian Public Sector Open Source Software Master Plan, which was launched in July 16,
2014 (MPS-OSS-MP, 2016). The purpose of this master plan was to encourage and enhance the use of open source technology in Malaysian public sectors. The changing trends in library service delivery and information system solutions have urged system developers and information system adopters to seek open-source technology solutions (Krishnamurthy, 2008). This trend motivated the researchers to conduct an exploratory qualitative study to understand Malaysian university librarians’ views about open-source system adoption and the factors that influence the acceptance of an open-source library system. This study is focused on those Malaysian academic libraries that had conducted a pilot test of Koha between 2009 and 2016.

Literature review

Technology, system and the users

“A system is a set of interrelated components with clearly defined boundaries, working together to achieve a common set of objectives” (O’Brien & Marakas, 2007, p. 4). Users are the main decision makers in technology and system adoption and use. The user’s behavior affects the process of decision making about system adoption and implementation. Hence, technology, system, and users, as shown in Figure 1, are interrelated to ensure successful system adoption and implementation in an organization.

These key predictors are mapped and discussed in the technology acceptance model (TAM) as depicted in Figure 2. This model focuses on the technology (perceived usefulness), system (perceived ease of use), and user (attitude toward using) to determine the intention to use a system and the decision towards actual use of the system (Davis, 1989). The definition of perceived usefulness is the degree to which a person believes that using a particular system would enhance his/her job performance. Perceived ease of use is defined as the degree to which a person believes that using a particular system would be free from effort. This belief reflects the individual’s positive or negative feelings and reactions to using the system; behavioral intention to use is indicating the interest towards a system and actual system use defined as the real-time use of a desired system (Davis, 1989). The selected TAM model reflects the information system theory focusing on open-source key predictors such as the technology, the user, and the system. This theory is being used to determine the influencing factors for open source adoption and how systems librarians make insight decisions. This model is a platform to achieve an organization’s business strategies and objectives (Mohideen, Kaur, Muhamad, Jan, & Ahamadhu, 2017).

Comparative analysis of OSS and proprietary systems

The authors acknowledge that proprietary systems are widely used in libraries. The features of proprietary systems include vendor support; maintenance agreements; unavailability of source code; and the cost of user licenses (Breeding, 2009). Since the open-source movement is believed to be the leading paradigm shift in the library system industry (Dennison, 2011), there is a need to understand the merits and demerits of OSS adoption in libraries (Singh, 2014). OSS offer significant benefits when compared with proprietary systems. The main advantages of OSS include cost effectiveness, free open source code, technical
simplicity, unlimited user license agreements, flexibility, user-friendliness, and the opportunity to overcome features that are not usually available in proprietary systems (Alves, Reais, & Alves, 2012; Bailey, 2011; Breeding, 2009; Jayasingh & Eze, 2010). Moreover, the drawbacks of a vendor, customization, documentation, and policy are no longer issues in the OSS environment (Ahmed and Alreyaee, 2014).

On the other hand, the critics of OSS argue that there are barriers that libraries face when considering the adoption of OSS. Some of the major barriers of OSS include reduced usability, less user-friendly interfaces, and a deficiency in reliability, security, and technical support (Buchanan & Krasnoff, 2005). The cost of technical support, irregular upgrades, and a lack of staff training are some of the other disadvantages (Adnanh & Lee, 2015; Breeding, 2009; Singh, 2014, 2017). The prevalence of these issues will need to be considered when planning an OSS implementation in a library.

**Koha open source system**

There are various open-source systems available in the market including Koha, Lucidea, Mandarin, OPALS, OpenBiblio, NewGenLib, Evergreen, ABCD, MarcoPolo and PhpMylibrary (Chawner, 2004; Jaffe & Careaga, 2007). Koha is known as an integrated library management system (ILMS). It is the first OS integrated library system and was developed by Katipo Communications Limited of Wellington, New Zealand for use by Horowhenua Library Trust (HLT). Koha was released worldwide in July 2000, using the General Public License (GPL). Since then, there has been a high demand for Koha. The early adopters of Koha were from New Zealand, Australia, Canada, United States of America, India, Thailand, United Kingdom, and France (Jasimudeen, 2013). The Koha adopters range from small to medium libraries, e.g., school and special libraries. Various versions of Koha have been released since its inception. Since August 2002, Koha supports Machine Readable Cataloging 21 (MARC21) and Universal Machine Readable Catalog (UNIMARC).

**Previous studies on Koha**

A number of studies have been conducted worldwide on various aspects of the Koha open-source system (OSS). Tella and Oladeji (2017) evaluated the impact of Koha on library services in some selected universities in Nigeria. The findings of their study disclosed that Koha had a positive impact on user attitude, system usage, and cost savings in their respective libraries. Some of the hurdles faced by the librarians in their implementation of Koha were inadequate infrastructure and financial constraints. Vimal Kumar and Jasimudeen (2012) reported the adoption and user perception of library professionals in India about Koha, where adoption and use of Koha were gaining momentum in Indian libraries. They also found that Koha was popular among Indian library professionals, and the number of its users was gradually increasing.

Singh and Sanaman (2012) studied the performance of two OSS, i.e., Koha and NewGenLib, to update library professionals about what considerations they should make when choosing an OSS. The findings of their study disclosed that Koha has more special characteristics as an OSS. Moreover, it has advanced features, user-friendly downloads, documentation facility, and easy installation. Koha also supports more formats and standards than NewGenLib, whereas NewGenLib has better functionality of modules and more user help and support compared to Koha. Vimal Kumar and Jasimudeen (2012) argued in favor of Koha and stated that it was a useful tool for library services. He further concluded that the availability of Koha live CD was one of the reasons for Koha’s popularity among librarians. Khatun and Ahmed (2018) investigated the usability of Koha’s online public access catalog (OPAC) from a user’s perspective. Their findings revealed a significant performance difference between experienced users and novices for the initial use. Based on these studies, the authors of the current study have concluded that Koha is a useful package for library operations management.

**Koha in Malaysia**

Open-source library systems have not yet penetrated into large libraries (ALA-TechSource, 2017). Similarly, in Malaysia, the adoption of Koha has been limited to small libraries. However, large libraries, particularly university libraries, are now considering Koha. In Malaysia, the development of open source information systems (OSIS) is supported by the Malaysian Administrative Modernization and Management Planning Unit (MAMPU). An Open Source Competency Center (OSCC) under MAMPU was launched on June 19, 2002 (MAMPU, 2004) to encourage OSS usage within the public sector. Thus far, one public university and four private universities have implemented the Koha open-source system in their libraries.
**Problem statement**

The users’ behavior towards an implemented system is questionable when they are not satisfied with the system’s performance, its features, functions, and support for troubleshooting. Hence, user satisfaction is connected with the success and quality of a system. Understanding users’ opinion to improve usability and identifying new approaches for open source system acceptance is challenging (Çetin & Gokturk, 2008; Raza & Capretz, 2015).

There is an assumption that libraries will always support proprietary systems (Bailey, 2011). However, the financial restrictions by the Malaysian government have affected the adoption of proprietary systems in libraries. Consequently, libraries are now looking for alternative solutions. The alternative to the proprietary technology is open source technology. There is a lack of understanding about open-source systems and its acceptance among librarians (Mohideen et al., 2017; Zainab Ajab, 2017). This indicates a gap between librarians and OSS technology awareness, which discourages OS technology adoption in libraries. Consequently, there is a need to investigate librarians’ opinions about OS library systems. This study was conducted to understand librarians’ behavior towards the adoption of open source systems and the factors that influence acceptance of an open-source library system. This study will fill the user-technology awareness gap by using a Technology Acceptance Model (TAM) to evaluate the technology usage, user attitude and system acceptance among librarians.

**Objectives**

This qualitative study was designed to explore the acceptance of the Koha open source system by system librarians from library application and system divisions in Malaysian public and private university libraries. The objectives of the study are:

- a. to identify the factors that influence librarians’ acceptance of the Koha open source library system
- b. to evaluate the decision to implement the Koha open source library system in Malaysian public and private university libraries.

**Methodology**

This exploratory case study about the adoption of Koha in 5 Malaysian university libraries is aimed at understanding librarians’ acceptance of this library system. The participants were 5 system librarians who used Koha during its implementation and testing process – a 2-week pilot test in 2016. The sample universities were Universiti Sains Malaysia (USM), Universiti Kuala Lumpur (UniKL), Universiti Tenaga Nasional (UNITEN), Al Madinah International University, and Asia e University (AeU). Interviews were conducted using a semi-structured, open-ended questionnaire.

The following 6 questions were asked to achieve the first research objective. They are based on the TAM model, focusing on the usage of OSS technology, OSS flow, open-source library standards, OSS features, utilization of in-house technical skills, and librarians’ perceptions upon using the open-source library system:

1. What is your opinion about the usage of Koha OSS technology? [Technology]
2. What features are supported by Koha OSS library system? [System]
3. What is your awareness about Koha OSS library system? [Users]
4. What are librarians’ intentions in using Koha OSS library system? [System]
5. What is the level of utilization of in-house technical skill? [Technology]
6. What is the level of librarians’ acceptance of Koha OSS library system? [Users]

**Table 1.** Categorization of interview questions using TAM (Davis, 1989).

<table>
<thead>
<tr>
<th>Domain</th>
<th>Categorizing key predictors</th>
<th>Open ended interview questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td><strong>Perceived usefulness:</strong> Believes enhancement on job performance, trust on open source system technology, and utilization of in-house technical skill.</td>
<td></td>
</tr>
<tr>
<td>Users</td>
<td><strong>Attitude toward using:</strong> Librarians’ perception, awareness and level of acceptance of open source library system.</td>
<td></td>
</tr>
<tr>
<td>System</td>
<td><strong>Perceived ease of use:</strong> Source system features (open source system flow, library standard, open source platform, information, system and quality) and users are free from extra effort and knowledge to perform a task.</td>
<td></td>
</tr>
</tbody>
</table>
The responses to these 6 questions helped to answer the second objective.

The purposive sampling technique was used in this study. The interviewees’ answers were categorized according to the predictors (technology, system, and user) in order to identify the similarities and differences obtained during the interview session. For the purpose of confidentiality, the participants are labeled as Librarian A (public university-IPTA), Librarian B, Librarian C, Librarian D and Librarian E (private universities-IPTS). Each interview was conducted for about 30 min. A total of six main questions relating to the Koha pilot test focused on the following constructs: usage of OSS, open-source process flow, library standards supported by the OSS, OSS features, utilization of in-house technical skill, and users’ perception of library OSS. The process of categorizing the key predictors as noted in Table 1 is adapted from Davis (1989). The raw data of the interviews were analyzed and used in explaining, understanding, examining, categorizing, tabulating, and recombining the evidence by identifying the important aspects of librarians’ inputs to be considered as rich data for the study’s second objective.

Results and discussion

The interview transcripts and their relevance are verbatim and significant in this study; they provide information on open source technology, users’ acceptance, and system adoption and implementation to explain the key predictors from the technology acceptance model based on librarians’ acceptance of the Koha OSS system (research objective one). The interview transcripts helped to deliver information more precisely and accurately as they eliminated possible misinterpretation of the data. Every word spoken was faithfully transcribed without correcting any grammatical errors, repetition, or false starts.

The results from the interviews are presented and discussed based on 6 semi-structured open-ended questions and categorization of key predictors as identified in Table 1. The subsequent section discusses the study outcome, which explains the identified influencing factors. The key predictors are presented using the TAM model requirements for perceived usefulness in terms of system usage and utilization of in-house technical skill, which will lead to users’ attitude towards and behavioral intention to use open source technology.

Perceived usefulness

The use of open-source library systems in Malaysian public universities began in 2009 with a pilot test. Then it continued to grow at a major scale and went live in 2014. Currently, there are a total of 225 users, and the library system is fully utilized to support all library services. Both Librarian B and Librarian C adopted the open-source library system in 2012 with total numbers of 10 and 5 librarian users respectively. According to Librarian C, “the adoption of Koha is to capture the librarians’ skill in using an OSS system.” In the year 2013, Librarian D adopted the Koha library system with 56 users, and in the year 2014, Librarian E had 40 users. Koha use and users have steadily increased over the years, which is a positive sign to indicate that there is a high demand for Koha open source library system. Library management and librarians also support the decision to adopt and implement the Koha OSS. This shows that open source technology is well accepted by librarians of Malaysian public and private libraries.

The second opinion from the librarians is about the utilization of in-house technical skills among system users. According to Librarian A, “we have 5 experts, solution providers and a team to support the OS for library system, therefore we have sufficient support and expertise in the field of the OSS and the public university librarians [rely] less on the IT department.” Librarian B mentioned that, “expert[ise] in Linux and open source is an issue but with a strong team and support from other users and Koha community the system is workable.” According to Librarian C, “the system is good…technology to replace proprietary. Therefore our team decided to give …support and meanwhile learn [during] the development phase.” Librarian D said that “at first it was difficult without experts but after the migration the system was running smoothly, [we] attained support from IT department.” According to Librarian E, the support on library data types has forced the library to establish a Koha team and collaborate with other public and private universities. Four out of the 5 interviewees responded that they had little expertise in their library to support the Koha OSS (Librarian B, C, D, and E). However, the libraries are engaging support from the IT department from the universities. Librarian B, C, D and E are also gaining training from other experts on Koha OSS.

Concerning the key predictor system, this study qualitatively analyzed the outcome from questions 2 and 4. The outcome is presented using perceived ease
of use in terms of system features and librarians’ behavioral intention to use open source technology.

**Perceived ease of use**

The librarians discussed the OSS features to identify determinants of OSS use, flow, library standard, open-source platform, information, system, and quality (Table 2). OSS process flow is identified as a system feature. The Koha open source process flow indicates the workflow and process flow of data and user interaction with the system. Library B, C, D and E agreed that the Koha open source library system is progressing towards the aim and objectives of the library. There are 7 modules in the Koha open-source system (circulation, serial control, acquisitions, cataloging, patron management, reporting, and OPAC), and these modules are highly integrated. The process flow is also supported by the features that librarians will need and are also customizable. According to Librarian A, Librarian D, and Librarian E, “the process flow on book logistics is much simpler compared to the proprietary library system.” In a proprietary system, the book logistics only begin upon receiving the book with bibliographic organization to accession file maintenance and finally released for circulation, whereas in Koha the book logistics are systematic and bibliographic organization is done during the process of acquisition and finally released for circulation. The impact of the process assists the staff to be more productive, and the process of book release for circulation becomes much simpler and faster. Librarian B, C, D, and E agreed by indicating that the Koha open source library system is built for the world to share catalog and interlibrary loan information in a much simpler way.

The self-service for troubleshooting technical workflows is simpler as there exists a user community for the Koha open source library system. The OSS library standard identifies the users’ requirements. Since Koha is an integrated library system, it needs to support and comply with library data standards. According to all the librarians, “the OSS is supported with library standards.” They agreed that Koha supports MARC 21, UNIMARC, MARC XML (eXtensible Markup Language), Rich Site Summary (RSS), Standard Interchange Protocol (SIP2), and Z39.5. Therefore, there exists an awareness and compliance toward the system. These standards are also the critical influencing factors for Koha adoption in the library.

The second opinion (Table 3) is based on librarians’ intentions to use the Koha system. According to Librarian A, “the Koha open source library system fulfills library needs focused on types of information and library standards. The system is cost effective especially when it comes to maintenance. The usage of Debian and Ubuntu for an open database is free, and furthermore, it is a fully web-based application. The modules are integrated and allow us to work from home… Koha is a next-generation library system.”

Librarian B was of the opinion that “the Koha system is excellent and results in quality information, processing and retrieval and also runs on a desktop PC and has the latest features. So far, Koha users are free from cost, and the usage of Linux and SQL support huge data volume, [which] is excellent for the library environment. The Koha OSS is a fully web-based client system solution.” According to Librarian C, “our main intention of using Koha is … the support of library data types, and the response rate is fast compared to any proprietary system that we have used before. The open-source technology approach is
good and suits the library environment. Technology overcomes proprietary system solution in terms of integration, [being] fully web-based [allowing for] easy access from home.”

Librarian D said “the system is good compared to proprietary systems in terms of information processing and displaying the resources. Our staff are being trained in Linux, [which] is good and can determine the system quality of processing rate… The [system is] web based, modules are integrated and easy to use. Our library supports the next generation technology to serve the users.” Librarian E stated that, “we want a system that fully supports library data types and library needs and Koha has it. Cost is our issue and open source has no maintenance cost. Proprietary systems need frequent upgrades and … [are] not web based solutions. Therefore, adopting Koha is the best solution.”

All participants’ decisions and expectations were based on information quality, system quality, and web-based requirements as shown in Table 2. These features are fulfilled by the Koha open source library system. Koha uses the Linux platform with various choices (Debian, Ubuntu, and RedHat) and a structured query language (SQL) database, which lowers the cost. The hardware requirement is also less costly as Koha runs on a standard desktop, laptop, and server. Therefore, according to Librarians A, B, C, D, and E, the Koha open source library system, with all its features, is a next-generation library technology system.

With regard to the user key predictor, this study qualitatively analyzed the outcome from questions 3 and 6. The outcome considers the attitude of users, which eventually will lead to librarian’s behavioral intention to the actual use of the open-source technology system in the library setting. The system librarians interviewed were satisfied about the information quality, system quality, and system platform of Koha.

### Attitude towards using an open-source library system

The users’ perception about using an open-source library system is based on the critical factors of awareness, satisfaction, confidence, and intention to use. According to Librarian A, “the library staff are aware of open source library solutions. We have adequate technical staff to support the system solution and our staffs are highly confident using the system after many trials and pilot tests. The system is [a good] value for [the] money and cost effective. We are happy to use the system as it is accepted by the librarians.” Librarian B mentioned, “Our staff are knowledgeable in open source but they need support as we are at an early stage. We are happy with our decision to adopt open source because it is the only solution to overcome our present problems with

### Table 3. Attitudes towards using Koha.

<table>
<thead>
<tr>
<th>Users domain</th>
<th>Librarian A IPTA Library</th>
<th>Librarian B IPTS Library</th>
<th>Librarian C IPTS Library</th>
<th>Librarian D IPTS Library</th>
<th>Librarian E IPTS Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>High awareness among library staffs and less required technical staff</td>
<td>High understanding on open source system and need support</td>
<td>High knowledge on open source technology but need support from technical expertise</td>
<td>High exposure on open source system during library trainings</td>
<td>High recognition for open source library system and grasp the technology for pilot test</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>High satisfaction upon system trial and value for money (cost effectiveness)</td>
<td>Satisfied with the system and overcome the proprietary problems of data and information</td>
<td>Satisfied with the system and cost effectiveness</td>
<td>High trials during pilot test and concluded the system is good and up to the users expectation</td>
<td>High desire on latest technology and usage for the library system</td>
</tr>
<tr>
<td>Confident</td>
<td>High and think appropriate system and technology to support the library operations and services</td>
<td>High and think adoption and implementation is a requisite</td>
<td>Moderate and think adoption is acceptable to overcome current system problems</td>
<td>High and will use the system</td>
<td>High and usage is considered mandatory to overcome present client systems</td>
</tr>
<tr>
<td>Intention to use</td>
<td>Using the system and will continue to use</td>
<td>Will be using the Koha system as others are using too</td>
<td>Using and continually will upgrade based on librarians’ demand</td>
<td>Librarians welcome the open technology and Koha</td>
<td>High intention to adopt and use Koha and open technology system</td>
</tr>
<tr>
<td>Actual system use</td>
<td>The Koha system is perfect and good for library service</td>
<td>The usage is becoming mandatory as libraries are moving toward open source</td>
<td>The decision of using Koha is never a regret to the library</td>
<td>Yes. The actual use reflect the library and librarians are align with information technology</td>
<td>Welcoming Koha and will be using parallel with present system meanwhile pre-formating and doing data migration</td>
</tr>
</tbody>
</table>
proprietary library systems, and we are confident of this solution of open source technology.” Librarian C said that, “our library staff are already being exposed to the open-source library solution, [but] our staff need technical support because the library is lacking in technical expertise. The solution is cost effective and definitely will satisfy us as our IPTS librarians have used the system, and [it has] proven to be the accepted system for the library.” Librarian D mentioned, “training the librarians is our first approach to giving awareness to the librarians. We underwent many trials and pilot tests, [and] the system satisfies the librarians’ needs.” According to Librarian E, among private libraries, “open source is well accepted and recognized and creates a high desire to use the system and latest technology…the findings from librarians are well accepted and fully encouraged us…to overcome the proprietary system problems.”

The Koha open source library system is user-friendly and only basic computer literacy is required for implementing the system. According to the respondents, they were aware of the Koha open source library system, they were satisfied with the pilot test that led to adoption and implementation, and were confident with the system as presented in Table 3. There is a high awareness of OSS among librarians in public and private libraries. The awareness has created a high confidence level regarding Koha system adoption and implementation.

The overall findings emphasize the need for open source and acceptance by librarians. Responses reflect the need and demand for an OSS for the library.

Support and training

According to Mohideen et al. (2017), the open-source system community requires support and training. Most librarians were concerned about the learning curve during the implementation of Koha. During this stage, Koha had undergone some growing pains to ensure that users understood the modules. Library management ultimately needs to decide whether to spend money on upgrading its current proprietary library management system or using the savings from implementing an open-source solution instead to train their staff.

Koha community organization support is very strong worldwide; in 2009, librarians in Malaysia also developed a Koha Malaysian open source community (Koha-Blog, 2009). Training and support are provided at minimal cost, which is much cheaper as compared with proprietary systems. There are 21 libraries in the community to support the Koha open-source system (Koha-Malaysia, 2018). The system librarians are the members of this community. All the process flow of setting up Koha is discussed in this community. The system librarians work closely with the Information Technology department for hardware support, such as servers and system migration. In each library, there is a systems department, which fully supports and troubleshoots the open-source application and technical issues. The authors have concluded that in Malaysia the system has sufficient support for it to be fully deployed in libraries.

Conclusions

Koha OSS offers a paradigm shift for library management system development in libraries, especially for developing and underdeveloped countries. It is a widely accepted open-source library system as compared to other open-source systems available in the open-source market (Mohideen et al., 2017; Adnanh & Lee, 2015). Koha is recognized by the library community for its troubleshooting abilities related to bugs and regular system upgrades. These features have played a vital role in building the confidence of librarians towards Koha adoption.

Based on the results of this study, the authors conclude that the Koha open source library system is well accepted among Malaysian librarians for use in their respective libraries. Moreover, the factors that influence librarians’ decisions to accept Koha are based on perceived usefulness (technology), attitude toward using the system (users), and perceived ease of use (system). The findings of this study have demonstrated positive opinions of system librarians about Koha. They are satisfied with the information quality, system quality, and system platform of Koha. They have a high level of awareness, satisfaction, and confidence in the use of this software. The librarians also intend to use the system and find that it meets information needs for the near future as well.

An open-source library system is a good alternative to proprietary systems based on system quality and information quality, web-based application, cost effectiveness for system maintenance, information accessibility rate, users’ awareness, satisfaction, confidence, intention to use, and actual usage. This study is the first to assess the university system librarians’ acceptance at Malaysian academic libraries. This exploratory qualitative study also introduces the use of key predictors based on the theoretical framework of technology
acceptance model (Davis, 1989) with the key dimension of OSS strategy.

**Limitations and future studies**

This exploratory qualitative study on OSS is limited to the public and private academic libraries in Malaysia. At the time of data collection, only 5 universities had initiated and adopted the open-source technology to run their library operations. All of these universities are part of this study. The presented results highlight the critical influencing factors on the library system and librarian behaviors upon system implementation. The Koha OSS users have grown over the years, hence future research efforts should include a quantitative research approach to study users’ acceptance of the Koha open source library system. Another area of future research includes the societal impact in the university environment in terms of enhanced library service delivery including real-time information about accessibility, accuracy and integrity with the OSS. Future research can also focus on library open system technology similar to Koha like Evergreen, DSpace, and others.

**Funding**

This research received a Post Graduate Research Grant of University Malaya [2015 B] Ref No: 4824. The interview outcomes presented in this study are obtained from system librarians via a pilot test of Koha open source library system from public and private libraries in Malaysia.

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