



Impact of library management systems on information provision in the Rustenburg municipality



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Background: The Library Management System (LMS) is crucial to the operations and performance of the library. Libraries around the world have automated their operations to provide relevant services to users and to move away from operating manually.

Objectives: The purpose of the study was to examine the impact of LMS on the provision of information in libraries of the local municipality of Rustenburg.

Method: This was a quantitative study that examined the impact of LMS on information provision in libraries of the Rustenburg local municipality. The survey research design was adopted and data was collected using questionnaires.

Results: The findings revealed that Rustenburg libraries depend highly on manual systems, which is a sign that they do not have adequate information and communication technologies. The few libraries that have online systems used them for circulation and are not maximising the full functions of the library.

Conclusion: The study concludes that the local municipality of Rustenburg should provide funding to acquire information and communication technologies. Furthermore, it should adopt a library system in all libraries and train staff in all modules.

Contribution: The LMS's are crucial in the operations and performance of the library. Similar studies focused on the type of management systems available for use and how they can be managed. Having said that, most third world countries are still using manual systems, therefore this study takes the discussion further by looking at the impact that the lack of systems in the third world countries have on information provision in libraries.

Keywords: library management systems; information provision; library software's; Municipal libraries; Rustenburg local municipality.

Introduction and background of the study

Library automated systems are known to have a significant impact on the quality of services provided by libraries, including community libraries. Oyekale (2018) opines that these systems are used in libraries to manage different library routines and processes. Ashikuzzaman (2018) points out that library management systems (LMS) enable faster processing of information and easier access to relevant information. According to Khan, Zahid and Rafiq (2016), a LMS is used to monitor the flow of the library process, which includes data storage of new material and patron details, transaction data, or transaction log for item and patron. Oyekale (2018) also indicates that the systems commonly known for integrating library systems are known as LMS. These systems are software that combines modules for cataloguing, acquisition, circulation, end-user searching, database access, and other library functions through a common set of interfaces and databases (Oyekale 2018).

There are several systems that can be used to manage functions of the library effectively. Oyekale (2018) highlights that LMS are categorised into proprietary and open source integrated library systems (ILS). Proprietary LMS are systems that are paid for and cannot be used or circulated without the owner's permission. Open-source LMS are systems that are not paid for (Kumar and Abraham, [Sa]). Additionally, Obajemu et al. (2013) discuss the following LMS, which are open source:

1. SLIM21 is an integrated multiuser multitasking library information software for the Windows environment.
2. GLAS is a window-based system that allows users to open multiple records.

3. X-LIB is a structured record application software and is made up of files which contain records.
4. VIRTUA –is a library software package and a Windows-based client or server application.
5. KOHA is an open-source integrated LMS used worldwide by public, school, and special libraries.

Joy (2014) discusses proprietary LMS as follows:

1. TINLIB is an ILS based on a database management system named Tinman.
2. LIBSYS is a fully integrated and multi-user library and information management system.
3. Millennium is a web and Java-built programmed library system that incorporates succeeding technology.
4. Aleph is a Unicode-based library system that provides a multilingual and multiscript support interface.

Every library aims to provide quality and relevant service to its users (Ukachi 2010). Kharamin and Siamian (2011) further highlight that an ideal library service is one where users have access to information resources at the time required, in a format that can be used, in the quantities that are needed, and where the needs of the user are understood by the staff. Similarly, libraries in the local municipality of Rustenburg exist to provide access to information that can be used for academic, business, and personal development purposes (Rustenburg Local Municipality 2020).

Rustenburg municipality libraries, like other libraries, have adopted systems that help with operations of the libraries. According to the Rustenburg Local Municipality (2020), the demarcation of municipalities after the 2000 elections resulted in the inclusion of vast rural and semi-urban populations in the area of the Rustenburg local municipality. Library services in these areas are mostly non-existent, and the population can be described as disadvantaged with low literacy levels. During the restructuring and transformation process of the Rustenburg local municipality, it was revealed that there was an oversupply of libraries in the central Rustenburg area, but that other areas, especially the less developed areas, do not have such facilities. Some libraries were amalgamated and new libraries in less developed areas were established (Rustenburg Local Municipality 2020).

Subsequently, it is the desire of most libraries to have a LMS that supports all library operations and provides library materials in different formats or locations (ExLibris 2014). This study investigated the impact of the LMS on information provision in the libraries of the Rustenburg local municipality. The objectives of the study were to:

- Determine the type of system used in the libraries of the Rustenburg local municipality
- Examine the performance of the systems used for information provision in libraries from the Rustenburg local municipality
- Assess the influence of current systems on information provision in the libraries of the Rustenburg local municipality.

Contextual setting

The Rustenburg local municipality is located in the Northwest Province of South Africa (Rustenburg Local Municipality 2020). The North West Province of South Africa is bounded in the north by Botswana, in the south by the provinces of Free State and the Northern Cape, and in the northeast and east by the Limpopo Province and Gauteng (North West province government, [Sa]). According to the Bojanala District Municipality (2020), the North West province has four district municipalities, namely Bojanala Platinum, Dr. Kenneth Kauda, Ngaka Modiri Molema, and Dr. Ruth Segomotsi Mompati. Bojanala Platinum District Municipality is a Category C municipality that comprises five Category B local municipalities, namely Kgetlengrivier, Moretele, Mosses Kotane, Madibeng, and Rustenburg. This study focussed on the library staff from the Rustenburg local municipality who use library systems. All libraries in the exception of four are fully computerised. It is envisaged that all of these libraries would be linked to a local library network with global access (Rustenburg Local Municipality 2020). The libraries provide access to books, study area, photocopy services, and computers.

Problem statement

In most advanced economies, libraries rely on automated systems for their smooth operation, which enable staff members to perform their daily tasks and speed up library performance. Noh (2019) confirms that most United States of America public libraries provided access to books via cross-platform applications (e.g., 3M Cloud Library, Overdrive). According to Khan et al. (2016), LMS track library operations, data storage for new materials, patron information, and transaction data or transaction logs for each item. House (2016) reported that the Deutsche Schule Charlotte in the United States implemented the Koha system because of its fast check-in, check-out, and better inventory control.

However, the public libraries in most third world countries such as South Africa still depends on manual systems. Municipal libraries such as the Rustenburg municipality heavily rely on manual system for information provision.

Studies have been conducted on library systems development, types of systems, usage and adoption of systems in libraries (Abayomi 2017; Breeding 2017; Markchit 2015; Uzomba, Oyebola & Izuchukwu 2015). This study focusses more on the impact of LMS on information provision in libraries. A similar study was conducted by Sikhosana (2016), which looked at the management of electronic resources used in South African libraries. The study revealed that majority of public libraries were not using ILS optimally to manage electronic resources. This study therefore aims to look at how the LMS currently in use are impacting on information provision in municipal libraries.

Brief review of the literature

The review of the literature is organised according to the study themes.

Types of system used in public libraries

Ashikuzzaman (2018) points out that LMS enables faster processing of information and provision of easier access to relevant information. This is because LMS are used to monitor the flow of the library's processes including, storage of new material and patron details, transaction data or transaction log for item and patron (Khan et al. 2016). There are different LMS used across the globe.

Public libraries in developing countries such as Nigeria have depended on ILS imported from developed countries such as the United Kingdom and the United States. Similarly, Mohammad and Mohammad (2019), highlights that public libraries in Pakistan's Punjab province use Koha software. Most of these libraries adopted Koha between 2012 and 2014. The Nigerian libraries also used the Koha software together with Virtua software, and some use Millennium Innovative (Abayomi 2017; Idris, Umar & Shiloba 2020). However, Muchiri, Wathika and Githeko (2019) indicate that in Kenya, Amlib integrated library software at Egerton library has been in use since 2008.

When it comes to South Africa, Monyane (2019) reports that libraries used several library systems. For instance, library systems that had been used previously were URICA, SirsiDynix Symphony, and Millennium library system. Furthermore, Ledwaba (2018) states that all public libraries that were surveyed in his study used Slims as their LMS. However, the study conducted by Mojapelo (2017) found that LMS were not installed in some public libraries in Limpopo. This implied that routines such as the circulation of library material were performed without using an automated system.

Performance of the systems used for information provision

Randhawa (2018) conducted a study on open source systems and libraries and found that integrated sources such as Koha can handle almost every function of the library. Many smaller libraries cannot afford to purchase, install, and maintain an ILS, and Koha is a perfect alternative. The findings of the study by Omeluzor (2020) on the evaluation of the use of the ILS in Nigerian libraries revealed that libraries have made remarkable progress in the adoption and use of the ILS for library services. The findings also showed that much has been achieved in the use of ILS in library services.

According to Sobalaje, Ajala and Salami (2018) most libraries use the Koha system for user registration, cataloguing, charge and discharge library materials, to print barcodes, access the web-based Online Public Access Catalogue (OPAC) system, generate statistical data for research purposes, and use for

library stock management. Moreover, Uzomba et al., (2015) indicate that the library system can be used to search for books and library materials, staff can use Koha to do cataloguing and classification of books, charge and discharge books and library materials to users, register users or patrons, calculate date due for books and library materials, access its web-based OPAC system, and take library stock management. Monyane (2019) shares the same sentiments by stating that OPAC system is easy to use, saved time, offered considerable cost savings, and streamlined the workflow. The OPAC system offered staff functions such as ordering, cataloguing, and circulating their material and a public interface that was their library catalogue to access their print and electronic material at one point.

Influence of the system on information provision

Shonhe and Jain (2019) states that librarians in Botswana public libraries believe that library systems allow timely access to current information, increases customer satisfaction, increases retrieval rate, improves service delivery, and increases productivity. They also believe that they have the capacity to improve their confidence in serving library patrons and that it facilitates innovation among them, enables effective circulation of library resources, and improves the acquisition process.

Olatunji, Farouq, and Idris (2018) posit that library system helps to provide: (1) on-the-spot access to information, (2) provision of on-the-spot access to information, (3) proper organisation of information, (4) accurate charging and discharging process, (5) up-to-date statistical records, (6) evaluation of information resources and resource sharing. According to Abayomi (2017), library systems in Nigeria have influenced the roles of librarians. The application of information and communications technologies (ICTs) in their daily routine has enhanced their performance. A library user who needs a book can search for the name of the author, title, or the subject of the book. Library systems have enhanced job performance, output, efficiency, service delivery, and library operations. Furthermore, they enable close monitoring of activities in the library. Omeluzor and Oyovwe-Tinuoye (2016) argued that the use of the library system in library operation is critical. The adoption and use of library systems positively affect the library and its users, and non-adoption of ILS by academic libraries will cause setback to delivery of quality library services to patrons.

Research methods and design

This study employed a quantitative approach and adopted a positivism research paradigm. The reason for adopting positivism paradigm was that the study aims to test the relationship between variables, that is, how LMS influence library functions and performance. This means that the question being addressed is deductive in nature therefore making positivism a perfect worldview to adopt. The target population for the study was 37 library officials who work

with systems in libraries of the Rustenburg local municipality. All library personnel were included in the study, as such there was no sampling performed when it comes to library officials. Permission to conduct the study was obtained from the unit head of Library and Information Services at Rustenburg local municipality. Additionally, researchers obtained ethical clearance from the university's ethics review committee. The participants were informed on the purpose of the study and notified of their freedom to withdraw from the study if they wished to do so. Data were collected using questionnaires. A total of 37 questionnaires were distributed to library officials and only 35 questionnaires were returned, giving a 95% response rate. Leedy and Ormrod (2015:171) state that the return rate of 50% is considered normal when using questionnaires. Quantitative data from questionnaires were analysed using the IBM SPSS Statistics (Version 28) and Microsoft Excel® spreadsheet. The study drew results from one municipality in South Africa. There are different types of municipalities in South Africa that are funded differently, which means that a different study from another municipality may yield a different set of results and that is the study's weakness.

Results and discussion

The results and discussions are organised according to the objectives of the study.

Library systems used in libraries of the Rustenburg local municipality

Library officials were asked to indicate the library system with which they were familiar from the list of systems presented. The results presented in Table 1 show that none of the respondents seem to have never come across systems like Symphony, Koha, and Evergreen. These are systems popular with countries like Pakistan and the United States (Ponelis & Adoma 2018; Todd 2018). Surprisingly, the Symphony system which is used in Namibia was never used by the libraries in the Rustenburg municipality. Having said that, the findings

suggest that most of the library officials in the Rustenburg region (92%) are dependent on manual systems. This was highlighted by the responses received ranging from occasionally (37%) to most often (54%).

However, the presence of a library system such as Slims in Rustenburg municipal libraries is an indication that South African public libraries are moving with other public libraries in other countries. This finding is consistent with Ledwaba (2018) and Mojapelo (2017), who found that all public libraries surveyed in the Limpopo province of South Africa used Slims and Papyrus as their LMS. However, in those libraries where the systems were not installed, the manual system was in place (Ledwaba 2018).

Reasons for using library management systems

Library officials were asked to indicate their reasons for using LMS. The results presented in Table 2 show that most of the respondents (17) mainly used the system to track borrowed materials. It appears that library systems are not used for tracking bills to be paid, to track material that have been ordered, and track purchases they made in Rustenburg public libraries. The finding is partly in line with what was found by Kwami, Panford and Hayfron-Acquah (2019) in that LMS in libraries are usually used for tracking items a library owns, materials that have been ordered, purchases made, bills that have been paid or to be paid, and materials that have been borrowed by patron.

Library officials were asked to indicate from the list what they thought the system should do for them. The findings in Table 3 show that the 15 respondents (43%) indicated that the system often provided timely access to current information, 15 (43%) said that the system often increased the retrieval rate, 14 (40%) said that the system most often improved service delivery, 13 (37%) said that the system most often increased productivity, and 12 (34%) said that the system most often increased customer satisfaction.

TABLE 1: Systems used ($N = 35$).

Systems	1 = Never		2 = Rarely		3 = Occasionally		4 = Often		5 = Most often	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Manual system	0	0	2	6	13	37	1	3	19	54
Symphony	35	100	0	0	0	0	0	0	0	0
Slims	5	14	0	0	2	0	7	20	21	60
Evergreen	35	100	0	0	0	0	0	0	0	0
KOHA	35	100	0	0	0	0	0	0	0	0
Millenium	-	-	-	-	-	-	-	-	-	-
Other	0	0	0	0	0	-	0	0	0	0

TABLE 2: Reasons for using library management systems ($N = 35$).

Reasons	1 = Never		2 = Rarely		3 = Occasionally		4 = Often		5 = Most often	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Tracking items library owns	8	23	2	6	4	11	6	17	15	43
Track materials that have been ordered	13	37	4	11	2	6	6	17	10	29
Track purchases made	13	37	6	17	1	3	3	9	12	34
Track bills paid or to be paid	11	31	3	9	9	26	5	14	7	20
Track materials borrowed	6	17	2	26	5	14	5	14	17	49

TABLE 3: Importance of the system in the library ($N = 35$).

System importance	1 = Never		2 = Rarely		3 = Occasionally		4 = Often		5 = Most often	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Timely access to current information	3	8	5	15	9	26	15	43	3	8
Increases customer satisfaction	0	0	6	17	5	15	12	34	12	34
Increases retrieval rate	0	0	3	8	7	20	15	43	10	29
Improves service delivery	0	0	5	14	7	20	9	26	14	40
Increases productivity	0	0	1	3	9	26	12	34	13	37

TABLE 4: Benefits of using system ($N = 35$).

Benefits	1 = Strongly agree		2 = Agree		3 = Neutral		4 = Disagree		5 = Strongly disagree	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Enhance job performance	21	60	8	23	6	17	0	0	0	0
Enhance efficiency	22	63	9	26	4	11	0	0	0	0
Enhance service delivery	21	60	9	26	4	11	1	3	0	0
Enhance library operations	21	60	7	20	6	17	1	3	0	0

TABLE 5: System's performance ($N = 35$).

Performance	1 = Strongly agree		2 = Agree		3 = Neutral		4 = Disagree		5 = Strongly disagree	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Prevents items from missing	4	12	13	37	2	6	4	11	12	34
Provide user-friendly acquisition module	5	14	14	40	5	14	4	12	7	20
Improved cataloguing	9	26	15	43	4	11	3	9	4	11
Improved circulation	20	57	15	43	0	0	0	0	0	0
Improved serial management	2	6	15	44	7	20	4	12	6	18

The study further established that the system provides users with timely access to current information, increases the retrieval rate, improves service delivery, increases productivity and customer satisfaction. Similar study by Shonhe and Jain (2019) found that librarians in Botswana public libraries believe that library systems allow timely access to current information, increases customer satisfaction, increases retrieval rate, improves service delivery, and increases productivity.

Benefits of using library management systems

Library officials were asked to indicate from the list their reasons for using library systems. The findings in Table 4 show that 63% of the respondents ($n = 22$) strongly agreed that the system improved efficiency, 60% ($n = 21$) strongly agreed that the system improved job performance, 60% ($n = 21$) strongly agreed that the system improved service delivery, and 60% ($n = 21$) strongly agreed that the system improved library operations. This concurs with a study by Pandya (2012) that highlighted that LMS help library staff to perform routine library work much effectively.

Performance of systems used in information provision in Rustenburg public libraries

Zainal (2019) argues that LMS are designed to serve both library employees and people who will use the library resources by simplifying how things are done and improving the overall service offered by the library. To determine the performance of the library system in place, library officials were asked to indicate functions that were improved because of the availability of the system in place. Table 5 indicates that the majority of respondents (57%) strongly agreed that the

systems they have assisted them with circulation, while 44% agreed that the system improved serial management, while 37% were in agreement that the system prevented items from going missing.

Conclusions and recommendations

According to Randhawa (2013), LMS are developed to support the effective management of library activities. They are used to track items owned, orders made, bills paid, and patrons who have borrowed. Libraries and information delivery operations in libraries around the world are changing with the application of new technologies (Pucciarelli & Kaplan 2016). The findings from the study suggest that most of the libraries in the Rustenburg municipality are largely reliant on manual systems, and those that have an online manual system use them negligibly. When it comes to reasons for using LMS, the results are spread across because of the over-reliance of the manual systems that are in place. It is, however, worth observing that those using on-line systems mainly used them to track the library and materials, and were not using the full functions of the systems satisfactorily. The findings further highlight that library officials are aware that online library systems increase the speed at which their users will access information and improve service delivery, which goes hand in hand with customer satisfaction. Library officials are quite aware that LMS have the potential to improve the overall service offered by the library and increase the speed at which things are performed in the library. The study recommends that municipal libraries such as the ones in the Rustenburg area, need to adopt online LMS. This is of great importance in this age of technology, where most of the

information is born digital. The next generation of library users is likely to expect library services from wherever they are, which will make library visits an occasional thing as such, putting their existence at risk. The municipality should also employ skilled personnel in their libraries who have the necessary ICT skills to drive the LMS that may be acquired to their full potential. The study further recommends a much wider study involving different types of municipal libraries from various provinces in South Africa to eliminate a potential bias that may result from a small sample on which this study relied on.

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Competing interests

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Authors' contributions

M.S.M. contributed to conceptualisation, methodology, formal analysis, investigation, writing—original draft, writing—review and editing. J.R.M. was involved in conceptualisation, project administration, and supervision.

Ethical considerations

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Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

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