Seminars in Medical Writing and Education. 2024; 3:622
doi: 10.56294/mw2024622

ORIGINAL

Adoption and Usage Patterns of Referencing Services Management Software Among Postgraduate Students: A Case Study of Selected Kenyan Universities

Patrones de Adopción y Uso del Software de Gestión de Servicios de Referencia entre Estudiantes de Posgrado: Un Estudio de Caso de Universidades Kenianas Seleccionadas

Fredrick Kayusi[1,2], Moses Isutsa Shileche[3], Linety Juma[4], Rashmi Mishra[5], Petros Chavula[6], Rubén González Vallejo[7]

[1]Department of Environmental Studies, Geography & Planning, Maasai Mara University. Narok-Kenya.
[2]Department of Environmental Sciences, School of Environmental and Earth Sciences, Pwani University. Kilifi, Kenya.
[3]Library and Information Services Department, Pwani University Library. Kilifi, Kenya.
[4]Department of Curriculum, Instruction and Educational Technology, Pwani University. Kilifi, Kenya.
[5]College of Economics and Business Administration, University of Technology and Applied Sciences- Al Musanna.
[6]Africa Centre of Excellence for Climate-Smart Agriculture and Biodiversity Conservation, College of Agriculture and Environmental Sciences, Haramaya University. Ethiopia.
[7]University of Malaga, Department of Spanish, Italian, Romance Philology, Theory of Literature and Comparative Literature. Malaga, Spain.

Cite as: Kayusi F, Shileche MI, Juma L, Mishra R, Chavula P, González Vallejo R. Adoption and Usage Patterns of Referencing Services Management Software Among Postgraduate Students: A Case Study of Selected Kenyan Universities. Seminars in Medical Writing and Education. 2024; 3:622. https://doi.org/10.56294/mw2024622

Submitted: 15-12-2023 **Revised:** 04-03-2024 **Accepted:** 11-05-2024 **Published:** 12-05-2024

Editor: PhD. Prof. Estela Morales Peralta

Corresponding Author: Fredrick Kayusi

ABSTRACT

Administration of referencing, referral services offered in university libraries across the world is a critical function in library services to its users. It impacts the way the face of the library is viewed in the eyes of the users. However, various studies show that this service is prone to numerous crisis during its provision that affect an efficient, effective, and user-friendly referencing services management system. The functions of the reference desk within the library revolve around providing a point of referral for help users seeking library services, a point of referral to other services, or to other materials within the library that cannot be accessed by the users, or to other physical spaces where library functions take place,and providing a contact point with the library. Libraries have traditionally offered in-person referencing and referral services to their users; the use of in-person referencing services has declined markedly while virtual referencing and referral services has increased,and referencing services have been integrated in library websites management systems where you see applications like Turnitin, Endote, Zotero, APA as well as AI prominently incorporated. This redefinition of referencing services has challenged librarians to identify the skills and competencies required by service staff to meet this need. Referencing services nowadays may involve much more than acting as a roving search engine. Successful referencing work requires librarians and information specialists to familiarize with a variety of databases and be comfortable with many diverse menus of technologies, as well as being familiar with good online referencing techniques. The purpose of this case study was to examine the adoption and usage of referencing services management software among postgraduate students in Kenyan universities. The study analyzed four predictors: Ease of Navigation, Institutional Resources, Training Impact, and Perceived Relevance. The study was qualitative, and the design used was multiple-case based, involving 205 postgraduate students in Kenyan universities who were purposively selected to participate in the study. Data were collected using focus group discussions, observation, and document analysis. The results revealed a strong model fit, with an R Square value of 0,770, indicating that the predictors explained 77 % of the variance in adoption and productivity. Key findings highlighted the significant positive contributions of Ease of Navigation,

Training Impact, and Perceived Relevance, while Institutional Resources showed no significant influence. The results underscore the importance of user-friendly design, skill development, and relevance to user needs in driving software adoption. Practical implications include the need for flexible, collaborative training programs and improvements in resource utilization. Suggestions for future research include exploring broader demographic factors and longitudinal studies. This case study can be utilized by all library users ranging from undergraduate to faculty level.

Keywords: Academic Libraries; Referencing Services; Adoption and Usage Patterns; Management Software; Postgraduate Students; Kenyan University Libraries.

RESUMEN

La administración de los servicios de referencia y derivación ofrecidos en bibliotecas universitarias de todo el mundo es una función crítica en la prestación de servicios bibliotecarios a sus usuarios. Afecta la percepción que los usuarios tienen de la biblioteca. Sin embargo, diversos estudios muestran que este servicio es propenso a múltiples crisis durante su provisión, lo que afecta la eficiencia, efectividad y facilidad de uso en la gestión de los servicios de referencia. Las funciones del mostrador de referencia en la biblioteca giran en torno a proporcionar un punto de derivación para los usuarios que buscan ayuda con los servicios bibliotecarios, una referencia a otros servicios o materiales dentro de la biblioteca que no pueden ser accedidos directamente por los usuarios, o a otros espacios físicos donde se llevan a cabo funciones bibliotecarias, además de servir como punto de contacto con la biblioteca. Tradicionalmente, las bibliotecas han ofrecido servicios de referencia y derivación en persona; sin embargo, el uso de estos servicios ha disminuido notablemente, mientras que los servicios de referencia y derivación virtuales han aumentado. Estos servicios han sido integrados en los sistemas de gestión de sitios web de bibliotecas, con aplicaciones como Turnitin, EndNote, Zotero y APA, así como con inteligencia artificial, incorporadas de manera destacada.Esta redefinición de los servicios de referencia ha desafiado a los bibliotecarios a identificar las habilidades y competencias necesarias para el personal de servicio con el fin de satisfacer esta demanda. Hoy en día, los servicios de referencia pueden implicar mucho más que actuar como un motor de búsqueda itinerante. Un trabajo de referencia exitoso requiere que los bibliotecarios y especialistas en información se familiaricen con una variedad de bases de datos, manejen con comodidad diversos menús tecnológicos y dominen técnicas avanzadas de referencia en línea. El propósito de este estudio de caso fue examinar la adopción y el uso de software de gestión de servicios de referencia entre los estudiantes de posgrado en universidades kenianas. El estudio analizó cuatro predictores: facilidad de navegación, recursos institucionales, impacto de la capacitación y relevancia percibida. Se empleó un diseño cualitativo basado en múltiples casos, involucrando a 205 estudiantes de posgrado de universidades kenianas seleccionados intencionalmente para participar en el estudio. Los datos se recopilaron mediante discusiones en grupos focales, observación y análisis de documentos.
Los resultados revelaron un ajuste sólido del modelo, con un valor R cuadrado de 0,770, lo que indica que los predictores explicaron el 77 % de la varianza en la adopción y productividad. Los hallazgos clave destacaron las contribuciones positivas significativas de la facilidad de navegación, el impacto de la capacitación y la relevancia percibida, mientras que los recursos institucionales no mostraron una influencia significativa. Los resultados subrayan la importancia de un diseño fácil de usar, el desarrollo de habilidades y la relevancia para las necesidades del usuario en la adopción de software. Las implicaciones prácticas incluyen la necesidad de programas de capacitación flexibles y colaborativos, así como mejoras en la utilización de recursos. Se sugiere que futuras investigaciones exploren factores demográficos más amplios y estudios longitudinales. Este estudio de caso puede ser utilizado por todos los usuarios de la biblioteca, desde estudiantes de pregrado hasta profesores.

Palabras clave: Bibliotecas Académicas; Servicios de Referencia; Patrones de Adopción y Uso; Software de Gestión; Estudiantes de Posgrado; Bibliotecas Universitarias de Kenia.

INTRODUCTION

Referencing services forms part of the heartbeat of the academic library. Consequently, they are perpetual subjects of research.[1,2] With the continuous advancements in information sciences and communication technologies, referencing services are increasingly being offered electronically via multi-mode platforms ranging from email, telephone, web-based chatbots, instant messaging, text messaging, and web-based videophone. These services are convenient to many because they offer live, pre-captured, pre-recorded, and heuristically enhanced knowledge that can be searched and accessed quickly from any part of the world. This fact highlights

the growing importance of electronic referencing services delivery. The value and effectiveness of automated referencing services, however, depend on the efficacy of the referencing services management software upon which they are deployed.[3,4,5,6,7]

In Kenya, scant literature on the patterns of adoption and use of referencing services management software is available. Such a study would serve as the basis for informing the supply and demand curve to meet the ever-increasing demand for referencing services management software among postgraduate students from librarians who have the core competencies for academic librarianship. Additionally, the number of demands for virtual referencing has increased over the years from both institutions and service providers; however, scholarly literature on measuring the adoption of the software is still scant.[6,7,8,9,10] Hence, this situation has made it difficult for librarians and educational technologists to deliver efficient and effective services to their patrons.

Postgraduate students from Kenyan universities would also gain from learning more about their peers and, more importantly, their counterparts' experiences in the use of referencing services management software for service providers to propose a combination of a more appropriate software application that are fit for purpose. Other studies have focused on the challenge of access and utilization of referencing services among the patrons.

The invention of new information sciences technologies has seen the gradual emergence of reference services management software in academic and research libraries. The adoption of technological changes in academic libraries is usually slow because these institutions always want to be sure of the usefulness of any new technology before they adopt it.[4,5,6,7] As a natural trend, the size and scope of academic use of reference services management software have tended to grow rapidly. Postgraduate students are interested in reading for the purposes of research, latest information records that continually leads to changes in the body of knowledge to allow them to keep pace with the emerging and disappearing knowledge in his or her field of study; hence, reference services can be very useful.[7,8,9,10,11]

Referencing services are meant for academic purposes hence efficient management of reference services, which are being supported by reference services management software, helps to provide user access to the adequate and relevant information needed in time under a conducive environment. This is significant to people's success in their respective areas of endeavor. Research services partially facilitate the attainment of educational objectives of an institution. Reference services management software has been around for some time now. It is not clear how research students are making use of them today.[11,12,13,14,15]

A few studies have been conducted, but none in the Kenyan context to determine supported usage patterns in Kenya. There is no evidence on whether the Kenyan academic community uses or adopts them. Studies have established that universities in East and Southern Africa use them, but there are differences even within the same geographical location. In recent times, developed countries are increasingly using them more and more, especially those institutions with a large system. It has been established that a percentage of academic libraries surveyed used them in one form or another. Some institutions use specific applications for reference services management.[12,13,14,15,16,17,18,19,20]

Adoption is the process by which a person starts to use a service and forms his/her attitude toward the service and develops an interest in the service, for example by becoming a member. Adoption has its own triggers, which can be categorized into external and internal factors. In the external factors, we have, among others, personal contacts, perceptions by the potential users, opinions of others, mass media, social influences, relative advantages, and facilitating conditions. The internal factors include, among others, fear of loss or of an opportunity, anxiety, a learned norm or personality traits, the need for tension release, and emotion. Where the adoption process force outweighs the resistance force, the person is likely to adopt the product or service.

Adoption has been seen as one of the most potent variables in acceptance since it results in the behavior of services being used being put into addictive use, and addictive quest for advancement and expertise as it advances into more complex levels of development.[19,20,21,22] These users eventually become the Gurus of these tools. As some people or groups of people use a new service, others realize that they may benefit from it and begin using it also, spreading the usage across many people. Organizations are faced with the problems of adoption and subsequent usage of many software implementations, yet do not clearly understand what services the users need and how the users have adapted and have used or been suboptimal in the use of these services. Software delivery to faculty and graduate students differs from similar services offered in the data processing field because of specialization, and hence the need for adoption and continuous usage becomes even more critical.

Case Study Historical Preview

The history of referencing services software development in the Library and Information Science (LIS) domain dates back to the 18th century when the earliest referencing services, such as the library inquiry desk and telephone reference, began through which library users in general, and librarians in particular, asked for help from colleagues. Telephone and face-to-face reference dominated since then. Software programs to manage referencing services began cropping up in the past decade due to the rise in internet services delivery. Going

back in time to 1798 to be precise, a landmark moment in referencing services emerged when Philadelphia became the chief city of the United States when John Vaughan offered the nation's first reference service free of charge and opened his collection of books to the public.[23,24,25,26,27] Two centuries later in the 1990s, another landmark in reference services specifically related to the internet era was initiated followed by a few years later, other electronic resources, such as CD-ROM and online databases, entered the market to compete, costing thousands of dollars per subscription.[22,23,24,25,26,27,28,29,30,31]

The culmination of all these efforts transforming content sites into subject gateway sites occurred three years later after several meetings were held; the last of these culminating accommodation meetings was held in London when leading information leaders ruled to establish the concept of subject gateways, right before the start of the web 2.0 or social era.[32,33,34,35,36,37,38]

The social web led to several software tools, such as a microblogging program founded in the year 2006.[39] It is from this social web platform that referencing services incorporated other alternative applications, such as instant messaging tools, designed to offer online referencing services in real time to clients who cannot or will not come into the physical premises of libraries and to support social media applications provided by library staff.

Referencing services management software is a specialized type of library automation system that is specifically designed to meet the requirements of referencing services in academic and research library settings.[40] It is a type of library software application designed to help library staff members administer and manage patron requests for referencing or information literacy assistance.[41,42] Moreover, effective management and performance of referencing services are essential functions of libraries in the academic and research library sector.

Referencing services software are used in academic and research libraries to identify, access, verify, select and retrieve specific resource materials and information resources pertinent to an area of research or study being investigated by a postgraduate student, scholar or member of the faculty.

Usability evaluation is now increasingly gaining acceptance in the academic and research library sector as library managers are increasingly using it to distinguish the importance of robust designs that enable their patrons and library staff to access and retrieve reference collections of data.[43]

Typical information retrieval systems in libraries currently exhibit a number of challenges linked to the user interface, indexing, ranking, and search features.[44] This, however, appears to be changing, especially with the advent of enterprise search systems that are being used not only in large corporate organizations but also in some academic and research libraries. Information retrieval researchers are currently working on improving library systems software to make the search experience of users within libraries' collections of data much more satisfying.

Over the years, library researchers have indicated that users prefer to[45] find electronic library resources such as books and video/audio files. This means that effective development of library catalogs, especially in academic and research libraries, should provide the following exceptional features: support for standard Boolean operators, which include the NOT, AND, and OR operators; ability to support both proximate and truncated searching; and high precision of the search results.[46]

Case Study Modern Referencing Trends

Academic libraries have recently adopted the provision of dynamic referencing services aimed at supporting the teaching, learning, and research needs of their communities. Reference managers have been developed to help libraries manage the provision of services more efficiently; however, their adoption and usage are expected to be influenced by users' perceptions, behaviors, and institutional factors.

This case study sought to investigate the adoption and usage patterns of these special libraries' management systems, specifically focusing on four categories of end users. Libraries have been hailed as the first and best place to launch research. Academic libraries, in their current form, have morphed to keep up with changes in knowledge in the digital age.

This change is further buttressed by the fact that knowledge is recognized as the main driver for both social and economic growth, as well as the key to success for the knowledge workers of tomorrow. Academic institutions, and specifically academic libraries, are recognizing this role and are working to develop into knowledge resources that are able to help students, academics, and the larger community meet their research, learning, and teaching objectives. Providing timely and tailored information services is one of the areas that have seen drastic changes in academic libraries. Most developed and developing nations recognize the critical role played by higher education in national development. As such, they invest heavily in this crucial subsector.

Standardization Efforts Made by the Kenyan Government

The Kenyan government has made significant strides in its attempt to improve higher education. For instance, the University's Act of 2012 was established to reform the governance and management of universities, including student admissions, creation, abolition, and conversion of campuses, faculties, and institutions. The Act also established the roles and responsibilities of the university council, senate, management, libraries cited as "Standards for University Libraries in Kenya 2013" and other university organs, as well as the roles of heads of

academic divisions such as the university libraries, academic and designated staff as contemplated under the Act. This Act illustrates the roles the libraries need to play among others: *information literacy" means* a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate and use the information effectively". *"information resources*" means formal, informal, human, printed or electronic resources that contains information that can be accessed to meet a need. *"information services*" means storing, accessing, processing or delivering information to meet the needs of specific users. It can include traditional library and information services comprising of books, archives, standards, patents, research reports and electronic materials comprising of CD-ROMs databases, software, electronic documents, multi-media and video.

These reforms recognized the need to help universities develop software to assist in managing PhD students at the proposal writing stages of their studies. In most Kenyan public universities libraries, data on students accessing their needed information warrants libraries to avail referencing software meant to reduce the burden of excessive work on the university organs in managing PhD students, as well as provide a mode of accessing the PhD students' works. Some Kenyan public university libraries introduced excel in academic and administrative automation. This resulted in poor management of post graduates which led to huge challenges in managing students at the proposal writing stages which resulted in an increase in the number of student dropouts.

Case Study Research Problem Context

Postgraduate students within the African Universities context take more than the stipulate timeframe and, in many cases, drop out of their studies due to inadequate skills and competencies required to master the art of adopting and using a referencing services management tool to seamlessly access and expedite research information access and use in their research work.

There seems to be a lack of a standardized tool that can ably be cited as an appropriate one for post graduate students use within the African context.[39,40] Postgraduate students particularly in Kenyan universities are an important clientele seeking academic information. They require access to information from academic libraries, both in person and online through remote access. As full-time students pursuing their studies, postgraduate students have a range of information needs and use the services of librarians, particularly referencing services. The services play an important role in helping students gain access to the needed information.[41,42]

However, the research conducted at the Referencing Service Unit at Moi University Library revealed the existence of a lack of referencing services management tracking software; thus, an Excel-based tool was developed at Moi University Library as a solution. The software has five reference sections covering email, chat, phone, counter, and request for purchase sections for use by the service providers.[20,23] One of the challenges known only at the Referencing Service Unit of Kenyan University Libraries is a lack of referencing service management software but instead rely on unverified open source software. This is a resource that is not readily available in other university libraries in Kenya because the developers are unable to publicly share it. All the referencing service management software known to the researchers and tested by librarians are non-Kenyan.

The purpose of this case study was to present some of the challenges faced at Kenyan University Libraries to form part of the research problem to be solved through software development as a partial solution, and to provide empirical evidence on other university libraries in Kenya demonstrating the need for software to automate referencing service. This research therefore undertakes to investigate the adoption and usage patterns of referencing services management software among postgraduate students.

Research Objectives

The aim of this study is to find out the user adoption and usage patterns of referencing services management (RSM) software among postgraduate students in Kenyan public universities. This study is grounded in the Technology Acceptance Model, which is one of the most widely used theories that explain why users accept and utilize technology. Therefore, the study endeavors to ascertain the level of adoption and use of referencing services management software among post graduate students with a view of designing a framework that can be applied to a wider scope of post graduate students

Literature Review

Understanding Referencing Services

In the information age, a lot of varied information is accessible across all sectors of the economy. To unite available raw data in actionable structures, it is necessary to consist of pieces of information in such formats that it can be later accessed to refer to the origins. In academic inquiry, the student is called upon to conform to certain standards in referring to the original sources of information that are used. This makes it simpler for one looking for service to confirm the precision and credibility of the data source. That difficulty is solved through referencing, which is that part of an academic document used to concede the sources of the materials used in its creation.

Library Referencing Automation Software (LiRAS) was the first genre that was developed, and it was mainly designed for streamlining the day-to-day running of libraries. The development of referencing services management software can be perceived as closing the gap that is perceived to have existed in the LiRAS. Referencing services management software helps in the referencing transaction in a unique way. They enhance customer service delivery by providing reliable and verifiable data efficiently. Software developers are now creating modules that work on top or in conjunction with a LiRAS; the hallmark of these semi-independent systems is their ability to be customized to suit the unique needs of the library that is supposed to be served by it.

There have been many studies that have used the Technology Acceptance Model to determine the level of adoption of the software.[20,24] This framework and many others would normally assume that the potential users of TASDs are the librarians; however, this study differed by saying that the potential users of the TASDs are the postgraduate students. It has been commonly accepted that if the postgraduate students are satisfied, then the staff will also be satisfied.

Additionally, when choosing a particular TASD, the expectation of a potential customer by the age of 35 years old is different from an individual aged 26 years and below, and it is on this assumption that the children, adolescents, and adult mental health theory has been advocated. When the postgraduate student leaves the institution, he or she would have spent about 5 to 7 years at that particular institution. They may have used the supported OPAC for most of their research, coupled with the assistance of software like Koha, Mendley, Zotero, Endnote and even APA among many to write many dissertations, and spent a minimum of three years there if he or she is a full-time student.[23,18,22,21,20] It is therefore appropriate to know their user pattern of software offered by the universities in Kenya.

Conceptual Framework

This study adopted the unified theory of acceptance and use of technology (UTAUT) model. This model was developed in order to more accurately predict and explain users' intentions and usage of technology and the success of an organizational digital library in academia in Kenyan universities. The UTAUT model is based on the communications and CRM user assessment, and this model presents a comprehensive approach that allows information system (IS) researchers and practitioners to explain end-user technology acceptance and usage behavior from various perspectives, including the network effects of user acceptance and usage behavior. The theory assumes that user technology acceptance behavior is shaped by the economic and cultural standards of the societies, which impact user expectations of the technology.

By conducting a survey of over 100 studies that relate to user acceptance and use of technology, a comprehensive model was developed that describes technology adoption and behaviors and intentions within the seven leading theoretical models of individual acceptance behavior: the theory of reasoned action, the theory of planned behavior, the technology acceptance model, the motivational model, the model combining TPB and TAM, the macro-level acceptance model, and the social cognitive theory (figure 1).

Figure 1. Conceptual Model

Theoretical Foundations

An example of a paradigm that may frame the study is a hierarchy of needs. It posits that certain needs have to be met before people can move on to carry out tasks or use themselves to their full potential. This hierarchy is depicted as a pyramid with three basic levels of need: the first level being basic or lower physiological wants, including the need for food, water, and sleep. After this, the need for safety and security has to be met before higher-level wants such as the need for love and belonging, self-esteem, and the realization of one's full potential as an individual. It continues to argue that once a need is met, it ceases to be the primary motivator, and these changes depending on what people's prioritized wants are at any given time. It is possible that users

of referencing services management software could have prioritized wants and could be foregoing the use of these systems.

As information systems are known to be toolkits for facilitating routine tasks enhanced by software, interpreting the technology acceptance model could be adapted to explain why referencing services management software at universities is not being fully utilized by postgraduate students. The model seeks to explain why individuals accept and use IT. It suggests only two main determinants of user acceptance: Perceived Usefulness and Perceived Ease of Use, which lead to the user's attitude towards a system. When there are good attitudes toward using the system, this leads to the system being used. It postulates that the purpose of a system and the effort required to use the system intercede user attitudes and consequently actual system usage. It has been proven to be a powerful and effective model in information technology research.

Institutional Resources in Referencing Services Management Software

The libraries globally have been adopting library automation systems and have left reference services management to be manual and carried out both by the library assistants and the students. It was not until 2009 that Columbus State Library introduced the reference services software for use by the students. In this library, at least each public service desk was made to have a laptop that was loaded with the reference services management software. When a conversation ended, a report was submitted immediately. The software has one of the following options in the drop-down menu: 'It was received in person,' 'by telephone,' or 'by live chat.' The user's name and contact information were captured in addition to the date and time of the question and the targeted deadline for its completion. The transaction was logged in the library's email service and assigned to a primary reference shift at the desk. Adopting and integrating the reference services management software is a difficult task for many libraries despite the many benefits that are associated with such systems.

Many reference desk staff could be overwhelmed using the new systems and could be at risk, given their work could appear to decrease in the public's eye as much of the work is being conducted at the reference desk on the university's budget. Additionally, various staff could get confused about the ways in which the program works, something that is inherent at the early stage of adoption of the program. The policy and training discussed in this case study may assist library managers in overcoming these barriers.

Ease of Use of Referencing Services Management Software

Referencing services management software can both be remote, on site or cloud-based tool used in libraries, including academic libraries specifically in Kenya.[20] There are many referencing services management software options available. It is a web-based system designed to not only provide the library with statistics to support future service development but also to serve as a single point of contact for users. In other words, referencing services management software enhances, develops, and adds value to the traditional reference librarian service in an academic library.[21,23] The researchers argue that reference services management software is an important tool for managing inquiries and user education in an academic library.

Referencing services management software provides effective communication with users, efficient query management, and supports resource discovery technology. Additionally, the software allows for interaction between librarians and users, providing a feedback-based support service. Several referencing services management software packages are used in libraries across the world.

Referencing services management software packages should provide feedback-based support services and analytical data feedback for managing queries and providing feedback. Referencing services management software can also assist in generating reports for library management, particularly in supporting information literacy and library induction for postgraduate students.

Training Impact of Referencing Management Software

No study has been conducted in Kenya to examine postgraduate students' interaction with a library used to support their learning.[16] This study is taking place in a higher education context in Kenya, where library provision and changes in service delivery are also occurring. More specifically, there have been changes in the curriculum to include a stronger emphasis on independent research programming, particularly focusing on the postgraduate users of the library. This research unit is designed to investigate this and report on how software has the potential to support postgraduate induction and information literacy.

Adoption and Productivity of Technology in Academic Libraries

Academic libraries in the developed world have embraced technology in service delivery and operational practices and factors that influence the adoption of technology in library service delivery include institutional support, staff training, and the readiness of library staff and users.[34] Resistance to change, personnel issues, and limited resources, among others, are challenges in the integration of technology in library services. Libraries have a diverse technology adoption rate, which is influenced by varied regional, economic, and institutional factors.

Recent studies on the adoption of library technology have focused on case studies of a specific type of technology and its specific use. Global research on the adoption of technology in academic institutions may provide an opportunity for comparison of the domestic study with international standards and how the domestic study compares to the trend against the global perspective. Furthermore, the influence of technology adoption on user satisfaction and service efficiency is crucial.

In sub-Saharan Africa, there are few studies that have examined technological adoption in libraries. A survey was conducted to find out the use of e-resources, user expectations, and best practices for academic libraries in Ghana.

Perceived Relevance Referencing Services Management Software

The study's findings revealed that most students have some level of skill in utilizing e-resources, but many students hardly use those skills whereby the students preferred e-books to e-journals. A study was carried out on the use of electronic resources in academic libraries in the East African region. The findings of the study show that libraries with more recent technologies often had more users of their information resources and allocations.[20,22] A study on scientific, technical, and medical information usage among academic scholars in Gombe State revealed that academic scholars were using the information as it saves them time and effort to access, it and thus have become dependent.

METHOD

This study aimed to investigate the adoption and usage patterns of referencing services management software among postgraduate students in Kenyan universities. A seed framework was used to guide the investigation of postgraduate students' adoption and usage patterns of referencing services management software. A sequential exploratory design approach consisting of a qualitative phase followed by a quantitative phase was adopted for this study based on the research framework. The qualitative phase involved the collection of data using semi-structured interviews and focus group discussions.

The quantitative phase was guided by the findings of the qualitative study and will administer a survey. The data collection process used in this research was a survey using a questionnaire with open- and closed-ended questions. The interview guide and survey instrument to used were developed from an exhaustive literature review of studies that had been conducted in Kenya and other countries around the world. This ensured our interview guide and survey instrument were valid, reliable, ethical, and free from bias, considering this study concerned human subjects. Ethical considerations were observed in the data collection process by obtaining informed consent from the participants. Anonymity, confidentiality, voluntary participation, and privacy of the participants were ensured in this study. Possible sources of bias in the research included self-selection bias and sampling bias in data collection. These were countered through the sampling procedure, ensuring a high participation rate and a comprehensive data collection procedure from the selected participants in the study.This study employed a quantitative research design to investigate the factors influencing the adoption and productivity of Reference Services Management (RSM) software among postgraduate students and faculty members. The research focused on four predictors: ease of navigation, institutional resources, training impact, and perceived relevance. Data was collected over a period of five months using a structured questionnaire, which was distributed through WhatsApp groups, Facebook forums, and direct contact with students and faculty. A non-probability convenience sampling method was used to recruit participants. This method was appropriate, given the reliance on accessible channels and the voluntary nature of participation. The target population included postgraduate students and faculty members from different academic departments. 205 responses were collected, exceeding the required sample size 169, as determined by G*Power 3.1.9.7. The sample size was calculated using the following parameters: an effect size of 0,15 (medium), a significance level of 0,01, a power of 0,95, and four predictors. The structured questionnaire consisted of two sections: demographic information (e.g., age, gender, education level, academic role, and familiarity with RSM software) and study variables (Ease of Navigation, Institutional Resources, Training Impact, Perceived Relevance, and Adoption and Productivity).

Responses were collected using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Data analysis was conducted using SPSS 30.0. Descriptive statistics summarized demographic data and provided an overview of responses, while multiple regression analysis tested the relationships between the independent variables and the dependent variable (Adoption and Productivity). The regression model was validated to ensure sufficient statistical power and accurate interpretation of results.

Research Design

Upon reviewing the pertinent literature, a mixed methods approach was identified as the most suitable investigation strategy to generate comprehensive data that addresses the objectives of the study. To achieve these ends, a quantitative element was evaluated as critical to establishing patterns of adoption and usage

from the perspective of a larger postgraduate population, while a focused qualitative element was deemed necessary to obtain an in-depth explorative understanding of end-users wide-ranging experiences with referencing services management software. The exploratory nature of this study necessitated the adoption of the case-study strategy, which aims to build holistic descriptions and understandings of the phenomenon, enabling the association of multiple perspectives and sources of evidence. This research applied a sequential exploratory mixed-methods research design, which is a three-phase process. In this instance, the chosen design initially focused on the collection and preliminary analysis of quantitative data to inform the following qualitative phase.

A purposive sampling strategy was used for the study. The cluster sampling method was employed to divide thirty-one postgraduate campuses of six universities into five exclusively geographically defined strata. Participants were randomly selected from the five clusters. Potential participants in the qualitative phase were identified and contacted via email on a voluntary basis. Over two months, a total of 205 postgraduate students participated in the survey.

Additionally, twenty-five key informants including librarians and ICT technicians from randomly selected 20 Kenyan universities participated in individual interviews. This research was conducted within three months, from October to December 2024.

To ensure the validity of this study, an additional data source was selected. It was appreciated that the findings obtained through the survey might act as a barrier to truth in interview studies as interviewees are likely to have provided socially desirable responses due to the self-reported questionnaire findings; nonetheless, the correlation between responses and the individual narratives provided was evaluated by the triangulation of the sources of evidence.

Additionally, there was a selection bias on the part of the researcher since both the survey and the interviews were conducted by a postgraduate student who worked with one of the universities at the time of data collection, which again reduces the authenticity of the data. However, caution was exercised to obtain responses from a wide variety of students from different universities.

Data Collection Methods

The research used instruments such as questionnaires and interviews designed using a Likert rating scale and multiple-choice questions to capture a comprehensive set of data on the experiences and patterns of use of the RMS. The researchers chose to interview the librarians who were using the software due to their competence and experience in the field and the postgraduate students because of their knowledge of the current trends in academic libraries.

The two groups of users were chosen to ascertain that the software was being used by users as intended by its designers. During the development of the instruments, a pilot was carried out, and the feedback was used to modify some of the questions to ensure reliability. Once effectiveness was satisfactorily achieved, the questionnaires were then distributed to the postgraduate students, while short, structured interviews were conducted with the authorized RSM software users who were the librarians.

Ethical considerations such as obtaining consent from respondents are also acknowledged, and the challenges of collecting the data are highlighted, such as obtaining the relevant authority for approval to collect data in the Kenyan academic libraries, and low response rates caused partly by inconvenience and differing user priorities in scheduling and use of the Internet. All these were necessary to facilitate research findings through rigorous methods of data collection.

Sampling Technique

A non-random method of sampling was employed in this study since it targeted postgraduate students studying Library and Information Science/Documentation and individuals working in libraries from providers and users of referencing services management software who hold managerial and supervisory positions in various academic and special libraries in Kenya. This implies a purposive sampling procedure was used.

Purposive sampling was chosen as the sampling method to provide exhaustive and reasonable results in relation to the face and content validity of postgraduate students undertaking research in all universities in Kenya. To this end, all individuals from the selected universities were informed of the research objectives and their consent sought before data collection.

Data Analysis Techniques

Descriptive data analysis techniques were used to analyze data. Data was presented in the form of frequency tables. Descriptive statistics such as percentage, mean, and mode were used to analyze the data. The constructs, components, and items were analyzed and interpreted independently. Associations between variables were tested using Chi-square tests. The study held a significance level of 0,05. Data screening was carried out to assess missing values, normality, and multiple responses. Prevalence rates for the different

reviewing software applications were calculated by scoring each respective application. Data was analyzed in the form of frequency distribution. The review of all the variables ensured consistency and completeness while suitably fixing any potential errors. All the relevant demographic data was analyzed descriptively (frequency counts, percentages, measures of central tendency, and measures of dispersion). Data cleaning was performed to ensure the data integrity is not compromised.

RESULTS

In this section the researchers present the research data that has been collected and processed to ascertain, among other things, the existence of a gap and loopholes for which a sophisticated software solution can be tailor-made. The researchers generally cover all the specific objectives of the research and the research questions that have been answered. The previously covered literature is designed for a particular purpose providing a basic understanding of the existence and the nature of the gap that needs bridging in so far as a sophisticated software solution is concerned. It thus informs, prepares, and paves the way for the collection of data, which, if applied properly, is able to provide proof of the existence of the gap and loopholes. It is to this primary purpose of data collection and display that this chapter is devoted. The research study primarily targeted postgraduate students in Kenyan universities.

The Ministry of Education in Kenya had recently made it a policy matter of national concern that university education in the country ought to be research-led. Empirical studies have also shown that software products that are developed and used in the developed world are often found to be initially inadequate when adapted for use in the less developed world. Therefore, for a university undergraduate or postgraduate student in Kenya, the academic research process is the primitive hunting ground for the needed knowledge, appreciation, application of research methods, and participation in research-led learning in the industries in the third wave.

Demographic Information

The descriptive statistics provide an overview of the participants' demographic and contextual characteristics, offering valuable insights into their use of Reference Management Software (RMS).

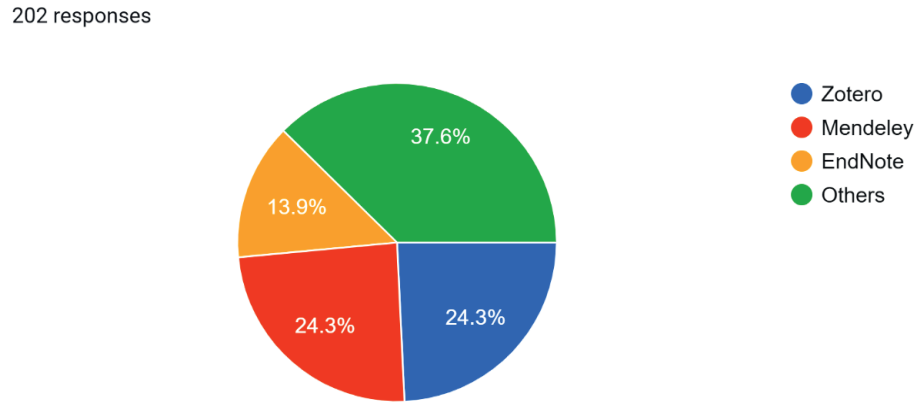

Figure 2. RMS tools

Above, among the 202 respondents, Mendeley and Zotero emerged as the most used RMS tools, with (49/24,3 %) apiece of the participants indicating their preference for them, followed by EndNote (28/13,9 %) and other, RMS which collectively scored (76/37,6 %). This highlights Mendeley's and Zotero popularity among postgraduate students and faculty members.

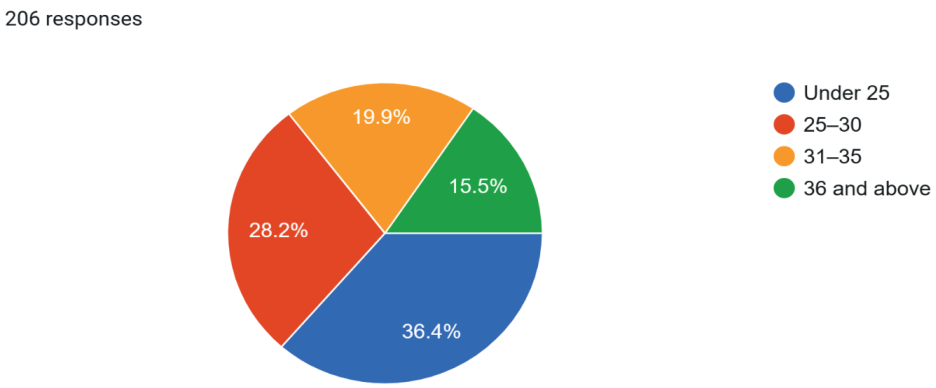

Figure 3. Age distribution

In figure 3 above in terms of age distribution, most of the 206 respondents (75/36,4 %) were under 25 years old, followed by those aged 25–30 (58/28,3 %), 31–35 (41/19,9 %), and 36 and above (32/15,5 %). This suggests that younger individuals, particularly postgraduate students, were more engaged using RMS tools.

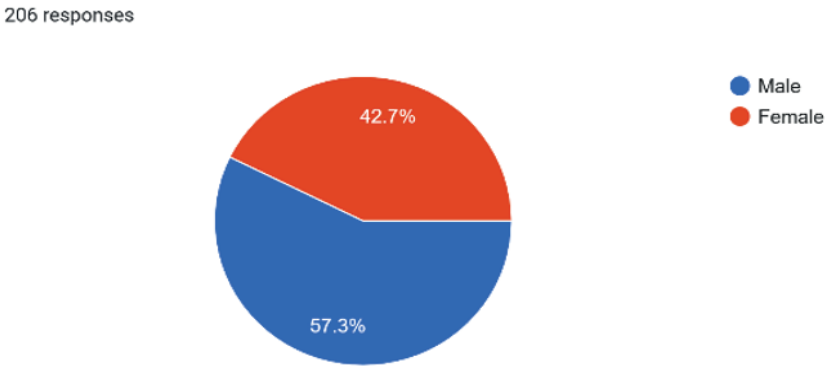

Figure 4. Gender

In figure 4 above regarding gender, (118/57,3 %) of respondents were male, while (88/42,7 %) were female, indicating a slightly higher participation rate among male respondents.

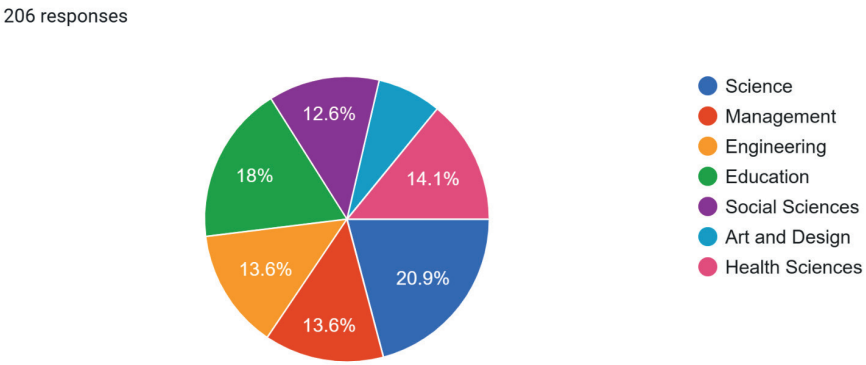

Figure 5. Fields of study

The fields of study of the 206 participants were diverse, with the highest representation from Science (43/21,0 %) and Education (37/18,0 %). Health Sciences pooled (29/14,1 %)Engineering and Management each accounted for (28/13,6 %) of the samples, Social Sciences represented (26/12,6 %), and Art and Design had the lowest participation at (29/7,3 %). These results suggest that RMS tools are utilized across various disciplines, with higher engagement in Science and Education.

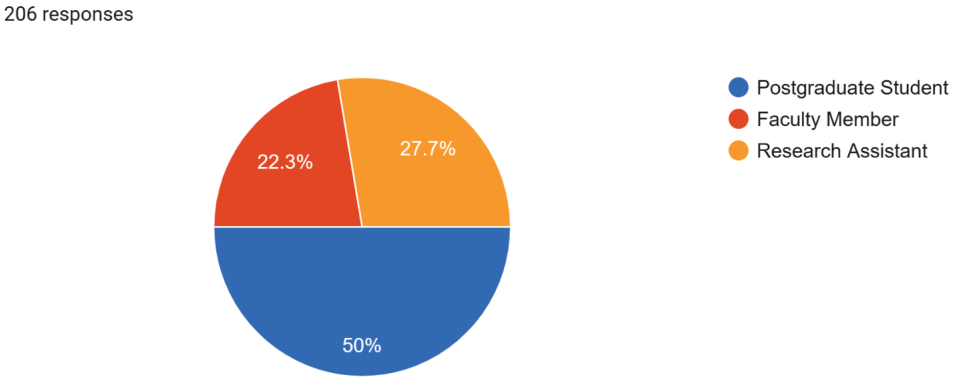

Figure 6. Roles

While examining participants' Academic/Institutional Information: current roles, (103/50,2 %) identified themselves as being postgraduate students, (57/27,7 %) as being engaged in research assistantship roles, and (46/22,3 %) represented faculty members. This distribution underscores the strong involvement of postgraduate students as primary users of RMS tools.

https://doi.org/10.56294/mw2024622

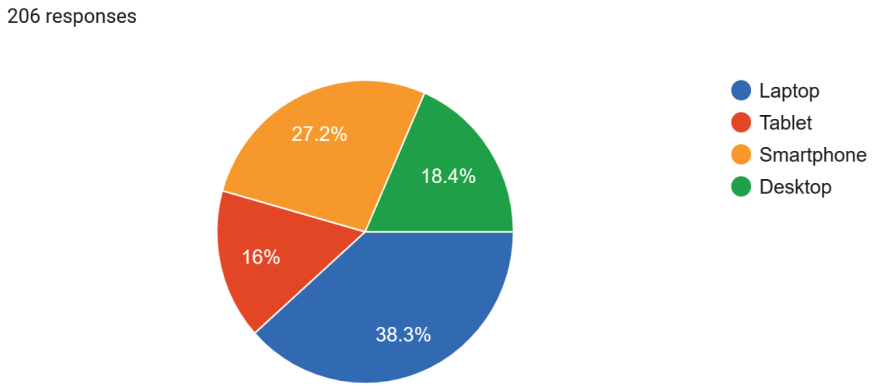

Figure 7. Devices used

Regarding the devices used to access RMS/LMS, in figure 7 above, of the 206 respondents, laptops were the most common (79/38,3 %), followed by smartphones (56/27,2 %), desktops (38/18,4 %), and tablets (33/16 %). These figures indicate a reliance on portable devices, particularly laptops, for research-related activities.

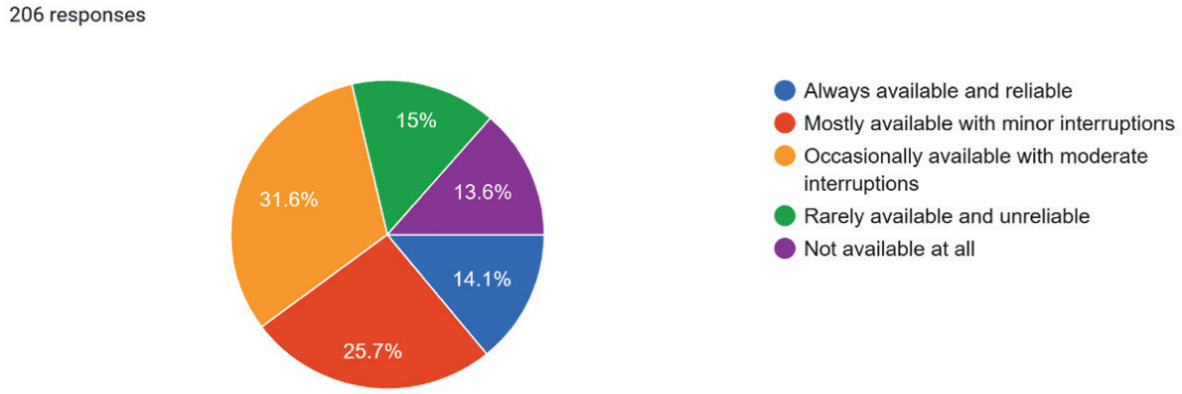

Figure 8. Internet Access Availability

Regarding internet access availability in figure 8 above, (65/31,6 %) of respondents reported occasional availability, while 53/25,7 % mainly indicated available internet. However, (31/15 %) and (28/13,6 %) stated that their internet access was rarely or not available, respectively, reflecting challenges in connectivity that may impact their ability to use RMS tools effectively.

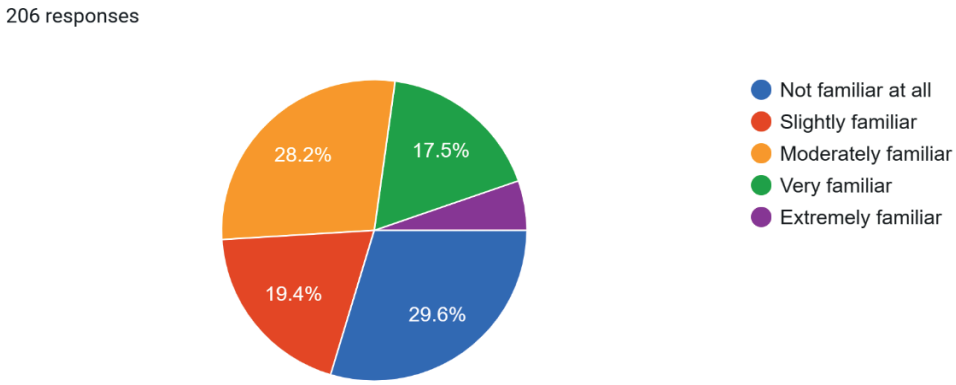

Figure 9. Technology usage

Respondents were asked about technology usage and if they were familiar with the RMS: and in figure 9 above, (61/29,6 %) were not familiar at all with the RMS, (58/28,2 %) were moderately familiar with the RMS, (40/19,4 %) were slightly familiar with the RMS, (36/17,5 %) were very familiar with the RMS and (11/5,3 %) were extremely familiar with the RMS

https://doi.org/10.56294/mw2024622

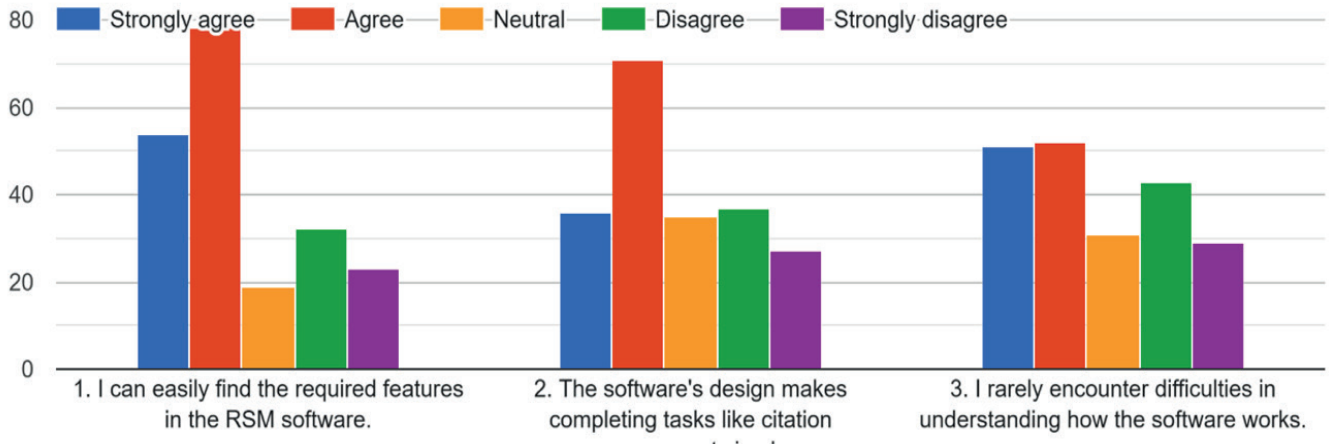

Figure 10. IV1: Ease of Navigation

IV1: Ease of Navigation

Bar graph IV1:1, when participants were asked to indicate on a five pointer Likert scale ease of navigation while using referencing tools 54 participants strongly agreed, 78 agreed, 19 were neutral, 32 disagreed while 23 strongly disagreed.

Bar graph IV1:2, on software design ability to complete tasks like citation management in a simple way 36 strongly agreed that the RMS did complete the tasks in a very simple way, followed by 71 who agreed, 35 neutral, 37 disagreed, while 27 strongly disagreed.

Bar graph IV1:3, participants were asked to stated whether they encountered difficulties on understanding how the software worked 51 agreed that they rarely encountered any difficulties, followed by 52 who agreed, 31 neutral, 43 disagreed and 29 disagreed which implied that they actually found it very difficult to understand the software.

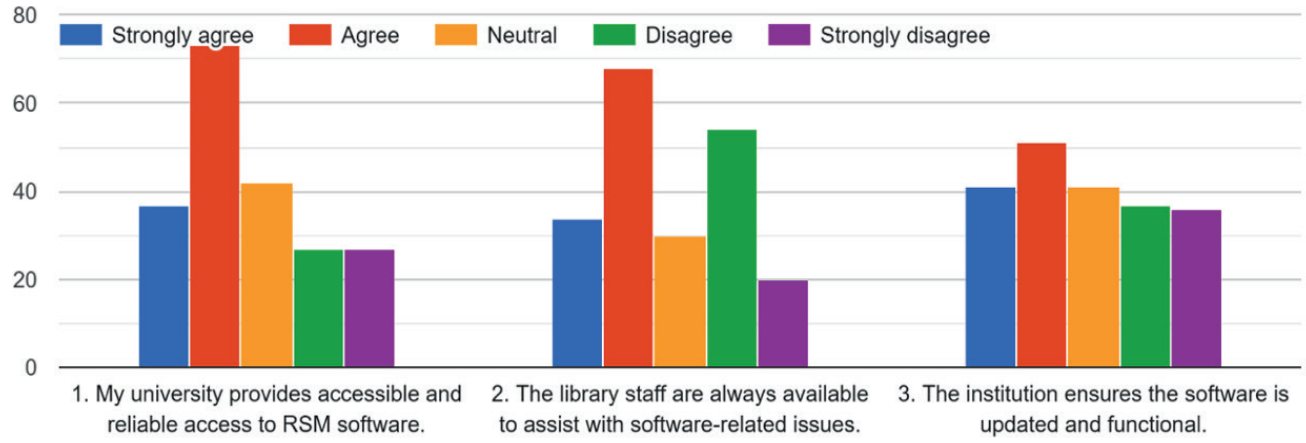

Figure 11. IV2: Institutional Resources

Bar graph IV2:1, a question to verify university provision of RMS and its relaiblity, out of 206 repondents; 37,73,42,27 and 27 Strongly aggreed, agreed, neutral, disagreed and strongly disagreed respectively with the fact that their respective universities provided accessible and relaible RMS. It translates to 110 responses who favoured their universities whereas 54 were out of favour of their respective universities providing RMS.

Bar graph IV2:2 the same respondents were asked to state whether the library staff were always available to assist with RMS software related issues out of 206 repondents; 34 strongly agreed that librarians were readily available,68 agreed that librairans were available, 30 were neutral, 54 said that the librarians were not available whereas 20 strongly said that the librarians were never available. It translates to 102 in favour of against 74, a clear indication if you consider the neutral responses , it seems that theres some great levels of ignorance and hence it adds to the 74 who strongly and diagreed and hence a tally of 104 is achieved.

Bar graph IV2:3 whether the software stays uptodate and fucntional or not out of 206 repondents; 41 stronlgy agreed, 51 agreed, 41neutral, 37disagreed and 36 strongly disagreed that the softeare were updated and functional.

https://doi.org/10.56294/mw2024622

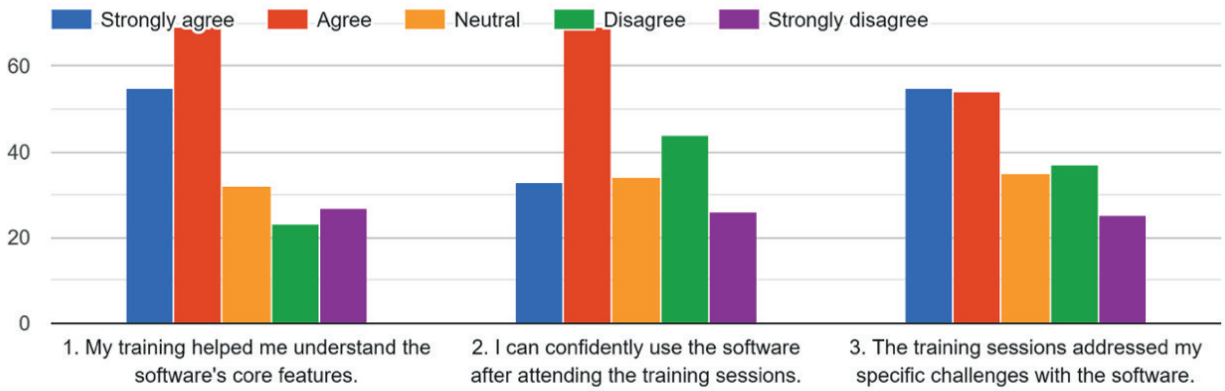

Figure 12. IV3: Training impact

Bar graph IV3:1, libraries at times mounted trainings on the RMS and hence the respondents were asked whether the training they received helped them understand the software core features out of 206 repondents; 55 strongly agreed, 69 agreed, 32 neutral, 23 disagreed and 27 strongly disagreed that libraiees mounted RMS training.

Bar graph IV3:2, confidence after training of use of RMS was tested on the respondents and out of 206 repondents; 33 strongly agreed, 69 agreed, 34 neutral, 44 disagreed, 26 strongly disagreed.

Bar graph IV3:3 whether the training sessions addressed individual specific RMS challenges, out of 206 repondents; 55 strongy agreed, 54 agreed, 35 neutral 37 disagreed and 25 strongly disagreed to have benefitted in addressing their personal challenges after training.

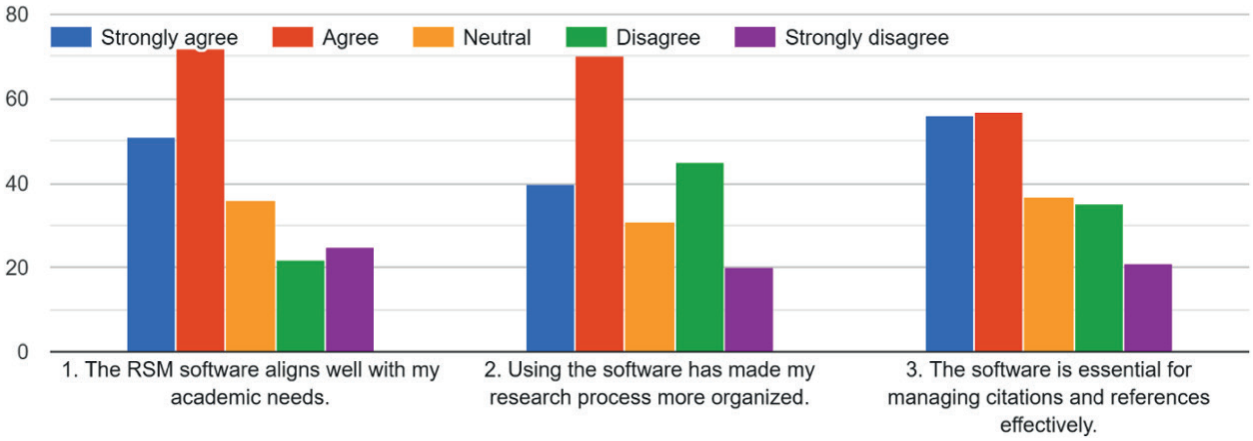

Figure 13. IV4: Perceived Relevance

Bar graph IV4:1 on perceived relevance of RMS out of 206 respondents; (51/24,7 %), strongly agreed, (72/34,9 %) agreed, (36/17,4 %) neutral, (22/10,6 %) disagree and (25/12,1 %) strongly disagreed.

Bar graph IV3:2 on using the software that has made research process more organized, out of 206 respondents (40/19,4 %) strongly agreed, (70/33,9 %) agreed, (31/15 %) neutral, (45/21,8 %) disagreed and (20/9,7 %) strongly disagreed.

Bar graph IV3:3 on the software being essential for managing citations and references effectively, out of 206 respondents (56/27 %) strongly agreed, (57/27,6 %) agreed, (37/17,9 %) neutral, (35/16,9) disagreed and (21/10 %) strongly disagreed.

Bar graph DV:1, respondents were asked whether they used RSM software regularly to manage academic references out of 206 repondents; 58 strongly agreed, 67 agreed, 34 neutral, (21/10 %) disagreed and 26 strongly disagreed.

Bar graph DV:2, on the software improving significantly research efficiency out of 206 repondents; 32 strongly agreed, 87 agreed, 28 neutral, 45 disagreed, 14 strongly disagreed.

Bar graph DV:3, on whehter the respondents would recommend the RMS they used to other postgraduate students, out of 206 repondents; 79 strongly agreed to recommend, 53 agreed to recommend, 36 remained neutral on recommending, 20 stated they wont recommend and 18 strongly stated that they wont recommend to other postgradjuate students.

https://doi.org/10.56294/mw2024622

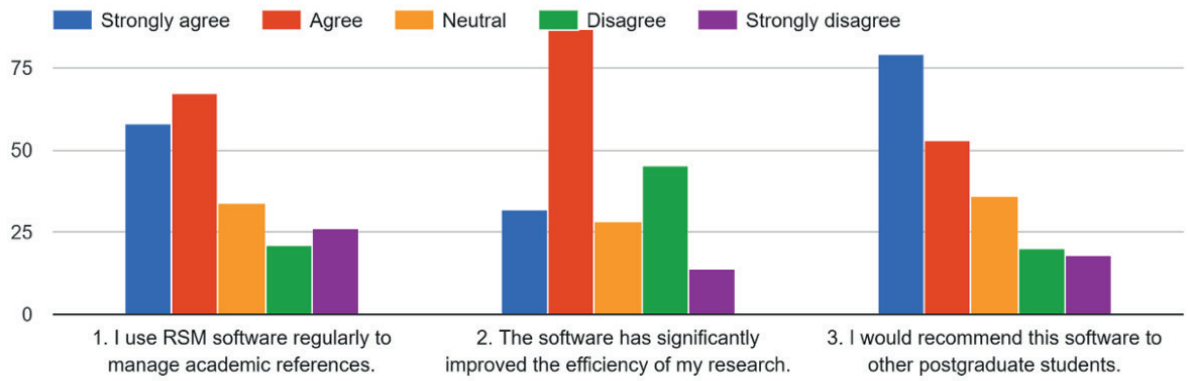

Figure 14. DV: Adoption and Productivity

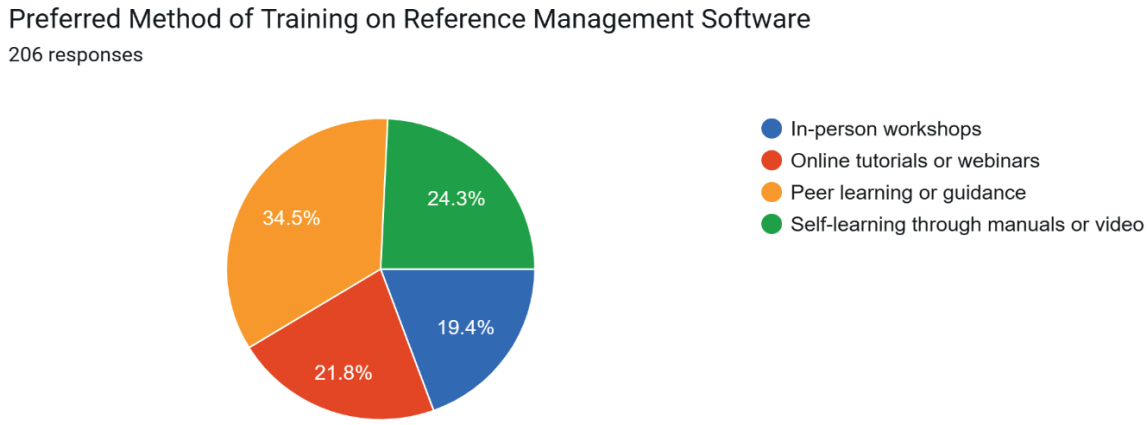

Figure 15. Participants' preferences for training methods

Finally, in figure 15, participants' preferences for training methods showed that (71/34,5 %) preferred peer learning and guidance, followed by (50/24,3 %) who favored self-learning through manuals or videos, 45/21,8 %) opted for online tutorials and webinars, and (40/19,4 %) preferred in-person workshops. These preferences highlight the importance of flexible and collaborative learning methods for mastering RMS tools.

Rate of Usage of Referencing Services Management Software by Postgraduate Students

Most of the postgraduate students surveyed indicated that they use the referencing services management software every week. Many of them indicated doing so; a smaller percentage indicated they use the software between two to three times a month. Only a small fraction of the students surveyed indicated they had never used the software. The breakdown of software usage by university indicates some variation in usage rates depending on the institution. These figures are depicted graphically.

Table 1. Reliability Cronbach Alpha

Variables	Constructs	Cronbach Alpha values
Ease of Navigation	3	0,874
Institutional Resource	3	0,845
Training Impact	3	0,862
Perceived Relevance	3	0,868
Adoption and Productivity	3	0,870

To ensure validity and reliability, the instrument was reviewed by subject matter experts and piloted with 20 respondents. As shown in table 1 for all constructs, Cronbach's Alpha values exceeded the acceptable threshold of 0,7, indicating high internal consistency.

Is the Software Effective?

While the majority of users indicated that they find it very effective to use the software, a smaller percentage of them think that it has been "somewhat effective." Only a small fraction indicated that it had

been ineffective. The software is more likely to be found effective among those who have received appropriate training than those who have not. Slightly more than half of the students indicated that they have received appropriate training on the software. More males have had training in the software than females. There is an indication from the satisfaction levels that students tend to be more satisfied with the software during its initial stages of use but become less satisfied as they become more acquainted with it. There is no gender-based differences in this regard. The reasons students gave for being satisfied with the software include efficiency, organization, interface, and accuracy of information. Students using the software are facing challenges such as slowness in generating reports, inadequate training, and staff support; some were not even allowed access to the software, though they were the ones who would be responsible for its use.

Table 2. Hypotheses results

Hypothesis	Result
H1: Ease of Navigation significantly influences Adoption and Productivity.	Supported
H2: Institutional Resources significantly influence Adoption and Productivity.	Not Supported
H3: Training Impact significantly influences Adoption and Productivity.	Supported
H4: Perceived Relevance significantly influences Adoption and Productivity.	Supported

The individual contributions of the predictors are detailed in table 2 and table 3 summarizes the hypotheses. The results show that Ease of Navigation: The results (B = 0,303, p < 0,001) demonstrate that ease of navigation significantly and positively impacts adoption and productivity, highlighting the importance of user-friendly software design. Institutional Resources: With a coefficient of B = 0,027 and a p-value of 0,664, institutional resources do not significantly influence adoption. This suggests that while resources are available, they may not be effectively utilized or communicated to users. Training Impact: The results (B = 0,242, p < 0,001) indicate that training programmes significantly enhance RSM software adoption and productivity, emphasizing skill development's role in driving practical usage. Perceived Relevance: As the most potent predictor (B = 0,338, p < 0,001), perceived relevance plays a critical role in adoption, suggesting that software alignment with user needs greatly influences its acceptance and effectiveness.

Adoption Rates of Referencing Services Management Software

The point where referencing services management software adoption was measured indicates that approximately 22 % to 27 % of postgraduate students are early adopters of the technology, ranging from 26,67 % of postgraduate students at one university to 22,67 % from another. The rest of the postgraduates (73 % – 79 %) form the early majority of referencing services management software. However, it is insightful to mention that some universities have over 10 % of postgraduate students who have never operated the referencing services management software. Whether this is due to a lack of awareness of the existence of referencing services management software, a lack of a demo factor to capture the market, or high switching costs to transition from manual operations to electronic technology was beyond the scope of this study. From another perspective, users of referencing services management software were assessed by course discipline. Health Sciences postgraduates had the highest adoption rates, ranging from 26 % of postgraduates at one university to 34 % of postgraduates at another. This could be because medical postgraduates may already possess familiarity with the technology compared to other disciplines such as social science, education, and arts. Evidence exists indicating that library users' awareness of a new service is a factor in its use. Training could have contributed to the high adoption rates of referencing services management software of that nature. Other reports have noted institutional initiatives made in the provision of online referencing services, and its adoption is attributed to user training programs.

Presently, several proprietary solutions have attracted a good deal of attention for such services. With technological advancements, social networks, and free availability of several referencing choices within documents, one might argue that the need for such applications would be limited. This paper aims to determine the adoption rates of referencing management applications by postgraduate students studying in Kenyan public and private universities. It is evident that the two factors are predisposing conditions that influence postgraduate students' behavioral usage. In order to understand the pattern of use and factors that would encourage increased use for enhanced learning outcomes among postgraduate students studying in Kenyan universities, a survey was conducted. It is hoped that this study would provide empirical evidence that could be employed to encourage the use of such services for the increased learning achievement of postgraduate students. There is very little empirical evidence that could be employed to encourage the use of such services for the increased learning achievement of postgraduate students. The software could be employed by targeting early adopters who would subsequently share their experiences, encouraging increased use over time. With the

increase in the number of students in Kenyan universities, referencing management applications would be a good bet to sustain academic libraries.

Table 3. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0,878[a]	0,770	0,766	1,68590	0,770	167,704	4	200	<0,001	1,795

Note: a. Predictors: (Constant), Perceived Relevance, Institutional Resource, Training Impact, Ease of Navigation b. Dependent Variable: Adoption and Productivity

The results in table 3 show a strong model fit, with an R-value of 0,878 indicating a high correlation between the predictors and the dependent variable. The R Square value of 0,770 demonstrates that 77 % of the variance in adoption and productivity is explained by the predictors. Additionally, the adjusted R Square of 0,766 confirms the model's robustness even after adjusting for the number of predictors included.

Table 4. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1906,648	4	476,662	167,704	<0,001[b]
	Residual	568,455	200	2,842		
	Total	2475,102	204			

Note: a. Predictors: (Constant), Perceived Relevance, Institutional Resource, Training Impact, Ease of Navigation b. Dependent Variable: Adoption and Productivity

As shown in table 4, the ANOVA test results confirm the statistical significance of the regression model ($F(4, 200) = 167,704$, $p < 0,001$). This indicates that the independent variables collectively have a meaningful impact on the dependent variable.

Usage Patterns among Postgraduate Students

This section sought to establish the usage patterns and identify the best aspects regarding the functionality of referencing services management software as perceived by the postgraduate students who have used it in their coursework. table 5 reveals that the majority of the postgraduate students who were aware of the existence of the software had either used it occasionally or intensively. However, there were also a few respondents who used it occasionally or were not aware of the software.

The high usage rate can be partly due to the stiff penalties imposed for any discrepancies noted when theses and projects prepared by the students are compared by attributing format specifications using referencing management applications.

The evaluation also sought to establish the strong points of the software to assist in adding features and improving functionality in the next generation of similar applications. The highest number approved of the ease in adding references into the different categories available, followed closely by the ability to automatically generate references in keeping with the application used.

Table 5. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,469	0,376		3,908	<0,001
	Ease of Navigation	0,303	0,063	0,319	4,803	<0,001
	Institutional Resource	0,027	0,062	0,028	0,435	0,664
	Training Impact	0,242	0,061	0,253	3,928	<0,001
	Perceived Relevance	0,338	0,063	0,346	5,370	<0,001

Note: a. Predictors: (Constant), Perceived Relevance, Institutional Resource, Training Impact, Ease of Navigation b. Dependent Variable: Adoption and Productivity

https://doi.org/10.56294/mw2024622

Other benefits identified by a significant number of the postgraduate students included the achievement of enhanced search and retrievability of research resources and integration and use of referencing management applications available as browser extensions with other bookmarking applications. However, finding full capabilities, especially in tracking the references that have been cited and the organization of retrieved references, and the ability to add metadata from paper downloads was considered to be inadequate.

DISCUSSION

The findings from this research addressed a number of research questions in relation to the use, adoption, and satisfaction of referencing services management software and review of existing studies and competitive analysis. The software platform has adopted and incorporated emerging technologies into research processes. The research questions were used to explore three interrelated concepts through Likert scales in an online survey of university postgraduate students. The results demonstrate that the adoption of innovative software is an important part of postgraduate students' work and that the software is also actually used, appreciated, and provides desired satisfaction as students look for value.[43]

The availability of this tool in the universities is seen to be important. By adopting the use of this software, students demonstrate that they are willing to tailor innovative technologies into their environment. The mean scores presented in the results showed a positive result indicating that the software under review was providing great value on some of the aspects under investigation. The management team of the software, especially those involved with deployment, are at an advantage because the software is being adopted and used.[44]

Their view of the software under rollout is also important as it was adopted before and used during the research process. Should there be any training needed for students during the periods while at the university, it can be conducted. Note that respondents in this study answered questions after being provided with a direct indication that it is important they expect its availability at the university where they pursue their education.[45,46]

The regression analysis demonstrated that Ease of Navigation, Training Impact, and Perceived Relevance significantly influence adoption and productivity. Ease of Navigation is a key predictor, emphasizing the need for an intuitive, user-friendly software design that minimizes barriers to usage. Training Impact also played a crucial role, highlighting the value of structured, skill-oriented programs that equip users to leverage the full potential of RSM tools.[47,48]

The significant contribution of Perceived Relevance reinforces the importance of aligning software features with users' academic and research needs.[49]

In contrast, Institutional Resources did not significantly impact adoption and productivity.[50] This finding suggests that resources may be available but are not effectively utilized or communicated to users, indicating a potential gap in institutional support mechanisms. These results underscore the multifaceted nature of software adoption, where usability, training, and relevance outweigh resource availability.[51]

Summary of Findings

This section presents a summary of findings from the study and relates them to the research objectives. The main objective of this study was to analyze adoption and usage patterns of referencing services software among postgraduate students in Kenyan universities. The first specific objective was to identify the available referencing service software commonly used by Kenyan postgraduate students.

The most common referencing services management software used by postgraduate students in Kenyan public universities was used by 55,3 % of all respondents, with significant usage at the University of Nairobi and Moi University.

The second specific objective was to identify the facilitators of adoption decision processes by Kenyan postgraduate students of referencing services management software. The facilitator identified with the highest usage was a recommendation from other users of the software.

A total of 87,8 % of the users of other facilitators used recommendations from other users of the same software.

The third specific objective was to determine how Kenyan postgraduate users of referencing services management software are employing the software to write their research papers.

The common tasks identified included searching for book information in the software database, tracking the publication status of wanted books, being involved in inter-library lending/request services, citing sources from books in the research paper, and searching for public library services.

The fourth specific research objective was to establish the limiting factors to effective use of referencing services software.

The results showed that users encountered limiting factors, which included problems with the software's removal performance, failure to register for the software service, and limited book listings.

The last objective was to suggest ways to overcome the limiting factors and measure their significance.

To establish the adoption rate and ascertain the usage patterns of referencing services management software, the study surveyed 205 postgraduate students from various public and private universities.

The findings indicated a software adoption rate of 57,1 % among the first respondents and a usage score of 6,06 among the 15 students. These findings are conclusive of the 44,8 % general software adoption rate and an overall usage score of 5,4, which is indicative of average application usage.

The cost, average number of non-adopters, and the average age of students indicate an incremental innovation mostly adopted by early and late majority students. Its expected that usage rates grow significantly over time as those who adopted in previous years begin to use the software in earnest. Bearing in mind that the students who took part in the survey were all IT literate, satisfaction levels were high, with the majority of the respondents strongly agreeing that the software will make referencing services delivery more efficient, relevant, and satisfying. According to the diffusion of innovation theory, if indeed customers are satisfied, the adoption rates will grow and the use of the software will increase.

The findings of this study will be useful to system developers, university librarians, managers, and academics. Furthermore, the study recommends similar surveys with larger sample sizes to extract additional knowledge in Kenya and extend to the rest of sub-Saharan Africa. This study set out to accomplish three objectives.

First, establish the adoption rate of referencing services management software by postgraduate students at various universities. Secondly, ascertain the period of adoption and its diffusion rate. Finally, investigate users' usage patterns and establish how user satisfaction may relate to the usage of the software.

From the survey's findings, it can be concluded that over 44,8 % adoption rate is good for technology in Kenyan academic libraries. Technology applications are tools of provision that managers can use as instruments in order to efficiently and effectively provide service and accomplish the goals and objectives of the organization. Furthermore, this adoption rate is very close to the expected rate of adoption using the mathematics of innovation and empirical diffusion models. The findings of this study are in accordance with prior studies.

Interpretation of Findings

Adoption and Usage of Referencing Services Management Software

The existing facilities characteristic has the following findings: 88 % of the respondents acknowledged the existence of reference-storing facilities in their institutions. Free access was the dominating aspect with a mean of 3,0624 (mean > 3).

Furthermore, with a mean of 2,6766 and a standard deviation of 0,50911, the responses were very varied. Most of the respondents hinted that institution-reposited resources were different from having free access to information.

In summary, the abundance of resources was generally low with a mean of 2,2051. After conducting some tests on the correlation between the numeric variables and the existence of the facilities, it was evident that accessible electronic information encouraged consumption with a Pearson's r of 0,1382. More interestingly, the act of encouraging consumption of scholarly materials using institutional e-resources was an initiator of propagation with a p-value of under 0,05.

These findings have direct implications on how information is accessed by postgraduate students. If many free scholarly materials are in wide range, students will benefit and find their searches from existing materials. However, this alone is not sufficient, as being trained on using subscribed scholarly materials and determining their respective search engines is important. Such training may have to be well regulated since there are some institutes not offering adequate training on scholarly materials and may not have the corresponding guidelines on how to consume these materials. While experiments have shown the need for trade-offs, the act of accepting trade-offs is another factor that will determine the well-being of both students and the funds of their institutions.

Data revealed that the act of sacrificing time and other resources towards the search, selection, and citation of scholarly materials had significant impacts with a p-value of less than 0,05. This means that to foster circulation of information on examining services made available by the library, it provides a channel to promote collaboration within the researcher-related courses.

Comparison with Previous Studies

On comparison with the studies where 65 % of students cited the need for reference, and referencing, guidance and writing programmes as their primary need, the findings of this case study illustrated deeper functionality expectations of such a system where successful integration with various office automation platforms and productivity software was key. However, none of the above studies seem to make specific intuitive reference to the concept or its equivalent, despite its use by the researchers. This could be due to, firstly, disciplinary differences among the reviewed studies, as well as the influence of which approach to citation presentation was considered by the students as appropriate, in their view, for their academic area. Conversely, explored the usage pattern of a file management or file storage/network tool, specifically a tool. They returned remarkably negative results with a majority of participants who only used it a 'few times a semester.' The common concerns that were relevant primarily focused on speed of access and whether the tool was up to date.

https://doi.org/10.56294/mw2024622

In comparison, they acknowledged an open awareness that file synchronization had been improved significantly. Despite this, less than half of those with accounts were bypassing the mobile apps that provide this.

Implications for Practice and Research

This study provides evidence-based data on postgraduate students' responses towards the Referencing Services Management Software available to users in Kenyan universities. The system was also evaluated by the respondents in terms of satisfaction. The study provides insights about factors affecting the use of RSM systems that encouraged Kenyan lecturers to use Referencing Services software. Most studies often focus on librarians' and lecturers' perspectives on the use of RSM software. This study fills the gap by using postgraduate students' views regarding the usage of RSM software and services and also proposes that further studies are required for more statistical inferences since this study is quantitative in nature. The analysis and correlational results of this study indicate that the behavioral intention of RSM software use by postgraduate students is a significant consequence. Lecturers provide students with assignments that desired data that influence the use of RSM software. Additionally, system quality reinforcement increased the postgraduate intention to use RSM software. The availability of information to postgraduates influences their intention. Statistical inference was also used to find the probable users of the software in the future.

The implications of the results were then discussed in terms of postgraduate students' perspectives. This study concludes that Ease of Navigation, Training Impact, and Perceived Relevance significantly influence the adoption and productivity of RSM software. At the same time, Institutional Resources play a less critical role. These findings highlight the importance of designing intuitive and relevant software for users' needs and ensuring adequate training programs to maximize usage. The lack of impact from Institutional Resources suggests the need for improved communication and support strategies to bridge the gap between resource availability and practical utilization.

CONCLUSIONS

The study sought to establish the adoption and usage patterns of referencing services management software among postgraduate students in Kenyan universities. The results indicate that postgraduate students rarely use referencing services management software. Various factors were considered before adopting the software. Some of these factors were positively and significantly associated with software usage. User-friendliness and awareness are important determinants of the software's usage. The research concluded with four main findings. First, postgraduate students have unique usage patterns. Second, awareness and user training programmes were negatively perceived to influence software adoption. Third, user training as a determinant of software creation may be perceived but does not positively influence the usage of software. Finally, awareness is a significant but weak determinant of software usage.

Therefore, libraries should focus on better quality and support services for all users to increase the adoption of referencing services management software. Effort should be increased to ensure that end users are aware of formulating referencing services management software. Additionally, libraries should also improve on developing referencing services management software that is more user-friendly. The conclusions reached reflect the fact that libraries need to implement competitive intelligence and continuously provide current software technologies that meet the research needs of their patrons.

All three hypotheses are accepted: that Kenyan universities are not synchronized in efforts to inform, promote, and train students on research services; that referencing services, systems, and software for academic research is an efficient and effective delivery system; or that software efficiency, effectiveness, ease of use, effort expectancy, and technical support have differential effects on adopting and using referencing services management software. There are notable differences between the surveyed variables for users and those for non-users. While using exploratory factor analysis, it was established that technical support should be separated into two components, namely student and ICT support. Moreover, it was found that students' perception and understanding of the software were negatively affected by the academic gap accrued from using the software and the assistance of the academic library. In summary, an adoption framework for referencing services management software was developed, and it was established that software efficiency, effectiveness, ease of use, effort expectancy, and technical support (ICT and student support) should be given more emphasis by the library and technical support staff. It was also realized that librarians should strive to reduce negative experiences related to RMS support and student support by using advanced teaching and learning methods. Furthermore, it was recommended that library staff should also step in by offering directed RMS support and thesis advisory. Findings of this study suggest that Kenyan universities have some work to accomplish in revisiting and reformulating academic writing support policies by providing funding for academic libraries, creating or transforming library policy to allow for better RMS utilization.

Recommendations for Universities and Policy Makers

This evaluative evidence could help guide libraries in decisions, particularly for universities faced with

developing RMS platforms. Students at larger universities who typically pay higher reference management software and services fees could also benefit from cross-university graduate programming. For graduate research mentors with well-established collaboration-sensitive personal networks, such arrangements could also lead to better compassionate research-specific service consumption.

Recommendations for Future Research

Since this case study has described current levels of the adoption and usage patterns of RSM software for a group of postgraduate students, a longitudinal study to examine changes in adoption rates in the future would be beneficial. Furthermore, it could also be used to compare the findings of this investigation with future studies conducted under more rigorous conditions in libraries.

Whereas this case study provided an overview of some characteristics of RSM users, much more in-depth explorations are required for such ascertained areas as the efficacy of user education programs, user-perceived need for automation of library services, the impact of technology, technical support requirements, and information security issues.

With regard to subject matter, it is also recommended that similar studies be conducted on the uptake of technology-driven library services for other user groups such as high school, college, and undergraduate students or university employees among others, and to examine their behavior within libraries. The trend towards embeddedness of libraries' resources and services is expected to continue as more users avail themselves with web-based tools to support their studies and work.

As technology evolves and younger, more technology-embracing library patrons enter academia and the workforce, the onus is on the academic and research libraries to understand these developments and provide appropriate services through relevant technology that meets the changing needs of their users. It is important, therefore, for researchers intending to identify the most appropriate technologies to ensure that the user perspective forms part of their research, even where the technology is intended for use by library staff. Because of limitations of time and resources, the study focused on specific research issues.

Future inquiries might include additional provocative research questions: dealing with software to support library visiting skills which help users navigate the large quantity of printed and electronic information provided,' posed in an online forum attended by practicing academic librarians who assumed that many users did not use the said software. It could also be of interest whether users perceived usage as optional or compulsory as distinct from non-usage. Refinements to future studies should include simplification of understanding cross-cultural issues. As the data is drawn from a number of universities located in Kenya a developing region, it would be helpful in the future if comparisons could be made with other areas to establish the extent to which these findings may be extrapolated.

The shortcomings identified in the current case study should also be addressed in future studies to ensure fully reliable results are reported. Its recommended that: creators of library software systems need to focus more on the creation of easy-to-use software; libraries should create more opportunities for user training to overcome the limiting factor of user training, libraries should overcome the external variables of library awareness by creating more avenues to create user awareness - the creators of library software systems should set KPIs towards libraries regarding the usage of their digital library resources, especially library software systems. Opportunities for research: Its strongly suggested that future research should focus on studying and identifying barriers of library software systems and how they can be improved. How to encourage user training to improve the adoption of new digital library resources as well as the easy use of the resources. Additionally, the study recommends that the identification of other factors that could influence the creation and usage of library software systems.

Practical Implications and Future Research

The study highlights the need for user-friendly RSM software designs and structured training programmes, such as peer learning and online tutorials, to enhance adoption and productivity.

Institutions should align software features with academic needs and improve communication about available resources to bridge the gap between provision and utilization. Future research should explore demographic influences, conduct qualitative studies on user experiences, and perform longitudinal analyses to assess long-term adoption patterns. Expanding the scope to include diverse regions and evaluating institutional policies can further inform strategies to optimize RSM tool usage.

BIBLIOGRAPHIC REFERENCES

1. Afre-Socorro AL, Labrador-Falero DM, García-Molina Y, Alonso-Herrera A, Wong-Silva J. Characterization of the Main Integrating Discipline of the Stomatology Career in Plan E. Odontologia (Montevideo) 2024;2:130-130. https://doi.org/10.62486/agodonto2024130.

2. Amaya KIV. Hypersexualization on TikTok, a case study by Areli Arechiga. Metaverse Basic and Applied Research 2024;3:.65-.65. https://doi.org/10.56294/mr2024.65.

3. Auza-Santiváñez JC, Díaz JAC, Cruz OAV, Robles-Nina SM, Escalante CS, Huanca BA. Gamification in personal health management: a focus on mobile apps. Gamification and Augmented Reality 2024;2:31–31. https://doi.org/10.56294/gr202431.

4. Benítez NR. Aesthetic: Subcultures in an Offline-Online Reality. SCT Proceedings in Interdisciplinary Insights and Innovations 2024;2:.121-.121. https://doi.org/10.56294/piii2024.121.

5. Cano AMC. The gentrification of health: an analysis of its convergence. Gentrification 2024;2:54–54. https://doi.org/10.62486/gen202454.

6. Caro SB, García M. Symbols in the field: a semiotic analysis of the football shields of bolívar city, colombia. Community and Interculturality in Dialogue 2024;4:138–138. https://doi.org/10.56294/cid2024138.

7. Céspedes-Proenza I, La-O-Rojas Y, García-Bacallao Y, Leyva-Samuel L, Padín-Gámez Y, Crispin-Rodríguez D. Educational intervention on oral cancer in high-risk patients over 35 years of age. Community and Interculturality in Dialogue 2024;4:127–127. https://doi.org/10.56294/cid2024127.

8. Chiappero ED, Trapé M, Scarcella E. Effectiveness of femtosecond laser-assisted cataract surgery in patients over 50 years of age in a private ophthalmology clinic in the city of Rosario, year 2022. Salud, Ciencia y Tecnología - Serie de Conferencias 2024;3:.720-.720. https://doi.org/10.56294/sctconf2024720.

9. Claudio BAM. Application of Data Mining for the Prediction of Academic Performance in University Engineering Students at the National Autonomous University of Mexico, 2022. LatIA 2024;2:14–14. https://doi.org/10.62486/latia202414.

10. Claudio BAM. Development of an Image Recognition System Based on Neural Networks for the Classification of Plant Species in the Amazon Rainforest, Peru, 2024. LatIA 2024;2:15–15. https://doi.org/10.62486/latia202415.

11. Cobos ACA, Cedeño ZZ, Quijije JS, Estrella MC, Catagua MM, Acosta SB. Mindfulness techniques as a strategy for reducing stress levels in pre-school and primary school teachers. Health Leadership and Quality of Life 2024;3:.362-.362. https://doi.org/10.56294/hl2024.362.

12. Cornu SAAA. A socio-environmental conflict, without a social movement?: artisanal brickworks in San Luis Potosí. SCT Proceedings in Interdisciplinary Insights and Innovations 2024;2:.155-.155. https://doi.org/10.56294/piii2024.155.

13. Crispin-Rodríguez D, Crispin-Castellanos D, Ledesma-Céspedes N, Reyes-Cortiña G, Lamorú-Pardo AM, Ivonnet-Gutiérrez E. Comprehensive care strategy at El Guayabo Penitentiary Center. Community and Interculturality in Dialogue 2024;4:126–126. https://doi.org/10.56294/cid2024126.

14. Demianchuk A, Hrymskyy V, Tsyhanyk M, Tymkiv B, Pidkova I. Analysis of scientific research on the sacred art of the Roman Catholic Church in Ukrainian territories. Salud, Ciencia y Tecnología - Serie de Conferencias 2024;3:.1234-.1234. https://doi.org/10.56294/sctconf2024.1234.

15. Efanimjor P, Okuku N, Amughoro AO, Atube EN, Temile SO, Okwoma AO, et al. Impact of metaverse and corporate social responsibility on agriculture production and accounting firm performance output of nigerian firms. Metaverse Basic and Applied Research 2024;3:.95-.95. https://doi.org/10.56294/mr2024.95.

16. Espinosa-Jaramillo MT. Internal Control in Companies from the Perspective of the COSO. Management (Montevideo) 2024;2:28–28. https://doi.org/10.62486/agma202428.

17. Galván LNO, Ayala DP, Lozano IM, Falero DML, Silva JW. Breastfeeding, Oral Habits, and Malocclusions in Children Aged 3 to 6 Years. Odontologia (Montevideo) 2024;2:101–101. https://doi.org/10.62486/agodonto2024101.

18. Gilani SAU, Al-Rajab M, Bakka M. Challenges and opportunities in traffic flow prediction: review of machine learning and deep learning perspectives. Data and Metadata 2024;3:378–378. https://doi.org/10.56294/dm2024378.

19. Gómez RT, Hernández YG, Suárez YS. Sustainable tourism and governance strategies in gentrification contexts: a bibliometric análisis. Gentrification 2024;2:66–66. https://doi.org/10.62486/gen202466.

20. Hernández-Lugo M de la C. Artificial Intelligence as a tool for analysis in Social Sciences: methods and applications. LatIA 2024;2:11–11. https://doi.org/10.62486/latia202411.

21. Hijar EPM, Pérez EEC, Meza JHM, Veliz DIH. Regulatory Compliance and Managerial Control in the Hemotherapy and Blood Bank Program of EsSalud Huancayo. Salud, Ciencia y Tecnología 2024;4:1002–1002. https://doi.org/10.56294/saludcyt20241002.

22. Iyengar MS, Venkatesh R. A Brief Report on Building Customer Loyalty in Luxury hotels: A Universal Approach. Management (Montevideo) 2024;2:20–20. https://doi.org/10.62486/agma202420.

23. Iyengar MS, Venkatesh R. Customer preferences while booking accommodation in hotels: Customer Behaviour and Hotel Strategies. Management (Montevideo) 2024;2:31–31. https://doi.org/10.62486/agma202431.

24. Lozano IM, Molina YG, Santos IF, Galván LNO, Pérez AP, Becerra CEC. Behavior of Denture Stomatitis in Adults Over 45 Years of Age. Odontologia (Montevideo) 2024;2:102–102. https://doi.org/10.62486/agodonto2024102.

25. M VVRR, Pokkuluri KS, Rao NR, Sureshkumar S, Balakrishnan S, Shankar A. A secured and energy-efficient system for patient e-healthcare monitoring using the Internet of Medical Things (IoMT). Data and Metadata 2024;3:368–368. https://doi.org/10.56294/dm2024368.

26. Macedo GC, Auza-Santivañez JC, Rejas DREV, Sarmiento RAQ, Canaviri JJF, Laime LHS. Giant multiloculated omental cyst in a pediatric patient. Case report and literature review. Multidisciplinar (Montevideo) 2024;2:88-88. https://doi.org/10.62486/agmu202488.

27. Madariaga FJD. Pedagogical model for the integration of ICTs into teaching practices in official educational institutions in rural Monteria. Multidisciplinar (Montevideo) 2024;2:105–105. https://doi.org/10.62486/agmu2024105.

28. Martínez M del CD, Rodríguez MMM, Pérez CAD. First dental consultation in pediatric patients. Machalilla, period September 2022 to July 2023. Salud, Ciencia y Tecnología 2024;4:.559-.559. https://doi.org/10.56294/saludcyt2024.559.

29. Monaityama MIG, Castillo VS. Effects of hunting and wildlife trafficking by peasants in the Huitorá indigenous reservation. Southern Perspective / Perspectiva Austral 2024;2:23–23. https://doi.org/10.56294/pa202423.

30. Montano M de las NV, Álvarez MK. Social vulnerability in communities of reformation and his relation with the stress. AG Salud 2024;2:45–45. https://doi.org/10.62486/agsalud202445.

31. Moreira JIG, Naranjo CEA. Analysis of injuries caused by sharp objects in the staff of the Segurilab health center and control proposal. Salud, Ciencia y Tecnología - Serie de Conferencias 2024;3:808–808. https://doi.org/10.56294/sctconf2024808.

32. Nasih S, Arezki SAS, Gadi T. Blockchain Technology for tracking and tracing containers: model and conception. Data and Metadata 2024;3:373–373. https://doi.org/10.56294/dm2024373.

33. Olguín-Martínez CM, Rivera RIB, Perez RLR, Guzmán JRV, Romero-Carazas R, Suárez NR, et al. Applications of augmented reality technology in design process. Gamification and Augmented Reality 2024;2:33–33. https://doi.org/10.56294/gr202433.

34. Orozco VO, Cotrin JAP, Zuluaga NR. Jurisprudential analysis on substitute compensation in the department of caldas: contrast between legal security and the right to social security. SCT Proceedings in Interdisciplinary Insights and Innovations 2024;2:234–234. https://doi.org/10.56294/piii2024234.

35. Osorio CA, Londoño CÁ. The expert opinion in the administrative contentious jurisdiction in accordance with law 2080 of 2021. Southern Perspective / Perspectiva Austral 2024;2:22–22. https://doi.org/10.56294/pa202422.

36. P LR. Innovating in Mental Health: Metacognitive Psychotherapy. Interdisciplinary Rehabilitation / Rehabilitacion Interdisciplinaria 2024;4:74–74. https://doi.org/10.56294/ri202474.

37. Pablos WJD, Guillén AJ, Blanco MB, Hernández-Runque E. Leadership in safety and health management at work in Courier companies. AG Salud 2024;2:44–44. https://doi.org/10.62486/agsalud202444.

38. Parra AL, Escalona E, Navarrete FB. Physical fitness assessment of a Venezuelan industrial direct labor force population. Interdisciplinary Rehabilitation / Rehabilitacion Interdisciplinaria 2024;4:88–88. https://doi.org/10.56294/ri202488.

39. Pattar N, Mehta PK. The Role of Social Security Schemes in Reducing Poverty and Inequality: A Comparative Study in Southeast Region. Salud, Ciencia y Tecnología - Serie de Conferencias 2024;3:.718-.718. https://doi.org/10.56294/sctconf2024.718.

40. Posso-Pacheco RJ, Gutiérrez-Ramos EA, Chica-Montero NJ, Alemán-Aguay JA, Rondal-Guanotasig M del C, Mullo-Cóndor KS. Evaluation of Artificial Intelligence Technologies and the Metaverse in Adapting Pedagogical Strategies. Metaverse Basic and Applied Research 2024;3:68–68. https://doi.org/10.56294/mr202468.

41. Razooq AM, Sayhood EK, Resheq AS. Effects of steel reinforcement ratios on the flange effective width for reinforced concrete T-beams casting with recycled coarse aggregate. Salud, Ciencia y Tecnología - Serie de Conferencias 2024;3:820–820. https://doi.org/10.56294/sctconf2024820.

42. Reyes YM, Jiménez NPC, Mena LAA, Jácome AGO, Allauca O del RP, Sarmiento FCR. Dysphemia in the development of verbal language in children aged 3 to 4 years. Health Leadership and Quality of Life 2024;3:.359-.359. https://doi.org/10.56294/hl2024.359.

43. Rojas MG, Agudelo NG. Creative economy and communication. Characterization in a line of research. Gamification and Augmented Reality 2024;2:32–32. https://doi.org/10.56294/gr202432.

44. Rosas-Patiño G. Gentrification as a field of study in environmental sciences. Gentrification 2024;2:55–55. https://doi.org/10.62486/gen202455.

45. Savitha D, Sudha L. Sentence level Classification through machine learning with effective feature extraction using deep learning. Salud, Ciencia y Tecnología - Serie de Conferencias 2024;3:702–702. https://doi.org/10.56294/sctconf2024702.

46. Sidiq M, Chahal A, Gupta S, Vajrala KR. Advancement, utilization, and future outlook of Artificial Intelligence for physiotherapy clinical trials in India: An overview. Interdisciplinary Rehabilitation / Rehabilitacion Interdisciplinaria 2024;4:73–73. https://doi.org/10.56294/ri202473.

47. Sohal J, S R yothi, Patil DD, Rastogi S, Ravindra R, Mishra SN, et al. Bariatric Surgery and Pregnancy: Impact on Maternal and Fetal Health. Health Leadership and Quality of Life 2024;3:.396-.396. https://doi.org/10.56294/hl2024.396.

48. Soto CAG, Castillo VS. Local methods for the control of Monalonion dissimulatun pest in cacao farms in Florencia- Caquetá. Multidisciplinar (Montevideo) 2024;2:83–83. https://doi.org/10.62486/agmu202483.

49. Vásquez MPR, Barrios BSV, Esmeraldas E del CO, Mora CC, Rodríguez-Álvarez AM, Román-Mireles A, et al. Social networks and adolescent mental health: a literature review. AG Salud 2024;2:46–46. https://doi.org/10.62486/agsalud202446.

50. Velásquez AA, Gómez JAY, Claudio BAM, Ruiz JAZ. Soft skills and the labor market insertion of students in the last cycles of administration at a university in northern Lima. Southern Perspective / Perspectiva Austral 2024;2:21–21. https://doi.org/10.56294/pa202421.

51. Yassine M, Attou OE, Arouch M. Moroccan Public Universities Confronting the Challenge of Patent Valorization: Potentialities and Realities. Salud, Ciencia y Tecnología 2024;4:1001–1001. https://doi.org/10.56294/saludcyt20241001.

FINANCING

The authors did not receive financing for the development of this research.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Fredrick Kayusi,Petros Chavula.

Formal analysis: Fredrick Kayusi, Moses Isutsa Shileche, Linety Juma, Rashmi Mishra, Petros Chavula, Rubén González Vallejo.

Research: Fredrick Kayusi, Petros Chavula.

Methodology: Fredrick Kayusi, Petros Chavula.

Resources: Fredrick Kayusi, Petros Chavula.

Software: Fredrick Kayusi, Petros Chavula.

Validation: Fredrick Kayusi, Moses Isutsa Shileche, Linety Juma, Rashmi Mishra, Petros Chavula, Rubén González Vallejo.

Display: Fredrick Kayusi, Moses Isutsa Shileche, Linety Juma, Rashmi Mishra, Petros Chavula, Rubén González Vallejo.

Drafting - original draft: Petros Chavula.

Writing - proofreading and editing: Petros Chavula.