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STRATEGIC ALIGNMENT OF THE INTEGRATED LIBRARY SYSTEM FOR LATE ADOPTERS: THE CASE OF AT MAKERERE UNIVERSITY LIBRARY

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Abstract

Introduction:

Generally, African University libraries can be said to be among the late adopters of ILS technologies in their service range. As of 2022, Makerere University Library is in the initial stages of migrating from Virtua ILS to Koha ILS. Yet adopting ILS is an expensive and time consuming endeavour. Therefore, there is a need for strategic "useful" deployment of ILS in any academic library.

Objective: This paper attempted to assess the strategic alignment of the Integrated Library Systems (ILS) in Makerere University Library to achieve strategic fit within the corporate environment of the University and achieve the institutional strategy.

Methodology: The was conducted using a qualitative research paradigm. In adopting the qualitative research paradigm, two approaches of this study were used; that is literature survey and case study design. Data was collected using the interview method and the observation method.

Findings and conclusion: There are noticeable mixed fortunes in Makerere University Library when it comes to the establishment of ILS. Almost all the technologies required and that have so far been implemented are imported and are quite expensive. Despite this, evidence exists that there is active investment in the University Library as it marches towards the attainment of its strategy. Perhaps ILS in the Makerere University Library and the University as a whole can only be described as a work in progress.

Key words: Integrated Library Systems, Strategic IT alignment, IT systems in libraries

1. Introduction

Different work and professions have been affected by varying levels of technological advancement for centuries, but libraries have only adopted technologies in the last few decades (Bhoi, 2017; Ponelis and Buwule, 2017). Bhoi (2017) observes that many academic libraries are adopting these technologies with a view to offering the services that they have traditionally provided without these technologies as well as attaining their strategic objectives. The promise of such technologies has made many academic libraries to develop an obsession with adopting library technologies as opportunities arise. However, Al-Fadhli, Corrall, and Cox (2016) note that at times libraries have a tendency to be "greedy" for every technology that they come across. This they refer to as *technolust.* It should be noted that simply accumulating new technologies and related services as the opportunities arise may, in the end, be impractical and may present intractable difficulties in terms of workload, security, authentication, intellectual property management and, most critically, the strategic alignment of systems (Al-Fadhli, Corrall, S. and Cox, 2016).

This study therefore attempted to assess the strategic alignment of ICTs in achieving the institutional strategy. The study specifically focuses on the alignment of the Integrated Library

Systems (ILS) at the Makerere University Library to achieve a strategic fit within the corporate environment of the University and achieve the institutional strategy.

2. Background to the study

Academic libraries stand out as invaluable centres where academics find an integrated source of information resources that are critical to their academic work and research. Fredua-Kwarteng, (2015) observes that academic libraries serve multiple communities. He classifies these communities into groups that include faculty staff, students, professional bodies and members of the general public (Fredua-Kwarteng, 2015).

Academia and librarianship are noted to be implementing IT-related systems retroactively and sometimes without regard to their impact on the overall organisational strategy (Sahu, 2015). This implies that academic libraries have had to be responsive to the requirements of the ICT dominated academic market. There is a general trend in academic libraries today towards deployment of information systems and information technology (Emeka, Jesudunni and Izuchukwu, 2015). As such computerised systems including Integrated Library Systems (ILS) are being embraced on a wide scale.

In Africa, The University of Botswana library was the first adopter of library systems in Sub-Saharan Africa, and even then, this happened in 1986 (Mutula, 2012). As such adoption of Africa can be regarded as a late adopter of library technologies including Integrated Library Systems. Ikoja (2004) noted that the National Library of Uganda conducted the first automation project in the country in 1998 with computers that were not even networked with CDS/ISIS. As for Academic libraries Makerere University was the first adopter of ILS in in Uganda with support from the Swedish International Development Agency (SIDA) operations (Sager and Walterson, 2005).

Makerere University is one of the oldest and leading in Sub-Saharan Africa. Recent rankings have placed Makerere University among the best in Africa (Preece, 2017, Times Higher Education, 2020). Since 2004, the University has taken up information and communication technologies (ICTs) as a strategic enabler to fulfill the Makerere University's strategic objectives (Makerere University, 2018).

In 2020 Makerere University published its 10-Year Strategic Plan, intended to span 2020 to 2030 (Makerere University, 2020). One of the core thematic areas in the plan include the need to boost the library infrastructure and to create an ICT-enabled environment.

Currently there are a number of ICT systems used for different purposes, i.e. for human resources (Human Resource Information System – HURIS), student academic resources (Academic Records Information System – ARIS), library resources (Makerere Library Information System – MAKLIBIS) and financial resources (Financial Information System – FINIS) and Academic Information Management Systems (AIMS) which is replacing the ARIS system (Makerere University, 2016).

Indeed, since the adoption of ILS at Makerere, there has been a notable lack of coherence between the library information systems with the rest of the university information systems and business needs (Nabende, Ahimbisibwe and Lubega, 2007).

It is on this basis that the study was conducted to examine how the Integrated Library System is aligned to attain a strategic fit within the corporate environment of Makerere University and to achieve the corporate strategy.

3. Literature review

3.1 The evolution of integrated library systems in academic libraries

The concept of integration in ILS relates to the fact that, whereas most of the earlier software deployed in work situations could only execute single functions, integrated software is designed to execute a series of related functions in a given environment (Ho, 1996). Ho further contends that such integration goes beyond the simplistic deployment of software to execute simple transaction in a series of uncoordinated fashions to a more systemic approach which considers the organisation as a system. This considers the various operations and processes the software is meant to execute in the particular environment. As such the software is integrated to work in the organisation as a system. Perhaps this is the reason why in most literature integrated software is also referred to as an integrated system. Likewise, integrated library systems can be said to have the capacity to execute a series of functions in a given library as a system.

The use of integrated library systems in academic libraries has existed for approximately since the late 1970's (Breeding, 2015). Deddens (2002) observes that integrated library systems were first used in colleges and universities at the beginning of the last quarter of the 20th century. This should, however, not lead to the view that ILS technology is archaic (Deddens, 2002). On the other hand, the technology used in the deployment of ILS has evolved over time to incorporate more of the needs of librarians (Cholin and Karisiddappa, 2006). Therefore, it can be asserted that the evolution of ILS can be partly linked to the responsiveness of information technology developers to the changing tastes, preferences and demands of the academic library environment.

Deddens (2002) further notes that the biggest development of the technology that underpins the ILS was realised in the 1990s. This development involved the linkage between bibliographical citations and the content that they represent. Prior to this, most ILS systems were grounded in the presentation of bibliographical citations of materials contained in particular libraries where the system had been deployed.

Egunjobi and Awoyemi (2012) further confirm the evolution of ILS technology through their observation that the current generation of integrated library systems attempts to move beyond the Machine-Readable Cataloguing (MARC) fields for text information resources to include metadata descriptions for multimedia library collections. Beyond the developments of the 1990s, ILS today has been fully developed to support multifunction Web-based multimedia content information management systems, and is built with high-capacity relational database structures. Whereas core

system architecture remains based on bibliographical citations presented via structured indexes, as it was in the early editions of ILS, the basis of these indexes is currently moving beyond the MARC fields designed for text information to include metadata descriptions for multiple digital file formats and content (Deddens, 2002). Furthermore, as noted in 2.3 above, ILS systems are getting more integrated with other systems that are deployed in the parent organisation. An example of this is the Makerere University Library management software, which is in the early stages of integration with the University Academic Records Information System (ARIS) and the Financial Information Institution System (FINIS) (Makerere University, 2016).

In addition, more ILS is beginning to be deployed as digital asset management systems (DAMS) in some academic libraries. Deddens (2002) contends that with this development ILS technology does not only point out the bibliographical details of library materials but also enables the acquisition of the actual content, which can be managed through the system itself.

All the above demonstrates the technological metamorphosis of ILS in the academic library environment. One concern that remains, however, is the efficacy of the ILS systems in the academic library. In many parts of the developed world, the ILS is considered a given, the same are new in many African countries (Njoku & Ravichandran, 2017).

3.2 The importance of integrated library systems in academic libraries

The apparent attractiveness of integrated library systems can be attributed to a number of factors. These factors are summarised by Cholin and Karisiddappa (2006) as shown:

a) The establishment of integrated library systems enables the improvement of the capacity of the existing library facilities and also increases accessibility by more potential clients to library resources and services,

b) The deployment of integrated library systems promotes collaboration and cooperation among libraries for resources and their technical abilities.

c) Integrated library systems have the capacity to increase access to electronic information sources by the users of the academic library.

d) Integrated library systems enhance the compliance of the libraries with recommended library standards such as MARC standards.

e) Integrated library systems have the potential to address more users' needs and thus improve user satisfaction in an academic library.

Cholin and Karisiddappa (2006) contend that in the era of the internet, electronic documents, growing client expectations, an information explosion and the attractions of virtual library technologies, an academic library cannot be maintained solely through using the older, manual approaches. In fact, they refer to the maintenance of the older manual approaches as being "out of order". Therefore, integrated library systems provide an avenue to span and control the vast amounts of information available in the library system as well as promoting inter-library collaboration.

Though integrated library systems may share similar advantages, the extent to which they achieve these may vary from one system to another. Deddens (2002) observes that there are many vendors of integrated library systems that are applicable in an academic library environment. However, no two integrated library systems can be said to be one and the same. Each integrated library system may be produced with an edge in one respect or another. The differences lie in the capacity of their developers to comprehend the current and future needs of the academic library environment. Perhaps this explains the differences in the pricing of the different systems. Therefore, academic library managers ought to engage a sense of judgement to select the best system for their specific environment.

3.3 Importance of strategic alignment of information technology alignment in organisations
The above presentation confirms that information technologies have revolutionised the work in organisations of different sizes, operations and creeds, including academic libraries. However, accumulating technology for the sake of having technology is foolhardy in an era of financial austerity and increased user awareness (Joint, 2009). Nabende, Ahimbisibwe and Lubega (2007) confirm this in their analysis of the causes of the failure of information systems in organisations to align the deployed information systems with their business environment. This view reveals a very important aspect of deployment of information technologies, i.e. the importance of matching technology and the business environment to achieve the right mix

Luftman (2000) states that the need for alignment has persisted as one of the core concerns for business executives. This concern seems to have grown over the years as businesses and service organisations have come to rely more and more on technology to conduct their activities. This opinion is also confirmed by Papp and Luftman (1995), who state that the case for information technology alignment seems to become important as an organisation strives to link technology and business, especially in an era of ever-changing technologies.

Luftman (2000) describes information technology alignment as the deliberative application of information technology in an appropriate and timely way, in harmony with institutional strategies, goals and the needs of the users of such technology in the organisation. Luftman (2000) further summarises the two major concepts that IT alignment describes as "[d]oing the right things and doing things right". This encapsulates the notion that not only is the right technology adopted in the entity (say a library) but also that the adoption of the said technology is done in the right way. Somarajan, Weber and Surendran (2008) observe that in the deployment of technology one has to consider the hard and soft issues. Hard issues in this case relate to the standard technological architecture and whether the said technology works the same way as its peers in the same technological market. Soft issues, on the other hand, relate to the organisation's design and internal operating mechanism. Soft issues may involve the technological philosophy of the organisation, its business activities and processes, and its internal structures. It should, therefore, be the goal of
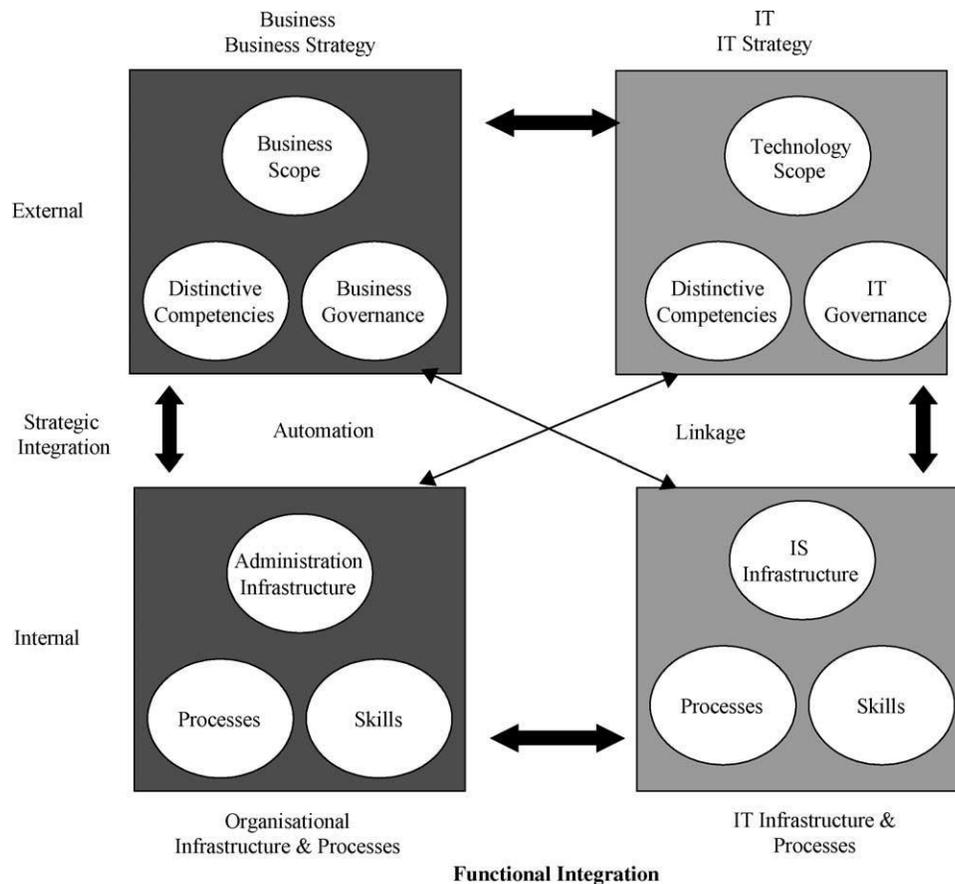
every organisation to ensure that the technology deployed takes into consideration the hard and soft issues to ensure that the technology is aligned with the organisational environment.

3.3.1 The strategic alignment model

Smaczny (2001) observes that a revolutionary approach to the management of IT-related issues in organisations is the Strategic Alignment Model (SAM) approach. This approach is termed revolutionary because it describes the position of information technology systems in a changing business environment. The model was first presented by Henderson and Venkantraman in 1991. According to Smaczny (2001), the SAM approach replaced a traditional approach that concentrated on the situational application of an IT system with one that takes into consideration the possible future and the futuristic position of technology in the organisation. He further contends that the approach is the best roadmap to achieving a strategic fit in an organisation.

Strategic fit in this context may be defined as the ability of an organisation to position itself based on its ability to accurately interpret its current positioning both internally and externally (Smaczny, 2001). The concept of strategic fit relates to strategic management. Strategic fit and strategic management both consider that when managing the organisational position one ought to look at the positioning of the organisation in its market environment. Therefore, strategic fit, just like strategic management, represents interplay between the business strategy of the organisation and its infrastructure and processes (Smaczny, 2001).

The SAM approach developed by Henderson and Venkantraman in 1991 is depicted by Smaczny (2001) as shown below.

Business
Business Strategy

IT
IT Strategy

External

Business Scope

Technology Scope

Distinctive Competencies

Business Governance

Distinctive Competencies

IT Governance

Strategic Integration

Automation

Linkage

Internal

Administration Infrastructure

IS Infrastructure

Processes

Skills

Processes

Skills

Organisational Infrastructure & Processes

IT Infrastructure & Processes

Functional Integration

(Adapted from Henderson and Venkantraman (1991) in Smaczny (2001))

The figure above demonstrates that for an organisation to attain a strategic fit, there is need for simultaneous thought to be given to both business strategy and IT strategy. In addition to this is the need for the simultaneous planning of the business and IT infrastructure and processes.

Smaczny (2001), however, questions the model for being too elaborate and as such requiring 'excessive' management skills yet such skills are not readily available. Besides, IT strategies tend to be more short-term compared to other organisational strategies. As such, it becomes extremely challenging to get the right fit as the IT strategy changes too fast. Consequently, many organisations still deploy top-notch management approaches for other strategies, leaving the IT strategy out of the mix.

Despite the weakness of the model, it presents a unique outlook on IT management in organisations. Since academic libraries are increasingly deploying IT systems such as ILS, it is only prudent that they give this approach some thought.

3.4 Integrated library system strategic alignment in academic libraries

Strategic alignment in this context can be described as the situation in which the IT infrastructure of the organisation is positioned in relation to the strategy of the organisation. Semiawan and Middleton (1999) argue that for any organisation to achieve strategic alignment of its IT systems, the IT systems are aligned with the strategic and operational plans and processes of the organisation.

Semiawan and Middleton (1999) further contend that to achieve these, the organisation should have a strong and well-developed strategic information system plan (SISP) that consists of a strategy for both information planning and management, including the use of functions and features of information technology (IT). They conclude that it is only through this that the users of the deployed systems would perceive the value of the system and the information delivered.

The alignment of ILS is also necessary for academic libraries. Remenyi (1990) observes that what makes ILS "strategic" is that it directly supports and shapes the competitive strategy of the library. Despite the apparent attractiveness of an integrated library system alignment, very few academic libraries give it the attention that it deserves. Semiawan and Middleton (1999) note that integrated library systems in many countries are in most cases established in an uncoordinated manner, reflecting interests in isolated functional areas, thus resulting in issues of redundancy, waste and, ultimately, inefficiency.

In the light of this, it is important that academic library managers make deliberate efforts to align their systems to ultimately justify their deployment.

Semiawan and Middleton (1999) recommend that an integrated library system that would be considered to be well-aligned can be attained through a carefully thought out process of planning of the system that suits the academy that hosts the academic library. This process should consider the following issues:

- That the policy and guidelines for the management, creation, maintenance, control and accessibility of the ILS is determined.

- That the ILS functions central to the library environment are determined and repositioned.

- That the architecture on which the ILS can run efficiently is built and maintained.

- That the portfolio of skills required for administering the ILS over its lifetime is acquired or its acquisition is planned.

- That a suitable organisational structure of the library that positions the ILS management team strategically in the whole library is determined and developed.

- That the aims of the ILS are clearly determined and widely communicated within the whole library environment and the academy in which the library operates.

- That the roles and responsibilities related to the maintenance of the ILS are determined across the whole library and academy so that there is shared ownership of the ILS.

- When this is done, a library will achieve a level of alignment of its ILS and other IT deployments.

As noted by Smaczny (2001) above, not all organisations attain strategic alignment of their IT systems. In the same vein, not all academic libraries attain strategic alignment of their ILS systems. This results in incompatibility in the system, costly maintenance, redundancy and, ultimately, inefficiency in the operations of the whole library. Nutefall and Chadwell (2012), however, note that even in the absence of a properly aligned system, efforts can still be made through which the ILS may be realigned to attain the required strategic fit. Realignment in this case can be prompted proactively by the management of the academic library or reactively to respond to the effects of the misaligned systems.

Nutefall and Chadwell (2012) outline three major reasons why ILS systems may need to be realigned. These include the following:

- The need to match the tremendous technological change in the field of library technology.
- The need to meet budget requirements and financial austerity.
- The evolution of management to manage change.
- All these requirements are especially valid when careful planning is undertaken so the realignment is responsive rather than reactive to the present and perceived future needs of users (Nutefall and Chadwell, 2012).
- The success of the realignment process is not assured for every ILS system. Kurien (2004) observes that even when efforts are made to realign ILS, sometimes the systems still fail the alignment test. Kurien (2004) summarised six major reasons why this scenario occurs:
- Failure by ILS vendors to provide reliable long-term costs of the ILS systems.
- Unrealistic expectations, thus the setting of overly ambitious targets for ILS.
- Failure to apportion responsibility across the whole academy with regard to ILS, thus breeding confusion.
- Poor planning across the whole organisation and the library in particular.
- Failure by the ILS team to justify particular costs.
- Failure to define success with regard to ILS alignment.

4. Methodology

The was conducted using a qualitative research paradigm. In adopting the qualitative research paradigm, two approaches of this study were used; that is literature survey and case study design.

Three interview guides were developed and used for interviewing the systems administrator of the integrated library system at Makerere University, a librarian from the University Library and the manager of the Directorate of Information and Communication Technologies (DICTS) of Makerere University. These were purposively selected on the basis of their roles in the establishment and management of the IT systems in the library and the University respectively.

5. Findings

5.1 Type of ILS used in the Makerere University Library

The findings revealed that the library has since 2004 adopted Virtua integrated library system from Vital Technology Library Solutions (VTLS), USA. This is proprietary software unlike many Universities in Uganda that have adopted Koha ILS. Ownership has changed though to Innovative interfaces Incorporated (Innovative Interface

The findings further revealed that since Virtua ILS is integrated, it has the capacity to provide a platform to conduct most of the library routines and functions in the Makerere University Library. Virtual ILS seeks to do what librarians at Makerere University have done for decades, i.e. the acquisition of information resources, organisation for storage (even storage itself if one considers e-resources) and later retrieval and facilitating the borrowing and returning of these valuable information resources to the library (including the self-help issue systems). VTLS (2004) observes that the three-tier nature of Virtua ILS incorporates a client platform, a server platform and a database platform. The client platform supports the user interfaces for both the library staff and the library users; the server platform supports the networking functions of the system; while the database platform supports the data storage capabilities of the system (VTLS, 2004).

It was further noted that VTLS has produced different versions of the system. However, it was revealed that Makerere University had not been able to upgrade to every latest available version over the years. However, by the time of data collection Makerere had just acquired the latest release of Virtua ILS 2016. This is an upgrade from the release of 2012 when the University Library had last upgraded the Virtua ILS. The failure of the University Library to get the latest releases as they are offered by the vendor is largely attributed to the high costs related to the acquisition of every released version of the Virtua ILS. The acquisition of the latest version of Virtua ILS was attributed to the fact that VTLS was no longer providing support for earlier versions of the system. The Makerere University Library was, therefore, compelled to upgrade lest the library fell prone to system failure and insecurities.

It should, however, be noted that the system is not used to its full capacity, with many components left unutilised.

5.2 Rationale for the selection of Virtua ILS

The findings revealed that the rationale for the selection of Virtua ILS was a combination of both the market ingenuity of the vendor and the technical advancement of the system compared to the systems that were offered by alternative vendors. The opinions expressed by the respondents further indicated that Virtua ILS will continuously be used as the ILS system of choice in the Makerere University Library for the foreseeable future.

First, the system was being provided by a company that was considered to have a good track record in providing robust library automation systems. It was revealed that before Virtua ILS was

selected, there were other vendors that provided proposals but the VTLS[1] proved it had a better track record regarding the provision of robust library systems.

Second, it was noted that the system was easy to learn. This was attributed to the fact that it has good documentation that makes it easy for the people that are installing, configuring and using it to do so. The respondents revealed that such documentation made it easy to install, configure and customise the system by the technical staff it as well easy to use by the clients.

Third, the system was designed using the English language. This is significant in navigating the system parameters for the staff and clients of the Makerere University Library. Since Uganda is part of the Commonwealth system, English is considered an official language there and is used as the language of instruction at Makerere University. This implies that for a system to be chosen it had to have its components labelled and its documentation written in English and Virtua ILS met this requirement.

Fourth, Virtua ILS was built basing on the core standards used in an academic library setting. There was evidence that the system designers considered the needs of an academic librarian. This was further confirmed by respondents in the library. Examples of such standards include Machine Readable Cataloguing (MARC) standards, and the Z39.50 standard for the importation of bibliographical data.

Fifth, Virtua ILS runs on computer operating systems that were already in common use at Makerere University. These included Microsoft Windows software and UNIX server software. Furthermore, the use of Oracle database was already prevalent at the University, especially with other information systems. All this implies that the adoption of Virtua did not require movement from the common platforms that were used all over the University. Besides, even if some issues that arose in relation to the configuration of such systems, there would be ready local support.

Sixth, the system met the technical requirements of the donors who were sponsoring the initial acquisition of the system. Makerere University has in recent years been a recipient of support from some notable international donors. Among these are Swedish International Development Agency (SIDA/SAREC) and Carnegie Corporation of New York. SIDA/SAREC sponsored the initial acquisition of the system. Therefore, the technical conditionality of SIDA/SAREC had to be met by the system. Some of the subsequent upgrades have, however, been financed by the University Library. It can, therefore, be deduced that the fact that the system has been maintained and even upgraded beyond the period of initial donor support. Perhaps the reason why the decision-makers in the library have continued with the system is that has given value for money.

Seventh, the willingness of the vendor to provide technical support has partly contributed to the continuous selection of Virtua ILS. The respondents indicated that after Makerere chose Virtua ILS, the vendor provided support for a long time after the purchase of the system. This support was in the form of training of selected members of the library staff who were equipped with the ability to train other staff. In addition to the initial training, the vendor also supports users of the system to form user communities. The respondents further indicated that since at the time of the first deployment there were few universities in Africa that had deployed Virtua ILS, Makerere University was linked up with the European user group.

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[1] In 2014 acquired by Innovative Interfaces (https://www.iii.com/products/virtua-ils/)

Eighth, the vendor provided the clearest platform for users to give their views on the development of future versions of the system. The respondents from the library indicated that through their user groups or even individual customers, libraries were given the opportunity to offer their views.

5.3 Challenges to ILS alignment at Makerere University

The following were some of the notable challenges to aligning the ILS with the overall University strategy:

Lack of coherence between the library information systems with the rest of the university information systems poses another critical challenge. Currently each system requires independent logging in by clients. Since 2007, there have been efforts to integrate part of the Academic Records Information System and the Financial Information System (Makerere University, 2020). Through this the students would be able to view their fees statements when they log into the Academic Records Information System (ARIS). There is also evidence of plans to create a seamless Enterprise Resource Platform through which all these systems will be able to interact since they normally serve the same clients. However, all these do not have coherence with the library information system and this remains a challenge.

- There was considerable resistance to change, especially from older employees when it came to organisational reform of the library. However, this resistance may be minimised by holding sensitisation seminars for staff to familiarise them with the benefits of organisational change and the new procedures ushered in with the information systems.
- Besides, there is a possible lack of "political" support from the management of the University to reward new innovative ways of service delivery.
- Another challenge is the inadequate funding for the implementation of newer technologies and for staff development to prepare staff for the ICT revolution in the library.
- Lack of steady supply of electricity to maintain the availability of servers for library service, especially where technology has to be used.
- Lack of coherence between the library information systems with the rest of the university information systems poses another critical challenge. Currently each system requires independent logging in by clients. Since 2007, there have been efforts to integrate part of the Academic Records Information System and the Financial Information System (Makerere University, 2018). Through this the students would be able to view their fees statements when they log into the Academic Records Information System (ARIS). There is also evidence of plans to create a seamless Enterprise Resource Platform through which all these systems will be able to interact since they normally serve the same clients. However, all these do not have coherence with the library information system and this remains a challenge.
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- Besides, there is a possible lack of "political" support from the management of the University to reward new innovative ways of service delivery.
- Lack of steady supply of electricity to maintain the availability of servers for library service, especially where technology has to be used.
- Misuse of information systems and related technologies in the service of personal projects as opposed to the performance of professional library service.
- Pressure from the donors in the library projects as opposed to the University Mission and objective may be particularly challenging with regard to decisions to
- Misuse of information systems and related technologies in the service of personal projects as opposed to the performance of professional library service.
- Pressure from the donors in the library projects as opposed to the University Mission and objective may be particularly challenging with regard to decisions to acquire particular technologies. For instance, the University Library adopted proprietary library management software in preference to an affordable open source option even when there were calls for this option.
- Another challenge is the inadequate funding for the implementation of newer technologies and for staff development to prepare staff for the ICT revolution in the library. Owing to the cost, there is a loud consensus that Virtua be replaced with an Open Source Option (Koha). As of 2022, Makerere University Library is planning to migrate from Virtua ILS to Koha ILS. In its hay days Virtua ILS was one of the leading ILS with Koha and other open source systems offering cheaper options to libraries that may be considered to have smaller budgets.

From the above challenges, it can be asserted that the causes of IT misalignment are multifaceted. However, it can also be asserted that the challenges are mostly related to institutional frameworks such as funding, attitudes, planning and staff deficiencies and not necessarily relating to the technology itself.

6. Discussion and conclusion
Developments in information technology are revolutionising the resources to a more electronic outlook with a new array of skilled personnel serving a "new" clientele. As such the staff, resources and clients are all "new" and they continue to evolve in form, quantity and expectations. All this implies a new leadership and management agenda, an agenda that can blend skills of the past and the present with an eye to the future.

- Harris (2010) affirms this view as he contends that new management skills in a "Technology Fluent World" would be fundamental to the creation of an appropriate

environment. It is this "appropriate environment" that would guarantee the creation of a space for the learning, skill development, comfort level and change management that needs to happen lest we witnessed the demise of the relevance of the academic library in the 21st century systems amidst the growing expectation that library services will become ubiquitous in the 21st century. All these systems seek to do what librarians have been doing down the ages ago.

- Halverson (2010) observes that there is a shift in what counts as literacy artifacts. Therefore, literacy in the 21st century involves understanding and competent control of the representational forms in the overall communications environment. Furthermore, it is clear that there is no single literacy that is appropriate for all people or for one person throughout their lifetime (Sehu, 2015). As such, academic libraries must reinvent themselves and embrace technology to boost their delivery of training experiences.

- From the above presentation, it is also evident that the service improvements in information technology development required of academic libraries simply cannot be ignored. However, as Joint (2009) observes, simply accumulating new technologies and related services as the opportunities arise may in the end be impractical, and may present intractable difficulties in terms of workload, security, authentication and intellectual property management. This answers the research the question that sought to establish the rationale of IT alignment. It is clearly evident that without proper alignment all that is left an accumulation of uncoordinated IT solutions. With careful alignment therefore, IT solutions are carefully deployed with the consideration of the overall environment.

- It is further evident that the main causes of IT misalignment are mostly related to institutional frameworks such as funding, attitudes, planning and staff deficiencies and not necessarily relating to the technology itself.

- Despite the presence of misaligned facets of technology, it is largely true that if a library does not actively embrace and implement information technologies in the conduct of its routines and the execution of its future strategy, its future is beyond doubt in jeopardy. Indeed, the adoption of information systems can be said to be greatly influencing the library strategy.

7 Recommendations

The adoption of information systems in Makerere University and related adjacent information technologies imply a change in the psychological contract for librarians and ICT decision-makers at the University.

First is the requirement for newer skills for librarians to offer new services in the academic library. Bell and Shark (2004, in Sinclair, 2009) note that the new academic librarian is one who combines the traditional skill set of librarianship with the information technologist's hardware and software

skills and the institutional or educational designer's ability to apply technology appropriately in the teaching-learning process. This Sinclair calls the "blended librarian".

The view that more training is required is supported by the Al-Fadhli, Corrall, and Cox (2016) who maintain that, as technological changes continue to impact the library routines and procedures, librarians ought to "proactively" broaden their skill portfolio to remain relevant. This implies hiring skilled personnel and continuous formal training for academic librarians at Makerere University.

Furthermore, there is need to effect changes in the financial appropriation and budgeting process. the Al-Fadhli, Corrall, and Cox (2016) contend that new technologies bring along new media in the library collections. However, financial allocations to academic libraries have generally remained stagnant and, in some cases, are reducing. As such, managers in academic libraries ought to adopt greater budgeting discipline and adopt cheaper IT options that require limited maintenance costs.

Another critical implication of the new developments is the immediate digitisation of retrospective collections held in the Makerere University Library. Digitisation projects make "hidden", less used and underused special collections available to researchers worldwide. Though there is evidence of some digitisation projects taking place in the Makerere University Library, the scope is still small compared to the perceived need to belatedly preserve and provide access to these unique collections, which can only be referred to as historical gems. It should, however, be mentioned that the current efforts at digitisation attest to the acknowledgement of new data curation opportunities and requirements for data preservation in the 21st century.

The adoption of ILS and related adjacent technologies also implies a paradigm adjustment (paradigm shift) in the academic libraries interested in adopting ILS. This implies that things are no longer going to be the same and as such there is a need to change the way librarians and libraries "think". The many areas in which a paradigm shift should occur include the following:

  a) The mission and the vision of the library, which ought to be altered to include elements of modern technology. Today the mission of the Makerere University Library is **"To meet the study, teaching, research and outreach information needs for sustainable development"**(Makerere University Library, 2018)**.** Although this may be interpreted to imply a willingness to embrace technology, a more deliberate mission statement highlighting technology ought to be devised to influence the thinking and planning processes of the library.
  b) The library strategic plans, which ought to be altered to explicitly include elements of technology and related technologies as core planning areas.
  c) The user education programmes and procedures, which should be planned and conducted in such a way that the use of information technologies and related end-user applications become core training platforms.

d) Fulltime information technology personnel, who should become part of the library planning and implementation teams to champion research and implementation of information systems.

e) One more implication is the requirement for new management skills. The term "management", according to Hislop (2013), implies the ability to get things done using available resources. Traditional librarianship focuses more on books and the traditional librarians.

8. Conclusion

Strategic alignment of systems in academic libraries is a very complex task. Most of the libraries are facing great deal of uncertainty over this complexity.

Compared to other academic libraries in Uganda, Makerere University library may be seen as an early adopter, but overall it is a later adopter of Integrated Library Systems. In the process of adopting the ILS systems Makerere University library has faced mixed fortunes. Almost all the technologies required and that have so far been implemented are imported and are quite expensive. Many Universities in Uganda, and Africa still grapple with dire challenges in the areas staff numbers; electricity and finances to pay existing staff a respectable living wage. Adopting ILS in a library may as such be viewed as a preserve for the affluent universities of the world.

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References

Al-Fadhli, M., Corrall, S. and Cox, A.M. (2016) Factors Underlying Technology Adoption in Academic Libraries in Kuwait. New Review of Academic Librarianship, 22 (4),370-390

American Library Association (2015). https://journals.ala.org/index.php/ltr/article/view/5686/7063

Arif, M. & Mahmood, K. (2010). The changing roles of librarians in the digital world: adoption of web 2.0 technologies in Pakistani libraries. World library and information congress: 76th IFLA general conference and assembly, Gothenburg, Sweden, 10 - 15 August 2010.

Bhoi, N.K. (2017). Use of Information Communication Technology (ICT) and Library Operation: An Overview. *Proceedings: International Conference on Future Libraries: From Promises to Practices 2017.*

Breeding, M. (2015). *Library Services Platforms: A Maturing Genre of Products.* Retrieved from https://journals.ala.org/index.php/ltr/article/view/5686/7062 (Accessed April 30th 2022)

Buwule, RS and Ponelis, RS (2017) Perspectives on university library automation and national development in Uganda. *IFLA Journal*, 43 (3): 256-265

Cholin V, S., & Karisiddappa, C. R. (2006). Study of design and development of an integrated university library system in the digital environment. 4th International Convention CALIBER-2006, Gulbarga, 2-4 February, 2006.

Deddens, M. (2002). Overview of Integrated Library Systems. Retrieved 11 July 2012 from http://net.educause.edu/ir/library/pdf/DEC0201.pdf

Egunjobi, R.A., & Awoyemi, R.A. (2012). Library automation with Koha. *Library Hi Tech News*, 29 (3), 12 – 15.

Emeka C.U., Jesudunni, O.O. sand Izuchukwu, A. C. (2015). The Use and Application of Open Source Integrated Library System in Academic Libraries in Nigeria: Koha Example. *Library Philosophy and Practice (E-Journal)*, *Paper 1250*, 37

Fredua-Kwarteng, E (2015) The case for developmental universities. *University World News, 30 October*. Retrieved Retrieved May 2nd 2022 from from http://www.universityworldnews.com/article.php?story=20151028020047530

Hislop, D. (2013). *Knowledge Management in Organizations: A Critical Introduction*. 3rd Ed. Oxford: Oxford University Press

Ho, C. (1996). Information technology implementation strategies for manufacturing organizations: a strategic alignment approach. *International Journal of Operations & Production Management*, 16 (7), 77–100.

Ikoja, R. (2004), "Nakaseke multipurpose community telecentre and library", in Chisenga, J.(Ed.), *The Use of ICTs in African Public Libraries: A Survey of Ten Countries in Anglophone Africa*. Oxford: International Network for the Availability of Scientific Publications (INASP). 108-110.

Joint, N. (2009). The Web 2.0 challenge to libraries. *Library Review, 58(3)*, 167-175.

Kurien, P. (2004). IT imperatives beyond strategic alignment: enterprise architecture flexibility and IT delivery efficiency. *Handbook of Business Strategy, 5 (1)*, 275 – 280.

Luftman, J. (2000). Assessment business-IT alignment maturity. *Communications of the Association for Information Systems*, 4 (14), 1-51.

Makerere University (2016*). Information and Communication Technology Policy 2016-2020.* Kampala: Makerere University

Makerere University (2020*). Makerere University strategic plan: 2020-2030*. Retrieved Retrieved May 2nd 2022 from from https://www.mak.ac.ug/sites/default/files/downloads/Makerere-University-Strategic-Plan-2020-2030.pdf

Makerere University Library. (2022). Information resources. Retrieved from http://mulib.mak.ac.ug (Accessed April 30th 2022)

Mendina, T., & Britz, J. J. (2004). *Information ethics in the electronic age: Current issues in Africa and the world*. Jefferson, N.C: McFarland & Co.

Mutula, S.M. (2012), "*Library automation in sub Saharan Africa: case study of the University of Botswana*", Program: Electronic Library and Information Systems, Vol. 46 No. 3, pp. 292-307.

Nabende, P., Ahimbisibwe, B., & Lubega, J. (2007). Relationship between information systems development paradigms and methods. Retrieved 16 March 2012 from http://rug.academia.edu/PeterNabende/Papers/94150/Relationship_between_Information_Systems_Development_Paradigms_and_Methods

Njoku, S. I. & Ravichandran, R. (2017). Use of open source technology for effective academic library services in Nigeria. *Library Philosophy and Practice (e-journal). 1686.* Retrieved May 2nd 2022 from https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4808&context=libphilprac

Nutefall, J. E., & Chadwell, F. A. (2012). Preparing for the 21st century: academic library realignment. Oregon: Oregon State University Libraries, Corvallis.

Ponelis, S. and Adoma, P. (2018) Diffusion of open source integrated library systems in academic libraries in Africa. *Library Management*. 39 (6-7): 430-448.

Preece, J. (2017). *University Community Engagement and lifelong learning: The Porous University*. Johannesburg: Palgrave Macmillan

Remenyi, D.S.J. (1990). *Strategic information systems: development, implementation, and case studies*. Manchester: NCC Blackwell.

Sager, C. and Walterson, K. (2005), "*Into an electronic era: a case study of the automation at Makerere University Library, Kampala, Uganda, University College of Borås*", Swedish School of Library and Information Science (SSLIS). Retrieved Retrieved May 2nd 2022 from http://bada.hb.se/bitstream/2320/1392/1/05-113.pdf).

Sahu, M.K. (2015). Strategic Management in Academic Libraries with Reference to users Perspective. *International Journal of Advanced Library and Information Science.* 3: 192-200

Semiawan, T., & Middleton, M. (1999). Strategic information planning and campus information systems development in Indonesia. *Campus-Wide Information Systems, 16 (2)*, 70-76.

Sinclair, B. (2009). The blended librarian in the learning commons: New skills for the blended library. *ACRL Tech Connect*, 504-507 &516

Smaczny, T. (2001). Is an alignment between business and information technology the appropriate paradigm to manage IT in today's organisations? *Management Decision, 39 (10)*, 797 – 802.

Somarajan, C., Weber, J. R., & Surendran, K. (2008). Planning and implementation of an ERP system in a university in USA: some Insights and guidelines. *CONISAR (1)*, 1-12.

Times Higher Education. (2020).*Times Higher Education World University Rankings 2021*. Retrieved Retrieved May 2nd 2022 from https://www.timeshighereducation.com/world-university-rankings/2021/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats