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Staff assessment of the success of the integrated library system: the case of the University of Ghana Library System

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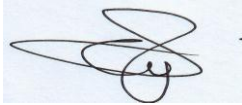
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DECLARATION

I hereby declare that this mini dissertation is my work and this work has not been previously submitted to any institution or university for a degree. All the sources cited in this study have been properly acknowledged as required by the department's regulations.



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*“He who abides in Me, and I in him, bears much fruit;
For without Me you can do nothing.”
- Jesus of Nazareth.*

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ABSTRACT

Library automation in Ghana began barely 13 years ago with the University of Ghana Balme Library being the first to start automation in 2003. Library automation is attained by means of a specific type of information system, an integrated library system (ILS). Given that modern academic libraries rely heavily on their ILS to meet user needs, the success of the ILS is vital. In 1999 Farajpahlou published a set of 26 criteria to assess the success of ILS in university libraries that was subsequently validated in both developing and developed countries (Iran and Australia). In this case study of the University of Ghana Library System (UGLS) Farajpahlou's original set of criteria was assessed for applicability and used to assess the success of the UGLS by surveying 28 randomly selected library managers, IT specialists and selected paraprofessionals who work with the UGLS ILS. The study showed that, in the opinion of these respondents, the UGLS ILS conclusively satisfies 13 out of the 16 criteria accepted by the research respondents out of the 26 criteria that constitute the Farajpahlou (1999, 2002) success criteria. This outcome suggests that the UGLS ILS may not be conclusively deemed to be successful. Furthermore, the study also suggests that, although Farajpahlou's success criteria can serve as a basis for the assessment of ILS success in academic libraries, some criteria may need to be altered or removed and additional criteria added to make it a more robust set of criteria to assess ILS success globally. This research contributes to studies that seek to assess the success of library automation in academic libraries in Ghana and also contribute to the development of potentially suitable success assessment criteria, which may be of value to both researchers and practitioners.

Keywords: library automation, information systems success, integrated library systems, university library, academic library, Ghana, case study, survey

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LIST OF ABBREVIATIONS

AACR II.....	Anglo-American Cataloguing Rules
DM.....	DeLone and McLean
ICT.....	Information and communication technology
III.....	Innovative Interface Incorporated
ILS.....	Integrated library system
IS.....	Information System
IOLS.....	Integrated Online Library Systems
IT.....	Information Technology
LoC.....	Library Congress
LMS.....	Library Management System
MARC.....	Machine-Readable Catalogue
OCLC.....	Online Computer Library Catalogue
OPAC.....	Online Public Access Catalogue
UG.....	University of Ghana
UGLS.....	University of Ghana Library System
Web PAC.....	Web Public Access Catalogue

CHAPTER 1: INTRODUCTION

1.0 Background

The emergence of ICT and their widespread use in many aspects of everyday life have led to dramatic changes in the way of life for many people. Today, technological development is evident in every profession (Jani, 2011). ICT, in the broad sense denotes various forms of technology that are used to transmit, store, create, share or exchange information. In a broader sense, this definition of ICT includes technologies such as video, radio, television, telephone (both fixed line and mobile phones), satellite systems, computer and network hardware and software; as well as the equipment and services that come with these technologies, such as videoconferencing and electronic mail. Currently, there is a paradigm shift from the old ways of information delivery to a modern way of information delivery system (Dhanavandan and Tamizhchelvan, 2012a).

Historically, ICT was introduced in libraries in the 1960s and had been used extensively in libraries in the developed countries in library automation to perform and automate library functions and services. Library automation is the process of applying automated systems to perform library functions such as acquisition, cataloguing, circulation and reference services. This process in the end enables the library to process, store, retrieve and communicate information in electronic format, and usage is unrestricted by distance and time and it can make library material accessible to a wider user population (Akpan and Madu, 2014a).

Rayward (2002) noted that librarians use ICT to process library tasks and services in order to serve patrons more effectively and also to relieve library workers of monotonous library tasks. Cibbarelli (1999) asserts that, library automation essentially seeks to automate and make better the librarian's work of cataloguing and accessing a catalogue, acquisitions, managing serials and circulation. In that, with an automated library system, functions such as the acquisition of books and e-books are expected to be executed through the acquisition module of the automated library system which then reflects on the cataloguing module that then allows such books and materials to be physically or electronically circulated as required, to enable users gain access. The automated library system allows staff of the library to maintain and manage material statistics at any given point in time in the library. Ahmad and Iqbal (2009) believe that through library automation, librarians are able to gather, store and disseminate information in more efficient and productive ways to their library patrons.

For most of sub-Saharan Africa, library automation is still an evolving reality that began in the 1980s. Today, a number of universities in sub-Saharan Africa, like the University of Ghana, Legon, have automated their libraries and implemented institutional repositories to capture and preserve their intellectual output such as post graduate theses, faculty publications, working papers, and inaugural lectures among others (Mutula, 2012).

Dhanavandan and Tamizhchelvan (2012b) argue that, technology explosion has penetrated into every sphere of daily human activity and it is being comfortably employed to serve the teaching and learning needs within academic institutions. Therefore academic libraries would not effectively satisfy the information needs of library patrons without automated library systems. In relation to this, Manifold (2000) observed that, library automation is now widespread in many academic libraries even though the full advantages of library automation systems may not be completely exploited by many libraries as the use of automation systems in most cases are restricted to selected sub-functions of the library functions and services.

According to Mohsenzadeh and Isfandyari-Moghaddam (2009), modern institutions of higher education now depend on a vigorous programme of automated information services to support and facilitate teaching, learning, research and management of their entire information systems. It is very important that library automation is successful in that, the successfully automated library is reflected in the automated library system's ability to meet user requirements, and allowing users to carry out the needed library tasks with ease, using the automated system.

The University of Ghana Library Systems (UGLS) is employing library automation as a means of exploiting information technologies towards meeting the teaching, learning and research mission of the university. The automated library system has been functioning for the past 8 years and has been hailed generally as a success by the library's stakeholders. Following from Bregman and Burger (2002) there are many factors that determine the success of any library automation. These include both technological and organizational factors including the institution's flexibility in making changes that are consistent with an automated library system's optimal use. It has taken more than three decades of system implementation through trial-and-error to reach a stage of maturity in library automation. There are a number of factors that are interrelated and which contribute to achieving a complete integration of automated library services. Webber and Peters (2010a:122-123) affirm that factors that aid in achieving such integration of library automation ranges from

good management and planning, proper vendor evaluation, realistic schedules and selection of appropriate hardware and software for the library automation process. On the other hand, Drabenstott (1985) identified several reasons why automated library systems may not prove to be successful, which may be attributed to a lack of adequate planning, ignoring retrospective conversion, unrealistic schedules and expectations, improper evaluation of vendor's viability and inadequate contract negotiation.

In assessing the successes of established automated systems, (Farajpahlou, 1999) provided a set of criteria for measuring success in of an automated library system. These criteria are described under these four broad categories: management of the system, usage of the system, technicalities of the system, and boundary issues. Farajpahlou (2002) stressed that a successful automated library system would require precursors such as a well-prepared automation plan and implementation program.

1.1 The University of Ghana Library System

The University of Ghana was established in 1948 following a recommendation by a commission set up by the then British Colonial government. On 11 August 1948 it was founded by an ordinance with the mission of promoting and providing university education, teaching, learning and research in the country Ghana, then known as the Gold Coast. The first principal of the established institution was Mr David Mowbray Balme, a visionary principal who encouraged and promoted learning, teaching and scholarship. The main university library was named after him and the main University of Ghana library has since been known as Balme Library (University of Ghana, 2014b).

The University of Ghana is a large university with over 20,000 students (University of Ghana, 2014a). The institution is a public university with 33 colleges sited on three campuses; the main campus located in Legon, City Campus at Adabraka and Korle-bu Campus at Korle-Bu. The locations Legon, Adabraka and Korle-Bu are all suburbs in the city of Accra in the Greater Accra region of Ghana. There are satellite libraries attached to the various colleges on these campuses. These libraries together with the main University of Ghana library, the Balme Library form the University of Ghana Library System (UGLS). These libraries range from small-sized collections and fairly large collections to fully-fledged libraries with trained staff and several thousands of volumes of material. The satellite libraries are relatively small and have smaller library collections. They do not operate with specific separated units. They operate as a basic library unit, where all staff perform all the expected library functions and activities of cataloguing, circulation and reader services as required at all points in time to keep the library functionally useful to its patrons. The activity of acquisitions is generally

carried out by the main Balme library acquisitions department for the entire UGLS. The UGLS is funded from grants and budgets from the university's coffers (University of Ghana Handbook, 2009).

The University of Ghana library has staff strength of 189 professional librarians known as senior members make up 19. They are the managers of the library. Paraprofessionals make up 112. They are senior staff and they are the implementers of library policies. 58 of staff are junior staff. They are supporting staff and cleaners and messengers. There is an electronic support unit made up of four IT staff with supporting staff of five. Their main responsibility is to ensure that the library's automated systems are functioning as expected. The organisational chart of the University of Ghana Balme Library system is shown in Figure 1.

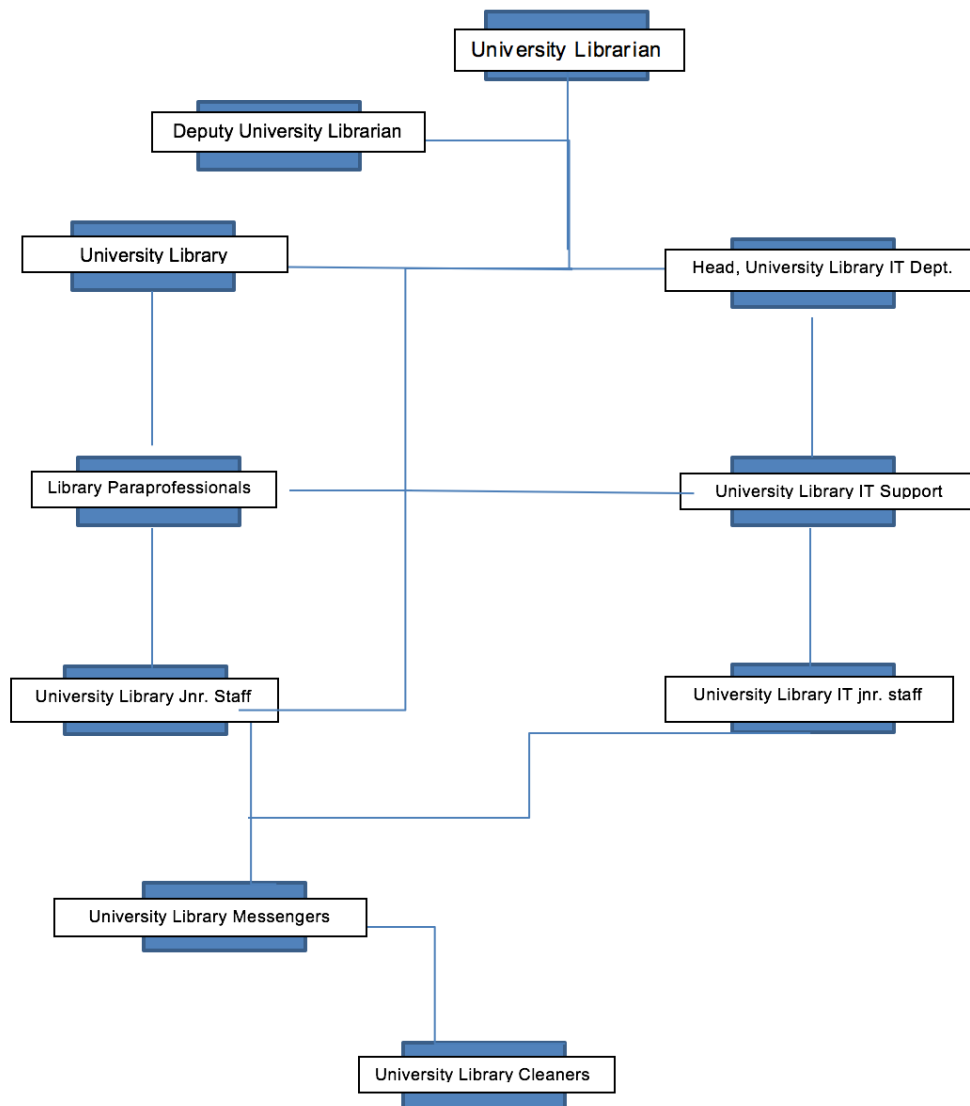


Figure 1. University of Ghana Library Organisational Chart

The University of Ghana Balme Library was the first to embark on automation in Ghana in 2003. The University Ghana Balme Library and the other satellite libraries in the UG have registered a steady increase in its user population over the years. In seeking to reach larger numbers of patrons and provide efficient and effective service it opted to automate its functions and services in that year 2003 and completed this project on October 31, 2006. In the year 2003, the University of Ghana presented a proposal on the topic, *Enhancing and Leveraging Comparative Strengths and Competencies in the University of Ghana through ICT* to Carnegie Corporation of New York. This proposal had the University of Ghana library automation project as an inclusive component. Carnegie accepted the proposal and a grant of 280,000 US dollars for the library component of the project was granted (Adanu, 2006). The University of Ghana Library System automation project was delivered as a turnkey

project by the Innovative Interface Incorporated and used the Millennium Software. The choice of Millennium Software was based on its advantages over other ILS systems software. The III Millennium software has served the University of Ghana Library Systems well. However, in June, 2014, management of the library saw the need to upgrade from Millennium software to an upgraded version known as Sierra which is classified as an open and flexible system by the Australian National University Library (2016). The migration from Millennium to Sierra was undertaken by the University of Ghana Library System to meet the ever increasing needs of patrons of the university who are faculty members, researchers and students. More so, III providers of Millennium encouraged migration to Sierra to enhance operations and service delivery in the library. The migration process was completed in July, 2014.

The UGLS automation project was seen by staff as a way of relieving them off their mundane library tasks. Indeed, easier and better services to patrons have underlied UGLS big push at automation. Prior to the library automation, cataloguing of library materials, acquisition processes and circulations among others were performed manually. However, through the UGLS automation, these library tasks and services are now carried out electronically.

1.2 Purpose and Objectives of Study

1.2.1 Problem Statement

It became vital for the UGLS to automate its library system due to the growing number of patrons using the libraries within the UGLS. These libraries consist of college libraries, hall of residence libraries, and departmental libraries located in the three campuses of the university. Prior to automating the library systems, various attempts were made at automating using Bibliofiles to catalogue in 1997. This attempt was not successful and the project was aborted. The library management deemed it necessary to automate due to the fact that the vast resources of the library could be better accessed through automation.

The University of Ghana Library Systems Integrated Library System (UGLS ILS) has been functioning for the past 8 years and has been upgraded during this period to meet demands of the library. The UGLS ILS is serving its purpose of meeting the work demands of librarians and patrons of the library. However, the UGLS ILS has never been subjected to any process to formally measure its success. The question then remains to be answered as to how the UGLS ILS has fared in terms of the opinions and attitudes of managers and system librarians with regard to the assessment of the success of the UGLS ILS.

1.2.2 Research Objectives

The aim of the study is to discover the opinions and attitudes of library managers, systems managers and paraprofessionals working with UGLS with regard to assessing the success of the UGLS ILS. The following objectives have been identified:

1. Identify success criteria to assess library automation using an ILS, assess the applicability of the identified success criteria at the University of Ghana, and assess the UGLS' ILS according to the identified success criteria
2. Make recommendations to improve library automation using an ILS at UGLS
3. Contribute to the body of knowledge regarding academic libraries ILS success assessment.

1.3 Study Assumptions, Limitations and Justification

1.3.1 Assumptions

Balme Library is the main library of the University of Ghana and has satellite libraries that together make up the UGLS. It is therefore assumed that all library managers and paraprofessionals working with libraries of the University of Ghana are eligible to be included in the survey. The research focused on Balme Library which is the main library and the selected satellite libraries within the University of Ghana Library System.

1.3.2 Limitations

UGLS ILS is used by all end-users within the University community. These end-users use the UGLS ILS to perform library services and functions and patrons of the library also use it to access the library's materials. It would have been proper to seek the views of all users of the UGLS ILS in assessing the success of the library's automated system in this survey. That is however not possible for this study and so only selected library managers, IT staff and paraprofessionals are included. Staff working in some departmental libraries and all the student hall of residence libraries are not included in this study.

1.3.3 Justification of Study

Successful institutions are generally dynamic in nature. Some academic libraries have become dynamic in nature due to the fact that, such libraries are constantly adapting to change to remain meaningful and relevant in satisfying the changing information needs of their patrons in this technology era. The UGLS is generally supposed to have all the required features of a dynamic institution in place and functioning as required. The study therefore would ascertain via internationally accepted criteria as to whether the UGLS ILS can indeed

be said to be successful. This research therefore seeks to contribute to studies that assess the success of library automation in academic libraries and also contribute to the development of a more robust and effective success assessment criteria that are useful and able to provide guidance to future researchers. The UGLS ILS since its completion has never been subjected to any scrutiny to assess its success.

1.4 Definition of Terms

1.4.1 Information System

“Information systems are combinations of hardware, software, and telecommunications networks that people build and use to collect, and distribute useful data, typically in organisational settings” (Jessup et al., 2006:4).

1.4.2 Library automation

“Automation in the library implies the process of the use of computer in carrying out library operations and services. It is the technology that enables the library to process, store, retrieve and communicate information in electronic format and it is unrestricted by distance, time and space” (Akpan and Madu, 2014a).

1.4.3 Integrated Library System

An integrated library system (ILS) is an information system in a library that has its processes and activities automated to the extent that, it is able to handle many electronic formats, and is internet-enabled and is able to manipulate electronic data, enable resource sharing among libraries, and enables access to full-text database (American Library Association, 2003).

1.4.4 Success

Success is difficult to define because it can be viewed from different perspectives and at different stages. Success by vocabulary definition is a desirable achievement, that is, the accomplishment or attainment of an aim or purpose (Oxford Dictionary Current English, (2006:911). The success of an automated library system therefore depends on the aims of implementing the system, and the realisation of the expected benefits of the automated library system.

1.5 Structure

This research work has been organised into five chapters. Chapter 1 introduces and highlights the research objectives and purpose of the study in a manner and context that

shapes the consequent chapters. Chapter 2 reviews the literature and provides a theoretical framework on library automation that serves as basis for this empirical study. Chapter 3 explains the research methodology. Chapter 4 focuses on reporting the findings and analysis and discussion of the results. Chapter 5 comprises the summary of the research, conclusions drawn and recommendations provided.

1.6 Chapter Summary

This chapter gives an overview of the study. It provides a background on ICT use in the academic library and outlines the organisational structure of the UGLS. The purpose and objective, as well as justification for this research and the definition of terms are stated in this chapter. Assumptions and limitations related to this study and the manner this research is organised into chapters is outlined. This chapter is followed by a review of literature on library automation.

CHAPTER 2: LITERATURE REVIEW

2.0 Chapter Introduction

This chapter reviews literature relating to library automation. It addresses its evolution and development including its beginnings in Ghana. The context of automation in the library environment and the library activities that are automated are also addressed. A review of the literature on library activities and benefits of library automation, the basis of assessment of the success of an IS and the conceptual framework of the study is covered in this chapter.

2.1 Library Automation

2.1.1 Historical Perspective and Stages of Development

Library automation gained prominence in the 1960's when libraries in Europe and the United States of America (USA) started using computer systems. In this chapter, the history and development of library automation and how library automation became known as Integrated Library Systems (ILS) is discussed. Researchers and historians have documented how library automation began and evolved through the various stages of its developments (Borgman, 1997). Williams (2002) notes that as far back as the 1930s, attempts were made by librarians to use a semblance of technology to carry out library activities. However that form of technology could not survive the test of time as Rayward(2002) noted. The technology of the 1930s could not survive the social-economic challenges that emerged leading to the breakdown of these technologies by the early 1960s. Groenewegen (2004) revealed that, the automation enthusiasm among libraries in the USA in the 1960s created awareness of library automation among librarians in Britain around the same period which birthed the automation interest among librarians.

Staffady (1989) indicates that, from the 1960's libraries began to experiment with computers and this continued till the 1970's. This stage as noted by Kaplan (2009) was characterised by bibliographic services, as well as the online technology of the day and MARC (Machine-Readable Catalogue) vocabulary such as OCLC (Online Computer Library Catalogue) was introduced into the library market to facilitate library activities. Borgman (1997) opined that, the aim of library automation at this stage was to improve internal library work flow and address data processing issues. The 1960s and 1970s was characterized by library systems being locally developed with custom applications and batch processing of records. This was done by identifying operations that could and needed mechanizing. Library automation transformed the nature of library workflow considerably which resulted in a reduction in the number of staff needed to work and carry out library tasks. It also improved library services.

As librarians were busily developing library automation systems, the system librarian became another phenomenon that was developed alongside. The system librarian's task was to ensure that the automated systems were functioning as expected (Thompson, 2008).

Verbeek and Rowe (2000) are of the view that it was in the late 1970's and early 1980's that, the turnkey system was introduced into the library. This stage also saw developments in computer hardware with mass production of minicomputers by manufacturers. The turnkey system allowed computer hardware and software to be supplied as an integrated package to libraries. This stage marked the beginning of the integrated library system in the library environment. Brovnrigc and Bruer (1976) added that the turnkey system was embraced by the library community due to the benefits it offers in terms of work in the library, such as providing efficiency and speed. It is also cost effective as little expertise is required to manage such systems. The turnkey system provided a short catalogue so that a link could be made between an item being loaned and the bibliographic data for that item. In late 1980's, the integrated library system appeared enabling libraries to perform tasks such as acquisition, cataloguing, reservation of titles and serial monitoring. It is at this stage that Thompson (2008) noted that, library automation systems evolved into Integrated Library Systems with the introduction of the Turnkey system. The systems librarians' role then evolved to that of coordinating the selection, implementation and management of the Turnkey system on the library site.

The 1990's and 2000's witnessed growth of the internet. The advances and growth of the internet enabled libraries operating ILS the opportunity to interact with library users on online web-based library portals and Online Public Access Catalogue (OPAC) systems (Dech, 2012). This stage of library automation development was characterized by client-server technology. The System Librarian's role evolved into that of collaborating with colleagues within and outside the library. Library automation required more than computer hardware and software. They included local area networks, wide area networks, and broadband technologies and accordingly required bigger budgets.

The 2010's is characterised with the rise of cloud based management systems which enables libraries to employ software to store and manage the automated systems in clouds (Breeding, 2011b). This period saw further development in the client – server architecture of the ILS, so that ILS operations can normally be split between clients and servers.

2.1.2 Library Automation in sub-Saharan Africa and Ghana

Ekpeyong (1997) reported that, some African countries with Nigeria as an example started thinking about library automation way back in the 1970s. However, library automated did not materialized in any big manner due to the lack of funds. Nevertheless, some small libraries got automated within Nigeria. Mohammed (2007) reported that attempts at library automation by some Nigerian Academic institutions failed due to the lack of funds. This setback did not discourage libraries within Sub-Saharan Africa from automating their systems. A study conducted by Rosenberg (2005) revealed that by the 1990s about sixty five percent (65%) of the forty (40) public university libraries surveyed in selected Sub-Saharan African countries were automated. Eke (2011) observed that academic libraries within sub-Saharan Africa had embraced technology use as most of these institutions had incorporated ICT in addition to automated systems into their operations in the libraries and were converting library holdings into digitized format to enable easy retrieval and access as well as establishing repositories to store digitized material .

In Ghana, Badu (1990) reported that, the earliest form of technology known in libraries were photocopier machines and type writers which were introduced in the 1970's in the three public university libraries. At that time, these universities were University of Ghana, University of Cape Coast and Kwame Nkrumah University of Science and Technology then called University of Science and Technology. Later on, the University of Ghana Balme Library introduced a word processing computer, but it was not used in the library, but rather sent to the University of Ghana Vice Chancellor's office. In Ghana, major library automation started in the 1990s with the three main public universities. The Balme Library was the first among the public universities to automate their systems in 2006. The automation project of the Balme Library commenced in 2003 and was completed on October 31, 2006 (Adanu, 2006). The other two universities followed suite and started planning their automation project till all had their library systems automated either fully or partially and had their library content either digitized or in the process of having such content digitized. The universities have also established institutional repositories to enable storage of digitized content.

2.2 The Library Environment and Automation

2.2.1 Library Context of Automation

The term "automation" was introduced by D.S Hander in 1936 who was then an employee of General Motors Company in the United State of America. The word was used by Hander to mean handling of parts automatically between progressive production processes (Hitomi, 1996:342-343). Library automation has received varied definitions from various authors in

literature, which inferably have the same meaning. Library automation as defined by Saharan (2013:214-243) is the means of employing technology to perform library technical processes such as acquisition, cataloguing, circulation and serial control. Sajeer (2012) defines library automation as the use of ICT to perform library operations and services to save human power and time. Akpan and Madu (2014b) further added that apart from employing computers to perform library operations and services, automation enables faster and easier processes, storage and retrieval of processed library material.

Kinner and Rigda (2009) report that library automation systems have gone through several changes since its inception. The Internet, new and innovative developments in information technologies, such as open source; the increase in electronic resources; and the rising expectations of library users have contributed to the changing nature of these systems. This has caused library vendors to struggle at times to keep up with the demand for these new services and technologies while providing support for existing services. Rehman and Al-Huraiti (2010) notes that several terms are used currently to describe library automated systems. These terms are library management system (LMS), integrated online library system (IOLS) and, most commonly used, integrated library system (ILS).

The American Library Association (2003) stated that, an integrated library system must be able to handle many electronic formats, be internet-enabled and must be able to manipulate electronic data, enable resource sharing among libraries, and enable access to full-text database. ILS enables users to search online resources such as e-books, databases, computer files and the internet using a single interface (Reitz., 2014). Rehman and Al-Huraiti (2010b) are of the view that the aim of ILS is to provide users of the library seamless access to library material. Satisfying the information needs of the user has always been vital to the existence of libraries. The availability of technology has created the need for librarians to provide their users with electronic content and to find new ways of meeting the increasing information needs of users electronically (Kinner and Rigda, 2009). Dougherty (1990) assets that, ILS allows libraries to use the acquisition module to acquire invoice and receive purchased item, catalogue these items, circulate and track the library item. Further ILS is useful for inventory taking and users are able to search for titles in other branches of the library that have been integrated.

2.2.2 Automating Library Activities

The application of technology is part and parcel of everyday activities in the modern day organization and institution, which include libraries. Incorporating the use of technology in organizations always comes at a cost, and in certain instances, at such great cost when

compared to the organization's overall total budget. Libraries, just like other organizations investing in the use of technology need to ensure that such investments are carefully thought through and planned and implemented to the best benefit of the organization. Technology application in libraries is referred to as library automation and it involves the use of technology devices to execute library processes (Clayton and Batt, 1992:1)

In automating library activities many authors seem to have different views on the order of priority of which housekeeping activity should be automated first (Rao, 1995). Amekuedee (2005) opined that, the operation of cataloguing should be given priority in the automating of housekeeping activities. Mutula (2012) in a study of library automation in the University of Botswana noted that housekeeping activities that are labour intensive and that take much staff time such as acquisition and cataloguing should be given high priority when automating library activities. This is to ensure that bibliographic records are accurately captured from the onset of library automation.

Rajput and Gautan (2010) believes automation if carried out well could be of great benefit in the housekeeping areas such as, acquisition, cataloguing, circulation, serial control stocktaking and classification. Rao (1995) is of the opinion that institutions that carry out library automation of library housekeeping activities of acquisition to control cost, speed up the purchasing of library material, improve funds control and allow development of harmonious integrated systems. Peyala (2011) asserts that an automated acquisition system aids in funds control, helps with easier and faster processing of acquired library material and eliminates duplications.

Akpan and Madu (2014) points out that in planning for library automation, the institution must take into consideration, the cost of equipment, staff and user training as well as a project cost –benefit analysis.(Rowley, 1980:7-25) outlined 6 steps to library automation:

1. Definition of objectives,
2. Feasibility study,
3. Definition phase,
4. Design phase,
5. Implementation stage, and
6. Valuation stage.

Accordingly, an automated library system requires proper and effective planning in order to achieve the full benefit of library automation. For the success of any library automation

project Clayton and Batt (1992:139) urge that project managers or head librarians should invest time in “*planning the managerial function, systems testing, file creation, training and systems changeover*”.

2.2.3 Computer Software

Computer software makes work processes easy, fast and more efficient and boosts productivity. Computer software can be defined as any set of electronic machine-readable instructions that directs a machine to perform specific operations thereby enabling users to interact with a machine or have it perform specific tasks. The computer hardware requires software to run and software makes computer hardware usable. There are two categories of software namely, system software and application software. The system software helps with management of files, loading and the execution of programs as well as enabling the system to accept commands from the input device. The system software that collectively manages the system is known as the operating system. Application software programs are computer written programs that enable tasks to be done. A typical component of an operating system is made up of the application programs interface that act as an interface for application programs and aids with the access to the internal program of the computer. There is also the kernel module that contains the processing functions of the operating system. The output and input (O/I) drivers help with storage and retrieval of files. The network modules control interaction between computer system and the networks to which the modules are attached (Englander, 2009:16-17).

2.2.4 Computer Hardware

Computer hardware is the part of the computer system that is visible and tangible. Typically, the hardware is made up of the input and output devices. The input devices are the keyboard and the mouse that are used to input data into the computer. The output device is the display screen. The other physical components of the computer system are the central processing unit located inside the computer with the main function of calculating and performing other operations. The memory within the computer holds programs and data while processing are being carried out. This description of computer hardware is applicable to all types of computer be it large frame computers, personal computers or hand held devices (Englander, 2009:14-16).

Hardware is a key requirement for library automation and there are various types of suitable hardware obtainable in the marketplace. A typical hardware requirement for a library depends largely on (Devi and Raghuveer, 2014):

- Available budget;
- size of the data to store;
- Usage load;
- Required speed;
- Features to upgrade when it is required;
- Availability of servicing (maintenance);
- Compatibility with operating system that is going to be used; and
- Warranty period.

It is the view of Dhanavandan and Tamizhchelvan (2012b) that software selection precedes hardware selection in that, in the library environment, the software capabilities are critical to effective library housekeeping activities and information retrieval tasks. Nebeolise and Osuchukwu (2014) assert that success of library automation depends to a large extent on the right selection of hardware and software and their proper application to automate library activities.

2.3 Library Activities

The major activities of libraries are considered to be acquisitions, cataloguing, circulation and serial control (Sindhav and Patel, 2014). Each of these core activities are examined in more detail below.

2.3.1 Acquisitions

Acquisition is a term generally used to denote procurement of library print and non-print material. These materials include, books, reports, electronic- journals, electronic- books, government publications and audio-visual materials. Generally, there are distinct processes characterizing the acquisition of library material. The processes are: selection, verification, vendor selection, ordering, claims and cancellations, payment, accessioning, statistics, gifts and exchange. These processes can be grouped into five major functions and these are as follows; selection, ordering, accessioning, management information and gifts and exchange.

The acquisition process begins with the selection of titles. The titles are selected from a variety of sources including the library catalogues and book lists submitted by users of the library. After titles are selected, vendors are selected and quotations received from them. After quotations are received, vendors that meet the library's requirements are selected and orders placed. There are different order modes. Depending on the library's needs and budget, the order mode that suits the library is used. The order record is then filed. When

books are received, physical examination of the books are done. The books are crosschecked against the filed list. When the library is satisfied with the books and the vendor meets the requirements, the books are then processed and payments made to the vendor. Processing of books involve stamping with property stamp, accessioning and assigning location for the books within the library. The books are then forwarded for cataloguing (Clayton and Batt, 1992:58-59).

An automated acquisition process serves as a platform for automating other library housekeeping activities that enables the creation and development of an integrated system within the library with a single bibliographic data base which facilitates the numerous information processing needs of various technical services and functions and other services in the library (Waghmode, 2012).

Vickery (1995) observed that automation of the acquisition process is not new in the acquisition of library material, in that libraries have had a form of automatic ordering system in the library for many years which enabled enhanced workflow. The acquisition process is primarily to acquire, build local collections, and manage and control access to library materials. The traditional process had mainly been to serve the library itself rather than the public. The automated process has changed this role. Currently, the user is integrated in the automated acquisition process, in that the whole process is now aimed at providing a speedy service for the library and the user. Onoriode (2013) opined that, an automation system allows decentralization of library records for easy access and status of a library material is readily known by users and staff.

Jui (1993) notes that, the mundane task of manually searching through library card catalogue for verification to avoid duplication when purchasing is eliminated and further lists functions of library automated acquisitions functions as follows:

- Helps with accurate accounts of library fund.
- Easier access to external bibliographic data.
- Bibliographic records of purchasing order with date are generated for users to keep track of ordered items.
- Notify patrons of the arrival of a request made.
- Overdue notices are automatically sent to vendors.
- Delayed acquisition orders are automatically sends a cancellation notice to the vendor.

- Accurate vendor's performance reports are created such as orders made, amount paid and delivery date.
- Keeping and maintaining records of acquisition activities.
- A status of newly purchased item is readily made known for the users with a generating report for library use.

2.3.2 Cataloguing

Cataloguing is defined by Reitz (2014) as *"a comprehensive list of the books, periodicals, maps, and other materials in a given collection, arranged in a systematic order to facilitate retrieval (usually alphabetically by author, title, and/or subject). In most modern libraries, the card catalogue has been converted to machine-readable bibliographic records and is available online"*. Catalogues according to Singh (1999) dates back to the beginning of libraries in ancient times and this form of cataloguing were used in the library of Alexandria in ancient Egypt. The catalogue was known as Pinakes and was developed by a librarian called Callimachus. The purpose of catalogues in the library had always served as an information retrieval tool for users of the library and librarians and this was achieved through the use of card catalogue.

The cataloguing process is a very daunting and engaging task that requires a lot of expertise. Cataloguing involves a thorough examination of the material slated for the catalogue. The things that are considered in examining the material include the author, title, year of publication, place of publication and most importantly, the subject matter. In identifying the subject matter, a lot of factors come to play. A book with computing in the title does not necessarily place the book under technology. An accurate identification of the subject matter is necessary to allocate a class number to the material. A wrong classification would make location and access of the book difficult.

When the subject matter is identified, the schedule is then used to assign the class number. There are different schedules. There is the library of Congress Schedule, Dewey Decimal Classification Scheme and Anglo-American Cataloguing Rules (AACR II). In assigning a class number using a schedule, sometimes the country of publication, year of publication may be needed. The Cutter number is then assigned. There are several Cutter schedules and an example is the LC cutter. There are several libraries that have developed their own Cutter to suit their system. UGLS, for instance, has its own Cutter that it assigns to its books (Tabusum et al., 2013).

Raiz (1992) stated that in the early years of library automaton in the USA, libraries introduced an in house system of cataloguing to maintain records for the library's holdings. This system is usually updated and printed at periodic intervals. When computerization started in the library, these retrospective catalogue were converted into machine readable format and added into the main file to make it complete. These were the processes involved in cataloguing systems:

- “Preparing work sheet
- Generating machine readable records
- Verification of the records and generation of the catalogue
- Generation of added entries
- Generation of indexes and cross-reference
- Printing the records”

There are many benefits derived from automated cataloguing. Monotonous and repetitive functions of the library are performed more efficiently as well as providing unlimited access to library catalogue. Book catalogues can be produced from printed catalogues and other printed records in the library. An automated library system can easily be integrated into other systems especially in an academic institution. Automated catalogue is centralized and enables sharing among libraries. The online catalogue allows direct input to be made such as correct, reuse, add new editions of a particular title online through the existing terminals. Online file can be sort, fill and rearranged within the library's automated system (Riaz, 1992:151).

2.3.3 Circulation

Libraries lend out library materials to their patrons and the lending and borrowing process requires the borrower to provide borrower information to the lending library. For most academic libraries like Balme Library, borrowers are required to provide information on their name, hall of residence, programme of study, and their academic level. When the required information is provided by the borrower, the library staff checks the information against the borrower's registration. Borrowers are made to register at the library before using the facility. The registration card bears all the information and these cards are catalogued alphabetically by surname in a specially designed box. A record of the borrowing date and date of return is indicated. When the library staff is satisfied with the information provided by the borrower, a copy of this information is kept in the office records and attached to the student's registration. When the library material is returned, the information is accordingly updated and

the circulation process for that particular library material and borrower is closed. The library material is then made available again for borrowing by library patrons.

Library circulation process started as far back as the 1890s when the ledger system was used in recording the number of books a borrower borrowed and the detailed record of the borrower of each book. In the 1900s other forms of the circulation process were introduced such as the Newark system. This system allowed a borrower to present an item that needs to be borrowed at the circulation desk with an identification card that is verified. The borrowed material's due date is stamped on a slip attached to the borrowed material. The borrower's record and the date the material is due is recorded on a card for filling in a tray at the circulation desk. The cards are arranged in an orderly manner either by date, author or title (Tabusum et al., 2013).

Jui (1993) is of the view that, circulation process is the first activity that a library considers to automate in that the automated system carry out the following library activity such as keeping track of library materials, keeping records of number of books checked out at a given period, detecting delinquent borrowers, printing and sending out overdue notices to library defaulters, allowing fast access to location as well as knowing status of items, generating statistical data of circulation activities, and providing branch libraries network support. Further a user can access the status of library material without physically being in the library, update of library material is accurate since record of library material is automatically recorded.

Berghammer (1995) pointed out that, library automated systems carried out properly enable proper circulation such as reservation of books, generation of statistical reports of library transactions, check-in and check-out. The activities of an automated library system are fitted with three important library automated standards and these are database structure called MARC 21, Z39.5 protocol and search features. The word MARC (Machine Readable Catalogue) enables the library to correctly display, print catalogue records, retrieve information within specific fields and allow for easy migration of library systems without re-encoding records. The Z39.5 is described as the information search and retrieval protocol. It allows for searching, easy retrieval and exchange of records on different platforms (Yannis et al., 2000).

2.3.4 Serial Control

The term "serial" is defined as any publication delivered in a continuous manner and which is planned to be continued for an indefinite period. Serial publications may be issued in print or

non-print format. Examples of common serials are magazines, research journals, directories, newspapers, trade publications, yearbooks and almanacs, and abstracts and indexes. Serial processing in the library begins with acquisition. The next step in the serial processing is cataloguing and classification which enables acquired serials to be classified into their respective groups in the catalogue (Edoka and Anunobi, 2008).

Serials processing is cumbersome and requires special skills for check-in and cataloguing. The use of technology in serials processing brings great relief to library staff. An automated serial system provides greater speed and accuracy efficiency such as giving access to check-in and newer services to users. Further, an automated serial system aids in data generation and management which are useful to the overall library collection management, evaluation, and library budget management (Lynch, 1991).

2.4 Benefits and Challenges of Library Automation

Library automation is an expensive venture undertaken by any institution. To ascertain the rationale behind investments in library automation by libraries, Sajeer (2012) pointed out that automation is carried out to maintain bibliographic records and to reduce repetition in the technical processes and to share library resources. Akpan and Madu (2014b) corroborates this by adding that, an automated system within the academic library provides the speed, and precision needed in searching the libraries bibliographic records.

Table 1. Benefits and challenges of library automation outlined by various authors.

Authors	Benefits	Challenges
Ahenkroah-Marfo et al (2010) Amekuedee (2005) Chisenga(2004) Egunjobi and Awoyemi (2012) Kargbo (2009) Mutula (2012) Raval (2013) Sajeer (2012) Stilwell and Hoskins (2012) (Thompson and Pwadura, 2014) Wella (2011)	<ul style="list-style-type: none"> • Convenient • Ease of use • Easy access • Encourages resource sharing • Improves quality of service in libraries • Helps the library to introduce new services • Multiple library tasks such as acquisition, and cataloguing and circulation are performed faster and easier • Allows librarians to acquire new skills from training • Enhances management of physical and financial resources • Aids discarding of non-useful material and elimination of duplicates 	<ul style="list-style-type: none"> • Lack of appropriate planning by academic institutions and inability to sell properly the automation concept and how the institution stands to benefit to the management of the institutions • Staff anxiety • Lack of training / expertise • Lack of funds / limited budgets • Lack of ICT infrastructure • Inadequate broad bandwidth • Constant and ever-changing requirements of upgrades and renewals of software and hardware and licences • Sophisticated technology equipment becomes obsolete after few years of use • Lack of maintenance • Inappropriate security equipment which sometimes fails to detect theft • Frequent power outages / surges

2.5 Assessing Success of Information Systems

Assessment according to Sengal et al (in Goldsmith, 2013:187) is a process that involves the gathering of information about results. It involves comparing results at various points in time and then opening a discussion of the meaning of the results gathered and their effects on future decision making. Hill and Patterson (2013) are of the view that, assessments could present challenges but still be worthwhile to undertake if the aim of the assessment is to create and add value, to that which is being assessed. Rockman (2002) adds that assessment strategies must be realistic, clear, and manageable. Within the context of institutions and organizations, assessment procedures need to be communicated properly and be sustainable and integral to the institution's mission. For example, in assessing the success of an automated library, it is important that the process of assessment is inherent with great potential to produce significant results in the library's present and future undertakings and the library's ability to provide relevant services. Okpokwasili and Blakes (2014) are of the view that assessment of library services and resources need to be carried out on a continual basis to ensure they remain relevant to their patrons and stakeholders.

There is difficulty in defining the term success. Brockway and Hurley (1998) notes that, the definition of success can only be approached and never fully achieved in that, being successful in any undertaking requires knowing one's current state in order to fully define success. The issue of success is viewed from different perspectives in that, one man's success may be another's failure and what is perceived as success today may be tomorrow's failure (Sauer, 1993). This notwithstanding Goldsmith (2013:156) is not alone in his view that success is a desirable achievement. Success can be considered at various levels, for example, project success and information system success.

According to Heeks (2002), project success is traditionally measured by time, budget, and being able to satisfy the required criteria. Bakker et al, (2010) echoes Heeks' view and sees project success as a project that produces its deliverables within a specified time within the specified budget and meeting the project requirements. However, Westerveld (2003) noted that, the issue of project success is understated and goes beyond the golden triangle of time, budget and required quality. Project success is generally measured by: time, budget and ability to satisfy required criteria (Bakker et al, 2010).

Library automation undertakings in academic libraries typically take the form of project implementation. Indeed the Balme Library automation was a library automation project

(Adanu, 2006). According to Pinto and Slavin's (1987), a successful project satisfies the following criteria:

- Comes in on-schedule (time criterion).
- Comes in on-budget (monetary criterion).
- Achieves basically all the goals originally set for it (effectiveness criterion).
- Is accepted and used by the clients for whom the project is intended (client satisfaction criterion).

Project implementation success can be described as a project that completes on schedule, meets budgetary criterion, achieves all set goals and meets client satisfaction criterion. Thus from the point of view of Pinto and Slavin (1987) project success can be said to mean implementation success.

The importance of acceptance and satisfaction is picked up by Freeman and Beale (1992) who identified five criteria that are used in measuring project success, namely, technical performance, efficiency of execution, managerial and organisation implications (mainly customer satisfaction), personal growth, and manufacturability and business performance. Lipovetsky et al, (1997) noted that, the assessment of a project success is carried by internal measures such as technical and operational goals as well as meeting the set schedule and budget. They note that the measurement of project success is not limited to internal measures but external effectiveness, which could be categorised into project impact on its customers and the organisation's development as a whole. Project benefits to customers are important to the success of any project.

It is noted that, it is possible to generate a general checklist for project success criteria, though projects differ and are shaped by several factors, which include the size, uniqueness and complexity of the project. The Oxford Dictionary of English (2006:410, 619) defines criteria as "a principle or standard by which something may be judged or decided" while a factor is described as any circumstance, fact, or influence which contribute to a result." Lim and Mohamed (1999) observed that, when factors and criteria are applied to the definition of project success, the results are a set of circumstances, facts, and influence which add to the project outcome. Project assessment using success criteria depends largely on the individual or group carrying out the assessment since a project perceived as a success by an organisation might not meet the customer's expectation. One's view of success can also be influenced by one's occupation.

The Balme Library automation project is one such typical project. The Balme Library automation project which is the UGLS ILS is an IS project of the UGLS. By definition library automation is attained by means of a specific type of information system, namely, an integrated library system (ILS). An information system is usually defined within the context of an organisation or institution. It includes hardware, software, data, people and processes. It is a system in which people, the users, or end users, both inside and outside the institution interact with elements within the information system. These interactions involve processes that are tasks and functions, and activities that users execute to realise specific outcomes (Rosenblatt, 2014:6-9).

Although information systems (IS) success is a key issue in practice there is little consensus after three decades of research on appropriate generically applicable and specific measures of IS success in organizations (Gable et al, 2008). The DeLone and McLean’s (1992) IS-Success model is one of the most widely cited IS success models that provides a framework for evaluating IS success from different perspectives (Heo and Han, 2003). Figure 2 depicts the DeLone and McLean (1992) IS-Success model. It consists of six (6) interrelated main constructs or dimensions of IS success. These constructs or dimensions are System Quality, Information Quality, Use, User Satisfaction, Individual Impact, and Organizational Impact. The “systems quality” dimension measures success relating to the technical features of the system. The “information quality” dimension measures success relating to semantic features. The “use, user satisfaction, individual impacts”, and “organizational impacts” dimensions measure effectiveness success.

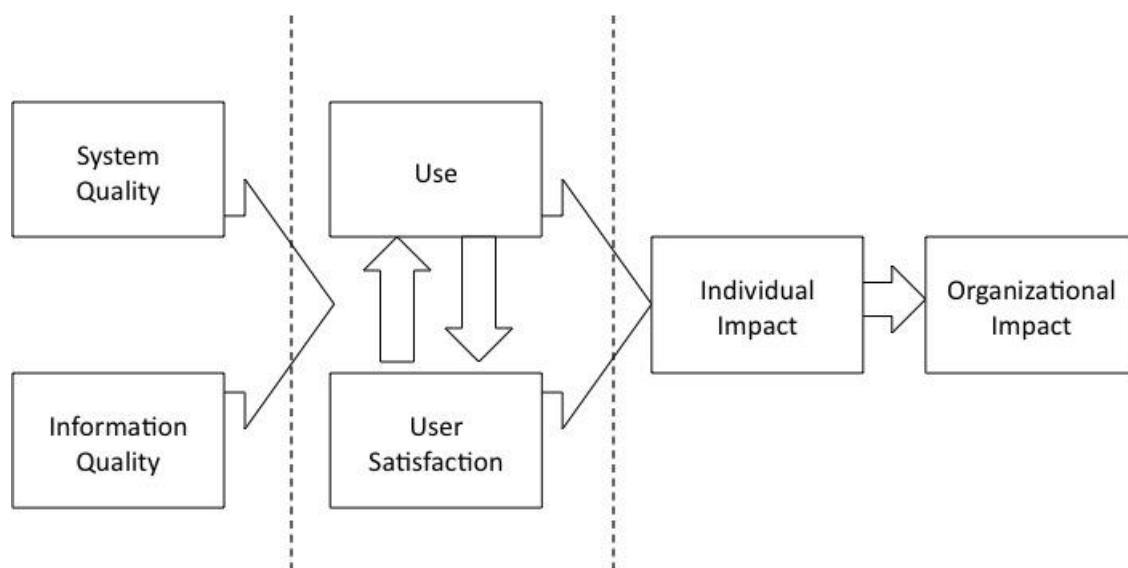


Figure 2. Information Systems Success Model (DeLone and McLean, 1992)

IS success evaluation using the DeLone and McLean (1992) model would begin with a measure of system and information quality. Following from these dimensions, a user experiences the features of the system and the user then is either satisfied or dissatisfied with the system or its information products. The use of the system and its information products then impacts or influences the individual user in the performance of his or her work. These individual impacts collectively result in organizational impacts.

In 2003 DeLone and McLean (1992) updated their IS success model. It also has six (6) dimensions of IS success: These updated dimensions are Information quality, System quality, Service quality, Use/Intention to use, User satisfaction, and Net benefits. The updated DeLone and McLean (2003) IS Success Model depicted in Figure 3 demonstrates with arrows the interrelations among success dimensions in a process sense. In the causal sense the arrows do not show whether the interrelations are positive or negative. The three quality dimensions: “Information quality”, “Systems quality”, and “Service quality” singularly or jointly affect subsequent “use” and “user satisfaction”.

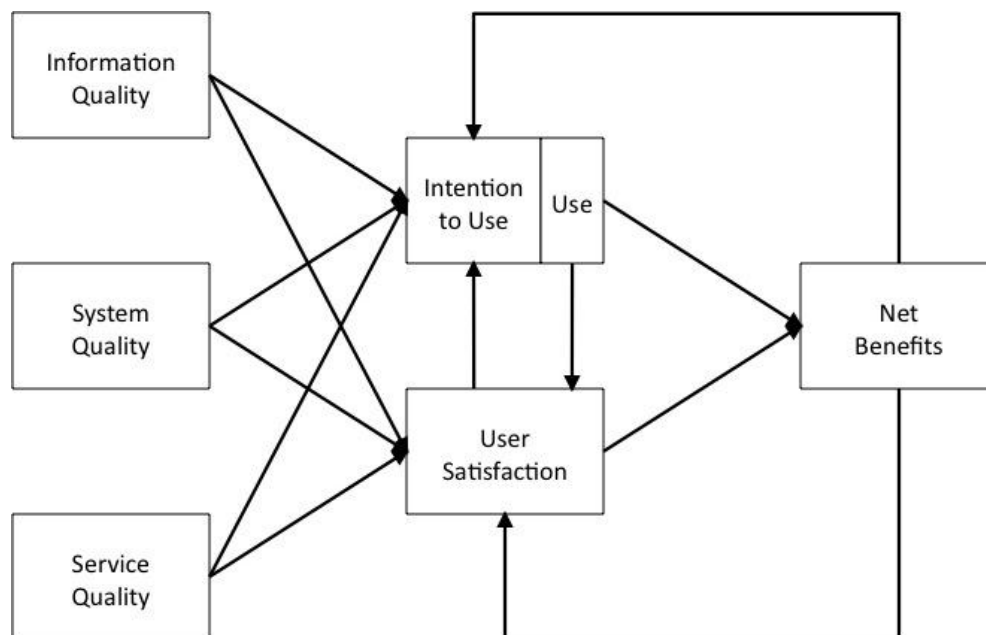


Figure 3. Updated Information Systems Success Model (DeLone and McLean, 2003)

The arrows demonstrate proposed associations between the success dimensions. The updated DeLone and McLean (2003) model is explained as follows: An IS can be evaluated in terms of information quality, system quality, and service quality; in that these dimensions affect the consequent Use/Intention to use and User satisfaction dimensions. Following from

using the system, certain benefits will be realized. The Net benefits dimensions which may be positive or negative would be attained and would impact user satisfaction and the further use of the information system. With the DeLone and McLean (2003) updated model, Use and intention to use are applied differently within process or casual contexts. “Use” must precede “user satisfaction” in a process sense, but positive experience with use” will lead to greater “user satisfaction” in a causal sense. Also, increased “user satisfaction” will bring about increased “intention to use”, and consequently “use”.

The DeLone and McLean (2003) model has been subjected to critique. The model is said to be deficient in providing sufficient explanations of its underlying theory and epistemology. Also, the suggested causal/process nature of the model has been questioned by some researchers (Ballantine et al., 1996, Myers et al., 1997). The DeLone and McLean (2003) model is thus faulted for its deficiency of theoretical grounding, as well as the feeble explanations for mixed results from empirical studies within causal contexts. All these have raised some issues about the validity of the suggested relationships among the 6 dimensions.

Gable et al, (2008) reconceptualised the DeLone and McLean (2003) IS success model arguing that a holistic way for evaluating an IS should comprise of IS success dimensions that together look both backward (impact) and forward (quality). Figure 4 shows the IS-Impact conceptual model. It shows the nexus between impacts to date and anticipated future impact (Quality). IS-Impact of an Information System (IS) is defined as a measure at a point in time of the stream of net benefits from the IS, to date and anticipated, as perceived by all key user groups.

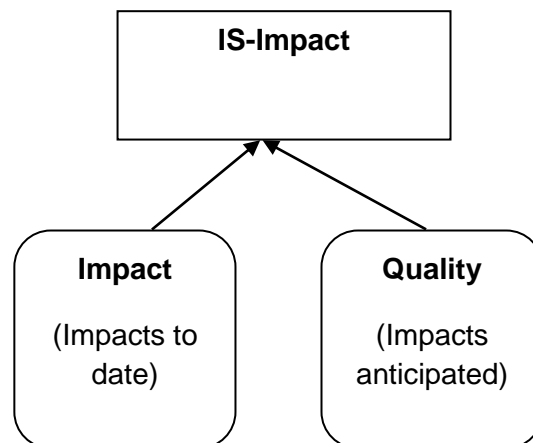


Figure 4. Reconceptualised model of IS success (Gable et al, 2008)

The final Gable et al, (2008) IS-Impact Model is shown in Figure 5. It includes four dimensions in two halves. The IS-Impact model adopts dimensions represented in the DeLone and McLean (2003) model and also employs them in a different manner. The Impacts half which has Individual Impact and Organizational Impact dimensions are explicitly and intentionally measured at the same time as the Quality half that has the System Quality and Information Quality dimensions. These measurements are done retrospectively, up to a point in time, and not mediated by Use. The IS-Impact model provides a snapshot of the IS. This snapshot or cross-sectional approach is often criticized when the intent research is to test causality.

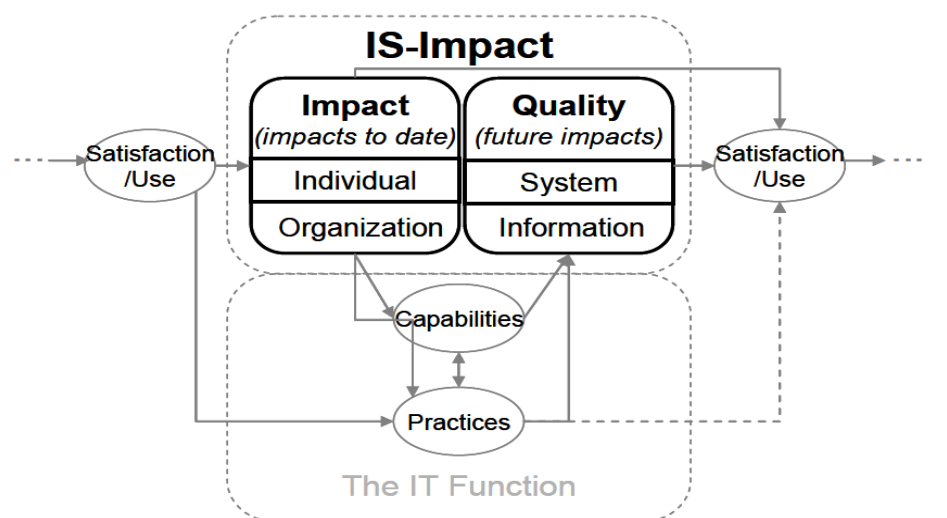


Figure 5. IS-Impact Measurement Model (Gable et al, 2008)

The IS Impact model illustrates that a quality system and quality information are worthy and valuable to the extent that they bring about satisfaction and fitting use and positive impacts on the individual and the organization that use the IS. Part of the IS Impact model as shown in Figure 5 is the IT Function. The IT function includes all other IT capabilities and practices within the organization, and also those IT functions that are brought into the IT function from outside the organization through outsourcing.

The DeLone and McLean (2003) IS Success model and Gable et al, (2008) IS Impact model have some major commonalities as well as major significant dissimilarities. The two models bring together and interrelate several dimensions of IS success. These two models have both been extensively validated using statistical and perceptual measures. This study adopts the IS Success/Impact Measurement developed by DeLone and McLean (1992,2003) and latter extended and reconceptualised by Gable et al, (2008) as theoretical foundation.

2.6 Success criteria

Farajpahlou, a professional librarian and professor attached to the Shahid Chamra Ahvaz University in Iran, developed criteria for assessing library automation success categorised under four headings:

1. Usage of the system;
2. Management of the system;
3. Technicalities of the system; and
4. Boundary issues.

The criteria were used in a survey carried out by Farajpahlou in 1993 in Australia to determine attitudes of Australian university library experts and systems managers. Farajpahlou (1999) advised that, in order for the criteria to gain more generalization, the criteria should be tested in different environments and on other groups of experts in automated library environments to assess their success.

The literature review did not yield results that showed applicable criteria other than the Farajpahlou (1999, 2002) success criteria. The Farajpahlou (1999, 2002) success criteria are internationally accepted criteria for assessing the success of library automation by means of ILS of institutions in both developed and developing countries and thus were deemed as a suitable basis for the study of the UGLS ILS.

The DeLone and McLean (1992) IS success model is the established theory on which all current IS theories are founded on and is the most extensively mentioned in researches related to IS success. The four criteria categories of Farajpahlou (1999, 2002) can be related to the IS Impact model in a manner that relates the Quality half of the model to the Management of the system and Technicalities of system criteria. The Impacts half of the model can relate to the Usage of the system and Boundary issues related to the system criteria. It is noted that Gable et al, (2008) assert with the IS Success/Impact Measurement model that User Satisfaction and IS Use are a consequence of the success (before and after), rather than a causal factor to success. Furthermore, System Quality and Information Quality affect Use and User Satisfaction. There is therefore a relationship amongst these sectors of the IS Success/Impact Measurement model which includes the four key criteria adopted by this study. The researcher therefore posits that the IS Success/Impact Measurement model supports the Farajpahlou (1999, 2002) success criteria. Moreover, the

Farajpahlou (1999, 2002) library automated systems criteria for measuring success of library automated systems has been successfully used to determine successes of library automated systems of institutions in Iran and Australia. This study therefore adopts the Farajpahlou (1999, 2002) criteria as basis for assessing the success of the UGLS ILS. The four categories that make up the Farajpahlou (1999, 2002) criteria have in all 26 factors/criterion for assessing the success of an automated library system and are discussed in more detail below.

2.6.1 Usage of the System

The key term ‘usage’ from the perspective of an ILS stems from the term ‘use’ and according to Gedenk et al, (2007) it is a measure and extent of the spread of technology in the context of an IS in an institution. In effect, it is the extent or level of technology application employed with an IS of an institution as well as the actual usage and extent to which a user employs the IS in carrying out tasks within the institution.

It is noted that in executing one’s task, a user is either satisfied with the system or dissatisfied. User satisfaction is mainly concerned with the successful interaction between the users and the IS. How well an IS functions depends on their quality. Factors that make up quality of a system as outlined by Wu and Wang (2006) are the absence of errors in the system, stable performance of the system, the ease of use of the system, quick response rate of the system and the instructiveness of the system.

Table 2. Success criteria pertaining to usage of the system (Farajpahlou, 1999; 2002)

Category	Success Criterion (indicates number in Farajpahlou questionnaire)
Usage of the System	(1) A successful automated library system is usually user-friendly in terms of its interactive interface
	(5) A successful automated library system is usually “self instructive”
	(16) A successful library automated system is usually easy to use
	(23) A successful automated library system should provide good management information

2.6.2 Management of the System

The phrase “management of the system” has its roots in Management Information System that put emphases on the management of information systems to deliver efficiency, effectiveness and increase productivity. In the integrated library system management environment, the system is generally expected to offer help in the management of the normal library functions like acquisitions, cataloguing, circulation, OPAC and other administrative functions such as statistical reports and facilitate direct access to sub modules across the main functional modules (Rabishankar, 2012). According to Yang (2013)

libraries seem to be over whelmed with daily loads of managing information which can lead to fragmentation of library information and disorganisation of activities in the library. She adds that, it is possible to employ the use software such as Enterprise Resource Management (ERM) electronic collection management such as Sierra's to rectify such issues. ILS should be flexible enough to allow easy learning, easy maintenance as well as easy fixing in case there is a problem with the system, and the system should save on staffing and time.

Table 3. Success criteria pertaining to management of the system (Farajphlou, 1999; 2002)

Category	Success Criterion (indicates number in Farajphlou questionnaire)
Management of the system	(3) A successful automated library system should not require extensive teaching of users
	(6) Integration of automation planning process into library activities does not usually have impact on the success of the resulting automated library system
	(7) A successful automated library system should allow a university library to employ less-qualified staff
	(8) A successful automated library system is usually based on a well-prepared automation plan
	(10) A successful automated library system does not depend on carefully considered contractual commitments with the vendor
	(13) A successful automated library system should save staff time
	(15) A successful automated library system should not require extensive courses of library staff training programs

2.6.3 Technicalities of the System

Technicalities of a system in Farajphlou (1999, 2002) have to do with the systems technical issues such as the continued development of the system and response rate of the system. Dowlin (1985) explaining Farajphlou (1999,2002) listed "technicality of the system" factors stated that, an automated system should be flexible as well as compactible to allow for future expansion and upgrading, compatible with existing work procedure that seamlessly allow the integration with existing systems. Dowlin (1985) adds that, systems should be reliable enough to minimize down time as well as enhance fast response rate.

Table 4. Success criteria pertaining to technicalities of the system (Farajphlou, 1999; 2002)

Category	Success Criterion (indicates number in Farajphlou questionnaire)
Technicalities of the system	(9) A successful automated library system will usually allow increase of quality of library services without increase in the number of staff
	(11) A successful automated library system will usually depend on its technical compatibility with other automated processes in the library
	(12) A successful automated library system is usually capable of continued development and enhancement
	(18) Having a fast response rate is one of the important factors in determining the success of an automated library system
	(20) Success of an automated library system is not usually judged on the length of time that the system lasts
	(22) A successful automated library system should have minimum down-time (say 1 percent)
	(24) Success of an automated library system will usually depend on its compatibility with existing work procedures

2.6.4 Boundary Issues

There are boundary issues related to the success of automated systems that includes political issues and issues relating to the cost of the systems and such issues relating to the selection of the vendors among others. Prior to automating a library system, it is imperative for library management to have a clear well drawn plan that convinces stakeholders of the benefits of the automated system. This is important to ensure that the system continuous to receive the needed funding to keep it operational. The credibility of the vendor is also very important. The length of time the vendor has been in business and the vendor's track record and relationship with customers are issues that need to be assessed. This can help management of the library to make an informed decision on the vendor. Each system is purchased with the intention of serving the library's goal of automation for the specific period. There should be guarantees that an acquired system would serve the purpose and time it is supposed to serve.

Table 5.Success criteria pertaining to boundary issues (Farajphlou, 1999; 2002)

Category	Success Criterion (indicates number in Farajpahlou questionnaire)
Boundary issues	(2) A successful automated library system can usually increase the library's influence in getting status from other departments in the university
	(4) Demonstration of clear political objectives at the beginning of automation has clear impact on success of resulting automated library system
	(14) The length of time a vendor has been in business should be considered as a measure for the success of the system produced
	(17) A successful automated library system can often increase the library's influence in getting resources from the university
	(19) A successful automated library system usually helps to increase the library's status in the library and information profession
	(21) Overall costs of an automated library system do not usually count in the success of the system
	(25) One factor in the success of an automated library system should be the number of libraries which buy it and install it

Table 6 presents the 26 criteria according to the four categories that were used as the basis for the data collection for this study.

Table 6. Success criteria by category (Farajpahlou, 1999; 2002)

Category	Success Criterion (indicates number in Farajpahlou questionnaire)
Usage of the system	(1) A successful automated library system is usually user-friendly in terms of its interactive interface
	(5) A successful automated library system is usually "self instructive"
	(16) A successful library automated system is usually easy to use
	(23) A successful automated library system should provide good management information
Management of the system	(3) A successful automated library system should not require extensive teaching of users
	(6) Integration of automation planning process into library activities does not usually have impact on the success of the resulting automated library system
	(7) A successful automated library system should allow a university library to employ less-qualified staff
	(8) A successful automated library system is usually based on a well-prepared automation plan
	(10) A successful automated library system does not depend on carefully considered contractual commitments with the vendor
	(13) A successful automated library system should save staff time
Technicalities of the system	(15) A successful automated library system should not require extensive courses of library staff training programs
	(9) A successful automated library system will usually allow increase of quality of library services without increase in the number of staff
	(11) A successful automated library system will usually depend on its technical compatibility with other automated processes in the library
	(12) A successful automated library system is usually capable of continued development and enhancement
	(18) Having a fast response rate is one of the important factors in determining the success of an automated library system
	(20) Success of an automated library system is not usually judged on the length of time that the system lasts
	(22) A successful automated library system should have minimum down-time (say 1 percent)
	(24) Success of an automated library system will usually depend on its compatibility with existing work procedures
(26) A successful automated library system will usually allow increase in the quantity of library services without increase in the number of staff	
Boundary issues	(2) A successful automated library system can usually increase the library's influence in getting status from other departments in the university
	(4) Demonstration of clear political objectives at the beginning of automation has clear impact on success of resulting automated library system
	(14) The length of time a vendor has been in business should be considered as a measure for the success of the system produced
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	(21) Overall costs of an automated library system do not usually count in the success of the system
	(25) One factor in the success of an automated library system should be the number of libraries which buy it and install it

2.7 Chapter Summary

Library automation dates back to the 1930's and has evolved since with ever improving technology into Integrated Library Systems. In Sub-Saharan Africa, library automation took off seriously in academic libraries in the 1990's. Library automation involves the application of computer hardware and software to carry out housekeeping activities of the library. It encourages resource sharing and enhances management of library resources and has as a major challenge, the size of its budgets within the ever-changing requirements of technology and the limited financial resources of libraries. By definition library automation is attained by means of a specific information system namely an integrated library system. The UGLS ILS is the IS of the UGLS. The DeLone and McLean (1992) IS success model and Gable et al, (2008) IS-impact measurement model provides a theoretical basis that supports the

Farajpahlou (1999, 2002) success criteria. It is noted that there is no direct correlation of the theoretical models and Farajpahlou (1999, 2002) success criteria in the IS literature. Generally, the IS theory model is designed to yield results from diverse systems and contexts and adapted to both quantitative and qualitative IS research frames. The Farajpahlou (1999, 2002) success criteria is considered useful criteria for assessing the success of ILS for an academic library and these criteria together with IS model provide the framework for this study. Chapter 2 therefore establishes the platform that allows the research and study population and sample described in the next chapter to be applied.

CHAPTER 3: METHODOLOGY

3.0 Chapter Introduction

This chapter outlines and explains the methodology employed in the conduct of this study to gather data for the study. Included in the chapter are the research study design, a description of the study population and sampling procedure. The data collection method instrument and how the collected data are analysed are also described in this chapter as well the issues of research ethics.

3.1 Research Study Design

Research design is the framework, the strategy or tactics adopted for carrying out a research project. There are generally two established approaches to research which are quantitative and qualitative research methods respectively (Creswell, 2014:12). Generally, there are four things that are important in designing research:

1. The data needed,
2. Where data is located,
3. How data will be secured, and
4. How data would be interpreted.

In designing any research, a topic has to be first selected, and the research variables identified and research questions clearly formulated. Once the questions are clearly formulated, an overall detailed plan for the study is developed. To sufficiently do this, all the stages in the research have to be anticipated and preliminary decisions made as to the sort of observations needed to answer the research questions. An appropriate strategy for making the observation is then selected taking cognisance of the strengths and weaknesses of each strategy (Singleton and Straits, 2010:109).

This research is a case study of the UGLS ILS. A case study is one of the many and several approaches to qualitative research (Creswell, 2014). According to Pickard (2013:101) defining a case study as a research method is considered difficult due to its form and nature. However, it can be used to investigate phenomenon in both qualitative and quantitative researches depending on what is being investigated. Yin (in Pickard, 2013:101) defined a case study as “an *empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used*”. A survey research

methodology was used in this case study to gather data from the target group. The target group is the senior library managers, IT specialists and selected paraprofessionals / senior staff of the UGLS who work with the UGLS ILS. Data was collected using a questionnaire to obtain the opinions and attitudes of the target group as to how they perceive the Farajphlou (2002) criteria in relation to the UGLS ILS and how the criteria impacts success assessment automated libraries in general and additional criteria of success for automating libraries.

3.2 Study Population and Sampling

3.2.1 Study Population

All populations have certain characteristics that define them as a group. Researchers often want to know something about a specific social group or population but are unable to study the entire population for reasons that may include that of the size of the population, time, and the costs involved for such entire population study. However, when physical and chemical properties of elements within the population can be assumed to be identical or nearly identical, it is good enough to use elements of the population as samples that represent the entire population for many purposes including the purposes of research (Singleton and Straits, 2010:150). In selecting the elements that make up the population sample, Creswell (2014:189) points out that, such selections should be done randomly for the purpose of the sample being useful and appropriate to represent the population and answer the research questions.

The study population for this research is the target group of library managers and paraprofessionals and I.T persons working with the UGLS. The study sample is a selection of these library managers, IT specialists and paraprofessionals who work in the main Balme Library and the other five satellite libraries viz, University of Ghana Business School Library, Faculty of Law Library, Accra City Campus Library, College of Health Science Library and Institute of Africa Studies Library.

3.2.2 Sampling Procedures

Generally, for most research studies of populations, random sampling is the recommended technique for selecting respondents. This is due to the fact that choosing respondents randomly reduces or eliminates any biases towards any of these respondents. It also provides good basis for the researcher to be able to extend the outcomes from the study sample population to the entire study population. Indeed, the goal of random sampling is to produce a statistically representative sample so that information generated from the sample can be applied to the wider population (Salkind, 2010:1214).

The researcher visited the Human Resources administration offices of the University of Ghana Library System and accessed the staff directory for the list of library managers, paraprofessionals and IT specialists engaged within the University of Ghana Library System. This enabled the researcher to obtain the list of all the library managers, paraprofessionals and IT specialists in the University of Ghana Library System. Using this list, the researcher was able to identify those persons working within the library who directly use the library's automated system for their work.

Simple random sampling was used in selecting elements in the study sample population who include library managers, paraprofessionals and IT staff performing library functions with the UGLS ILS in the UGLS libraries. Random sampling gives equal chance of selection to all respondents in the sample population (Ritchie et al, 2013:112-113). A minimum number of 20 respondents, representing more than 15% of the study sample population was considered sufficient for this research (Salkind, 2010). A sample size of 30 respondents was considered suitable for this research and was drawn using a table of random digits from a UGLS HR administration office records list of 131 library managers and paraprofessionals and IT staff, arbitrarily arranged and numbered from 1 through 131. Only 28 respondents were available for the research (21.4% of total population). This study sample is therefore representative of the study population and does provide the detailed picture of all phenomenon of the study population (Ritchie et al., 2013:114).

3.3 Data Collection Method and Procedures

Data were collected using questionnaire that is based on the Farajpahlou (1999, 2002) success criteria for measuring success of library automated systems supplemented by demographic data and an open-ended question regarding most important success criteria in the view of the respondent. This instrument allowed respondents to directly respond to their assessments of the UGLS ILS and also make suggestions about the UGLS ILS to allow the researcher to make a determination on the success of the UGLS ILS and also recommend ways to improve the UGLS ILS.

The data collection instrument was designed to be completed by the respondents without the interference of the researcher collecting the data. Section A of the question comprises demographic data. Section B of the questionnaire is based on Farajpahlou (1999, 2002) success criteria for automated library systems and is an instrument that has been peer-reviewed and used by researchers. To help determine the criteria of success for a library

automated system implementation, a 5-point Likert scale was used to measure to allow the respondents to express their opinion in the form of 'Strongly Agree' to 'Strongly Disagree' with a 'Neutral' in the middle (Pickard 2013:213-214).

After selecting all 30 respondents using the table of random numbers from the UGLS HR administration list, the researcher then proceeded to introduce to each one of them personally the research topic. The researcher in doing this had to visit all the three campuses of the University of Ghana, namely the Legon main campus, the City campus, and the Korle Bu campus. Unfortunately, two of the selected respondents were not available at the agreed scheduled time, and also on the two other occasions when new times were rescheduled. The research therefore involved the remaining 28 persons who consented to and were available and participated in this research.

The researcher arranged to deliver the questionnaire to each respondent at least 6 days prior to the scheduled date that the researcher and the respondents had agreed to, to pick up of the respondent's feedback. On the agreed feedback date and time, the researcher went to the respondent to pick up their completed questionnaire. Twenty-one respondents (21) completed their questionnaires prior to the scheduled dates for pick up. The remaining 7 respondents dictated their responses to the researcher on the scheduled collection dates, and were filled out by the researcher as dictated by the respondents. The researcher through this approach of collecting data succeeded in getting 28 randomly selected respondents from the total of 30 respondents, thus providing 93.3% response rate.

Secondary data was also gathered from sources like journal articles, textbooks and other relevant document from the management of the University of Ghana respectively to supplement and contextualize primary data.

3.4 Data Analysis

In Vos et al, (2011:397) view, the main purpose of analysing data is to ensure that the users of the analysed data are served with convincing analytical conclusions that rule out any alternative interpretations. In order to achieve the desired interpretation, Creswell and Clark (2011:205-206) assert that both qualitative and quantitative data analysis need to go through the sequential flow of activities which are:

- Preparing the data for analysis
- Exploring the data,

- Analysing the data
- Representing the analysis
- Interpreting the Result
- Validating the data.

Both quantitative and qualitative methods were used to collect data for this research and all this data were consequently processed accordingly. The qualitative data collected through interviewing was transcribed and organised into themes in line with the objectives of the study and literature reviewed. The qualitative data was then summarised under themes and presented in a manner that supported and complemented analysis from the quantitative data. The quantitative data was edited, coded and inputted into a computer data file using the computer software statistical package for social science Statistical Package for the Social Science version 20 (SPSS 20). Only descriptive statistics were generated. The Word 2007 programme software was used for managing the word processing parts of the research. Tables and graphical presentations of data was used to make simply the interpretation and comprehension of the data analysis outcomes (Hamilton and Corbelt-Whittier, 2013:140-141).

3.5 Reliability, Validity and Ethics

3.5.1 Reliability and Validity

Reliability shows the extent to which data collected and analysed generates results that are authentic enough to be replicated at different times or by different researchers. Validity refers to the extent to which the research is accurate or the extent to which the research measures what it was intended for (Curtis and Curtis, 2011:13). An existing, validated instrument was used. Since the instrument measures staff's subjective assessment of the ILS success it is reliable in so far as staff's assessment remains unchanged over time. Staff may likely have variations in their assessment at different times, however, the relatively large sample and high response rate should ameliorate some differences.

3.5.2 Ethical issues

Ethical issues in research are the application of ethical principles which involve standards that determine what is right or wrong in research. There are three broad areas in scientific research. They include ethics in data collection and analysis, the ethics of treatment of participant and the ethics of responsibility to society. It is mandatory for researchers and the research profession to provide data that is sound and trustworthy, free of errors, fabrications falsification and plagiarism (Singleton and Straits, 2010:47-48). The research was therefore

subjected to clearance from the University of Pretoria and adhered to all ethical issues with regard to data collection, treatment of participants, data analysis and the presentation of research findings.

One major ethical consideration in research is voluntary informed consent in the context of minimising the risk of harm. It involves the process in the recruitment of participant, providing enough information to the participant so they can make informed decision about participation and signing a formal consent form. Signing a consent form is not always practicable but an explicit discussion of informed consent processes must be followed in order to insulate the researcher from any future lawsuits (Curtis and Curtis, 2011:16). The researcher handed a voluntary consent form to each respondent to agree to participate in the research (see Appendix B for the informed consent form). In the situations where the respondent's interviews were recorded, the respondent's permission was sought before carrying on with the process. Where respondents were uncomfortable with recording, only hand written notes were taken. The ethical code in research that demands the privacy and confidentiality of research participants was strictly followed. The research findings and results from this study are available to sponsors, students, and decision makers and generally available for the improvement of society (Singleton and Straits, 2010: 47- 48).

3.6 Chapter Summary

In this chapter, the research methodology was discussed. The research design is based on the case study approach and involved quantitative and qualitative data collection. The study population was the target group of library managers and paraprofessionals and IT specialists of the UGLS who regularly interacted with the UGLS ILS. The study population had to be segregated to make it relevant for the purposes of the study. In that, the UGLS does not allow every member of the population to fully engage and apply the UGLS ILS in their daily work. There are situations where you have senior managers and paraprofessionals who do not use the UGLS ILS. This is because the UGLS ILS is fairly new. It came into operation in 2006 and is still being expanded to include the non-automated parts of the UGLS. Consequently the random sampling method needed to be applied to the subset of the population that actively used the UGLS ILS. Primary data was collected from 28 out of 30 randomly selected respondents using a questionnaire based on Farajpahlou's (1999, 2002) success criteria, followed by face-to-face meetings to collect the completed questionnaires. The issue of research ethics and data reliability and validity are addressed also in this chapter. The next chapter presents and discusses the research results.

CHAPTER 4: RESULTS AND DISCUSSION

4.0 Chapter Introduction

This chapter outlines the outcomes of the assessment of the UGLS ILS by respondents with respect to the Farajpahlou (1999, 2002) success criteria. All the responses elicited through the application of the data collection instruments used for this study are analysed and discussed. The appropriate tables and figures that help with such analysis and discussions are presented in this chapter. The discussions and analysis highlight the outcomes that point to ways to improve library automation using an ILS at UGLS and also provide useful contributions to the body of knowledge regarding academic libraries ILS success assessment. All these and their related discussions are contained in the detail under the two main sections of the chapter which are Section A- Demographic Data of Respondents and Section B- Assessment of UGLS ILS Success.

4.1 Section A - Demographic Data of Respondents

4.1.1 Campus Location

A total of 30 respondents were selected out of which 28 actually provided responses to the administered questionnaires resulting in a 93.3% response rate. Figure 6 illustrates the distribution of the actual respondents with respect to the University of Ghana campus location.

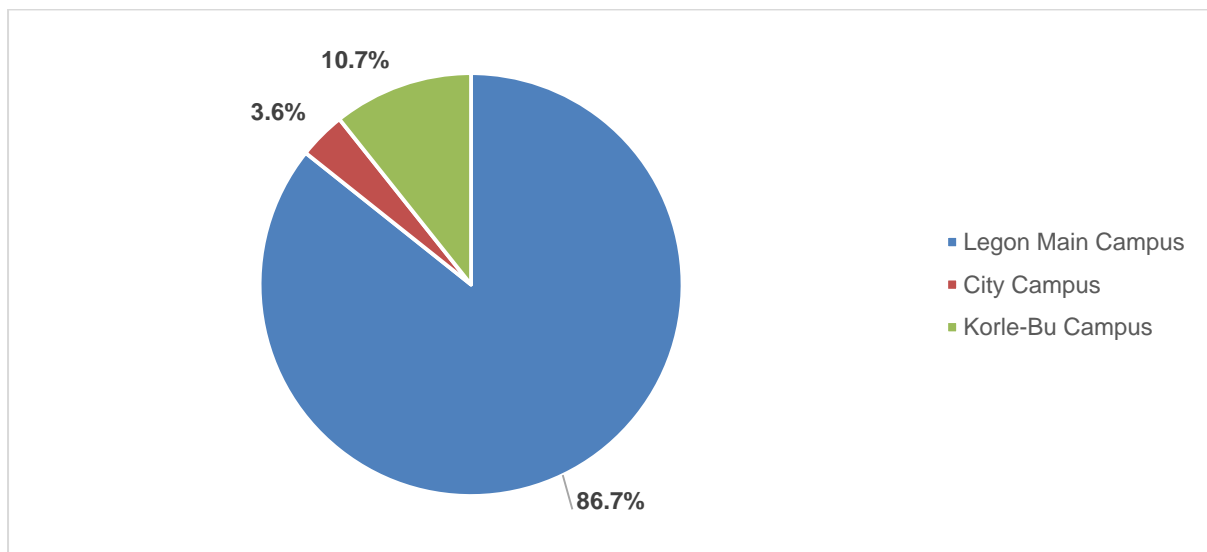


Figure 6. Respondents by UGLS Campus Location

Table 7 below also shows the distribution of respondents according the University of Ghana campus location and their University of Ghana Library Organisational Chart titles. City campus had three paraprofessionals and one library manager. However only one respondent out of the selected three respondents provided responses.

Table 7. Target population and sampling by campus and staff category

UG Campus (Location)	Senior Library Managers		Senior staff / Paraprofessionals		IT Staff		Total	
	Sample	Pop. size	Sample	Pop. size	Sample	Pop. size	Sample	Pop. size
Main (Legon)	8	17	11	88	5	10	24	115
City (Adabraka)	1	1	2	3	-	-	3	4
Korle-Bu (Korle-Bu)	1	3	2	9	-	-	3	12
Total	10	21	15	100	5	10	30	131

4.1.2 Academic Qualification

Figure 7 depicts the distribution of the highest level of respondent's qualification. The study sought to find out the academic qualification of respondents in order to know the calibre of staff working with the UGLS.

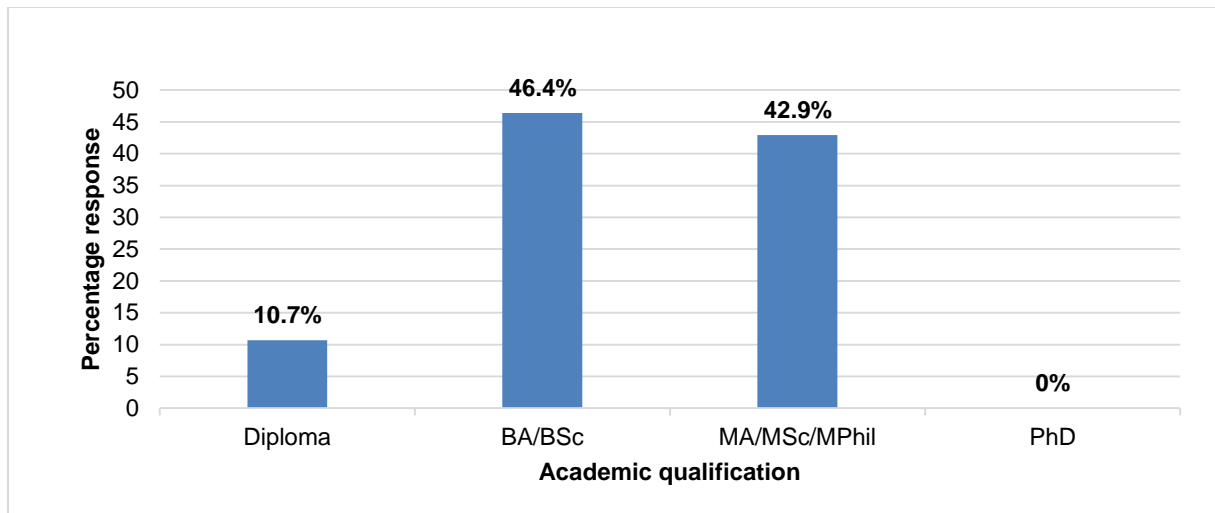


Figure 7. Highest Academic Qualification

The high academic qualification among respondents should be expected in the academic library environment. Academic library operation demands highly trained staff with requisite expertise to effectively meet the diverse information needs of users (Obinyan and Unuabor, 2013). Contrary to this view, Farajpahlou (2002) is of the opinion that, an automated library environment should not require highly trained expertise to handle automated tasks and services. In that, automation is supposed to reduce cost of labour. Therefore having a total of 84% of first degree and masters holders handling the UGLS ILS has not reduced the cost of labour, rather it has increased the cost since highly skilled persons cost more.

4.1.3 Status within the UGLS

Figure 8 depicts the status of respondents in with the UGLS. From the organisational chart in Figure 5, senior members occupy the levels of library managers. There are some senior members also on the library paraprofessional level as well. The total percentage for the group of respondents who are senior members was 32.1% (N=9) and they were mainly managers of the UGLS ILS. The largest group in the study was made up of paraprofessionals who made up 67.9 % (N=19). These respondents interacted with the UGLS ILS on a regular basis.

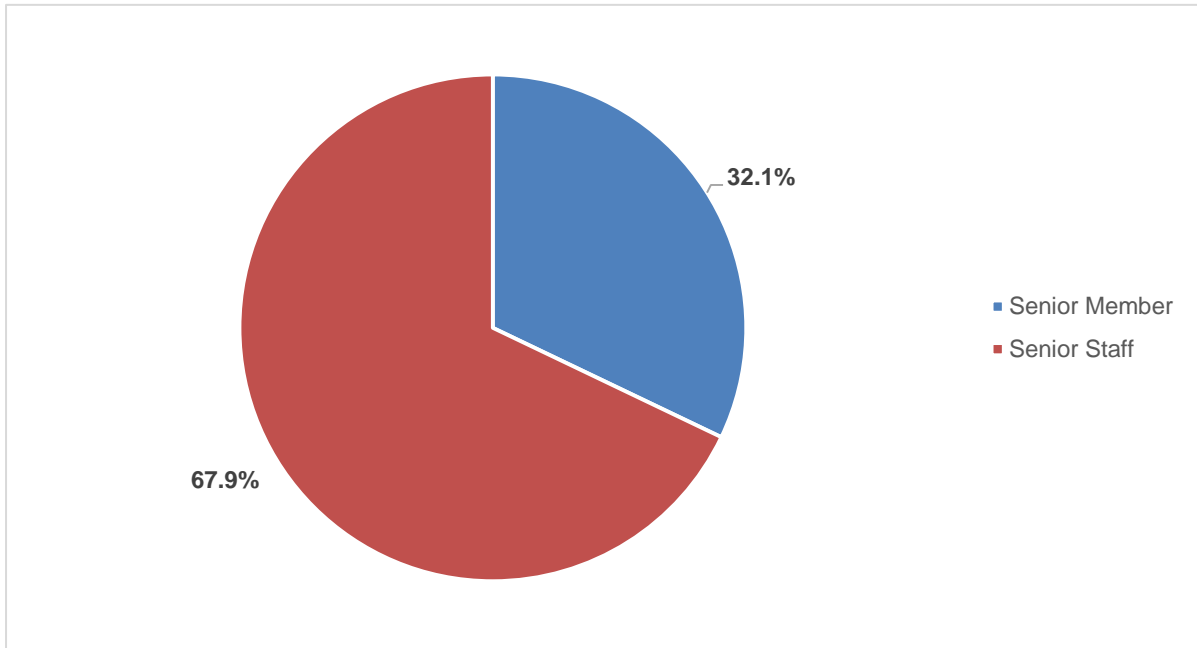


Figure 8. Status in the University of Ghana

4.1.4 Work Experience

Figure 9 is the frequency table of years of experience for staff with the UGLS. It also shows the percentage of respondents as related to their years of experience with the UGLS. The minimal number of those whose work experience was up to 3 years could be explained to mean that, management of the library may have reduced employment of new staff due to its automated activities and therefore old staff were being used. In fact one respondent puts it as “the old hands are trained to carry out the library’s automated activities”.

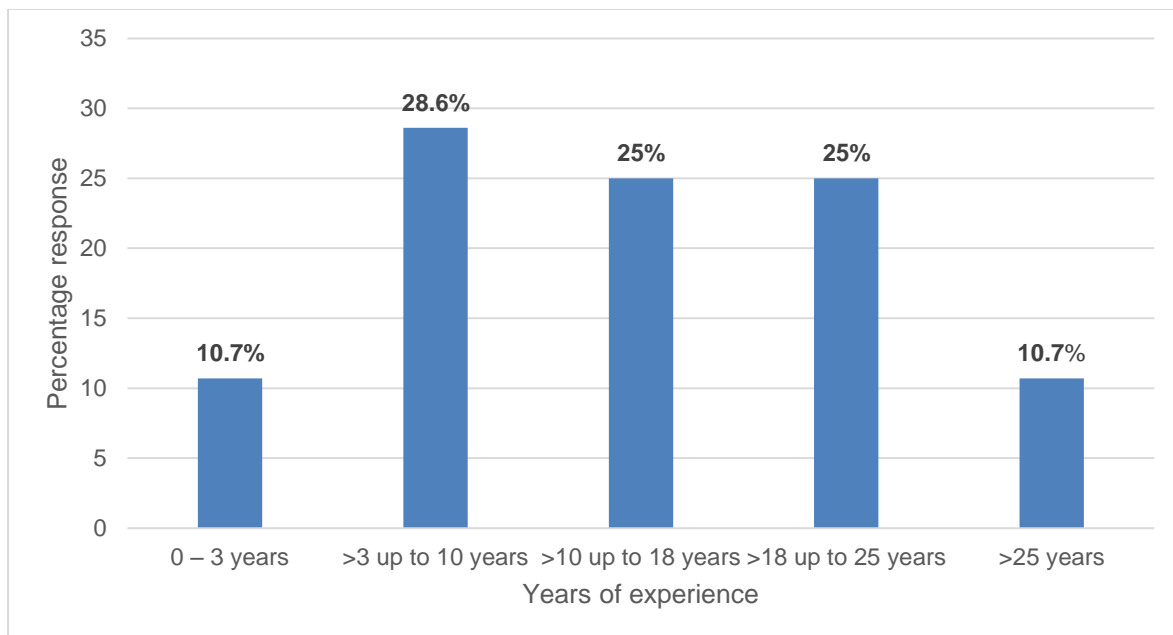


Figure 9. Number of Years of Work in UGLS

4.1.5 Library Department or Unit

Figure 10 is the frequency table that shows respondents work units with the UGLS. It also shows the percentages of respondents as related to their unit of work. The high percentage of cataloguing staff could be attributed to the fact that cataloguing function is deemed as the primary function of the automated library activity by the UGLS ILS management, hence more attention is paid to this function (Amekuedee, 2005). The IT unit is a very vital unit within the automated library environment, therefore the expertise of the IT personnel also known as the system librarians are needed to ensure all automated library system function as expected (Lavagnino, 1997). The IT unit of the UGLS therefore see to the management of the ILS.

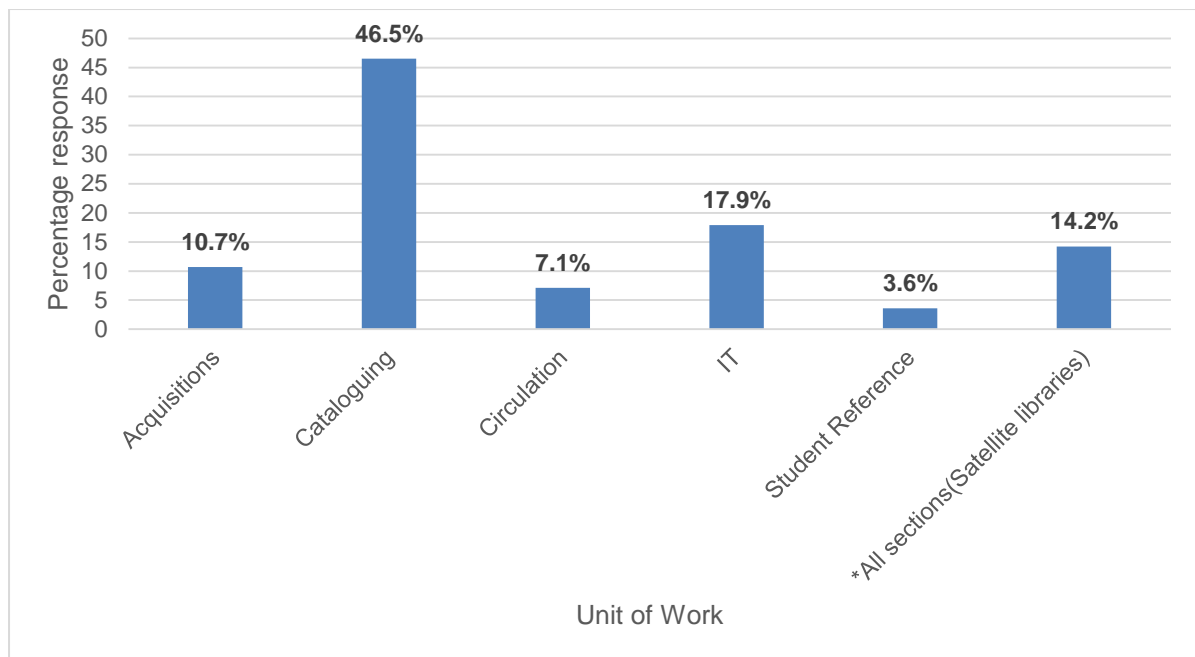


Figure 10. Library Units

Table 8 below shows the distribution of respondents according the UGLS work unit.

Table 8. Work Unit of Respondents

Work Unit	Library managers (Senior members)	Paraprofessionals (Senior Staff)	Total
Acquisition	1	2	8
Cataloguing	4	9	13
Circulation	-	2	2
Student Reference Lib	1	-	1
IT	1	4	5
All Sections (satellite libraries)	1	3	4
Total	8	21	28

4.2 Section B - Assessment of UGLS ILS Success

The Farajpahlou (1999,2002) criteria that was adopted and adapted for Questionnaire 1 is discussed under four sections namely, Usage of the System, Management of the System, Technicalities of the System and Boundary Issues. Responses to each of Farajpahlou (1999, 2002) criteria are presented under the following categories; Usage of the System, Management of the System, Technicalities of the System and Boundary Issues. All the responses are captured and measured using the Likert scale arranged on a range from 1 to 5. The weighted average and standard deviation of the measure for each criterion is

calculated and presented as part of the table that shows the responses of respondents to each of the categories that make up the Farajpahlou (1999, 2002) criteria. The weighted average and standard deviation are calculated using the formula as presented in Appendix D. The Likert scale employs fixed choice response formats. It is arranged from 1 to 5 such that 5 equate 'Strongly Agree'; 4 equate 'Agree'. 3 equate 'Neutral'; 2 equate 'Disagree' and 1 equates 'Strongly Disagree'. Following from this Likert scale range, the weighted average of responses below three indicate a disagreement or negative position and that from three but below four indicate an inclusive opinion or neutral position and that from four to five indicates agreement or positive position.

4.2.1 Usage of the System

Criteria 1, 5, 16 and 23 of Farajpahlou (1999, 2002) form the basis for assessing the success of library automation in the category, Usage of the System. Respondents assessments with respect to these factors at UGLS specifically are indicated in Table 9.

Table 9. Success of UGLS ILS based on Farajpahlou Usage of the System criteria

SUCCESS CRITERIA	Assessment of the ILS implementation at UGLS						Total	Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)	No response (0)			
	Frequency(Percentage)								
(1) A successful automated library system is usually user-friendly in terms of its interactive interface	18(64.3%)	9(32.1%)	1(3.6%)	0(0.0%)	0(0.0%)	0(0%)	28(100%)	4.61	0.57
(5) A successful automated library system is usually "self instructive"	13(46.4%)	13(46.4%)	1(3.6%)	1(3.6%)	0(0.0%)	0(0%)	28(100%)	4.35	0.73
(16) A successful library automated system is usually easy to use	9(32.1%)	13(46.4%)	2(7.1%)	2(7.1%)	1(3.6%)	1(3.6%)	28(100%)	3.85	1.27
(23) A successful automated library system should provide good management information	16(57.1%)	10(35.7%)	2(7.1%)	0(0.0%)	0(0.0%)	0(0%)	28(100%)	4.50	0.64

Respondents agreement with respect to the importance/impact on success of ILS implementation in general are indicated in Table 10.

Table 10. Success of ILS in general based on Farajpahlou Usage of the System criteria

SUCCESS CRITERIA	Agreement with respect to the importance/impact on success of ILS implementation in general							Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly Agree(5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	No Response (0)	TOTAL		
	Frequency / Percentage								
(1) A successful automated library system is usually user-friendly in terms of its interactive interface	11(39.3%)	16(57.1%)	1(3.6%)	0(0.0%)	0(0.0%)	0(0%)	28(100%)	4.36	0.56
(5) A successful automated library system is usually "self instructive"	14(50%)	12(42.9%)	1(3.6)	0(0.0%)	1(3.6%)	1(3.6%)	28(100%)	4.52	0.87
(16) A successful library automated system is usually easy to use	12(42.9%)	10(35.7%)	1(3.6)	1(3.6%)	2(7.1%)	2(7.1%)	28(100%)	4.12	1.57
(23) A successful automated library system should provide good management information	14(50%)	12(42.9%)	2(7.1%)	0(0.0%)	0(0.0%)	0(0%)	28(100%)	4.43	0.64

Criterion 1: "A successful automated library system is usually user-friendly in terms of its interactive interface"

There was a 96.4% response of "Agree" and "Strongly Agree" from respondents for this criterion in the Farajpahlou (1999, 2002) criteria with a weighted average of 4.61. This is very high and shows a high acceptance of this criterion by the respondents. There was a corresponding response of 96.4% of "Agree" and "Strongly Agree" from respondents for this criterion with a weighted average of 4.36 as generally important for any criteria that seeks to assess the success of library automation. The very high acceptance is very significant in that, the result is provided by library staff that interacts with the automated system of the UGLS ILS

According to Wallace (1984) the phrase "user friendliness" has received varied definitions in different disciplines. With regard to IS however, Wallace (1984) defined user friendliness of a system as one which requires no special knowledge to use, so that all the different choices

made by end users can be accommodated. The phrase 'user friendliness' is often associated with interactive computer systems. Inferably an interactive computer system must be flexible to any user, and must be able to accommodate and distinguish between several users, and serve and adapt to each user's situation. The interactive interface is the part of the interactive computer system that users communicate through. The interface is visible to users and in carrying out a task, an interactive system must be able to respond to user's queries as well as give prompts on any given users' queries (Jacob, 2003:1821-1826).

Criterion 5: "A successful automated library system is usually "self-instructive"

There was a 92.8% response of "Strongly Agree" and "Agree" from respondents for the above Farajpahlou (1999, 2002) criterion with a weighted average of 4.35. The response indicates an acceptance of the criterion. As to whether it is generally important for any criteria in seeking to assess the success of an automated library system, there was an equally high response of 92.9% of "Agree" and "Strongly Agree" from respondents for this same criterion with a weighted average of 4.52 which also indicates acceptance of the fore mentioned criterion. An ILS that is considered as 'self-instructive' usually has 'help and tutorial tools imbedded in the system. The purpose of such tools in the ILS is to enable users to navigate and access the system in order to allow the user to use a particular function that is part of the ILS. A system with self-instructive features means that, users would be able to independently use the ILS and take full advantage of all the features of the ILS.

Criterion 16: "A successful library automated system is usually easy to use"

There was a 78.6% response of "Strongly Agree" and "Agree" from respondents for this criterion in Farajpahlou (1999, 2002) criterion with a weighted average of 3.85. Similarly, there was a corresponding response of 78.6% with a weighted average of 4.50 on what respondents considered as generally important in ILS success measurement. An effective and efficient use of an automated system lies in the easiness of use. A complex system with complicated features would render use of the system inefficient, in that too much time would be required to understand and learn complex features of the ILS. It is noted that ease of use is an important factor for user satisfaction of any system. A system that has complex features and with which users would have to struggle before they are able to use would not serve its purpose in the library.

Criterion 23: "A successful automated library system should provide good management information"

There was a response of 92.8% for “Strongly Agree” and “Agree” for the above Farajpahlou (1999, 2002) criterion with a weighted average of 4.15. This is very high and shows a high acceptance of this criterion by the respondents. There was a correspondingly high response of 92.8% for “Strongly Agree” And “Agree” with a weighted average of 4.43 with respect to the agreement on the impact of this criterion on ILS success measurement. It is of great essence for any ILS to have an efficient and effective way of managing library functions. The library must be able to help keep accurate records of various transactions such as orders for library materials that have been made, addition of new books, keep track of library items borrowed by library users and so on. A successful automated system should have features that help the library staff manage their libraries in a more efficient, effective and convenient way (Ahmed, 2009).

4.2.2 Management of the system

Respondents assessments of the ILS implementation at UGLS with respect to these factors are indicated in Table 11. Criteria 3, 6, 7, 8, 10, 13 and 15 are all related to the category “Management of the system”.

Table 11.Success of UGLS ILS based on Farajpahlou Management of the System Criteria

SUCCESS CRITERIA	Assessment of the ILS implementation at UGLS						TOTAL	Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Response			
	(5)	(4)	(3)	(2)	(1)	(0)			
Frequency (Percentage)									
(3) A successful automated library system should not require extensive teaching of users	6(21.4%)	14(50.0%)	1(3.6%)	6(21.4%)	1(3.6%)	0(0%)	28(100%)	3.64	1.26
(6) Integration of automation planning process into library activities does not usually have impact on the success of the resulting automated library system	3(10.7%)	7(25.0%)	8(28.6%)	5(17.9%)	4(14.3%)	1(3.6%)	28(100%)	3.00	1.34
(7) A successful automated library system should allow a university library to employ less-qualified staff	4(14.3%)	2(7.1%)	5(17.9%)	9(32.1%)	8(28.6%)	0(0%)	28(100%)	2.46	1.37
(8) A successful automated library system is usually based on a well-prepared automation plan	15(53.6%)	12(42.9%)	1(3.6%)	0(0.0%)	0(0.0%)	0(0%)	28(100%)	4.50	0.58
(10) A successful automated library system does not depend on carefully considered contractual commitments with the vendor	0(0%)	5(17.9%)	9(32.1%)	10(35.7%)	4(14.3%)	0(0%)	28(100%)	2.54	0.96
(13) A successful automated library system should save staff time	17(60.7%)	9(32.1%)	1(3.6%)	0(0%)	0(0%)	1(3.6%)	28(100%)	4.43	1.03
(15) A successful automated library system should not require extensive courses of library staff training programs	3(10.7%)	10(35.7%)	7(25.0%)	6(21.4%)	2(7.1%)	0(0%)	28(100%)	3.21	1.13

Respondents agreement with respect to the importance/impact on success of ILS implementation in general are indicated in Table12.

Table 12. Success of ILS in general based on Farajpahlou's Management of the System Criteria.

SUCCESS CRITERIA	Agreement with respect to the importance/impact on success of ILS implementation in general							Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	No Respond (0)	TOTAL		
	Frequency (Percentage)								
(3) A successful automated library system should not require extensive training	7(25.0%)	15(53.6%)	2(7.1%)	2(7.1%)	0(0.0%)	2(7.1%)	28(100%)	4.04	1.32
(6) Integration of automation planning process into library activities does not usually have impact on the success of the resulting automated library system	3(10.7%)	11(39.3%)	7(25.0%)	3(10.7%)	3(10.7%)	1(3.6%)	28(100%)	3.30	1.31
(7) A successful automated library system should allow a university library to employ less-qualified staff	7(25%)	3(10.7%)	3(10.7%)	6(21.4%)	9(32.1%)	0(0%)	28(100%)	2.75	1.62
(8) A successful automated library system is usually based on a well-prepared automation plan	15(53.6%)	10(35.7%)	1(3.6%)	0(0.0%)	0(0.0%)	2(7.1%)	28(100%)	4.54	0.59
(10) A successful automated library system does not depend on carefully considered contractual commitments with the vendor	1(3.6%)	8(28.6%)	8(28.6%)	7(25%)	4(14.3%)	0(0%)	28(100%)	2.83	1.12
(13) A successful automated library system should save staff time	18(64.3%)	9(32.1%)	0(0%)	0(0%)	0(0%)	1(3.6%)	28(100%)	4.67	1.00
(15) A successful automated library system should not require extensive courses of library staff training programs	8(28.6%)	10(35.7%)	6(21.4%)	4(14.3%)	0(0%)	0(0%)	28(100%)	3.79	1.03

Criterion 3: "A successful automated library system should not require extensive teaching for users"

There was a response of 71.4% for "Strongly Agree" and "Agree" for the above Farajpahlou (1999, 2002) criterion with a weighted average of 3.64. There was a corresponding response of 78.6% for "Strongly Agree" and "Agree" with a weighted average of 4.04 with respect to agreement of importance/impact on success of ILS implementation in general of this criterion on ILS success measurement. This response is indicative that this criterion is acceptable as an ILS success measure criterion. The essence of a library automated system

is to make library activities and functions simpler and more productive. Therefore introducing and applying new technology would require that staff are trained appropriately to be able to use the technology properly. The nature of such training should not require extensive teaching for users. It should take a short time and be simple. It should show and illustrate how one can use and interact with the system.

Criterion 6: “Integration of automation planning process into library activities does not usually have impact on the success of the resulting automated library system”

There was a response of 35.7% for “Strongly Agree” and “Agree”; 28.6% for “Neutral” and 32.2% for “Disagree” and “Strongly Disagree” with respect to the above Farajpahlou (1999, 2002) criterion with a weighted average of 3.00. There was a corresponding response of 50.0% for “Strongly Agree” and “Agree”, 25% for “Neutral” and 21.4% for “Disagree” and “Strongly Disagree” with respect to agreement of importance/impact on success of ILS implementation in general of this criterion with a weighted average of 3.30 on ILS success measurement. This shows that there is no clear indication of acceptance or rejection of this criterion by the respondents. Planning is vital to the success of any undertaking. It is expected that the main library activities like acquisition, cataloguing and circulation would be integrated into the library automation process. The core objective of library automation is to apply technology to carry out library activities.

Criterion 7: “A successful automated library system should allow a university library to employ less-qualified staff”

There was a response of 21.4% for “Strongly Agree” and “Agree”, 17.5% for “Neutral” and 60.7% for “Disagree” and “Strongly Disagree” with respect to the above Farajpahlou (1999, 2002) criterion with a weighted average of 2.46. There was a corresponding response of 35.7% for “Strongly Agree” and “Agree”, 10.7% for “Neutral” and 53.5% for “Disagree” and “Strongly Disagree” with respect to the agreement of importance/impact on success of ILS implementation in general of this criterion with a weighted average of 2.75 on ILS success measurement. This shows that there is no clear indication of acceptance or rejection of this criterion by the respondents. As indicated earlier, library automation is the automation of library activities. This implies that technology is now used in libraries to carry out laborious library activities that were hitherto carried out manually. The application of technology in the library also means that, carrying out library activities is made easier therefore staff with less qualified qualification can be employed in the library to perform library task and functions in order to save on cost. The rather larger number of respondents, who rejected the criterion,

could be explained to mean that, the university as an institution is deemed as an organisation that requires qualified staff to handle the library automation activities.

Criterion 8: “A successful automated library system is usually based on a well-prepared automation plan”

There was a 96.5% response of “Strongly Agree” and “Agree” from respondents for the above Farajpahlou (1999, 2002) criterion with a weighted average of 4.50. The response indicates an acceptance of the criterion. As to whether it is generally important for any criteria in seeking to assess the success of an automated library system, there was also a high response of 89.3% of “Agree” and “Strongly Agree” from respondents with a weighted average of 4.54 for this same criterion which also indicates acceptance of the fore mentioned criterion. A successful library automation system is largely based on a well prepared automation plan which should be incorporated into any success measuring criteria. The above criterion can be classified as accepted. Planning is one of the key factors in any undertaking including library automation. Setting up of ILS requires huge capital; therefore, it is imperative for library managers to plan well to ensure success of the ILS.

Criterion 10: “A successful automated library system does not depend on carefully considered contractual commitments with the vendor”

There was a response of 17.9% for “Strongly Agree” and “Agree”, 32.1% for “Neutral” and 50% for “Disagree” and “Strongly Disagree” with respect to the above Farajpahlou (1999, 2002) criterion with a weighted average of 2.54. There was a corresponding response of 32.2% for “Strongly Agree” and “Agree”, 28.6% for “Neutral” and 39.3% for “Disagree” and “Strongly Disagree” with a weighted average of 2.83 with respect to the agreement of importance/impact on success of ILS implementation in general on the impact of this criterion on ILS success measurement. Respondents’ lack of agreement (less than 50%) with the attitude presented in criterion 10 likely means that respondents agree that contractual commitments with vendor constitute a criterion for the success of automated library systems. This agrees with Eytayo (1989) who asserted that, a successful implementation of a library automated system depends largely not only on a proper execution by the library but also on the continuous support and commitment from the contracted vendor for the ILS software and hardware.

Criterion 13: “A successful automated library system should save staff time”

There was a 92.8% response of “Strongly Agree” and “Agree” from respondents for the above Farajpahlou (1999, 2002) criterion with a weighted average of 4.43. The response indicates an acceptance of the criterion. As to whether it is generally important for any

criteria in seeking to assess the success of an automated library system, there was an equally high response of 96.4% of “Agree” and “Strongly Agree” with a weighted average of 4.67 from respondents for this same criterion which also indicates acceptance of the fore mentioned criterion. It is noteworthy that all the respondents interact on a regular basis with the UGLS ILS. It can therefore be assumed that their responses are indicative of their experience with the UGLS ILS and that experience is likely to underlie their acceptance that successful ILS save time.

Criterion 15: “A successful automated library system should not require extensive courses of library staff training programs”

There was a response of 46.4% for “Strongly Agree” and “Agree”, 25% for “Neutral” and 28.5% for “Disagree” and “Strongly Disagree” with respect to the above Farajpahlou (1999, 2002) criterion with a weighted average of 3.21. There was a corresponding response of 64.3% for “Strongly Agree” and “Agree”, 21.4% for “Neutral” and 14.3% for “Disagree” and “Strongly Disagree” with a weighted average of 3.79 with respect to the agreement on the impact of this criterion on ILS success measurement in general. This shows that there is no clear indication of acceptance or rejection of this criterion by the respondents. Automated library that require extensive library staff training courses could be bad and even defect the aim of library automation, in that the automated system is supposed to be user friendly and easy to use and so must require minimal training to use.

4.2.3 Technicalities of the system

Criteria 9, 11, 12, 18, 20, 22, 24 and 26 are all related to the category “Technicalities of the system”. Respondents assessment with respect to these factors is indicated in Table 13.

Table 13. Shows Success of UGLS ILS based on Farajpahlou's Technicalities of the System Criteria.

SUCCESS CRITERIA	Assessment of the ILS implementation at UGLS							Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	No Response (0)	TOTAL		
	Frequency(Percentage)								
(9) A successful automated library system will usually allow increase of quality of library services without increase in the number of staff	13(46.4%)	9(32.1%)	4(14.3%)	2(7.1%)	0(0%)	0(0%)	28(100%)	4.18	0.95
(11) A successful automated library system will usually depend on its technical compatibility with other automated processes in the library	10(35.7%)	15(53.6%)	3(10.7%)	0(0%)	0(0%)	0(0%)	28(100%)	4.25	0.65
(12) A successful automated library system is usually capable of continued development and enhancement	11(39.3%)	13(46.4%)	3(10.7%)	0(0%)	0(0%)	1(3.6%)	28(100%)	4.30	1.05
(18) Having a fast response rate is one of the important factors in determining the success of an automated library system	12(42.9%)	13(46.4%)	2(7.1%)	0(0%)	0(0%)	1(3.6%)	28(100%)	4.37	1.03
(20) Success of an automated library system is not usually judged on the length of time that the system lasts	2(7.1%)	9(32.1%)	7(25%)	6(21.4%)	4(14.3%)	0(0%)	28(100%)	2.96	1.20
(22) A successful automated library system should have minimum down-time (say 1 percent)	6(21.4%)	9(32.1%)	11(39.3%)	1(3.6%)	0(0%)	1(3.6%)	28(100%)	3.74	1.10
(24) Success of an automated library system will usually depend on its compatibility with existing work procedures	11(39.3%)	13(46.4%)	2(7.1%)	0(0%)	0(0%)	2(7.1%)	28(100%)	4.34	1.29
(26) A successful automated library system will usually allow increase in the quantity of library services without increase in the number of staff	7(25%)	11(39.3%)	8(28.6%)	2(7.1%)	0(0%)	0(0%)	28(100%)	3.82	0.91

Respondents agreement with respect to the importance/impact on success of ILS implementation in general are indicated in Table 14.

Table 14. Success of ILS in general based on Farajplou's Technicalities of the System Criteria

SUCCESS CRITERIA	Agreement with respect to the importance/impact on success of ILS implementation in general							Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	No Response (0)	TOTAL		
	Frequency (Percentage)								
(9) A successful automated library system will usually allow increase of quality of library services without increase in the number of staff	10(35.7%)	15(53.6%)	0(0%)	1(3.6%)	2(7.1%)	0(0.0%)	28(100%)	4.07	1.09
(11) A successful automated library system will usually depend on its technical compatibility with other automated processes in the library	11(39.3%)	14(50%)	3(10.7%)	0(0%)	0(0.0%)	0(0.0%)	28(100%)	4.29	0.66
(12) A successful automated library system is usually capable of continued development and enhancement	12(42.9%)	12(42.9%)	4(14.3%)	0(0%)	0(0%)	0(0%)	28(100%)	4.29	0.71
(18) Having a fast response rate is one of the important factors in determining the success of an automated library system	11(39.3%)	16(57.1%)	1(3.6%)	0(0%)	0(0%)	0(0%)	28(100%)	4.36	0.56
(20) Success of an automated library system is not usually judged on the length of time that the system lasts	5(17.9%)	6(21.4%)	8(28.6%)	5(17.9%)	4(14.3%)	0(0%)	28(100%)	3.11	1.32
(22) Success of an automated library system will usually depend on its compatibility with existing work procedures	15(53.6%)	9(32.1%)	2(7.1%)	0(0%)	0(0%)	2(7.1%)	28(100%)	4.18	1.34
(24) A successful automated library system should have minimum down-time (say 1 percent)	9(32.1%)	11(39.3%)	6(21.4%)	1(3.6%)	0(0%)	1(3.6%)	28(100%)	4.04	1.13
(26) A successful automated library system will usually allow increase in of quantity of library services without increase in the number of staff	8(28.6%)	9(32.1%)	7(25%)	3(10.7%)	1(3.6%)	0(0%)	28(100%)	3.72	1.12

Criterion 9: "A successful automated library system will usually allow increase of quality of library services without increase in the number of staff"

There was a 78.5% response of "Agree" and "Strongly Agree" from respondents for this criterion in the Farajplou (1999, 2002) criteria with a weighted average of 4.18. This suggests an acceptance of this criterion by the respondents. There was a corresponding response of 89.3% of "Agree" and "Strongly Agree" from respondents for this criterion with a weighted average of 4.07 as generally important for any criteria that seeks to assess the success of library automation. One of the main reasons why libraries are now investing in

library automation is the fact that automation eliminates the rather mundane and repetitive library tasks associated with the manual systems in libraries. Library automation is expected to bring with it in the long run the needed efficiency, precision and accuracy required to organise and retrieve information in the library by library staff and users alike.

Criterion 11: “A successful automated library system will usually depend on its technical compatibility with other automated processes in the library”

There was a response of 89.3% for “Strongly Agree” and “Agree” for the above Farajpahlou (1999, 2002) criterion with a weighted average of 4.25. This suggests an acceptance of this criterion by the respondents. There was a corresponding response of 89.3% for “Strongly Agree” and “Agree” with a weighted average of 4.29 with respect to the agreement on the impact of this criterion on ILS success measurement. The phrase “technical compatibility”, sometimes referred to as interoperability, is the ability of different systems to work in harmony without any intervention from users. This implies that, the choice of software for an integrated library system should be flexible enough to allow the performance of basic management functions, conversions of existing records, and incorporation of all library automation functions (Schamber, 1990). Therefore respondents’ accepting this criterion is an indication that an ILS largely depends on its technical compatibility with other automated processes in the library to ensure success of the ILS.

Criterion 12: “A successful automated library system is usually capable of continued development and enhancement”

There was an 85.7% response of “Agree” and “Strongly Agree” from respondents for this criterion in the Farajpahlou (1999, 2002) criteria with a weighted average of 4.30. There was a corresponding response of 85.8% of “Agree” and “Strongly Agree” from respondents for this criterion with a weighted average of 4.29 as generally important for any criteria that seeks to assess the success of library automation. This suggests that this criterion is accepted as a success measuring tool by the respondents. Continued development and enhancement of a library automated system implies that the system is flexible enough to allow for integration of other programs and the future upgrading of the system. It is also noted that, continued development would also mean that, a library would require continued financial support from the stakeholders and owners of the system. In that, it takes huge financial support to keep the automated systems functioning.

Criterion 18: “Having a fast response rate is one of the important factors in determining the success of an automated library system”

There was an 89.3% response of “Agree” and “Strongly Agree” with a weighted average of 4.37 from respondents for this criterion in the Farajpahlou (1999, 2002) criteria. This is quite high and it suggests an acceptance of this criterion by the respondents. There was a corresponding response of 96.4% of “Agree” and “Strongly Agree” with a weighted average of 4.36 from respondents for this criterion as generally important for any criteria that seeks to assess the success of library automation. A response rate indicates how fast the system responds during use. Usually, fast response rates depend on factors such as fast internet connectivity and bandwidth of the supporting system. The response of respondents to this criterion is indicative that a fast response rate is vital in determining the success of an automated library.

Criterion 20: “Success of an automated library system is not usually judged on the length of time that the system lasts”

There was a response of 39.2% for “Strongly Agree” and “Agree”, 25% for “Neutral” and 35.7% for “Disagree” and “Strongly Disagree” with a weighted average of 2.29 with respect to the above Farajpahlou (1999, 2002) criterion. There was a corresponding response of 39.3% for “Strongly Agree” and “Agree”, 28.6% for “Neutral” and 32.2% for “Disagree” and “Strongly Disagree” with a weighted average of 3.11 with respect to the agreement on the impact of this criterion on ILS success measurement. A successful library automated system is evaluated and assessed by various factors. These factors include the overall definition of the project, a well-prepared plan, vendor evaluation and selection, the flexibility of the system, compatibility, interoperability of the system, and the choice of hardware and software. The budget allocated for the project determines the size, lifespan of the system as well as how the system is managed (Webber and Peters, 2010b:92-94). An ILS project may last for a short period and yet be successful. It could on the other hand last for a longer period but may not function as expected.

Criterion 22: “A successful automated library system should have minimum down-time (say 1 percent)”

There was a response of 53.5% for “Strongly Agree” and “Agree” with a weighted average of 3.74 for the above Farajpahlou (1999, 2002) criterion. There was a corresponding response of 71.4% for “Strongly Agree” and “Agree” with a weighted average of 4.11 with respect to the agreement on the impact of this criterion on ILS success measurement. The term ‘down time’ refers to time when the system is not functional or available. This can occur due to factors such as planned maintenance which occurs during hardware and software upgrades

or unplanned occurrences such as hardware and software events. Another factor which could cause down time is human factors which normally occur during configuration changes which in most cases causes outages in the automated system. According to Barnett (2002:123-4) libraries have become so dependent on the ILS in such a way that, all library activities hinges on library automation. It may be argued that, every developed technology has some weakness associated with it and should therefore have measures put in place to avoid the ILS having a poor down time record.

Criterion 24: “Success of an automated library system will usually depend on its compatibility with existing work procedures”

There was a response of 85.7% for “Strongly Agree” and “Agree” with a weighted average of 4.34 for the above Farajpahlou (1999, 2002) criterion. This suggests an acceptance of this criterion by the respondents. There was a corresponding response of 85.7% for “Strongly Agree” and “Agree” with a weighted average of 4.04 with respect to the agreement on the impact of this criterion on ILS success measurement. The acceptance of the criterion by respondents is an indication that, any software the library installs should have the capacity to integrate existing library procedures such as bibliographic records and software should be able to read existing bar codes. It is imperative that the software chosen is flexible enough to accommodate and integrate existing work procedure into the system with ease (Webber and Peters, 2010b:2).

Criterion 26: “A successful automated library system will usually allow increase in the quantity of library services without increase in the number of staff”

There was a response of 64.3% for “Strongly Agree” and “Agree” with a weighted average of 3.82 for the above Farajpahlou (1999, 2002) criterion with 28 % “Neutral” indicating acceptance rate. There was a response of 60.7 % for acceptance rate with 25% “Neutral” with a weighted average of 3.72 with regard to general view on the success of ILS measurement. The above criterion was accepted. An automated system by its nature is expected to increase productivity, by the use of technology to carry out library tasks and services. It is expected also that more library work would be executed with the less numbers of library staff through the use of technology thereby bringing about an increase in productivity.

4.2.4 Boundary issues

Criteria 2, 4, 14, 17, 19, 21 and 25 are related to the category “Boundary Issues”. Respondents assessments to these criteria are indicated in Table 15.

Table 15. Success of UGLS ILS based on boundary issues criteria

SUCCESS CRITERIA	Assessment of the ILS implementation at UGLS						TOTAL	Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Response			
	(5)	(4)	(3)	(2)	(1)	(0)			
Frequency(Percentage)									
(2) A successful automated library system can usually increase the library's influence in getting status from other departments in the university	15(53.6%)	11(39.3%)	2(7.1%)	0(0%)	0(0%)	0(0%)	28(100%)	4.47	0.64
(4) Demonstration of clear political objectives at the beginning of automation has clear impact on success of resulting automated library system	8(28.6%)	10(35.7%)	8(28.6%)	1(3.6%)	1(3.6%)	0(0%)	28(100%)	3.83	1.02
(14) The length of time a vendor has been in business should be considered as a measure for the success of the system produced	3(10.7%)	12(42.9%)	9(32.1%)	3(10.7%)	1(3.6%)	0(0%)	28(100%)	3.46	0.96
(17) A successful automated library system can often increase the library's influence in getting resources from the university	13(46.4%)	11(39.3%)	2(7.1%)	1(3.6%)	1(3.6%)	0(0%)	28(100%)	4.25	0.99
(19) A successful automated library system usually helps to increase the library's status in the library and information profession	17(60.7%)	10(35.7%)	1(3.6%)	0(0%)	0(0%)	0(0%)	28(100%)	4.57	0.57
(21) Overall costs of an automated library system do not usually count in the success of the system	2(7.1%)	5(17.9%)	9(32.1%)	8(28.6%)	4(14.3%)	0(0%)	28(100%)	2.75	1.14
(25) One factor in the success of an automated library system should be the number of libraries which buy it and install it	4(14.3%)	9(32.1%)	8(28.6%)	6(21.4%)	0(0%)	1(3.6%)	28(100%)	3.41	1.18

Respondents agreement with respect to the importance/impact on success of ILS implementation in general are indicated in Table 16.

Table 16. Boundary Issues

SUCCESS CRITERIA	Agreement with respect to the importance/impact on success of ILS implementation in general							Rating of UGLS ILS implementation*	Standard deviation of UGLS ILS rating
	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	No Response (0)	TOTAL		
	Frequency / Percentage								
(2) A successful automated library system can usually increase the library's influence in getting status from other departments in the university	10(35.7%)	17(60.7%)	1(3.6%)	0(0%)	0(0%)	0(0%)	28(100%)	4.32	0.55
(4) Demonstration of clear political objectives at the beginning of automation has clear impact on success of resulting automated library system	11(39.3%)	8(28.6%)	7(25%)	0(0%)	1(3.6%)	1(3.6%)	28(100%)	3.89	1.26
(14) The length of time a vendor has been in business should be considered as a measure for the success of the system produced	1(3.6%)	12(42.9%)	10(35.7%)	3(10.7%)	1(3.6%)	1(3.6%)	28(100%)	3.21	1.07
(17) A successful automated library system can often increase the library's influence in getting resources from the university	12(42.9%)	12(42.9%)	3(10.7%)	0(0%)	1(3.6%)	0(0%)	28(100%)	4.21	0.99
(19) A successful automated library system usually helps to increase the library's status in the library and information profession	15(53.6%)	10(35.7%)	2(7.1%)	0(0%)	0(0%)	1(3.6%)	28(100%)	4.32	1.06
(21) Overall costs of an automated library system do not usually count in the success of the system	4(14.3%)	9(32.1%)	8(28.6%)	6(21.4%)	0(0%)	1(3.6%)	28(100%)	2.89	1.17
(25) One factor in the success of an automated library system should be the number of libraries which buy it and install it	7(25%)	8(28.6%)	6(21.4%)	5(17.9%)	1(3.6%)	1(3.6%)	28(100%)	3.43	1.35

Criterion 2: “A successful automated library system can usually increase the library’s influence in getting status from other departments in the university”

There was a response of 92.9% for “Strongly Agree” and “Agree” with a weighted average of 4.47 for the above Farajpahlou (1999, 2002) criterion. This suggests an acceptance of this criterion by the respondents. There was a corresponding response of 96.4% for “Strongly Agree” and “Agree” with a weighted average of 4.32 with respect to the agreement on the impact of this criterion on ILS success measurement. The aim of an academic library is to facilitate ready and easy access to information and knowledge resources that are essential to the vitality of the academic institution. The library through automation is able to foster meaningful inter library users services and cooperation. These forms of services and cooperation are relevant in the academic fraternity and help a lot in increasing the status of the library.

Criterion 4: “Demonstration of clear political objectives at the beginning of automation has clear impact on success of resulting automated library system”

There was a 64.3% response of “Agree” and “Strongly Agree” with a weighted average of 3.83 from respondents for this criterion in the Farajpahlou (1999, 2002) criteria. There was also a 28.6% response of “Neutral”. There was a corresponding response of 67.9% of “Agree” and “Strongly Agree” and a 25% response of “Neutral” with a weighted average of 3.89 from respondents for this criterion as generally important for any criteria that seeks to assess the success of library automation. Drabenstott et al, (1989) do advise that even though prior to automation, a library may have a clear political objective spelled out, it is still necessary to contact libraries who have successfully gone through automation and learn from their experience.

Criterion 14: “The length of time a vendor has been in business should be considered as a measure for the success of the system produced”

There was a response of 42.9% for “Strongly Agree” and “Agree”; 32.1% for “Neutral” and 10.7% for “Disagree” and “Strongly Disagree” with a weighted average of 3.46 with respect to the above Farajpahlou (1999, 2002) criterion. There was a corresponding response of 48.5% for “Strongly Agree” and “Agree”, 36.7% for “Neutral” and 14.3% for “Disagree” and “Strongly Disagree” with a weighted average of 3.21 with respect to the agreement on the impact of this criterion on ILS success measurement. This shows that there is no clear indication of acceptance or rejection of this criterion by the respondents. Nevertheless, library automation is an expensive venture; therefore in selecting a vendor, a thorough check must be made to ascertain the vendor’s reliability, viability and stability. This is important to ensure the future development and support for the automated system. It is assumed that, a

vendor who has been in business for a considerable length of time would have had a track record of project success and failures which should inform how they are selected. The length of time in business would reveal the vendor's speciality and the roles they have played in library automation development. The length of time a vendor has been in business can be a factor in the library automation success.

Criterion 17: “A successful automated library system can often increase the library's influence in getting resources from the university”

There was 85.7% response of “Agree” and “Strongly Agree” with a weighted average of 4.25 from respondents for this criterion in the Farajpahlou (1999, 2002) criteria. This suggests an acceptance of this criterion by the respondents. There was a corresponding response of 85.7% of “Agree” and “Strongly Agree” with a weighted average of 4.21 from respondents for this criterion as generally important for any criteria that seeks to assess the success of library automation. “Resources” in the context of this discussion is simply the supply of money or funding (Oxford Dictionary of Current English, 2006). Funding is the supply of money on a regular basis to carry out an activity or function. Supply of money is essential in the successful running of any organisation including the library. An automated environment in which the library operates requires constant funding to ensure quality service delivery. It must be noted that, in the academic environment several projects and activities struggle to top the university's priority list. Projects and units that attract the largest budgetary allocations are those that make a good case and justification for the allocation of the funds. Therefore, an unsuccessful library automated system in the university would prove difficult to justify why it should be funded for the second time. It is expedient for the library to present a well prepared automation plan, execute it, and then the university would provide the continuous needed funding for the library's automated system.

Criterion 19: “A successful automated library system usually helps to increase the library's status in the library and information profession”

There was a 96.4% response of “Agree” and “Strongly Agree” with a weighted average of 4.57 from respondents for this criterion in the Farajpahlou (1999, 2002) criteria. This suggests an acceptance of this criterion by the respondents. There was a corresponding response of 89.3% of “Agree” and “Strongly Agree” with a weighted average of 4.32 from respondents for this criterion as generally important for any criteria that seeks to assess the success of library automation. Libraries and the library profession find themselves in a generation where access to information is a click of a button away due to technology. Today, technology has changed the face of every profession and that includes librarianship and the library profession. For libraries and their profession to stay relevant, they have to

embrace technology in the form of library automation and today it is being used especially in academic institutions to deliver the information needs of their users. Breeding (2011a) adds that, librarians must develop a stronger engagement with their users in vigorous use of their facilities and services. In doing this, the library profession and the image of libraries are enhanced. Library professionals who are at the forefront of service delivery through library automated systems are not left out on training in the appropriate application of technology in academic libraries. In fact, more and more librarians are being trained in the field of technology to manage library automated facilities and services delivery.

Criterion 21: “Overall costs of an automated library system do not usually count in the success of the system”

There was a response of 25% for “Strongly Agree” and “Agree”, 32.1% for “Neutral” and 42.9% for “Disagree” and “Strongly Disagree” with a weighted average of 2.75 with respect to the above Farajpahlou (1999, 2002) criterion. There was a corresponding response of 48.4% for “Strongly Agree” and “Agree”, 28.6% for “Neutral” and 21.4% for “Disagree” and “Strongly Disagree” with a weighted average of 2.89 with respect to the agreement on the impact of this criterion on ILS success measurement. Results skew towards the overall costs of the systems being considered to have an effect on the success of an automated library system. It must be noted that a successful automated system requires substantial investments. It requires careful planning, and good software and hardware selection among others. A library could invest huge sums of money into library automation, but if proper automation guidelines are not followed then, the automation project is bound to fail.

Criterion 25: “One factor in the success of an automated library system should be the number of libraries which buy it and install it”

There was a response of 46.4% for “Strongly Agree” and “Agree” 28.6% for “Neutral” and 21.4% for “Disagree” and “Strongly Disagree” with a weighted average of 3.41 with respect to the above Farajpahlou (1999, 2002) criterion. There was a corresponding response of 53.6% for “Strongly Agree” and “Agree” 21.5% for “Neutral” and 21.5% for “Disagree” and “Strongly Disagree” with a weighted average of 3.43 with respect to the agreement on the impact of this criterion on ILS success measurement. This shows that there is no clear indication of acceptance or rejection of this criterion by the respondents.

It is assumed that an automated library system is likely to become successful because a number of libraries buy and install the same kind of system. This may be attributed to the fact that, once a number of libraries buy and install a system, other buyers can easily track the vendor’s success records and then take their decision to buy the same system or look

for an alternative. More buyers installing the system may mean that, the vendor is reliable and may possess good marketing skills. Therefore, the fact that more libraries are buying and installing a system may not necessarily mean it is suitable for all libraries. Each environment differs, therefore the fact that one library buys and installs a system, does not mean that the system should suit another library. However, a greater installed base, particularly among geographically co-located peers can increase the overall knowledge and skills base with respect to the particular ILS and improve both organisational success with ILS implementation, reduce overall training costs, and increase staff mobility.

4.2.5 Category comparison

Looking at the four categories overall, Table 17 reveals that, issues related to the usage of the library systems rank first, since it recorded the highest mean score, followed by the technicalities of the system. It also shows that management of the system is rank lowest, below boundary issues. Although this may seem surprising the reasons for the low ranking of management of the system is the extent of disagreement with the Farajpahlou's (1999, 2002) success criteria relating to the ILS allowing for employment of less-qualified staff and vendor contractual commitments not being important.

Table 17. Comparison of the means of attitudes to criteria for the success ILS by category

Category	Number of items	Total score	Mean
Usage of the system	4	17.31	4.3
Management of the system	7	23.78	3.4
Technicalities of the system	8	31.96	4
Boundary issues	7	26.74	3.8
Total	26	99.79	3.8

4.2.6 Additional success criteria

Table 18 shows the features that respondents indicated should be part of a successful automated system. The list of features produced by respondents shows that out of the 11 success criteria proposed by respondents two of were proposed by all of the respondents. These two are "should have user-friendly interface" and "should be durable and reliable system." It is noteworthy that "user-friendly interface" is covered by Farajpahlou's (1999, 2002) success criteria and "should be durable and reliable system" is covered to some extent with respect to the length of time that the system lasts. There are two others features that were proposed by more than 50% of the respondents, namely, "should have good planning; good budgetary allocation; good maintenance" and "should be able to integrate

with other programs,” both of which were also covered to a greater or lesser extent by one or more of Farajpahlou’s (1999, 2002) success criteria.

Table 18. Features of Successful Automated System

Features	Corresponding Farajpahlou success criterion/criteria*	Percentage (%)
Should have user-friendly interface	U-1; U-5	100.00
Should be durable and reliable	T-20	100.00
Should be able to integrate with other programs	T-11	64.29
Should have good planning; good budgetary allocation; good maintenance	M-8; B-21; T-12	53.57
Should have competent staff to manage it	-	46.43
Should have good management and vendor support	M-10; B-4	42.86
Should enhance staff development	-	25.00
Should be accessible everywhere	-	17.86
Should have good security features	-	3.57
Should be robust	-	3.57
Should support core services	T-24	3.57

* Prefix indicates category (U=Usage of system, M=Management of system, T=Technicalities of system, and B=Boundary issues)

There were several features that could be considered as additional success criteria in future studies (Table 19). It is interesting to note that some of these contradict success criteria in the original Farajpahlou list. For example, enhancing staff development likely implies investment in staff training, the opposite of which Farajpahlou considers to be an indicator of success (M-15).

Table 19. Additional success criteria proposed by UGLS staff

Category	Additional success criteria proposed by UGLS staff
Usage of the system	A successful ILS should be accessible everywhere
Management of the system	A successful ILS requires competent staff to manage the ILS
Technicalities of the system	A successful ILS should be robust
	A successful ILS should have good security features
Boundary issues	A successful ILS should enhance staff development

4.3 Chapter Summary

The research outcome of the case study of the UGLS ILS success is discussed extensively. The qualifications of the respondents who constituted the sample is made evident and buttresses their suitability to this study. Finding from the UGLS ILS case study is entirely premised on the data collection instrument. It showed that respondents considered 16 out of

the 26 Farajpahlou (1999, 2002) success criteria were acceptable. Furthermore, the UGLS ILS satisfied 13 out of the 16 acceptable factors of the Farajpahlou (1999, 2002) success criteria. A number of criteria that could help improve the success ratings of the UGLS ILS were also suggested by respondents indicating the likelihood that some new criteria could be considered as additional success criteria following further research of other ILS. Also, some of the Farajpahlou's (1999; 2002) success criteria may be expunged from the current set of 26 factors. The results and discussions contained in this chapter provides solid basis for the conclusion and recommendations that are presented in the next chapter.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.0 Chapter Introduction

Chapter 5 contains the conclusion and recommendations from this study. The objectives of the study are to identify success criteria for library automation using an ILS, to assess the UGLS ILS according to the identified success criteria, and to make recommendations to improve the UGLS ILS and contribute to the body of knowledge on ILS success assessment. This chapter presents the conclusions of the research conducted in order to meet these objectives as well as recommendations for further research.

5.1 Summary of Research Objectives

The study used the Farajpahlou (1999, 2002) criteria as a basis to assess the UGLS ILS. The IS success/ Impact measurement framework initiated by DeLone and McLean (1992) and later extended and reconceptualised by Gable et al, (2008) formed the theoretical foundation for this study and supports the Farajpahlou (1999,2002) success criteria.

The DeLone and McLean (1992) IS success model is the established theory on which all current IS theories are founded on and is the most extensively mentioned in researches related to assessment of IS success. Gable et al, (2008) reconceptualised the DeLone and McLean (2003) IS success model arguing that a holistic way for evaluating an IS should comprise of IS success dimensions that together look both backward (impacts), and forward (quality). The research used the Farajpahlou (1999, 2002) criteria because it is categorized into the four categories namely, Usage of the System, Management of the System, Technicalities of the System and Boundary Issues which are conceptually supported by the Gable et al, (2008) theoretical model.

The study shows that there is the need for improvement of the UGLS ILS. There is a need to make the UGLS ILS easier to use for UGLS staff. This may require that varied interventions like better staff training with regard to the UGLS ILS and probably software upgrades and interface upgrades to make for easier use of the UGLS ILS.

The study showed that Farajpahlou (1999, 2002) success criteria can be generally considered as helpful criteria for assessing ILS in academic libraries. The library managers, paraprofessionals and IT specialists working with the UGLS ILS accepted 13 factors out of the 26 factors that make up the Farajpahlou (1999, 2002) success criteria. Four factors of the criteria were considered unacceptable and 9 factors could not be decided on conclusively. The study also found additional success criteria could be considered in

addition to those reported by Farajpahlou (1999, 2002) to assess ILS success in academic libraries (see Table 19).

5.2 Conclusions

The study showed that the adopted success criteria for the assessment of the UGLS ILS was good enough for the purpose. The criteria, Farajpahlou (1999, 2002) success criteria, by itself and the adaptations derived from it provided conclusions that underpin the outcome of the study. Three factors under the category Usage of System as categorised by Farajpahlou (1999, 2002) have been conclusively satisfied by the UGLS ILS. These are criteria 1, 5 and 23. Criterion 16 however was deemed as to be inconclusive. This outcome may be considered as suggesting that some users of the UGLS ILS do not find it usually easy to use. Two factors under the category Management of the System as categorised by Farajpahlou (1999, 2002) have been conclusively satisfied by the UGLS ILS. These are criteria 8 and 13. Three factors, criteria 2, 6 and 15 were deemed to be inconclusive. The UGLS ILS was considered to have failed to satisfy two factors, criteria 7 and 10. The outcome regarding criteria 7 and 10 may suggest that it is not the case that the UGLS ILS allowed the engagement of less qualified staff. The contrary may rather be the case should less qualified staff be assumed to be persons/employees with academic qualification lower than a university first degree. This is quite evident from the UGLS organisational structure in Figure 1. The outcome also suggests that the linking of the UGLS ILS success with terms of vendor contracts may not be valid.

5 factors under the category Technicalities of System as categorised by Farajpahlou (1999, 2002) have also been conclusively satisfied by the UGLS ILS. These are criteria 9, 11, 12, 18 and 24. Two factors, criteria 22 and 26 were deemed to be inconclusive. The outcome regarding criteria 20 suggests that the linking of UGLS ILS success and the length of time ILS is in use may not be valid. The UGLS is thus not considered to satisfy this criterion. Three factors under the category Boundary Issues as categorised by Farajpahlou (1999, 2002) have been conclusively satisfied by the UGLS ILS. These are criteria 3, 17 and 19. Three factors, under the category Boundary Issues, criteria 4, 14 and 25 as categorised by Farajpahlou (1999, 2002) were deemed to be inconclusive. The outcome regarding criterion 21 suggests that the linking of UGLS ILS success to its associated cost may not be valid. Using the Farajpahlou (1999, 2002) success criteria to assess the UGLS ILS, it is found that the UGLS satisfied conclusively 13 of the Farajpahlou (1999, 2002) success criteria. The UGLS ILS did not satisfy four of the Farajpahlou (1999, 2002) success criteria and for 9

factors of the Farajpahlou (1999, 2002) success criteria, the UGLS ILS could not be conclusively assessed. These conclusions are summarized in Table 20 below.

Table 20. Assessment of UGLS ILS using Farajpahlou Success Criteria (1999, 2002)

Category	Success criteria by category (adapted from Farajpahlou (1999, 2002))	Applicable to assess ILS success*	Rating of UGLS ILS implementation
Usage of the system	(1) A successful automated library system is usually user-friendly in terms of its interactive interface	+	4.61
	(5) A successful automated library system is usually "self instructive"	+	4.35
	(16) A successful library automated system is usually easy to use	?	3.85
	(23) A successful automated library system should provide good management information	+	4.50
Management of the system	(2) A successful automated library system should not require extensive teaching of users	?	3.64
	(6) Integration of automation planning process into library activities does not usually have impact on the success of the resulting automated library system	?	3.00
	(7) A successful automated library system should allow a university library to employ less-qualified staff	-	2.46
	(8) A successful automated library system is usually based on a well-prepared automation plan	+	4.50
	(10) A successful automated library system does not depend on carefully considered contractual commitments with the vendor	-	2.54
	(13) A successful automated library system should save staff time	+	4.43
	(15) A successful automated library system should not require extensive courses of library staff training programs	?	3.21
Technicalities of the system	(9) A successful automated library system will usually allow increase of quality of library services without increase in the number of staff	+	4.18
	(11) A successful automated library system will usually depend on its technical compatibility with other automated processes in the library	+	4.25
	(12) A successful automated library system is usually capable of continued development and enhancement	+	4.30
	(18) Having a fast response rate is one of the important factors in determining the success of an automated library system	+	4.37
	(20) Success of an automated library system is not usually judged on the length of time that the system lasts	-	2.96
	(22) A successful automated library system should have minimum down-time (say 1 percent)	?	3.74
	(24) Success of an automated library system will usually depend on its compatibility with existing work procedures	+	4.34
	(26) A successful automated library system will usually allow increase in the quantity of library services without increase in the number of staff	?	3.82
Boundary issues	(3) A successful automated library system can usually increase the library's influence in getting status from other departments in the university	+	4.47
	(4) Demonstration of clear political objectives at the beginning of automation has clear impact on success of resulting automated library system	?	3.83
	(14) The length of time a vendor has been in business should be considered as a measure for the success of the system produced	?	3.46
	(17) A successful automated library system can often increase the library's influence in getting resources from the university	+	4.25
	(19) A successful automated library system usually helps to increase the library's status in the library and information profession	+	4.57
	(21) Overall costs of an automated library system do not usually count in the success of the system	-	2.75
	(25) One factor in the success of an automated library system should be the number of libraries which buy it and install it	?	3.41

* +=agreed (>4), -=disagreed (<3), ?=inconclusive (3-4)

Although a single university cannot be used to represent an entire country and statistically compared to country-level results based on larger samples, it is interesting to compare the results of this study to Farajpahlou's results from the study in Australia (1999) and Iran (2002) as shown in Table 21.

Table 21. Comparison of Ghana (UGLS) results with other reported results

Category	Success criteria by category (adapted from Farajpahlou (1999, 2002))	Ghana (UGLS only)	Iran	Australia
Usage of the system	(1) A successful automated library system is usually user-friendly in terms of its interactive interface	+	+	+
	(5) A successful automated library system is usually "self instructive"	+	+	+
	(16) A successful library automated system is usually easy to use	?	+	+
	(23) A successful automated library system should provide good management information	+	+	+
Management of the system	(2) A successful automated library system should not require extensive teaching of users	?	+	+
	(6) Integration of automation planning process into library activities does not usually have impact on the success of the resulting automated library system	?	+	+
	(7) A successful automated library system should allow a university library to employ less-qualified staff	-	?	+
	(8) A successful automated library system is usually based on a well-prepared automation plan	+	+	+
	(10) A successful automated library system does not depend on carefully considered contractual commitments with the vendor	-	+	+
	(13) A successful automated library system should save staff time	+	+	+
	(15) A successful automated library system should not require extensive courses of library staff training programs	?	+	+
Technicalities of the system	(9) A successful automated library system will usually allow increase of quality of library services without increase in the number of staff	+	+	+
	(11) A successful automated library system will usually depend on its technical compatibility with other automated processes in the library	+	+	+
	(12) A successful automated library system is usually capable of continued development and enhancement	+	+	+
	(18) Having a fast response rate is one of the important factors in determining the success of an automated library system	+	+	+
	(20) Success of an automated library system is not usually judged on the length of time that the system lasts	-	+	+
	(22) A successful automated library system should have minimum down-time (say 1 percent)	?	+	+
	(24) Success of an automated library system will usually depend on its compatibility with existing work procedures	+	+	?
	(26) A successful automated library system will usually allow increase in the quantity of library services without increase in the number of staff	?	+	+
Boundary issues	(3) A successful automated library system can usually increase the library's influence in getting status from other departments in the university	+	+	+
	(4) Demonstration of clear political objectives at the beginning of automation has clear impact on success of resulting automated library system	?	+	?
	(14) The length of time a vendor has been in business should be considered as a measure for the success of the system produced	?	+	?
	(17) A successful automated library system can often increase the library's influence in getting resources from the university	+	+	+
	(19) A successful automated library system usually helps to increase the library's status in the library and information profession	+	+	+
	(21) Overall costs of an automated library system do not usually count in the success of the system	-	?	+
	(25) One factor in the success of an automated library system should be the number of libraries which buy it and install it	?	+	+

In terms of management of the system, the impact of the contractual commitments with the vendor was also considered a success factor whereas Iranian and Australian university libraries did not consider it to have an impact on ILS success. Both at university libraries in Iran and at UGLS respondents did not agree conclusively that an ILS should result in employment of less-qualified staff. UGLS staff additionally reported that implementation of

an ILS should enhance staff development and requires competent staff to manage for success and expected enhanced staff development.

In terms of the technicalities of the system, the UGLS staff also were not convinced that additional services should be offered without a corresponding increase in staff. UGLS respondents also differed from their colleagues in Iran and Australia with regard to the length of time the system lasts being a success criterion. This may be as a result of more limited budgets and a tendency toward lower replacement rates of ICT infrastructure and systems, thus requiring infrastructure and systems to last longer and be more robust. Downtime of 1% was also not considered as a conclusive criterion of success at UGLS as it was in Iranian and Australian libraries. This may be because system downtime is likely often higher as a result of power fluctuations and outages.

In terms of the boundary issues, a vendor's track record was not considered as conclusive success criteria (B-14 and B-25). This is an interesting result given that vendor contractual commitments (M-10) are considered crucial. Political objectives, unlike in Iranian universities and similar to Australian universities, are not considered crucial to ILS success at UGLS. The major difference, however, is that overall cost does play an important role in ILS success for UGLS whereas Iranian and Australian universities agreed that it was not a measure of success. This may, however, have changed in recent years given the global economic downturn and pressures on universities' budgets globally.

5.3 Recommendations for improvement of ILS at UGLS

The user friendliness of the system must therefore be maintained and improved upon and users encouraged to learn more about the UGLS ILS and to update continually their knowledge of the UGLS ILS. More users of the UGLS ILS should be allowed to receive training on a regular basis from the ILS vendors so they could help colleagues readily when they require support with the UGLS ILS.

5.4 Future Work

The application of the Farajpahlou (1999, 2002) criteria to other ILS in other academic libraries in Ghana is required. There is the need to further test the suitability of the Farajpahlou (1999, 2002) criteria in the Ghana environment. This could potentially help validate within the Ghana environment, the strengths and weakness of the Farajpahlou (1999, 2002) criteria as useful and appropriate criteria for ILS in general, and for Ghana's academic libraries. There is the need for many more academic libraries to assess how

successful their ILS has been, and such outcomes published in appropriate journals to serve as reference points for other research work. This is important for the research and library community since there is little of such works currently available to allow for meaningful study.

There is the need to further research into the suitability of adding other success assessing criteria to the existing Farajpahlou (1999, 2002) criteria as well as removing some of the criterion from the current list. Further research is required to assess the suitability of the amended Farajpahlou (1999, 2002) criteria and how well the additional criteria proposed by this study affects and improves the Farajpahlou (1999, 2002) criteria and the success assessment of ILS in academic libraries.

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Appendix A: Questionnaire

The questionnaire is structured in two sections (A and B) for Library Managers, Paraprofessionals and System Librarians who use the ILS (Integrated Library System) of the UGLS (University of Ghana Library Systems).

This questionnaire is designed with respect to an M.IT mini-dissertation titled “Staff assessment of the success of an Integrated Library System: the case of the University of Ghana Library System.” Your response and identity will be kept anonymous and absolutely confidential. Moreover, they would be used strictly for research and advancement of knowledge. Thank for your co-operation.

Section A - Demographic Data

Please tick the appropriate answer.

1. Please indicate your campus
 - A. Legon main campus
 - B. City Campus
 - C. Korle-Bu Campus

2. Please indicate your current highest academic qualification.
 - A. Diploma
 - B. BA/BSc
 - C. MA, MSc/MPHIL
 - D. PhD
 - E. Other: _____

3. Please indicate your current level in the University of Ghana.
 - A. Senior member
 - B. Senior Staff
 - C. Junior Staff
 - D. Other: _____

4. Please indicate the number of years you have worked in the Library
 - A. 0-3 years
 - B. More than 3 years and up to 10 years
 - C. More than 10 years and up to 18 years
 - D. More than 18 years and up to 25 years
 - E. More than 25 years

5. In which unit of the library do you currently work?
 - A. Acquisition
 - B. Cataloguing
 - C. Circulation
 - D. IT section
 - E. Other: _____

Section B - Farajpahlou ILS success criteria

	Farajpahlou's success criteria	Indicate your ASSESSMENT of the ILS implementation at UGLS.					Indicate your AGREEMENT with each statement in general.				
		<p>Please choose only ONE option for each criterion:</p> <p>1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree</p>					<p>Please choose only ONE option for each criterion:</p> <p>1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree</p>				
1	A successful automated library system is usually user-friendly in terms of its interactive interface	1	2	3	4	5	1	2	3	4	5
2	A successful automated library system can usually increase the library's influence in getting status from other departments in the university	1	2	3	4	5	1	2	3	4	5
3	A successful automated library system should not require extensive teaching for users.	1	2	3	4	5	1	2	3	4	5
4	Demonstration of clear political objectives (e.g. that the automated system will bring more status for the parent organization, etc.) at the beginning of the automation project usually has a clear impact on the success of the resulting automated library system.	1	2	3	4	5	1	2	3	4	5
5	A successful automated library system is usually "self instructive", that is, it will have tools like help, tutorials, etc. by which it will itself instruct people how to use it.	1	2	3	4	5	1	2	3	4	5
6	Integration of the automation planning process into library activities, i.e. the diffusion of automation planning responsibilities throughout the library rather than in just one group, does not usually have any impact on the success of the resulting automated library system.	1	2	3	4	5	1	2	3	4	5
7	A successful automated library system should allow a university library to employ less-qualified staff (i.e. staff with fewer qualifications and lower salaries) than was previously needed.	1	2	3	4	5	1	2	3	4	5

8	A successful automated library system is usually based on a well-prepared automation plan.	1	2	3	4	5		1	2	3	4	5
9	A successful automated library system will usually allow increase of quality of library services without increase in the number of staff.	1	2	3	4	5		1	2	3	4	5
10	Success of an automated library system usually does not depend on carefully considered contractual commitments with the vendor.	1	2	3	4	5		1	2	3	4	5
11	A successful automated library system will usually allow increase of quantity of library services without increase in the number of staff.	1	2	3	4	5		1	2	3	4	5
12	Success of an automated library system will usually depend on its technical compatibility with other automated processes in the library.	1	2	3	4	5		1	2	3	4	5
13	A successful automated library system should save staff time.	1	2	3	4	5		1	2	3	4	5
14	The length of time a vendor has been in business should be considered as a measure for the success of the system produced.	1	2	3	4	5		1	2	3	4	5
15	A successful automated library system should not require extensive courses of library staff training programs	1	2	3	4	5		1	2	3	4	5
16	A successful automated library system is usually easy to use.	1	2	3	4	5		1	2	3	4	5
17	A successful automated library system can often increase the library's influence in getting resources from the university.	1	2	3	4	5		1	2	3	4	5
18	A successful automated library system is usually capable of continued development and enhancement	1	2	3	4	5		1	2	3	4	5
19	A successful automated library system usually helps to increase the library's status in the library and information profession.	1	2	3	4	5		1	2	3	4	5
20	Having a fast response rate is one of the important factors in determining the success of an automated library system.	1	2	3	4	5		1	2	3	4	5
21	Overall costs of an automated library system do not usually count in the success of the system.	1	2	3	4	5		1	2	3	4	5
22	Success of an automated library system is not usually judged on the length of time that the system lasts.	1	2	3	4	5		1	2	3	4	5
23	A successful automated library system should provide good management information.	1	2	3	4	5		1	2	3	4	5
24	A successful automated library system should have minimum down-time (say 1 percent).	1	2	3	4	5		1	2	3	4	5

25	One factor in the success of an automated library system should be the number of libraries which buy it and install it.	1	2	3	4	5		1	2	3	4	5
26	Success of an automated library system will usually depend on its compatibility with existing work procedures.	1	2	3	4	5		1	2	3	4	5

Indicate / state features you view as important for a successful automated system.

Thank you Sir/Madam for your time and patience.

APPENDIX B: INFORMED CONSENT FORM

(Signed by each research subject and kept on record by the researcher)

- 1 Title of research project: **Staff assessment of the success of an Integrated Library System: the case of the University of Ghana Library System.**
- 2 I,, hereby voluntarily grant my permission for participation in the project as explained to me by **CYNTHIA ATUA-NTOW.**
- 3 The nature, objective, possible safety and health implications have been explained to me and I understand them.
- 4 I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially. I am aware that the results of the investigation may be used for the purposes of publication.
- 6 Upon signature of this form, you will be provided with a copy.

Signed: _____ Date: _____

Witness: _____ Date: _____

Researcher: _____ Date: _____

APPENDIX C: WEIGHTED AVERAGE AND STANDARD DEVIATION CALCULATION

Let X_i , where $i = 1, 2, 3, \dots$ be the ranks assigned to the responses of the questionnaires for n respondents.

Then the weighted average is given as

$$\bar{X}_w = \sum_{i=1}^n \frac{n_x}{n} x_i,$$

where

n_x = the total number of response with rank X .

n = the total number of response of all the ranks

$\frac{n_x}{n}$ = the weight for rank X

For example, given that the ranks are $X = 1, 2, 3, 4, 5$ and the weight for each rank is given as $w_1 = 0.00, w_2 = 0.036, w_3 = 0.036, w_4 = 0.464, w_5 = 0.464$, then the weighted average is

$$\bar{X}_w = 0.0(1) + 0.036(2) + 0.036(3) + 0.464(4) + 0.464(5)$$

$$\bar{X}_w = 4.35$$

The standard deviation

$$s = \sqrt{\sum_{i=1}^n \frac{(x_i - \bar{X}_w)^2}{n - 1}}$$

For example,

$$s = \sqrt{\frac{(2 - 4.35)^2 + (3 - 4.35)^2 + \dots + (5 - 4.35)^2}{27}}$$

$$s = 0.75$$