

UNIVERSITY OF GHANA, LEGON
DEPARTMENT OF INFORMATION STUDIES

**LIBRARY MANAGEMENT SOFTWARE: A COMPARATIVE
STUDY OF CLOUD SERVICE AND IN-HOUSE SOFTWARE
IMPLEMENTATION AT UPSA-GHANA**

BY

SEBASTIAN BACH HADJOR OFOE

(1 0 2 6 9 4 3 6)

THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF
GHANA, LEGON IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF MA INFORMATION STUDIES
DEGREE.



JULY, 2016

DECLARATION

This is to affirm that this dissertation is in no way a reproduction, in part or whole of any work ever presented for the award of a degree here or elsewhere, excluding the work of other researchers that I have accordingly accredited. This production therefore presents my own original research paper.

Signature..... Date.....

Sebastian B. Hadjor Ofoe

(Student)

Signature..... Date.....

Dr. Ebenezer Ankrah

(Supervisor)

INTEGRI PROCEDAMUS

DEDICATION

I dedicate this research to God the Father, God the Son, and God the Holy Spirit and to my lovely mother Naomi Oboshie Sai, my wife Josephine Naa Ofoe, and my children, Antoinette Narki Ofoe, Sebastian Nartey Ofoe (jnr.) and Kelvin Tetteh Ofoe. Special dedication to my father, Mr. Moses Ofoe of blessed memories.



ACKNOWLEDGEMENT

This challenging and inspiring task would not have been successfully completed had it not be by the special Grace of God Almighty to whom I am most thankful.

Equally, my profound appreciation goes to, Dr. Ebenezer Ankrah, my supervisor who has really invested immensely his time, guidance and direction which has yielded in the success of my work. I owe Mr. Eric O. Osei my deepest gratitude for his instruction.

Great appreciation is also extended to the Head of Department, Dr. E. A. Adjei and all the lecturers of the Information Studies Department, for their motivations and candid counseling which helped to shape me in diverse ways.

Likewise, I am grateful to all the participants who willingly contributed their part in the study and devoted selflessly in answering the questionnaires. Same goes to my senior colleagues for their immense support and assistance.

Lastly, I wish to thank Mr. Michael Dzandu, a former lecturer in the Department, Mr. Steve Tagoe and Mrs. Rosemary Okai, Assistant Registrar and Assistant Librarian respectively of University Professional Studies, Accra (UPSA), for their contributions in my work.

A very special appreciation goes to Mr. Elijah, A. Mensah, the University Librarian of UPSA whose recommendation and consent pushed me to realizing this dream. God richly blessed you all.

ABSTRACT

This study looks at Library Management Software, a comparative Study of Cloud Service and In-house Software Implementation at UPSA-Ghana with the help of key performance indicators. The study was aimed at identifying the security effects of Cloud SaaS and In-house Software Management, the benefits of Cloud Service as compared to In-house Software Implementation, the capabilities of the IT personnel at UPSA, as well as trying to find out the challenges encountered by staff in the use of the current In-house Software Implementation of Library Management Systems within the context of Technology Acceptance Model (TAM). Software as a Service (SaaS) is a new emerging information system technology that provides software application services over the Internet for firms and individuals working from computer networks or mobile devices such as mobile phones, laptops, tablets and so on. This frees users from tough software and hardware controls.

To accomplish the intents of the analysis, the study used self-administered questionnaires and Statistical Package for the Social Sciences (SPSS) tool to analyze data collected from 52 respondents which took place at the UPSA only due to the research time restrictions. The study revealed that the users of the In-house library system faces challenges such as system instability, lack of usability and user adaptation, system unreliability and malfunctioning, and poor training for staff to use the system. Also, majority of the respondents have indicated that, In-house Software Implementation were more advantageous than the Cloud Services in terms of security inferences, maintenance expenses and procurement budgetary. However,

there were indications that SaaS adoption would provide better service and minimize the frustration of staff.

The study recommended the creation of user awareness about the services that SaaS (Outsourcing) offers, the need for the improvement of Staff Training to be abreast with current IT developments, and the motive for the acceptance of Cloud Services.



TABLE OF CONTENTS

Title	Pages
Declaration	i
Dedication	ii
Acknowledgement	iii
Abstract	iv
Table of Content	vi
List of Tables	x
List of Figures	xi

CHAPTER ONE: INTRODUCTION

1.1	Background to the study	1
1.1.1	Definition of Terms	12
1.1.2	Study Area	13
1.2	Problem Statement	14
1.3	Purpose of the Study	15
1.4	Objectives of the Study	15
1.5	Research Questions	16
1.6	Significance of the Study	16
1.7	Scope	17
1.8	Theoretical Framework	17
1.9	Organization of Work	20

CHAPTER TWO: LITERATURE VIEW

2.1	Introduction	22
2.2	Library Management System	23
2.3	Cloud SaaS (Software as a Service)	25
2.3.1	Outsourcing	28

2.3.2	Outsourcing Benefits	29
2.4	Cloud SaaS Security	31
2.5	Cloud SaaS Benefits	35
2.6	Cloud SaaS Challenges	37
2.7	In-house Software Management	38
2.7.1	Pros & Cons on In-house Software Management	39
2.8	Challenges of ICT Application in Library Software	41

CHAPTER THREE: RESEARCH METHODOLOGY

3.1	Introduction	44
3.2	Research Design.....	44
3.2.1	Selection of Case Study.....	45
3.3	Population	46
3.4	Sampling Size	47
3.5	Instrumentation	47
3.5.1	Questionnaire	47
3.6	Mode of Data Collection	48
3.7	Method of Data Analysis / Presentation of Results	49
3.8	Ethical ConsiderationsPros & Cons on In-house Software Management.....	50

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION RESULTS

4.1	Introduction	51
4.2	Background of Respondents.....	52
4.2.1	Educational Level of Respondents.....	52
4.2.2	Department of Respondents.....	53
4.3	Security Assessment.....	54
4.3.1	Outsourcing LMS will Leak out Vital Information.....	54
4.3.2	Outsourcing will Reduce Staff Potential Skills.....	55
4.3.3	Service Providers may not have the Library's Interest at Heart.....	56
4.3.4	In-house LMS provides a Safe and Better Secure Environment.....	57
4.3.5	There is a general Risk Reduction to have In-house LMS.....	58
4.3.6	When you provide a service to users over Internet, such as LMS link to your Webserver, you Expose your Organisation to New Risks.....	59

4.4	Procurement Cost.....	60
4.4.1	Will Outsourcing LMS truly Improve Library Performance.....	60
4.4.2	The Financial Projections are Accurate to Outsource LMS	61
4.4.3	Building own LMS will Reduce Cost for Budgetary Allocation.....	62
4.4.4	Getting the Best Service Provider to Build LMS is a Challenge.....	63
4.5	Human Capital Training.....	64
4.5.1	Does the University have the Expertise to Develop Library Software.....	64
4.5.2	Do you think that the internal IT staff lacks the expertise in the new technologies.....	65
4.5.3	Do you think in-house LMS will ensure less complex staff training on the use of the software.....	63
4.6	Maintenance Cost.....	67
4.6.1	LMS maintenance cost is very expensive when outsourced	67
4.6.2	It is easier to maintain in-house LMS than when outsourced.....	68
4.6.3	There is quick response to resolve system failure when outsourced	69
4.6.4	Developing in-house LMS provides easy access to error checking	70
4.7	Library Management System Challenges.....	71
4.7.1	Does the library currently have a Library Management Software	71
4.7.2	Some of the challenges being faced with the current LMS.....	72

CHAPTER FIVE: DISCUSSION OF FINDINGS OF THE STUDY

5.1	Introduction	74
5.2	Background of Respondents.....	74
5.3	Security Assessment in the use of Cloud SaaS.....	75
5.4	Procurement Budget on the need for Outsourcing.....	76
5.4.1	Benefits of Outsourcing for Cloud SaaS Model.....	76
5.5	Human Resources for the Development of Library Management Software....	77
5.6	Maintenance of Library Management Software Systems.....	78
5.7	Library Management System Challenges.....	78

CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1	Introduction	81
6.2	Summary of Findings.....	81
6.2.1	Introduction.....	81
6.2.2	Security Assessment in the use of Cloud SaaS	81
6.2.3	Procurement Budget on the need for Outsourcing.....	82
6.2.4	Benefits of Outsourcing for Cloud SaaS Model.....	82
6.2.5	Human Resource for the Development of Library Management Software....	83
6.2.6	Maintenance of Library Management Systems.....	83
6.2.7	Library Management Challenges.....	83
6.3	Conclusion.....	84
6.4	Recommendation.....	85
6.4.1	Staff Training.....	86
6.4.2	User Awareness.....	86
6.4.3	Adoption of Cloud Software as a Service.....	87
6.5	Further Studies.....	87
	Bibliography.....	88
	Appendix	98

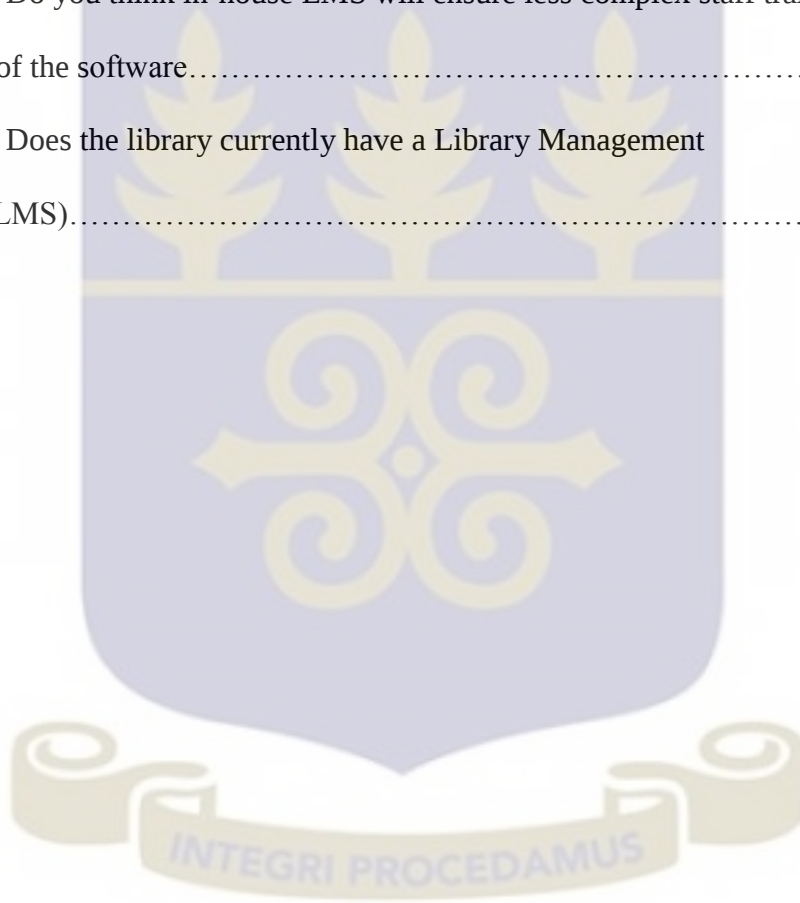


LIST OF TABLES

Table 3.1 Population.....	46
Table 4.1: Educational level of respondents.....	52
Table 4.2 Department as given by respondents.....	53
Table 4.3: Outsourcing LMS will leak out vital information	54
Table 4.4: Outsourcing will reduce staff potential skills.....	55
Table 4.5: Service Providers may not have the library's interest at heart.....	56
Table 4.6: In-house LMS provides a safe and better secure environment	57
Table 4.7: There is a general risk reduction to have in-house LMS.....	58
Table 4.8: When you provide a service to users over the Internet, such as a LMS link to your webserver, you expose your organization to new risks.....	59
Table 4.9: Will outsourcing LMS truly improve library performance.....	61
Table 4.10: The financial projections are accurate to outsource LMS.....	62
Table 4.11: Building own LMS will reduce cost for budgetary allocation.....	62
Table 4.12: Getting the best service provider to build LMS is a challenge.....	63
Table 4.13: LMS maintenance cost is very expensive when outsourced.....	68
Table 4.14: It is easier to maintain in-house LMS than when outsourced.....	68
Table 4.15: There is quick response to resolve system failure when outsourced....	70
Table 4.16: Developing in-house LMS provides easy access to error checking.....	70
Table 4.17: Summary of Findings.....	80

LIST OF FIGURES

Figure 4.1: Does the university have the experts to develop library software.....	65
Figure 4.2: Do you think that the internal IT staff lacks the expertise in the new technologies.....	66
Figure 4.3: Do you think in-house LMS will ensure less complex staff training on the use of the software.....	67
Figure 4.4: Does the library currently have a Library Management Software (LMS).....	71



CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The revolution of the Internet has brought about changes in the way information is disseminated; this is seen in the area of storage, speed, information sharing as well as the retrieval of the information. The cutting-edge technology in this contemporary information age which has brought about the advent of the technological emergence is seen in way in which information is retrieved. This new emerging technology is Cloud SaaS.

Software as a Service (SaaS)

“SaaS is a way of distributing applications over the Internet as a service” ((Ziff, 2014). That is, instead of installing and maintaining software, you simply access it through the Internet thus freeing yourself from difficult software and hardware management. This is software services that are hired instead of acquiring. It is acquired by subscribing to its service based software and all real time updates are stated in the terms.

SaaS may be advantageous to accept due to the following reasons:

- There is no extra hardware charge; the provider provides all the needed power to start the operations.
- No initial setup costs; applications are ready to use once the user subscribes.
- You pay for what you use; if a part of software is only needed for a short time then it is only paid for limited period.

- Scalability; a can request for more storage space without the need of installing and new software or hardware.
- Automatic updates; there is online update for current users in real time mostly for free. The applications and the updates will typically be set up routinely by the cloud provider.
- Cross device compatibility; you can access SaaS software applications through any Internet enabled device, which makes it ideal for those who use a number of different devices, like the phones and tablets, and those who do not continually use the same computer.
- Accessible from any location; there is no restriction in accessing the application from anywhere with an Internet enabled devices.
- SaaS applications can be tailored; with some software, customisation is available which makes it possible to alter changes to meet on one's need.

SaaS is collective distribution model for numerous business applications. Examples are messaging software, payroll software, database management software (DBMS), management information systems (MIS), customer relationship management software (CRM), enterprise resource planning (ERP), content management (CM), human resource management (HRM), an antivirus softwares. Gartner Group approximation of SaaS sales reached 10 billion US dollars in 2010, and these have been anticipated to the growth of 12 billion US dollars in the year 2011. This was an increase of about 20.7 percent from the year 2011 (McHall, 2011). Customer relationship management (CRM) remains the largest advertiser for SaaS forecast to

reach 3.8 billion US dollars in 2011 and increased rate from 3.2 billion US dollars in the year 2010 (Barret, 2010).

Cloud Computing



Source: <https://www.google.com.gh/search?q=cloud+computing+images&biw=1440&bih=799&tbm=i>

With Software as a Service, applications are run over the Internet via a web browser and compatible with all kinds of operating system. It can be applied internally and applicable on desktops and mobile services. SaaS services provide real time updates and users are able to get current version anytime they launch the browser's icon.

Additionally, information can be kept at the data warehouse of the provider's. (www.pcmag.com/encyclopedia/term/56112/saas). This technology provides a way of budget minimization on both operation and maintenance.

There is also a reduction which normally occurs or arises as a result of systems upgrades. SaaS permits the generating of new principles by linking funds of a single user on the supplier's platform.. Several business sectors have employed SaaS. Gartner (2009), had predicted SaaS growth of 17.7 % to about 7.5 US Dollars in the year 2010, targeting about 14 billion US Dollars for the year 2013. Cloud computing basically runs on the Internet, sharing resources, by request. Since updates are provided continually through networks, users have no need to worry about any extra features added. This therefore implies, users of SaaS services have less to spend in operation and maintenance cost and be successfully realistic in library procedure network.

According to Tayntor (2001), Outsourcing begun in the 1990s. Outsourcing is “defined as a strategy by which a firm uses external resources for current activities that, traditionally, involve few people and resources, turning to external services providers”. It is a way of engaging a third party services with the view of proving better quality services. Offshore outsourcing occurs when services are outsourced to foreign countries other than located within one's locale country.

Outsourcing Effects

The consequences of outsourcing are not general to the industry and the drive for which similar was embark on. Nevertheless through industries subcontracting is mostly accepted to enable companies to create better income appreciation whilst providing the firms added economic value. Outsourcing has a significant effect on

quality of products and services delivered as a result of this, either improving or dropping quality.

Though outsourcing could bring about rise or decline in the improvement, it could also result in improved patron service. Firms that engage in outsourcing have competitive edge that results in easy management and better production.

(<https://www.flatworldsolutions.com/articles/pros-cons-outsourcing.php>).

Pros of Outsourcing

Pros

- Better-quality income realisation and higher proceeds on investment
- Labor is low in cost whilst having an economic balanced.
- There is improvement as one is able to tap into new knowledge
- Management is able to concentrate on free management time, enabling companies to focus on core competencies while not being concerned about outsourced routine activities.
- Increases speed and the quality of delivery of outsourced activities
- Reduces cash outflow and optimizes resource utilization

Outsourcing cons

Some of the possible disadvantages often include the following:

- There is loss of control over a firm's commercial procedures.
- Difficulties related to quality and turnaround time.
- Inactive response times together with deliberate issue purposes.

- Limitations in routine vis a vis opportunities.
- Lower than expected realisation of benefits and results.
- Issues relating to lingual accent distinction.
- A fuming customer base joined with furious employee unions.

Library management system (LMS), according to Veronica et al. (2008) “is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed”. LMS software may include for example Greestone Library Software, Koha Software, Granthlaya, LIBSis and so on.

LMS typically comprises a relational database, software to interact with that database, and two graphical user interfaces. The software functions into separate programs known as modules, each of them incorporated with a unified interface. Examples of modules might include:

- acquisitions (ordering, receiving, and invoicing materials)
- cataloging (classifying and indexing materials)
- circulation (lending materials to patrons and receiving them back)
- serials (tracking magazine and newspaper holdings)
- the OPAC (public interface for users)

Larger libraries use LMS for acquisition, cataloguing, circulation and tracking of library's collection.

Library management system is used to manage documents in print formats that are kept by the library. Lately, its well-designed requests have been prolonged to comprise the combined library management as well all inclusive automated managing resources. Also, Moodle, such as Learning Management System has been incorporated and is compatible with other related system resources that work together without. However, there some limitations that do not expedite the recognition of SaaS computing:

- There are issues with data security because of the storage location that are resided at the vendor's servers (Lisserman, 2010).
- SaaS software applications are held in the “cloud”, beyond the reach of the user and presents potential in the environment.
- Several structural design, which drive cost efficiency for SaaS solution providers, limit customisation of applications for large clients, inhibiting such applications from being used in scenarios (applicable mostly to large enterprises) for which such customization is necessary.
- Selected applications used in businesses call for right to use with consumer's current data. When such data are large in volume or sensitive (e.g., end users' personal information), integrating them with remotely hosted software can be costly or risky, or can conflict with data governance regulations.
- Problems with large files or data transfer over the Internet are slow and difficult especially when swapping SaaS dealers.
- SaaS adoption as a new service may leads to unanticipated costs for staff training or instability from bugs in the newer software.

- Should the vendor of the software go out of business or suddenly EOL the software, the user may lose access to their software unexpectedly, which could destabilize their organisation's current and future projects, as well as leave the user with older data they can no longer access or modify.
- Relying on an Internet connection means that data are transferred to and from a SaaS firm at Internet speeds, rather than the potentially higher speeds of a firm's internal network. (Gallaughier).

In 2010, when the Act of Affordable Care bill was passed in the USA, there was an increased use of IT in the health care industry which accounted for an intense variation in their pay structure. This was evidence in the 83 percent of health services using SaaS technology, and 9.3 percent in a bid to also adopt the SaaS platform. According to this survey, 67 percent of Information Technology health industries are using SaaS software applications (Forbes, 2014).

According to the new Gartner (2015) Report, the security of Cloud application includes expertise and principles that improve the reliability and the security cloud software as a service being put into practice.

- How software-defined perimeters will appeal to organizations looking for innovative and secure ways to both connect and collaborate with their digital business ecosystem.
- How the extension of data centers into the public Cloud also has placed a focus on software-based approaches for segmentation.

- Which critical security trends are essential for you to follow as you plan your Cloud security implementation?

In-house software

In-house software is software that is produced by a corporate entity for purpose of using it within the organisation. In-house software however may later become available for commercial use upon sole decision of the developing organisation. The non-availability of software in shops or market normally calls for the development of software. The organisations therefore decide which software design best suit their. In-house software development is maintained and deployed by the organisation's own funds which also include the physical feasibility study, economic feasibility study, organizational feasibility study and operational feasibility study. For better output development, and to a very large extent, consulting for specialists such as systems analysts, programmers come into play. With team work, the in-house developers are able to make good impact.

According to Clydebuilt (2012), the following are some of the pros and cons of in-house development management:

Pros

- In-house development engages the IT staff thereby becoming proactive.
- In-house developers believe cost involved in the development is extremely cheaper.
- There is total control since you are not linked to any third party or outsourcer.

- Control over the software becomes very significant particularly with planned development.
- There is a well-defined requirement as required by the consumer.
- All being well the in-house development will be appropriate with current in-house software.
- There is also the surety of familiarity.

Cons

- A valuable expense is required to develop new system.
- There is time consumption trying to define systems project specifications. This also entails involving the procedural and the functioning staff.
- Pressures are abundant to mount on in-house developers to meet deadlines.
- Certain areas in the development cycle require skilled IT personnel.
- Outsiders coming in might be inexperienced with pertinent warehouse skill.
- Systems error check can be very lengthy.
- Most executives may find it difficult to argue with IT developers since they can become well vested in technology.

There have been several studies conducted on Cloud SaaS as a new emerging technology providing cost effective benefits to organisations. According to Cho (2011), the new developed SaaS application has shown that there is the possibility of cost reduction on task and maintenance. Also extra expenditures that are required for upgrading the systems have the possibility of being reduced. Fariba et al (2015) add

that the prospect of SaaS provides several considerable chances that help in improving the use of IT in firms deprived of cost and maintenance. Equally, a study by Judith (2013) has also indicated that, one cannot avoid the fact there are relevant issues that surround in the direction of contemporary information setting. “She stated that a way of shifting from the hardware and software demands of storing and organizing data, to information access concerns. That is because with the exponential growth in information sources and all accompanying complexities, the limited capacity of libraries to host their own in its entirety necessitates opting for alternatives in the cloud”.

A library is said to be a setting that is well arranged with materials or information resources serving its patrons and community at large. In academic institutions such as universities, polytechnics, colleges, a library supports the goals of the establishments in learning, teaching, research and service whose users include students, researchers, lecturers (Aina, 2004). Griffis (2014) referred to a library as “built environments including their cultural, geographical, and historical contexts, as well as their representative properties as social, political, and informational space”.

The undergraduate and postgraduate students of a university both have different views of a library. The former view it as a learning center, due to the fact that it offers resources necessary for learning for all programmes existing in the academia whilst the latter view the library basically for research. The library provides all resources needed for carrying out effective learning and research activities. Due to

the extent of university resources, the library engages qualified professional librarians to manage the library. The professional librarian's duty is to work hard to make these information resources and services accessible to its clientele. As postulated by Aina (2004), libraries in academia are those attached to colleges, polytechnics and universities, and the common users are lecturers, researchers, staff and students and are established to provide support for teaching, learning and research. Libraries have a major role to play in the achievement of the mission and vision of their institutions, (Alemna & Antwi 2002).

1.1.1 Definition /Abbreviations of Terms

EOL	“End-of-life”. this is used to denote product given to consumers, (https://en.wikipedia.org/wiki/End-of-life_(product)).
ILS	Integrated Library System - an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed. (Veronica, et al. 2008).
Professional librarian	- A librarian works professionally in a library, and may hold a Master degree in librarianship (known either as library science or library and information science (Aina, 2004).
SaaS	Software as a Service- <i>PC Magazine Encyclopedia</i> . (Ziff, 2014)
CRM	Customer Relationship Management
MIS	Management Information Systems

ERP	Enterprise Resource Planning
HRM	Human Resource Management
CM	Content Management
LMS	Library Management System

1.1.2 Study Area

The study covered the University of Professional Studies, Accra (UPSA) Library. The UPSA has undergraduate and post graduate libraries located in separate buildings. The undergraduates' library has a sitting capacity of 200 whilst the sitting capacity of the graduate school library stands at 32. The uniqueness of the library information sources supports both the professional and academic research. The electronic support section also provides comprehensive subscribed online databases available for its patrons.

UPSA achieved an independent status as a university in September 2008 when it was approved by a Presidential Charter. UPSA has since been offering undergraduate and postgraduate programmes whilst providing tuition for internationally recognised, acclaimed Business Professional Programmes. The current student population of the UPSA stands at thirteen thousand (13,000), (UPSA Hand Book, 2013).

1.2 Problem Statement

To facilitate the management of library operations, UPSA has developed an in-house library management system used to track items owned by the library. However, initial investigation and interrogations with the users, revealed that the system is problematic. For example, system maintenance cost and database operation failure. Sometimes it takes more than twenty four hours to get the attention of these in-house software developers to resolve transaction failures reported by users. Staff have to wait about 24 hours for the system to be resolved any time it fails. At times actions towards resolution are not considered urgent. But for cloud service, the provider is charged a penalty for the number of hours the database system goes down. UPSA stands to gain \$72 a day on every interruption cost of \$3 per hour from the cloud provider when contracted with cloud services. For this reason SaaS providers are prompt to fix system failures within the agreed downtime.

According to Cho (2011), the new developed Software as a Service (SaaS) application has shown that there is the possibility of cost reduction, a highly scalable platform and easy to manage by non-expert users. The challenges of the in-house provision of library system that hinders the smooth operation of library services can be dealt with by the adoption of a new emerging technology known as SaaS. The researcher therefore, seeks to embark on a comparative study between In-house and Cloud SaaS using TAM model based on empirical inference. Since, little has been touched on Cloud SaaS adoption for library system, the study therefore seeks to add knowledge as well as filling the gap on the literature.

1.3 Purpose of the Study

The main purpose of the study was to compare the potential risks as well as the benefits of using the Cloud SaaS and in-House Software Development of Library Management System in UPSA library with the help of key performance indicators.

1.4 Objectives of the Study

1. To find out the security effects of Cloud SaaS and In-house Software Management.
2. To identify the benefits of Cloud SaaS and In-house Software Management Systems.
3. To find out about the capabilities of the IT personnel of the University of Professional Studies, Accra.
4. To find out the challenges encountered by staff in the use of the In-house Library Management systems in UPSA library.
5. To suggest a suitable recommendations as per the findings of the study whether UPSA has to discontinue using in-house infrastructure and go for Cloud SaaS.

1.5 Research Questions

To achieve this purpose the following questions were posed in relation to the objectives:

1. What were the security implications in considering Cloud SaaS or In-house Software Management?
2. What were the benefits of procuring either Cloud SaaS or In-house Software Management Systems?
3. What were the capabilities of the IT personnel of UPSA in relation to In-house LMS or SaaS implementation of LMS?
4. What were the challenges encountered by staff in the use of the current in-house Library Management Systems?

1.6 Significance of the Study

The study will be of significance to the policy makers, practitioners, and researchers. For policy makers, the findings will help inform strategic managers when formulating policies in relation to Information Communication Technology (ICT) about the use and acceptance model.

This study will also benefit practitioners such as the professionals and para-professionals to better understand the acceptance of the new emerging technology and to provide a contextual awareness in accommodating the implementation.

For the researchers, this study will provide a comprehensive overview of the new emerging technology, the potential risks and benefits for an informed decision and also add to the literature of Cloud SaaS for further research.

This study will also help fill in knowledge for faculty members, academic staff, who will also be enlightened as well gaining an insight of this new technology.

1.7 Scope

There are many users of the enterprise resource management planning including faculty, procurement, human resource, student, and library. The study covered the library management module and focused on the Ecosystem. These are the users, the funders, and the servers, who are the information professionals such as the systems analysts and designers and library staff.

1.8 Theoretical Framework

A theory is defined as a set of interrelated of variables constructs, definitions and propositions that presents a systematic view of phenomenon by specifying relations among variables with the purpose of explaining a natural phenomenon.

Ennis (1999) defined a theoretical framework as “a structure that identifies and describes the major elements, variables, or constructs that organize your scholarship. It is used to hypothesize, understand, or give meaning to the relationships among the elements that influence, affect, or predict the events or outcomes you specify”. Theoretical framework deals with the theory that strengthens the study. It helps a

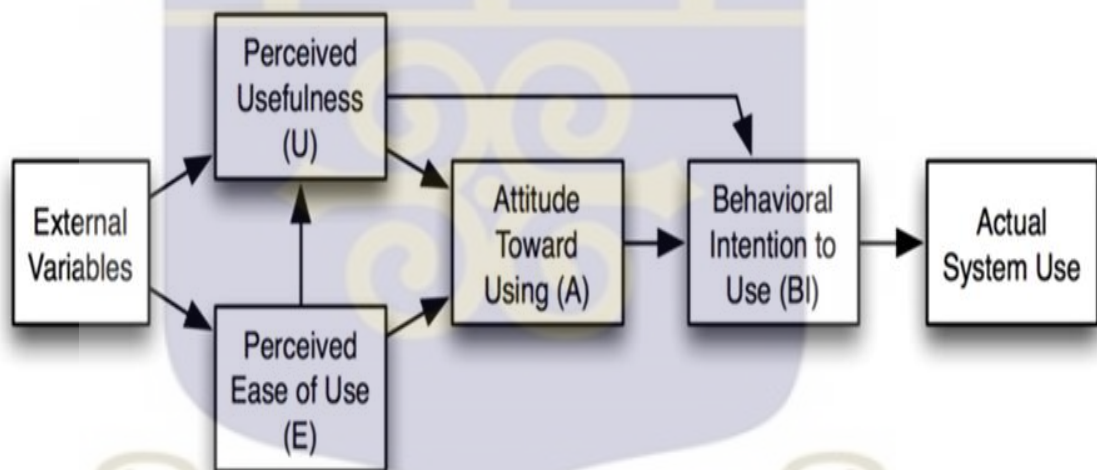
researcher or writer to determine problem areas, content considerations, research questions that need to be addressed, and the methodology or way in which the research plans to go about finding an answer to the research question. According to Creswell (2003), the theory for a study guides the entire study, an organizing model for the research questions and for the data collection procedure. In other words, a theory guides the research process.

Quite a lot of theories have been proposed with respect to the use of information technology. These include among others, Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), User Acceptance Theory (UAT), Innovation Diffusion Theory (IDT), and Technology Acceptance Model (TAM). TAM has been widely employed of all theories in the IT systems, (Bentil, 2011) cited (Lucas and Spitler, 2000); (Venkatesh and Davis, 2000); (Lee et al., 2004).

The study adopted the TAM model. This is an information systems theory that denotes the acceptance and use of technology (tools). It further proposes that, several number of reasons inspired users' choice about how to use new technology as well as when to use that technology, particularly, "Perceived usefulness (PU) and Perceived ease-of-use (PEOU)". This normally occurs whenever users are offered with modern technology.

"The degree to which a person believes that using a particular system would enhance his or her job performance"(PU). "The degree to which a person believes that using a particular system would be free from effort" (Davis 1989).

Because new technologies such as personal computers are complex and an element of uncertainty exists in the minds of decision makers with respect to the successful adoption of them, people form attitudes and intentions toward trying to learn to use the new technology prior to initiating efforts directed at using.



Source: The Technology Acceptance Model, version 1. (Davis, Bagozzi & Warshaw 1989)

Therefore applying P.U. to Cloud SaaS is believed that information professionals' job performance will be improved. With Perceived ease-of-use (the information professionals' will have little or no challenge in using the Cloud SaaS.

1.9 Organization of Work

The study was organized under six chapters.

Chapter One dealt with the introduction to the study. These include background of the study, definition of terms, study area, research problem, purpose of the study, objectives of the study, research questions, significance of the study, scope and organization of the study.

Chapter Two covered the review of relevant literature for the study. Literature was reviewed in relation to the objectives of the study. These include Library Management System, Cloud SaaS (Software as a Service), Cloud SaaS Security, Cloud SaaS benefits; Cloud SaaS Challenges, In-house Software Management, as well as Challenges related to library management systems.

Chapter Three emphasized on the research methodology adopted for the study. These are the research design, selection of case study, population and sample size, instrumentation, instrumentation, mode of data collection, data analysis and presentation of results as well ethical considerations.

Chapter Four dealt with the data analysis and presentation of results.

Chapter Five covered the discussion of the findings which was based on the findings related to the study objectives.

Chapter Six sums up the findings and covered the summary, conclusion and recommendations including further studies.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Literature review implies, locating and summarizing the studies about a topic one is researching on and may also include theoretical articles or thought pieces that provide frameworks for thinking about topics (Creswell, 2009).

The review “creates a firm foundation for advancing knowledge. It facilitates theory development, closes areas where a plethora of research exists, and uncovers areas where research is needed” (Webster and Watson 2002). As cited in Creswell (2009), Cooper, 1984; Marshall& Rossman (2006) stated that the literature review accomplishes the following purposes:

- It shares with the reader the results of the other studies that are closely related to the one being undertaken.
- It relates a study to the larger, ongoing dialogue in the literature, filling in gaps and extending prior studies.
- It provides a framework for establishing the importance of the study as well as a benchmark for comparing the results with other findings.

The study reviewed relevant literature on Cloud Software as a Service. The study was thus organized under the following themes related to the objectives of the study.

- i. Library Management System
- ii. Cloud SaaS (Software as a Service)
- iii. Cloud SaaS Security

- iv. Cloud SaaS benefits
- v. Cloud SaaS Challenges
- vi. In-house Software Management
- vii. Challenges related to library management systems

2.2 Library Management System

According to Kumar (2011), libraries are offering services through the implementation of library systems that are recognized as a needed tool in the provision of effective customer services as well as stock management. He stated that these systems were grounded on the knowledge and experience of information professionals over the years. Veronica et al (2008) postulated that, library management software is an initiative resource development for library, which is used to track collections that are owed by the library, as well as circulation purposes. Valuable library automation software may include KOHA, Greenstone, LIBSis, and Granthlaya.

A library system usually includes a relational database, software that interacts with database, with two graphical user interfaces. Library systems module includes: Acquisitions, Cataloguing, Circulation, Serials, Online Public Access Catalogue.

Dowlin (1985) defined the term 'integrated library system' as a system with a circulation system, a public access catalog and possibly an acquisitions system. According him, several vendors have included film booking, community resource files, and inter-library loan.

A study conducted by Rao and Sainul (1999) in India about the needs of library automation. The study provided an overview of the features and functions of library automation and discusses the need for automation software in libraries. They further discussed features that library automation software should have in the context of the internet. In addition, their paper examined the need for evaluation of library automation software, factors to be considered, and lists used for selection and evaluation of library automation software.

The findings of Kumar (2011), a comparative features of integrated library management software systems in Delhi in the selected Library Management Software Systems, showed that Liberty and Virtua were the best software when compared to the other selected LMS systems having regard to supporting library standards, technology standards, offering enhanced services and also incorporating most recent technological advancement. Their results also revealed that nearly both software packages supported different hardware and software platform. Based on the gathered results, NettLib which follows after Liberty and Virtua supported maximum library standards. On the other hand, looking at web compatibility of the software for their different management modules, Liberty and Ls-Premia provide a total web-based solution for all of its management modules. In addition, the analysis relating to offering enhanced services reveals that Liberty is the only software among other selected LMS systems that offered maximum enhanced services. It is both surprising and disturbing to note that despite the fact that librarians are involved in designing Library Management Software Systems and thus presumably should be aware of the

requirements of not only themselves but also fellow librarians in addition to users, several of the selected software packages studied did not provide certain important features. This is particularly noticeable with the free E-Granthalaya package, which fared worst yet, was the result of cooperation between programmers and library experts and based on the needs of Indian libraries.

Some important library software packages like Granthalaya, LibSys, Sanjay, Suchika, Basisplus- Techlibplus were evaluated. Factors for the selection for the evaluation of these software packages were facilities provided in the software packages, hardware requirements, operating system platforms, language of software development, search facilities, (Saxena and Srivastava, 1998). The writers concluded that Sanjay ver. 2.0 was suitable for small libraries, while Suchika, Granthalaya, and LibSys were most suitable software packages for big libraries.

2.3 Cloud SaaS

Several studies have been conducted on Cloud SaaS as a new emerging technology providing cost effective benefits to organisations. . According to Cho (2011), the new developed SaaS application has shown that there is the possibility of cost reduction on task and maintenance. Also extra expenditures that are required for upgrading the systems have the possibility of being reduced. Fariba et al (2015) add that the prospect of SaaS provides several considerable chances that help in improving the use of IT in firms deprived of cost and maintenance. Equally, a study by Judith (2013) has also indicated that, one cannot avoid the fact there are relevant

issues that surround in the direction of contemporary information setting. “She stated that a way of shifting from the hardware and software demands of storing and organizing data, to information access concerns. That is because with the exponential growth in information sources and all accompanying complexities, the limited capacity of libraries to host their own in its entirety necessitates opting for alternatives in the cloud”. SaaS is fast advancing. Gartner Group approximation of SaaS sales reached 10 billion US dollars in 2010, and these have been anticipated to the growth of 12 billion US dollars in the year 2011. This was an increase of about 20.7 percent from the year 2011 (McHall, 2011). (Barret, 2010), postulated that customer relationship management (CRM) remains the largest advertiser for SaaS forecast and expected to reach 3.8 billion US dollars in 2011 an increased level from 3.2 billion US dollars in the year 2010. The study by Cho (2011) on a SaaS-based library management system for the Korean library network indicated that most organizations install on their computers application software that they procure, adding that the emergence of SaaS allowed clienteles to contract networked commercial software.

Kim (2015) postulated that “Users’ confirmation with expectations positively affects their perceived usefulness and satisfaction level; Users’ perceived usefulness and satisfaction positively affect their intention to continue using such collaboration tools. Users’ prior experience with such tools and their IT skills has a moderating effect on the relationships among confirmation, perceived usefulness, satisfaction, and continuance intention”. The findings on the study “*User acceptance of SaaS-*

based collaboration tools: a case of Google Docscan “depicted how vendors can implement organizations with useful schemes and procedures to improve users’ acceptance of SaaS collaboration tools (Kim, 2015).

Cho (2011) outlined three major functionalities of SaaS that included the following:

(1) The stand of SaaS

The following complete functionalities are needed:

- metadata system: this manages the approval of software and the verification of confined libraries;
- service disseminator: this is where the relevant instance of logged-in library are directed to, based on selected application;
- billing system: this charges the capacity treatment of carefully chosen confined library; and
- management of the system: this handles the control, the backups and systems features.

(2) The stand of Network: this functionality allowed the sharing of resources through consortium building and also support interlibrary loan.

(3) The customer: this is where a user interacts with the system within the confined library and be able to access essential facilities.

Cho (2011) concluded that the application of SaaS in library management system will not only boost cost-effective competence of confined library procedure, but also boost its operation.

2.3.1 Outsourcing

According to Tayntor (2001) the word “outsourcing” has been in existence not quite long that is in the 1990s. Outsourcing is said to be an approach by which a firm employs by using external resources for its current tasks that, traditionally, involve a small number of people and resources. Aspray et al, (2006) also defined outsourcing as “a situation in which a company shifts a part or parts of its work to another organisation”. Outsourcing is an agreement whereby one firm offers services for another firm that could have been delivered in-house. It also means the decision of a firm or company to purchase its products from an outsider, instead of executing the same task using inside facilities so as to reduce cost.

The term outsourcing is a development that is becoming more corporate in IT and other businesses for services that have usually been regarded as fundamental to managing a business. As it is happening now in some situations, the whole information management of a business is subcontracted or outsourced. From researchers’ perspectives, the history of outsourcing began in the early years of the 20th century with major companies in control for generating their properties from unfinished to finished produce. This also paves way for companies like the automobile delegating some the manufacturing work to different firms for the

manufacturing of portions of the products. The key point of doing this was cost reduction. This is in line with (Davis et al, 2006). They stated that currently, all automobile companies “outsource parts, sub-assemblies, assemblies, and modules of autos”.

Equally, in the development of outsourcing in the field of information technology (IT) businesses sprung up in the 1960s which saw high price in computing machinery that needed a considerable amount of space (Lee et al, 2000). According to them aside the large space required to run and maintain the computers, one needs huge sum of money to be able to acquire the computer hardware.

2.3.2 Outsourcing Benefits

Administrators in advanced countries are gradually fascinated in subcontracting as a basis of affordability and worth making. Chukwunonso and Ribadu (2013) explored some benefits of outsourcing ICT to a vendor company in Nigeria. They indicated that cost savings were the most reason for outsourcing.

- Cost savings
- Focus on Core Business
- Creating leisure time
- Scalability
- Risk management

The study by Leavy (2004) revealed that a growing attention in subcontracting serves as a potential means of worth making that is typically evolved in advanced

countries for the past two decades. His claimed was that there has been a growing consciousness of the probable outsourcing to support a range of policies beyond that of lower cost by outlining the four most promising prospects for using outsourcing approaches which include focus, scale without mass, disruptive innovation, and strategic repositioning.

- **Strategic Focus:** The attention of group assets rest on the actions that can be established and subcontract greatly. Traeacy and Wiersema (1993) stated that, all these three are keys in conveying value to clients, but the organizational abilities and beliefs that uphold them are not the same, and regularly divert in different ways.
- **Scale without mass:** Leavy (2004) stated that one striking feature of outsourcing is that it gives firms the chance to expand in the face of market square devoid of corresponding development in organizational scope. A firm with a well-planned outsourcing develops greatly and free from the untimely internal shift from its informal entrepreneurial stage to a more administrative method of procedure.
- **Disruptive innovation:** To achieve this disruptive revolution, there is the need to generate a complete new section at a price point underneath the bottommost of the present-day market and then control this section as it expands.
- **Strategic repositioning:** International Business Machine (IBM), a longtime industry leader has a strategic repositioning which is not often easy. However, one of the main strategic bets that Gerstner (2003) made as part of

the turnaround at IBM in the mid-1990s was that services, not technology, would be the major growth area going forward, particularly in the corporate computing market.

2.4 Cloud SaaS Security

“Cloud computing can be defined as a style of computing, where extremely scalable IT-enabled capabilities are delivered as a service to external customers using Internet technologies” (Gartner 2009). Yuvaraj (2015) also defined the word “security” to mean “a general word used to suggest several rules, tools and controls used for keeping records, uses and the related arrangement within the cloud”.

Kippenberger (2000) wrote on "E-security": The Antidote about an Antidote colleague who tasted World's Best Chocolate Fudge Brownies during a break. “He stated that, the lady on her return home discovered that the recipe was up for sale. She therefore sent a letter (confidential) that was sealed in an envelope (integrity) with enclosed credit card and signature (authentication) through a registered post (non-repudiation)”. Kippenberger (2000) argued that by doing so the lady had certified the four principal security functions for commercial transaction which included the following:

- Confidentiality – set of rules or promise that limits access on certain type of information. That is keeping information private.

- Integrity – the act of being honest and having strong moral principles. That is information has not been altered.
- Authentication – the act of confirming the truth. That is confirming the identity of an individual.
- Non- repudiation – the guarantee that someone cannot deny something; by certifying that information cannot be disclaimed.

According to the new Gartner (2015) Report, Cloud Security encompasses technologies and standards that improve the security and reliability of cloud computing implementations.

- How software-defined perimeters will appeal to organizations looking for innovative and secure ways to both connect and collaborate with their digital business ecosystem.
- How the extension of data centers into the public Cloud also has placed a focus on software-based approaches for segmentation.
- Which critical security trends are essential for you to follow as you plan your Cloud security implementation?

“No data security system is impassable. Compromising the secret key, tampering with the public key, viruses, direct cryptanalysis or even old-fashioned breach in physical security, are all possible exposures” (Kippenberger, 2000). Patel and Rekha (2014) stated that, in dealing with Software as a Service (SaaS) model, customer

relies on the vendor for appropriate security controls. It is therefore essential that the several users of the service have each other's information or data kept undisclosed.

The following were some proposed solution (Patel and Rekha, 2014) commended for Cloud vendors to help curb the collective security threats that outdated communication systems face:

- Verification and permission: the application for the permission and verification employed in organisational settings require changes to provide a safer cloud working environments.
- Data confidentiality: this refers to the avoidance of unintended circulation of protected secretive material.
- Availability: this confirms the dependable and well-timed right to use cloud services. Cloud vendors are very much concerned with availability. This is because any disruption or compromising of cloud service will create problems for customers.
- Data Access: access to information is about the rules on security that are provided to customers as they access data. There are rules that govern every worker in an organisation concerning data access. These rules must be followed by the cloud vendors to prevent illegal users gaining access to organisation's information.
- Security on Network: SaaS distribution model handles high sensitive data which is stored at SaaS locations. Data therefore need to be kept secure to inhibit leakage of delicate info as data run over the network.

- Data breaks: The cloud is a high possible target. This is because files coming from countless consumers and commercial firms are organized in the cloud settings, penetrating through this setting makes the files a possible susceptible for all users.

Yuvaraj (2015) similarly claimed that safety in the cloud involves the security of files and the facilities presented by the cloud vendor. He maintained that the safety concern are generally characterised into two kinds or categories which include the one being confronted by the cloud vendor and the other by customers. He described some of the top threats to cloud security as follows: breaches of data, files damage, stealing of accounts, repudiation of service outbreaks, mischievous insiders, mishandling of cloud application, shared technology vulnerabilities.

According to Yuvaraj (2015), data breach or a break in data occurred as a result of important and sensitive information leakage; data loss normally are caused by malicious attackers or invaders or unintentional deletion by the cloud service providers or in the event of physical disasters like fire or earthquakes; account or service traffic hijacking he stated, arises through several means such as fraud and manipulation of software susceptibilities; insecure interfaces and application programmer interfaces is the situation whereby the interfaces or APIs (Application Programmer Interfaces) are not properly secure, hence any uncertainty or insecurity to these APIs might cause a disaster in the cloud

services; with the denial of service attacks happened when users are being denied of the cloud services even to the extent of not having access to their own information and suggested an Intrusion Detection System for defence against such occurrences that is DoS (Denial of Service); malicious insiders normally operate within the organization or any organization as malicious insiders causing the entire cloud facility becoming unstable and thus breached the organization security to access advantaged data or information and finally on the shared technology vulnerabilities it creates threat on the cloud since various services are distributed through the shared infrastructure, platforms and applications. The study of Yuvaraj (2015) attempted to fill the gap and provided solution to security concern that had been the main foundation of non-adaption of cloud computing in libraries.

2.5 Cloud SaaS benefits

SaaS is valuable to firms and individual users for several reasons. A study by Aleem and Sprott (2012) showed that organisations adopt cloud computing mainly because of the used of the businesses resources. They indicated that the impression of attaining cost on an ideal “pay as you use” was a great striking alternative for providers. Romero (2012) reported that Cloud computing was a high accessible platform that guaranteed swift right to use to hardware and software over the Internet, and offered a relaxed access and controlled processing easily managed by non-specialist users. Romero (2012) outlined some advantages of Cloud computing adoption:

- Cost reduction: the capability to increase or decrease the hardware and software resources usage.
- Scalability: “Pay as you go” permitting a well-organised control of outflows.
- Lower investment, reduced risk: there is a development the planned resource and error-checking which include hardware and software.
- Support included: cloud service providers ensure maximum advanced security procedures, with invaluable and in-depth experience in the service.
- Greater security and accessibility: testing and evaluation of cloud resources are accessible from any geographical area free of charge.

Safari et al. (2015) conducted a study on “*the adoption of software-as-a-service (SaaS): ranking the determinants*”. The study revealed that all attributes of Technology, which include relative advantage, compatibility, complexity, trialability, observability and security and privacy; Organisation which also include IT resource, sharing and collaboration culture as well as the environment competitive pressure, social influence, were significant in the acceptance of SaaS. Equally, Rader (2012) mentioned certain consumer benefits of SaaS which included the following:

- Easy end-user startup - no need to wait for internal IT projects completion because customers can access computing capabilities.
- Access anywhere - competences are obtainable over the web through multiple devices, comprising phones, laptops and portable digital assistance.
- Quick scalability - abilities can be quickly go up or down to match the workload.

- Additional utilities - no need for third-party or additional installations. Comparison, “the early Internet offered the promise of worldwide computing, but only provided the data network. Now cloud-based core software functions and a variety of applications have become universally and constantly available as well, thus potentially boosting organisation productivity” Rader (2012).

2.6 Cloud SaaS Challenges

Challenges about SaaS have had a lot of discourse. Nothing is ever free. Software vendors and customers are faced with challenges when moving from an “on-premise” to a SaaS model, (Vannini, 2014).

The C.E.O of Compass, the leading solution for automated management reports and benchmarks for small and medium-sized online business, made a presentation before leaders of the SaaS players at The Small Business Web Summit on the State of SaaS 2014 and its Challenges.

Herrman (2014) reported that SaaS business at Compass were closely conversant with both the unique prospects and dense challenges in their market. But they also had a unique viewpoint to offer, that is data. He stated that between 10-15 years since the inception of SaaS as an industry, “it’s now been planted firmly in the mainstream of conversation, but its disruptive wave is still getting started”.

The presentation revealed other finding about Compass data on SaaS. According to Herrman (2014), the biggest challenge was distribution despite the funding being

received that affirmed “Gartner’s forecasts on SaaS market that will grow at 20% through at least 2020, almost 3 times as fast as software overall and there remains ample opportunity for greater global penetration over time. Salesforce represents the shining star of possibility, consistently growing at more than 30%”. SaaS companies rely greatly on direct sales, at nearly twice the rates of every other network, but can afford only modest sales teams of 1 or 2. The indication here was that the huge majority pay nothing for marketing or advertising. Of all SaaS companies in Compass, only 7% achieve even 10,000 users. The challenges of these packed markets were also driving a push away from SMB audiences and into more profitable enterprise markets. Intuit, Oracle, Adobe, Microsoft, Google, SAP are mainly software industry giants that dominate SaaS revenue (Herrman, 2014).

The finding of Aleem and Sprott (2012) revealed that data loss and leakage which accounted for 73.5 % from the analysis were voted as the top threat to cloud computing by respondents from their study, *“Let me in the cloud: analysis of the benefit and risk assessment of cloud platform”*.

2.7 In-house Software Management

Barrett & Baldry (2003) defined “In-house process or methodology as the service that is delivered by a committed resource directly hired by the consumer firm. In this case both monitoring and control of performance are directed under the terms of conventional link between owner and worker”.

2.7.1 Pros & cons of in- house software management

Pros of in- house development of library systems

Wise (2007), opines that the most significant benefits of in-house method is the opportunity to develop individuals rather than contracting from external provider, and thereby help in the career development among the employees. He provides insight to the benefits of in-house approach:

1. People who are in-house own their work. In-house workers usually will perform better than outsourced workers, not the people for whom they are working by proxy.
2. Results of long-term financial analysis usually support in-house rather than outsourcing option. For instance, USA-based Abrazo Health Care saved \$2 million by providing its IT data centre in-house, rather than outsourcing it.
3. In-house option has been found to result to improve employee as well as customer satisfaction at the same time.
4. In-house offers the company the opportunity to grow people instead of hiring from outside, and so provide career prospects that reduce staff turnover.

According to Clydebuilt (2012), the following are some of the pros and cons of in-house development management:

Pros

- In-house development engages the IT staff thereby becoming proactive.
- In-house developers believe cost involved in the development is extremely cheaper.
- There is total control since you are not linked to any third party or outsourcer.

- Control over the software becomes very significant particularly with planned development.
- There is a well-defined requirement as required by the consumer.
- All being well the in-house development will be appropriate with current in-house software.
- There is also the surety of familiarity.

Cons

- A valuable expense is required to develop new system.
- There is time consumption trying to define systems project specifications. This also entails involving the procedural and the functioning staff.
- Pressures are abundant to mount on in-house developers to meet deadlines.
- Certain areas in the development cycle require skilled IT personnel.
- Outsiders coming in might be inexperienced with pertinent warehouse skill.
- Systems error check can be very lengthy.
- Most executives may find it difficult to argue with IT developers since they can become well vested in technology.

Atkin and Brooks (2005) make available additional understanding on the disadvantages of in-house approach:

- Problems in the controlling of the service arises when there is a poorly defined scope and with higher supervision costs and lowering of customer satisfaction. Meeting interested parties is very necessary.
- Without proper description of roles and tasks, it becomes very hard to quantify the performance of in-house developers.

- Self-satisfaction is on the prevalent threats to the in-house team's success and this is easily observed by clientele.

2.8 Challenges of ICT application in library software

Biswas (2012) reported that Library professionals in the state of West Bengal were mostly accustomed with the Windows Operating System and consequently have introduced library automation software in this OS. He stated further that modern library automation software are very advanced in nature and require lots of technical understanding during and after its development. Some fundamental requirements nowadays are the Web2.0 compliant virtual existence of the library along with OPAC and Digital Library Software delivering actual documents.

The study by Kari & Baro (2014) on Nigerian Universities Libraries, revealed some of the challenges in the use of library software. According to them, computer software packages are designed to perform specific functions for computers or information communication technology (ICT) processes. The function of the library is to support learning, teaching and research process in the university (Anafulu, 1996). (Singh, 2003) affirmed that use of ICT enables the library not only to offer its public the right information accessible within it but also helps to access other libraries.

According to Baetjer (1998), “software is an exemplified knowledge and because that knowledge is initially disseminated, tacit, latent and incomplete in large measures, knowledge is brought together and embodied in the software”.

Adeyomoye (2008); Agboola, (1993); Zaid, (2004); Imo and Igbo (2011) claimed that Nigerian academic libraries have experienced many challenges which included intermittent power, inadequate professional librarians to support projects, lack of maintenance and support agreements, poor ICT infrastructures, poor funding and poor ICT skills among library staff. Saxena and Scrivastava (1998) indicated that major challenge of library automation in Nigeria has to do with the choice of software. The selection of suitable software packages for libraries is a challenge due to lack of good latest comparative studies (Saxena and Scrivastava, 1998). Onohwakpor and Anre (2007) “observed that software selection decision in libraries is based on report from other colleagues through seminars”.

The literature reviewed has provided an understanding into the present developments, reflections in the field of Cloud SaaS. Additionally, related works of researchers in the past have been studied with a vision to predicting gaps in the literature where the present study may add to filling.

Reasonably a number of studies in relation to Cloud SaaS (Software as a Service) have been conducted. However, in relation to its application in the information services centers such as libraries, very little attention has been given.

The researcher deems it essential to undertake the study as he envisions that the study will add a fresh element and also serve as gap filling.

The first objective of the study is to find out the security effects of Cloud SaaS or In-house Software Management.

The second objective of the study is to compare the benefits of procuring either Cloud SaaS or in-house Software Management Systems.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section deals with the research tools, methods, procedures, mode of data collection and presentation and how data was analysed. “A method implies a way or a procedure of getting specific things done. It is the idea of a laid down or accepted or normally adopted way of getting specific procedures, techniques, ideas and thought processes followed in getting specific things done and or in achieving particular ends or objectives”, (Kumekpor (2002). The methodology covered the research design, selection of case, population size, sampling technique, instrumentation, and mode of data collection and presentation of results.

3.2 Research Design

Research design is the overall plan for obtaining answers to the questions being studied and for handling some of the difficulties encountered during the research process. The study used the survey method in comparing the benefits and risks of Cloud SaaS (Software as a Service) versus In-house Software Management for the development of a Library Management Software.

Survey research provides a quantitative or numerical description of trends, attitudes or opinions of a population by studying a sample of that population. It includes cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection, with the intent of generalizing from a sample to a population (Babbie, 1990). This study adopted the quantitative technique. The researcher

administered the questionnaire to obtain data from staffs which aided the study to conduct a statistical analysis.

3.2.1 Selection of Case Study

University of Professional Studies, Accra (UPSA) was chosen for the study. UPSA is a public university that offers undergraduate and postgraduate programmes whilst providing tuition for internationally recognised, acclaimed Business Professional Programmes. The UPSA offers ; Marketing, Accounting, Business Administration and Banking and Finance, as well as Auditing, Accounting and Finance, Marketing and Master of Science & Master of Philosophy in Global Leadership and Corporate Governance at the under graduate and post graduate levels respectively. The current student population of the UPSA stands at thirteen thousand (13,000), (UPSA Hand Book, 2013).

The UPSA has undergraduate and post graduate libraries located in separate buildings. The undergraduates' library has a sitting capacity of 200 whilst the sitting capacity of the graduate school library stands at 32. The library has a unique collection of a balanced blend of both academic and professional reading and research materials that support the University's mission of producing scholars and professionals. The library also has an electronic support unit that stocks very large volumes of electronic journals, databases as well as electronic books which users access for research purposes.

Some of the reference materials available in the Library include: past examination, CDs, Encyclopedias and World Books, dictionaries, Revision kits for professional books and Newsletters. One can also find publications from both public and private institutions as well as individuals in the library's collection. The library also has a collection of dissertations for reference purposes only. Services in the library include charging and discharging, reference and research, photocopying, binding, electronic search (UPSA, hand book, 2013). During the study, the researcher also found out that the university has completed a new ultramodern six-floor library complex. This was in line with the library's mission in promoting and providing a conducive learning environment for students and the entire fraternity.

3.3 Population

The Population used for the study was fifty four drawn from the library, finance, and Information Technology (IT) departments. According to Frankel and Wallen (1995), "a population is the larger group to which one hopes to apply the results of a study".

Table 3.1 Population

Departments	No.of staff
Library	20
Finance	16
IT	18
Total	54

3.4 Sampling size

Alreck & Settle (1985) proposed a sample size of ten percent (10%) of entire population. Fraenkel & Wallen (2002) claimed that there is no clear cut answer to the question on sampling size selection. They opined that, the best answer lies in a sample which is as large as the researcher can rely on to obtain the required data with affordable time and energy. In their view, the sample size should not be too small or too large. In this regard the entire population was used.

3.5 Instrumentation

Social investigation demands that information should be gathered from human beings and institutions on specifically defined topics. Also, in order to acquire firsthand knowledge of a particular phenomenon, one has to observe that phenomenon (Kumekpor, 2002). Information can be gathered through the use of interviews, questionnaires, observation and so on. This study however, used the questionnaire method to gather data which was implored from the staffs.

3.5.1 Questionnaire

“A questionnaire is a device consisting of a series of questions dealing with some psychological, social, educational, organizational and so on, issues sent or given to an individual or group of individuals with the objective of obtaining data with regard to some issues under investigation” (Koul, 1984).

A questionnaire was chosen for this study because it served as a good tool, since it can be used to implore answers from people at the same time. Aside being affordable to manage, it also served as a great instrument of confidentiality.

The questionnaire which contained inquiries on Cloud SaaS and In-house Software Management for the development of a Library Management Software was self-designed and included both closed and open ended questions that provided specific responses from the respondents and also gave them the opportunity to air their opinions.

The questions were arranged and divided into five broad sections and contained twenty five items.

Section A dealt with biographical data of respondents. This included questions about the education background, number of years respondents have worked, and the department of the respondents. The Section B also dealt precisely with the security assessment of outsourcing and in-house development of library management software. Section C looked at the procurement cost. At the Section D the human capital training of staff was observed. Section E looked at the maintenance cost and finally Section F focused on the challenges encountered by staff using library management software.

3.6 Mode of Data Collection

Primary data and secondary data were employed in this study. The primary data included the use of questionnaire and the secondary data included areas of research

that have been conducted under the one being studied. “Primary data are those which are collected afresh and for the first time, and thus happen to be original in character. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process” (Kothari, 2004).

Respondents were reached at the various departments through the permission of their Heads. Data collection was arranged after establishing the initial arrangement with the Heads represented in each department. “The collection of data in research is very essential whether it is a primary or secondary data this is because data are necessary to provide the solution of the problem and data as an essential element in any educational research because it provides a solid foundation for the study” (Singh, 2006).

3.7 Method of Data Analysis/Presentation of Results

“Data Analysis is the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate data”. It is an important aspect of research process after data collection. Data analysis is the process of extracting from a given data, relevant information from which a summarized and comprehensible numerical description can be formulated.

Data analysis is conducted to reduce, organize and give meaning to the data (Burns & Grove, 1999). The study used the Statistical Package for the Social Sciences (SPSS) system to analyse the collected data. The graphical tools in the SPSS were thus used to develop tables and frequencies.

3.8 Ethical considerations

According to Frankel and Wallen (2000), “all subjects should be assured that any data collected from or about them would be held in confidence”. There are several ethical issues that should be noted while collecting data. It includes several people during the research period, respondents and the interviewees. Ethical aspects in research paper represent the issues of how researchers should treat respondents during the process of research or how to maintain equality between the researcher and the respondents (Bryman & Bell, 2011; Sekaran & Bougie, 2010).

The researcher assured the confidentiality of all participants and that the intended study was for academic purpose. The study ensured that all ethical matters bordering privacy and secrecy of participants were adhered to. The research was therefore directed in line with the Code of Ethics that the University of Ghana upholds in conducting a research.



CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF RESULTS

4.1 Introduction

Chapter four presents the analysis of data collected and forms an essential aspect of the research method. Taking out the analysis of the collected data means that all data gathered will remain worthless to the people it was supposed to benefit. The raw data are meaningless unless certain statistical treatment is given to them (Singh, 2006).

Descriptive statistics such as frequency distribution were used to assess the demographic profile of the respondents. Descriptive statistics allow the researchers to present the data acquired in a structured, accurate and summarized manner (Huysamen, 1990). The study used the Statistical Package for the Social Sciences (SPSS) system to analyze the data collected.

The entire questionnaire administered was 54 but only 52 were returned. Therefore, there was a return rate of 96.3% which indicated an excellent response rate. As cited in Mingle (2015), Babbie and Mouton (2002) stated that 70% response rate is considered as very good and therefore, the 96.3% response rate is excellent.

The study covered the background of staffs, security assessment, procurement and maintenance of library management software. It also looked at the human capital expertise as well as the challenges facing the current library system.

4.2 Background of Respondents

In order to appreciate the proportion of respondents, their education level, and department and their work experience, the respondents were asked to state their qualifications, department and number of years worked. This section therefore presents the background of the staff in terms of educational level, number of years in employment and their departments.

4.2.1 Educational Level of Respondents

This section presents the educational level of respondents.

Table 4.1: Educational level of respondents

Qualification	Frequency	Percent (%)
Diploma	7	13.5
First degree	29	55.8
Second degree	12	23.1
MPhil	3	5.8
Others	1	1.9
Total	52	100%

Source: Field data, 2015

Table 4.1 shows the various levels of education of the respondents. Majority of the respondents constituting 29 which represents 55.8% have first degrees, whilst 12 respondents which represent 23.1% have Masters Certifications. A total of 7, representing 13.5% were those with diploma qualifications, and 3 respondents representing 5.8% have MPhil. The study also revealed that only 1 respondent which

represents 1.9% from the survey had a different educational background; that is, a professional qualification.

4.2.2 Department of Respondents

This section presented a cross tabulation between the number of years of respondents and their department. In all, three departments were covered made up of library, IT, and the finance in the university.

Table 4.2: Department as given by respondents

Number of Years	Department			Total
	Library	IT	Finance	
Under one year	5	3	4	12
1-5 years	6	5	3	14
6-10 years	4	3	3	10
Over 10 years	4	5	6	15
Others	0	1	0	1
Total	19	17	16	52

Source: Field data, 2015

Table 4.2 above shows the categories of range of years and department by the respondents. A total number of 15 have been in employment for over ten years, these are finance (6), IT (5), library (4). This was followed by 14 respondents who have worked between one to five years, these are library (6), IT (5), finance (3). Those who have spent less than one year in the employment constituted 12, these are library (5), finance (4), IT (3); while those who have spent six to ten years formed 10, these

were library (4), IT (3), finance (3). The study also revealed that one respondent from the finance department mentioned “others”.

4.3 Security Assessment

The security of the IT services outsourced will depend on the providing firm, which is why rules and measures must be negotiated during the outsourcing contract (Fink, 1994). It is one of the primary objectives of the study which sought to look at the security implication for outsourcing and in-house of library management software, the perceived advantages and risks decision.

4.3.1 Outsourcing LMS will leak out vital information

The section similarly wanted to find out from respondents their level of agreement on the issue of security implications of Cloud SaaS and In-house Software Management.

Table 4.3: Outsourcing LMS will leak out vital information

Responses	Frequency	Percent (%)
Strongly Agree	21	40.4
Agree	12	23.1
Moderately Agree	11	21.1
Disagree	1	1.9
Strongly Disagree	7	13.5
Total	52	100.0

Source: Field data, 2015

Table 4.3 above depicts their responses. It was shown that majority of the respondents constituting 21 (40.4%) strongly agreed to the assertion that outsourcing of library management software will disclose vital information. This was also followed by 12 respondents which represent (23.1%) who also agreed on the same leakage of information. It is of the fact that outsourcing will leak out vital

information which was moderately agreed by 11 respondents (21.1%). However, 7 respondents representing (13.5%) strongly disagreed to this claim whilst 1 respondent (1.9%) also disagreed. The finding shows that large proportion of the respondents representing (84.6%) have shown that outsourcing LMS will disclose vital information

4.3.2 Outsourcing will reduce staff potential skills

Outsourcing creates several staff-related problems. Thus, “the client firm is faced with possible conflict of the IT staff that sees outsourcing as a risk to their working position. IS/IT may find themselves before a dismissal, a retaining period, or a transfer to the service-providing firm” (Grover et al., 1994).

This section presents further inquiry on how staff potential skills will be affected if the university should decide to go for outsourcing.

Table 4.4: Outsourcing will reduce staff potential skills

Responses	Frequency	Percent (%)
Strongly Agree	17	32.7
Agree	21	40.4
Moderately Agree	5	9.6
Disagree	2	3.8
Strongly Disagree	7	13.5
Total	52	100.0

Source: Field data, 2015

From Table 4.4 above, the highest responses which constitute 21 (40.4%) agreed that outsourcing will reduce the staffs' potential skills. This was strongly agreed by 17 respondents (32.7%) of the respondents. Next, 7 (13.5%) strongly disagreed to this.

Also 5 (9.6%) moderately agreed, whilst 2 (3.8%) indicated disagreement that outsourcing will reduce staff potential skills. The finding shows that greater numbers of respondents which form (82.7%) have agreed to the assertion that outsourcing will put staff work at risk.

4.3.3 Service providers may not have the library's interest at heart

The study again tried to find out from respondents what they think an outsourcer's interest will be towards the library. Table 4.5 below shows the responses given. Of the total 52 respondents, majority of the respondents constituting 18 representing 36.2% agreed to the fact that outsourcers may not have the library's interest at heart and will therefore pose a security threat. This was followed by 11 respondents representing 21.1% also strongly agreed to the same view, whilst 11 respondents representing 21.1% disagreed to this. Another indication was that 8 respondents representing 15.2% moderately agreed with 4 also representing 6.4% strongly disagreed. The findings revealed that greater numbers of respondents which represents (72.5%) stated that agent or outsourcers may not have the library's interest at heart and can lead to poor quality of work.

Table 4.5: Service providers may not have the library's interest at heart

Responses	Frequency	Percent (%)
Strongly Agree	11	21.1
Agree	18	36.2
Moderately Agree	8	15.2
Disagree	11	21.1
Strongly Disagree	4	6.4
Total	52	100.0

Source: Field data, 2015

4.3.4 In-house LMS provides a safe and better secure environment

This section dealt with the in-house development or provision for a safe and better security. The researcher sought to find out the level of responses to the question.

Table 4.6: In-house LMS provides a safe and better secure environment

Responses	Frequency	Percent
Strongly Agree	24	46.2
Agree	19	36.5
Moderately Agree	2	3.8
Disagree	4	7.7
Strongly Disagree	3	5.8
Total	52	100.0

Source: Field data, 2015

Out of the total valid responses, 24 respondents which represent (46.2%) shown that they strongly agreed that in-house library management provision is a safe and better environment while 19 respondents representing (36.5%) indicate that they also agreed. However, 4 respondents (7.7%) disagreed that it was not safe to develop in-house library management software, with 3 respondents representing (5.8%) strongly disagreed, and 2 respondents (3.8%) moderately agreed. The findings above in Table 4.6 above shows that larger fraction of the respondents representing 86.5% agreed to the assertion that in-house software development is a safe and better secure environment.

4.3.5 There is a general risk reduction to have in-house LMS

In-house approach is a “service that is provided by a dedicated resource directly employed by the client organization, where monitoring and control of performance is normally conducted under the terms of conventional employer/employee relationship, although internal service-level agreement may be employed as regulating mechanisms” (Barret and Baldry, 2003, p. 17). An in-house approach remains to deal internally with products or services that require skill and knowledge in order to serve customers better. The study therefore sought to find out about the risk involved in developing in-house software. Staffs were accordingly asked to state their responses.

Table 4.7: There is a general risk reduction to have in-house LMS

Responses	Frequency	Percent (%)
Strongly Agree	13	25.0
Agree	25	48.1
Moderately Agree	6	11.5
Disagree	4	7.7
Strongly Disagree	4	7.7
Total	52	100.0

Source: Field data, 2015

From Table 4.7 above, respondents which constitute 25(48.1%) stated that they agreed to the fact there is a general risk reduction of having in-house library management software while respondents constituting 13 (25.0%) strongly agreed to that as well. Additionally, the respondents which also constitute 6 (11.5%) moderately agreed to it. However, there were respondents which constitute 4 (7.7%) who disagreed whilst other respondents constituting 4 (7.7%) also strongly

disagreed. The finding shows that large proportion of the respondents representing (84.6%) have shown that there is a general reduction involving in-house software development.

4.3.6 When you provide a service to users over the Internet, such as a LMS link to your webserver, you expose your organization to new risks.

As cited in Cervone (2010), Avery (2009) stated the “What is obvious is that virtual and cloud computing are changing the way information technology is implemented in organizations today. The question is no longer if virtual and cloud computing will be a reality, but instead when. Adoption of cloud computing is definitely accelerating”.

As one of the key aims of the study the researcher sought to find out whether respondents were aware of the dangers information access over the internet could bring.

Table 4.8: When you provide a service to users over the Internet, such as a LMS link to your webserver, you expose your organization to new risks

Responses	Frequency	Percent (%)
Strongly Agree	5	9.6
Agree	22	42.3
Moderately Agree	17	32.7
Disagree	3	5.8
Strongly Disagree	5	9.6
Total	52	100.0

Source: Field data, 2015

From the Table 4.8 above, majority of the respondents which constitute 22 representing (42.3%) indicated that they agreed with the assertion that providing

services over the Internet that link LMS to a webserver could expose the university to new risks, while respondents constituting 17, which represent (32.7%) moderately agreed. Respondents which form 5 representing (9.6%), strongly agreed. Furthermore, a small proportion of the respondents which constitute 5 representing (9.6%) and respondents which constitute 3 representing (5.8%) strongly disagreed and disagreed respectively with the assertion.

The finding shows that a large number of the respondents which represent (84.6%) indicated that providing services over the Internet that link LMS to a webserver could render the university to new threats.

4.4 Procurement Cost

In this section the researcher sought to find out the cheapest but quality and reliable library management software provision. This involved outsourcing as an improvement to library performance, the financial projections and so on.

4.4.1 Will Outsourcing LMS truly Improve Library Performance?

This section also wanted to find out from the investigation the responses of staff on how well outsourcing library system improves library performance.

Table 4.9 below depicts the data analysis of respondents. This constitutes 20 respondents representing (38.5%) strongly agreed. Some respondents which constitute 11 representing (21.2%) agreed whilst others which constituted 11 which represent (21.2%) moderately agreed that outsourcing library software will improve library performance. However, 8 respondents which represent (15.4%) disagreed

whilst respondents which form 2 representing (3.8%) strongly disagreed. The findings indicated 80.9% (forming a majority) of respondents believed that outsourcing of LMS will improve library performance.

Table 4.9: Will outsourcing LMS truly improve library performance?

Responses	Frequency	Percent (%)
Strongly Agree	20	38.5
Agree	11	21.2
Moderately Agree	11	21.2
Disagree	8	15.4
Strongly Disagree	2	3.7
Total	52	100.0

Source: Field data, 2015

4.4.2 The Financial Projections are Accurate to Outsource LMS

Furthermore the study sought to find out from respondents if financial projections are accurate to outsource library management software. From Table 4.10 below, respondents were asked as shown in the analysis. Majority of the respondents which constitute 23 (44.2%) moderately agreed, whilst respondents constituting 14(26.9%) agreed. The respondents who disagreed constitute 9 (17.3%), whilst those who strongly agreed constitute 5 (9.6%), with 1 respondent representing (1.9%) strongly disagreed. The findings show that a majority of respondents forming 80.8% said financial projections are accurate to outsource LMS of the university library.

Table 4.10: The financial projections are accurate to outsource LMS

Responses	Frequency	Percent (%)
Strongly Agree	5	9.7
Agree	14	26.9
Moderately Agree	23	44.2
Disagree	9	17.3
Strongly Disagree	1	1.9
Total	52	100.0

Source: Field data, 2015

4.4.3 Building own LMS will Reduce Cost for Budgetary Allocation

The researcher also sought to find out from the respondents if in-house software development will reduce the financial cost on budgetary allocation. From Table 4.11 below, out of the responses of 52, respondents constituting 25 (48.1%) indicated that they agreed of a reduced cost in budget if library software system is developed in-house. Furthermore, respondents which constitute 12 (23.1%) strongly agreed, whilst respondents constituting 11 (21.2%) moderately agreed. The respondents which form 2 (3.8%) disagreed, whilst another respondent which also form 2 (3.8%) strongly disagreed. The findings show that greater proportion of respondents representing 92.4% agreed that if LMS is built in-house it will reduce the financial burden on the budget allocated for the library.

Table 4.11: Building own LMS will reduce cost for budgetary allocation

Responses	Frequency	Percent (%)
Strongly Agree	12	23.1
Agree	25	48.1
Moderately Agree	11	21.2
Disagree	2	3.8
Strongly Disagree	2	3.8
Total	52	100.0

Source: Field data, 2015

4.4.4 Getting the Best Service Provider to Build LMS is a Challenge

Outsourcing normally goes through the process of “downselecting” in making sure that a qualified and best outsourcer who is capable of doing the job is selected.

The study therefore sought to find out from respondents whether getting a qualified outsourcer was a challenge. The levels of responses given are depicted in Table 4.12.

Table 4.12: Getting the best outsourcer to build LMS is a challenge

Responses	Frequency	Percent (%)
Strongly Agree	8	15.4
Agree	20	38.5
Moderately Agree	11	21.1
Disagree	9	17.3
Strongly Disagree	4	7.7
Total	52	100.0

Source: Field data, 2015

From the above Table 4.12, it was revealed that majority of the respondents constituting 20 (38.5%) agreed to the claim that getting the best outsourcer to build a library management systems was a challenge. This was followed by respondents which form 11 (21.1%) who moderately agreed. Furthermore, 9 respondents representing (17.3%) disagreed, whilst respondents which constitute 8 (15.4%) strongly agreed. It also indicated that, respondents which form 4 (7.7%) strongly disagreed to the claim. The finding shows that a large percentage of the respondents representing (75%) have shown that getting the best outsourcer to build LMS was problematic.

4.5 Human Capital Training

In this section the researcher sought to find out the staffs' capabilities and human capital training. This also involved software development expertise, internal IT experts' availability and staff training.

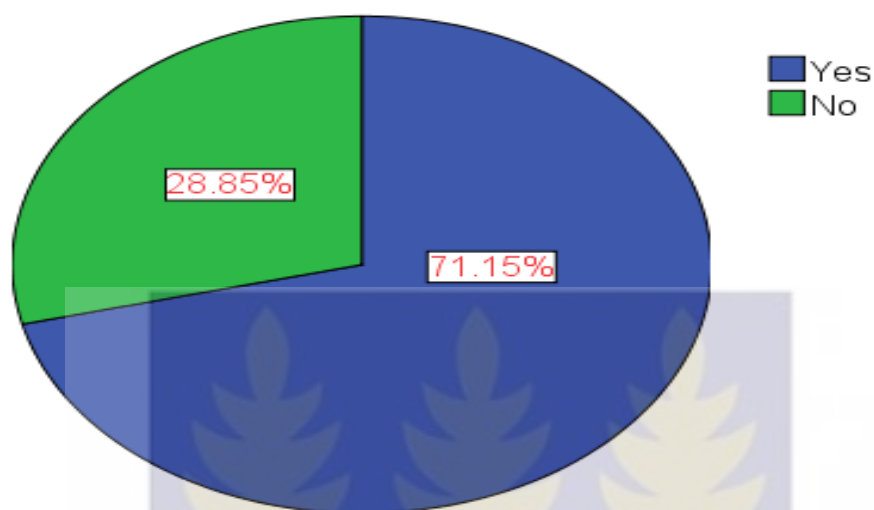
4.5.1 Does the University have the Expertise to Develop Library Software?

Software development is a technical area in system development process and therefore requires expertise that is knowledgeable in coding or programming languages.

The study went further to find out from respondents if they think the university has the experts to develop library software. From figure 4.1 below, respondents were asked about their knowledge of staff expertise in the university. (71.15%) responded in the positive while (28.85%) answered in the negative. The finding shows that large fraction of the respondents representing (71.15%) has affirmed that the university has requisite expertise to develop LMS for the library.



Figure 4.1: Does the university have the experts to develop library software

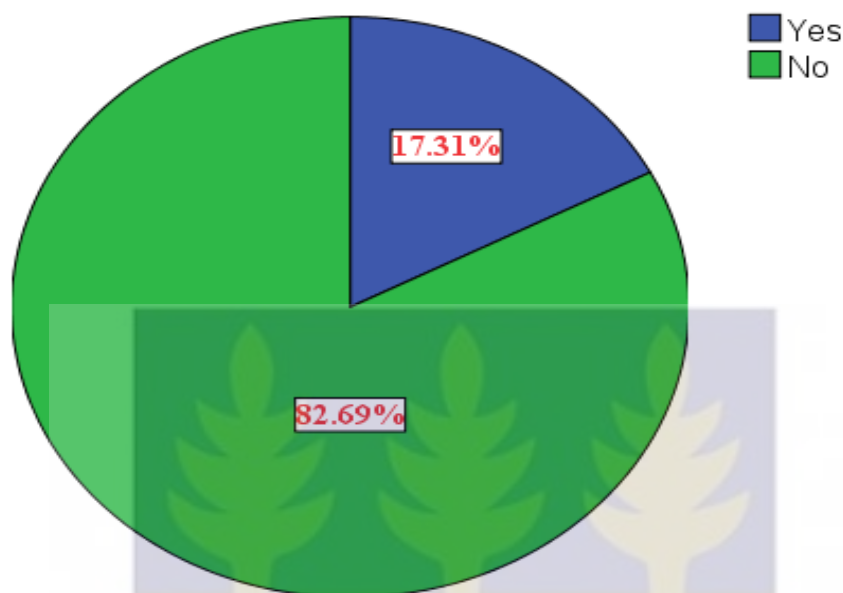


Source: Field data, 2015

4.5.2 Do you think that the internal IT staff lacks the expertise in the new technologies?

This section tried to investigate further in finding out from respondents if the university lacks the internal IT expertise in the cutting-edge technologies. Majority of the respondents representing (82.69%), stated the university does not lack internal IT staff whilst respondents representing (17.31%) think university lacks the internal IT staff. The findings thus revealed that a large segment of the respondents which represent (82.69%) think that the university has the internal IT staffs who are specialists in modern technologies as depicted in the Figure 4.2 below.

Figure 4.2: Do you think that the internal IT staff lacks the expertise in the new technologies?

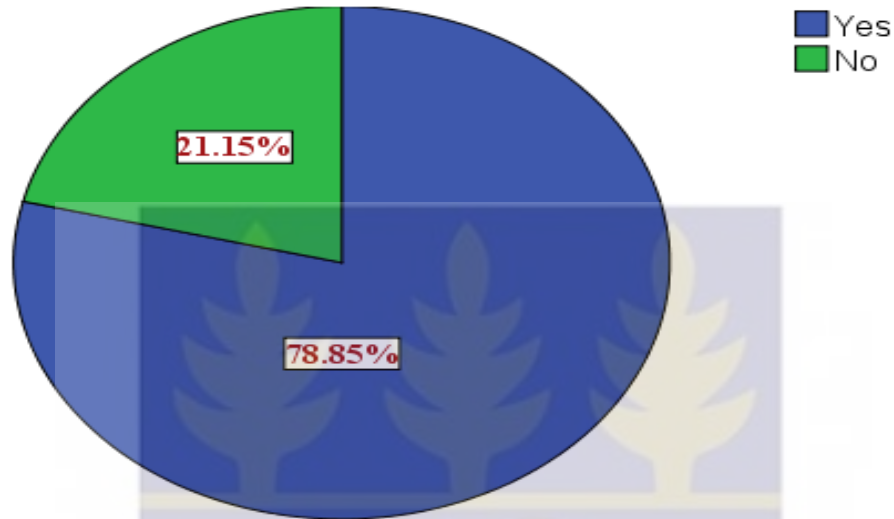


Source: Field data, 2015

4.5.3 Do you think in-house LMS will ensure less complex staff training on the use of the software?

This section also sought to find out from respondents if in their opinion they think that in-house software development of library management systems will lessen staff training on the use of the software. In the Figure 4.3 below, sizeable section (78.85%) of the respondents indicated their responses in the affirmative, whilst respondent which represent (21.15%) answered in the negative. The findings indicate that 78.85% (forming a majority) of respondents think in-house LMS will ensure less complex staff training on the use of the software since the developers will have control over their own design in training the staff in the use of the software.

Figure 4.3: Do you think in-house LMS will ensure less complex staff training on the use of the software?



Source: Field data, 2015

4.6 Maintenance Cost

Maintaining a system comes with a cost and urgency. It is therefore important to consider these facts when developing a system. As one of the main objectives of this study the researcher sought to find out the cost variations in maintaining LMS.

4.6.1 LMS maintenance cost is very expensive when outsourced

The Table 4.13 below depicted the outcome of responses. The study therefore revealed that out of the responses of 52, majority of respondents constituting 21, representing (40.4%) said they agreed to the assertion whilst respondents which constitute 16, representing (30.8%) strongly agreed. However, respondents which form 7, representing (13.5%) disagreed. The respondents who constitute 5

representing (9.5%) moderately agreed whilst those which constitute 3, representing 5.8% strongly disagreed to this assertion. The findings revealed a large proportion of respondents representing (80.7%) which forms the majority indicates that it is cheaper to maintain LMS when it is developed in-house.

Table 4.13: LMS maintenance cost is very expensive when outsourced

Responses	Frequency	Percent (%)
Strongly Agree	16	30.8
Agree	21	40.4
Moderately Agree	5	9.5
Disagree	7	13.5
Strongly Disagree	3	5.8
Total	52	100.0

Source: Field data, 2015

4.6.2 It is easier to maintain in-house LMS than when outsourced

The study also sought to find out from respondents whether in-house is easier to maintain. The levels of responses given are depicted in Table 4.14

Table 4.14: It is easier to maintain in-house LMS than when outsourced

Responses	Frequency	Percent (%)
Strongly Agree	15	28.8
Agree	23	44.2
Moderately Agree	8	15.4
Disagree	3	5.8
Strongly Disagree	3	5.8
Total	52	100.0

Source: Field data, 2015

The study in the above Table 4.14 revealed that respondents constituting 23 (44.2%) agreed that it was easier to maintain in-house LMS than maintaining an outsourced LMS whilst the respondents which constitute 15 (28.8%) strongly agreed as well. It was followed by the respondents which form 8 (15.4%) who moderately agreed. However, 3 respondents, representing (5.8%) disagreed whilst other respondents which constitute 3 (5.8%) strongly agreed.

The findings which constitute a larger proportion of the respondents, representing (88.4%) agreed to the assertion that it was easier to maintain in-house LMS than maintaining an outsourced LMS.

4.6.3 There is quick response to resolve system failure when outsourced

System failure can be both hardware and/or software. The study further sought to examine the response rate for the two systems. The levels of responses given are depicted in Table 4.15 below. It was evident that majority of the respondents 20 representing (38.5%) disagreed to the assertion that there is a quick response to resolve system failure when outsourced LMS. The respondents which constitute 10 representing (19.2%) strongly agreed, whilst respondents which form 9 representing (17.3%) moderately agreed. The respondents constituting 7, which represents (13.5%) and 6 respondents representing (11.5%), strongly disagreed and agreed respectively.

The findings to this assertion show that respondents which represent (52%) totally disagreed that there is quick response to resolve system failure when outsourced.

Table 4.15: There is quick response to resolve system failure when outsourced

Responses	Frequency	Percent (%)
Strongly Agree	10	19.2
Agree	6	11.5
Moderately Agree	9	17.3
Disagree	20	38.5
Strongly Disagree	7	13.5
Total	52	100.0

Source: Field data, 2015

4.6.4 Developing in-house LMS provides easy access to error checking

System maintenance also involves debugging. Error checking improves systems stability and performance.

The researcher was interested in finding out from the respondents if developing in-house LMS will provide an easy way to checking errors on the systems.

Table 4.16: Developing in-house LMS provides easy access to error checking

Responses	Frequency	Percent (%)
Strongly Agree	15	28.8
Agree	25	48.1
Moderately Agree	10	19.2
Disagree	2	3.9
Total	52	100.0

Source: Field data, 2015

The levels of responses given are depicted in Table 4.16 above. Out of the total respondents of 52, it was shown that 25 (48.1%) agreed, whilst 15 (28.8%) strongly agreed and 10 (19.2%) respondents moderately agreed. The study indicated only 2 (3.8%) of the respondents disagreed to this statement. The findings indicate that

96.1% (forming a majority) of respondents clearly show that they totally agreed to the claim in-house LMS development will provide the easy way of checking errors.

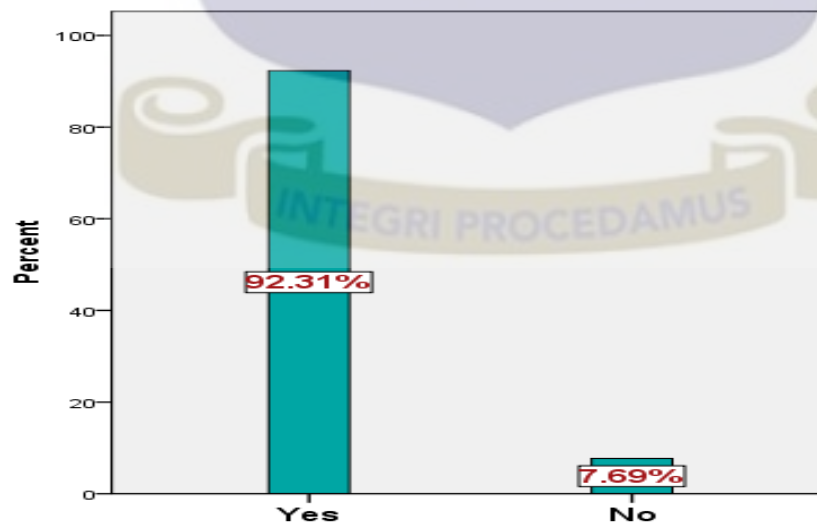
4.7 Library Management System Challenges

Software development has its own challenges and therefore need to be addressed. This section sought to find out from the respondents some of the challenges they faced in the use of the current library management system.

4.7.1: Does the library currently have a Library Management Software (LMS)?

This section sought to find out from the respondents the awareness about the existence of a library software management and whether the said library system was outsourced or was an in-house development and to give reasons why they think the university should delegate its work to an agent (outsourcer) or rather have its developed in-house.

Figure 4.4: Does the library currently have a Library Management Software (LMS)?



Source: Field data, 2015

Figure 4.4 above shows that the majority of the respondents which constitute 48 representing (92.31%) indicated that they were aware of a library system in the library whilst the respondents which form 4 representing (7.69%) indicated that they had no idea of the existence of a library management system.

The finding thus confirmed that the greater portion of respondents which represent (92.31%) were conscious of the existence of a library management system.

4.7.2 Some of the challenges being faced with the current LMS

This section sought to find out from respondents some of the challenges the current library management software faces.

In relation to Figure 4.4, the researcher sought to find out from the respondents who specified the awareness of the library systems as an in-house development and to state some of the challenges they were confronted with.

Challenges from respondents included the following; failure in real time usage; slow when queried; system malfunctioning; the usage by staff; it is not being used by the university; scalability; lack of usability; user adaptation; not much has come up with; low bandwidth, were the opinions from the IT department. Others among the library professionals were stated as; unreliability; not always functioning; malfunctioning and system failure; internet connection; irregular access to the internet is affecting the piloting process; lack of understanding of the system; server not to be found; financial issues; poor training for staff to use the software; irregular power supply; user registration; generating of accession numbers; charging and discharging of

materials; data entry problem; allocation of resources. The final suggestions were the respondents from the finance department who also stated the following; no idea of any challenges; lack of adequate skills in managing it.



CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Introduction

This chapter presents the discussion of the findings of the study as per the objectives of the study. According to Hess (2004), “the purpose of a discussion is to explain the meaning of the findings or results to the reader”.

The discussion was done under the following captions in answering the research questions that were posed.

- I. Security Assessment in the use of Cloud SaaS
- II. Procurement Budget on the need for Outsourcing
- III. Human Resources for the Development of Library Management Software
- IV. Maintenance of Library Management Software Systems
- V. Library Management System Challenges

5.2 Background of Respondents

From the findings it was revealed that large proportion of the respondents was first degree holders (29), with (12) who were having a second degree. Those with diploma qualifications were (7), and (3) and (1) were MPhil and professional qualifications holders. In relation to work experience, the respondents had work experience between 6 and 15 years. Their working skill had a positive impact in the survey.

In relation to the department, majority of the staff who contributed in the study were 20 information professionals, 18 IT personnel and 16 Finance experts involved in the study.

5.3 Security Assessment in the use of Cloud SaaS

Yuvaraj, (2015) defines the word “security” to mean “a general word used to suggest several rules, tools and controls used for keeping records, uses and the related arrangement within the cloud”.

The researcher discovered from the findings that, majority of staff (82.7%) have agreed to the assertion that using Cloud SaaS will put staff at risk. This confirms (Grover et al., 1994), who stated that Outsourcing creates several staff-related problems. Thus, the client firm is faced with possible conflict of the IT staff that see subcontracting as a threat to their working position.

The finding also revealed that (84.6%) have shown that there is a general reduction involving in-house software development. This is backed by Barret and Baldry, (2003) who indicated that an in-house approach rests to deal within with services that necessitate ability and understanding in order to serve consumers better. It was also revealed that large proportion of the staff (84.6%) has shown that outsourcing library management software will disclose vital information. The findings agreed with Patel and Rekha (2014) stated that, in dealing with Software as a Service (SaaS) model, customer relies on the vendor for appropriate safety procedures of the structure. It is therefore essential that the several users of the service have each other's information

or data kept undisclosed. Yuvaraj (2015) further affirms that library work encompasses voluminous files owing to which security sensitivities remain the main problem to broader acceptance in libraries.

5.4 Procurement Budget on the need for Outsourcing

Cost savings have become most of the reason for firms to outsource their services (Chukwunonso and Ribadu, 2013). Outsourcing has become a prime decision factor for a firm or company to purchase its products from an outsider, instead of executing the same task using inside facilities so as to reduce cost. Therefore, the study sought to discover how outsourcing can benefit an organisation or a firm.

5.4.1 Benefits of Outsourcing for Cloud SaaS Model

The findings the researcher gathered from the study revealed that 80.9% (forming a majority) believed outsourcing of library management software will improve the performance in the library service and thus create competitiveness. This confirms the study conducted by Leavy (2004) which revealed that a growing awareness in subcontracting serves as a possible source of competitiveness and value creation by outlining the four most promising prospects for using outsourcing approaches which include focus, scale without mass, disruptive innovation, and strategic repositioning.

Romero (2012) also recounted that Cloud computing is greatly accessible stand that guaranteed swift access to hardware and software over the internet, and offered a relaxed access and controlled processing easily managed by non-specialist users.

However, from the findings, it was also revealed that greater proportion of the respondents 92.4% were of the view that developing in-house library management software will reduce the financial burden.

5.5 Human Resources for the Development of Library Management Software

Again, the findings show respondents (71.15%) were optimistic that the university has the needed expertise to develop library software. The findings also revealed that a large segment of the respondents (82.69%) think that the university has the internal IT staffs who are specialists in modern technologies. Additionally, the results indicated that 78.85% (forming a majority) of respondents think in-house library management software will ensure less complex staff training on the use of the software since the developers will have control over their own design in training the staff in the use of the software.

The findings are in line with Kumar (2011), who states that libraries are offering services through the implementation of library management software (LMS) systems that are recognised as a needed tool in the provision of effective customer services and that these systems are grounded on the knowledge and experience of information professionals. A software development is a technical area in system development process and therefore requires expertise that is knowledgeable in coding or programming languages. The findings revealed in-house management helps to improve on staff capabilities and therefore provide better benefits to the organisation.

This confirms Wise (2007), who stated that the most significant benefits of in-house method is the opportunity to develop individuals.

5.6 Maintenance of Library Management Software Systems

The study also found out that majority of the respondents 42 (80.7%) indicated that outsourcing is very expensive to maintain with low as 10 (19.3%) disagreeing to the claim. The suggestion from the findings showed Cloud Service as a Software will pose a maintenance problem. This is backed by Vannin (2014), who indicated that Software vendors and customers are faced with challenges when moving from an “on-premise” to a SaaS model.

5.7 Library Management System Challenges

According to Veronica et al (2008), “a library management system (LMS) is an enterprise resource planning system to track items owned by the library as well as orders being made, for bills paid, and materials made borrowed by patrons”.

The study revealed from the findings that greater portion of respondents (92.31%) were aware of the existence of library management system. Software development has its own challenges and therefore need to be addressed. The study sought to find out from the respondents some of the challenges they faced in the use of the current library management system and only 7.69% said they were unaware.

The views from IT were system failure in real time usage; system slow when queried; system malfunctioning; the usage by staff; it is not being used by the

university; scalability; lack of usability; user adaptation; not much has come up with; low bandwidth.

Again, it was established from the study that the information professionals had challenges which include system unreliability and functioning; internet connection; irregular access to the internet is affecting the piloting process; lack of understanding of the system; poor training for staff to use the software; irregular power supply; user registration and generating of accession numbers. Further findings from the finance department revealed that respondents had no idea of any challenges but rather mentioned the lack of sufficient skills in managing the library systems.

The findings therefore corroborate with Adeyomoye (2008); Agboola, (1993); Zaid, (2004); Imo and Igbo (2011), which claimed that academic libraries have experienced many challenges which included intermittent power, inadequate professional librarians to support projects, lack of maintenance and support agreements, poor ICT infrastructures, poor funding and poor ICT skills among library staff.

The discussion of the main findings of the study have thus been summarized in the below prototype table.

Table 4.17: Summary of Findings

S/N	Question	Agreed %	Interpretation			
			In-house		Outsourced/SaaS	
			Plus	Minus	Plus	Minus
1	Outsourcing will reduce staff potential skills	82.7	✓			✓
2	There is a general risk reduction to have In-house LMS	84.6	✓			✓
3	Outsourcing LMS will improve library performance	80.9		✓	✓	
4	Building own LMS will reduce cost for budgetary allocation	92.4	✓			✓
5	Getting the best outsourcer to build LMS is a challenge	75	✓			✓
6	Do you think in-house LMS will ensure less complex staff training?	78.85		✓	✓	
7	LMS maintenance cost is very expensive when outsourced	80.7	✓			✓
8	It is easier to maintain in-house LMS than when outsourced	88.4	✓			✓
9	There is quick response to resolve system failure when outsourced	38.5	✓			✓
10	Developing in-house LMS provides easy access to error checking	96.1	✓			✓

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This final chapter presents a summary of the findings of the study in relation to the objectives and draws a conclusion based on the findings of the study. The investigator also suggested some recommendations based on the findings of the study.

6.2 Summary of Findings

6.2.1 Introduction

The revision sought to compare the potential risks and advantages of using the Cloud SaaS (Software as a Service) in UPSA library. The study adopted the TAM model, an information systems theory that denotes the acceptance and use of technology (tools). It further proposes that, several number of reasons inspired users' choice about how to use new technology as well as when to use that technology, mostly, "Perceived usefulness (PU) and Perceived ease-of-use (PEOU)".

"The degree to which a person believes that using a particular system would enhance his or her job performance"(PU); and "the degree to which a person believes that using a particular system would be free from effort" (Davis 1989).

6.2.2 Security Assessment in the use of Cloud SaaS

It was discovered from the findings that, majority of staff (82.7%) have agreed to the assertion that using Cloud SaaS will put their work at risk, so they will prefer having a library system being built in-house. Moreover, staff-related problems such as

dismissal could also set in. A further investigation revealed that a large proportion of the staff (84.6%) has shown that outsourcing library management software will disclose vital information.

6.2.3 Procurement Budget on the need for Outsourcing

Cost savings have become most of the reason for firms to outsource for their services (Chukwunonso and Ribadu, 2013). Outsourcing has become a prime decision factor for a firm or company to purchase its products from an outsider, instead of executing the same task using inside facilities so as to reduce cost. Therefore, the study sought to discover how outsourcing procuring can benefit an organisation or a firm.

6.2.4 Benefits of Outsourcing for Cloud SaaS Model

One of the central aims of the study was to discover the benefits of using Cloud SaaS. It was revealed that 80.9% of the respondents mentioned the need of using Cloud SaaS for library management software since it will enhance the performance and services in the library. They also believed that outsourcing for Cloud services create a competitive advantage. In comparison, the study also revealed that a larger proportion of the respondents 92.4% had indicated that the development of in-house library management software will lessen the monetary problem despite the benefits Cloud SaaS offers.

6.2.5 Human Resources for the Development of Library Management Software

The study revealed that, the competences of staff to develop in-house library software was high. This confirms the total respondents (71.15%). It further revealed a considerable number of staff forming (82.69%) have internal IT staffs specialists who were abreast with cutting-edge technology.

6.2.6 Maintenance of Library Management Software Systems

In relation to maintaining library management software, majority of the respondents 42 (80.7%) specified that outsourcing for Cloud SaaS was very expensive to maintain and 10 respondents (19.3%) thought otherwise.

6.2.7 Library Management System Challenges

Finally, the study also revealed that the information professional had problems in the use of the library software. These include system instability, lack of usability and user adaptation, system unreliability and malfunctioning, internet connection, irregular access to the internet, lack of understanding of the system, poor training for staff to use the system. The analysis of the data gathered from the research shows that, users of the current in-house library management system at UPSA are confronted with numerous challenges as outlined above. However, to opt for another alternative system such as SaaS (Software as a Service) has its own security implications and cost.

6.3 Conclusion

Veronica et al (2008) have described library management system “as an enterprise resource planning system to track items owned by the library as well as orders being made, for bills paid, and materials made borrowed by patrons”. It is an established fact that library management system is of great importance to library services providing efficiency in the smooth management of its operation to clientele. The study conducted revealed that, University of Professional Studies, Accra, are currently using a library management system which was developed in-house by the IT department of the university. Main users of the software who are the information professionals (professionals and para-professionals) and who also determine the success of the information (library management system), have shown great interest in the application and development of the system. However, they are faced with problems in the software and other related ICT challenges that hindered the smooth operation of the library in the bid to providing better services to its numerous patrons.

In contrast, SaaS, a new emerging technology which is referred to as Cloud computing, offer software application to users over the Internet on their network computers, mobile devices such as laptop, phone and personal digital assistance (PDAs). The services held in “the cloud” can be used to accomplish several purposes for both individuals and firms. Cloud computing offers cost reduction, scalability, lower investment, reduced risk, real time support, greater security and accessibility anywhere. Cloud Computing is nothing; companies or firms as well as academic

institutions around the world are adopting cloud services due to its several benefits. Though cloud services have some shortcomings, the benefits far outweigh the disadvantages.

TAM model, according to (Davis, 1989), proposes that, several number of reasons inspired users' choice about how to use new technology as well as when to use that technology, mostly, "Perceived usefulness (PU) and Perceived ease-of-use (PEOU)". To adopt this model in terms of cost savings and operational efficiency, the university ought to examine the current global economic situation and come out with a decisive assessment in comparing the potential risks and advantages of either procuring SaaS or to maintain the current In-house Software Development for the Library Management System.

6.4 Recommendations

Per the findings of the study conducted, it is conceptually established that Library Management Systems is of great importance to library services, particularly, using the Cloud SaaS.

With Cloud SaaS the following benefits were observed; cost reduction, scalability, lower investment, reduced risk, real time support, greater security and accessibility anywhere for free of charge (Romero, 2012). Rader (2012), drawn some benefits as well to include easy end-user startup - no need to wait for internal IT projects completion, right to use everywhere, anytime - competences are available over the network through several devices, rapid scalability - capabilities can be quickly scaled

up or down to match the workload, additional functions - no need for third-party or additional installations. It provides quick applications access to additional capabilities.

With In-house software management the following were also practical, development costs perceived to be cheaper, control over software, strategic importance, able to define one's needs, software design easily fit with existing in-house systems, and developers are able to familiarize with system interface, (Clydebuilt, 2012).

It has been established from the findings that, In-house Software Implementation can reduce security problems, lower procurement expenditure, and reduce maintenance expenses. With Cloud Services on the other hand, there were indications that the adoption of SaaS would provide better service and also minimize the frustration of staff.

The following recommendations were made based on the outcomes of the study:

6.4.1 Staff Training

The study recommends IT training for information professionals to be up to date with current trends of information systems usage.

6.4.2 User Awareness

The study recommends the reassurance of the main users of the library management software of the need to outsource some services to a third party for Cloud storage whilst educating them on the advantages and disadvantages Cloud computing.

6.4.3 Acceptance of Cloud SaaS

The study recommends the adoption of Cloud Services for Library Management Systems to help curb the numerous challenges that the In-house Software offers despite its cost and security implication as per the findings.

6.5 Further Studies

The researcher recommends the following topics for further studies:

1. Evaluation of the challenges and benefits of Cloud SaaS; case study of University of Ghana.
2. Evaluation of the impact of Cloud SaaS on Human Resource Management in Academic institutions.
3. Examining the problems of Cloud Computing, a comparative study of Public and National Libraries in Ghana.



Bibliography

- Adeyomoye, J.I. (2008). Library automation projects in Nigeria Private Universities: the case of Igbinedion University, Okada. *Information Technologist*, 5 (2), 19-23.
- Agboola, A.T. (1993). Third generation Nigeria University libraries. *International Information and Library Review*, 25(1), 43-59.
- Aina, L.O. (2004). *Library and Information Science Text for Africa*. Ibadan: Third World Information Services Limited.
- Aleem, A., & Sprott, C.R. (2012). Let me in the cloud: analysis of the benefit and risk assessment of cloud platform. *Journal of Financial Crime*, 20(1), 6 – 24. <http://dx.doi.org/10.1108/13590791311287337>.
- Alemna, A. A. & Antwi, I. K. (2002). A review of consortium building among university libraries in Africa. *Library Management*, 23 (4/5), 234-238. <http://dx.doi.org/10.1108/01435120210429961>.
- Alreck, P., & Settle, R. B. (1985). *The Survey Research Handbook*. Homewood, III: Irwin.
- Anafulu, J.C. (1996). Trends in funding academic Libraries in Nigeria. *Library Bulletin of the Nigeria University Library System*, 1 (2), 9-33.
- Aspray, W., Mayadas, F., & Vardi, M.Y. (2006). *Globalisation and Offshoring of Software: A Report of the ACM Job Migration Task Force*. ACM
- Atkin, B., & Brooks, A. (2005). *Total Facilities Management*. (2nd ed.). Oxford: Blackwell Publishing Ltd.
- Babbie, E. (1990). *Survey research methods* (2nd ed.). Belmont, CA: Wadsworth

Publishing.

- Baetjer, H. (1998). *Software as Capital: An Economic Perspective on Software Engineering*, IEEE Computer Society Press, pp. 85.
- Barret, L. (2010). *SaaS Market Growing by Leaps and Bounds: Gartner. Datamation. QuinStreet*. Retrieved from <http://www.datamation.com/entdev/article.php/3895101/SaaS-Market-Growing-by-Leap-and-Bounds-Gartner.htm>.
- Barrett, P. & Baldry, D. (2003). *Facilities Management: Towards Best Practice* (2nd ed.). Oxford: Blackwell Publishing Ltd.
- Benioff, M., & Adler, C. (2009). *Behind the Cloud: The untold story of how salesforce.com went from idea to billion-dollar company-and revolutionized an industry*. Francisco, CA: Jossey-Bass.
- Bentil, W. (2011). *The Use of Electronic Resources in Ghanaian Universities: a comparative study of University of Cape Coast and Central University College*. (Unpublished MPhil Thesis). University of Ghana, Legon.
- Biswas, R. (2012). *Challenges in Library Management System*. Indian Association for the Cultivation of Science (IACS), Kolkata. Retrieved from <https://rajabiswas.wordpress.com/tag/challenges-in-library-management-system/>.
- Boldea, I., & Brandas, C. (2007). *Some Considerations about IT Outsourcing Process*. Munich Personal RePEc Archive. Retrieved from <http://mpira.ub.uni-muenchen.de/6687/>.
- Bouزيد, A., & Rennyson, D. (2015). *The Art of SaaS*. (Kindle ed.). New York, NY: Xlibris US.

- Bryman, A., & Bell, E. (2011). *Business Research Methods*. Oxford University Press: Uk. *Management*, 27 (1), 33-44.
- Cervon, H. F. (2010). An overview of virtual and cloud computing. *Systems & Services: International digital library perspectives*, 26 (3), 162 – 165.
- Cho, J. (2011). Study on a SaaS-based library management system for the Korea library network. *The Electronic Library*, 29 (3), 379 – 393.
<http://393.dx.doi.org/10.1108/02640471111141115>.
- Chukwunonso, F., & Ribadu, A. Y. (2013). *Exploring the Benefits of Outsourcing Information and Communication Technology to a Vendor Company in Nigeria*, (5), 25-34.
- Clydebuilt Business Solutions Ltd (2012). Retrieved from
<http://www.clydebuiltsolutions.com/wp-content/uploads/2012/05/Inhouse-VS-Off-the-Shelf-May.pdf>.
- Creswell, J. W. (2009). *Research Design: Qualitative, quantitative, and mixed methods Approaches* (3rd ed., pp. 25). Thousand Oaks, CA: Sage.
- Creswell, J. (2003). *Research design: qualitative, quantitative and mixed methods approaches*. (2nd ed.). London: Sage publications.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science* 35,982–1003.
doi:10.1287/mnsc.35.8.982.
- Davis, G., Ein-Dor, P., King W.R., & Torkzadeh, R. (2006). IT OFFSHORING: History, Prospects and Challenges. *Journal of the*

- Association of Information Systems*, 7 (11), 770-795: Hawaii.
<http://aisel.aisnet.org/jais/vol7/iss11/32>.
- Dowlin, K. E. (1985). The integrated library system. *The Electronic Library*, 3 (5), 340 – 345. <http://dx.doi.org/10.1108/eb044674>.
- Ennis, C. D. (1999). A Theoretical Framework: The Central Piece of a Research Plan. *Journal of Teaching in Physical Education*, 1999, 18, 129-140.
- Fariba, S., Narges, S., & Alireza, H. (2015). The adoption of software-as-a-service (SaaS): ranking the determinants. *Journal of Enterprise Information Management*, 28 (3), 400 – 422. <http://dx.doi.org/10.1108/JEIM-02-2014-0017>.
- Forbes (2014). Retrieved from
<http://www.forbes.com/sites/louiscolumnbus/2014/07/17/83-of-healthcare-organizations-are-using-cloud-based-apps-today/>.
- Frankel, J.R., & Wallen N.E.(1995). *How to Design and Evaluate Research in Education*. New York, NY: McGraw- Hill.
- Frankel, J.R., & Wallen N.E.(2000). *How to Design and Evaluate Research in Education*(4th ed.). Boston: McGraw-Hill High Education.
- Fink, D. (1994). A security framework for information systems outsourcing. *Information Management & Computer Security*, 2 (4), 3-8.
- Gallaughier, J. (2016).*Information Systems: A manager's guide to harnessing technology*. Catalog. Flat world knowledge. Retrieved from
<http://catalog.flatworldknowledge.com/bookhub/reader/3816?cid=622401&e=fwk-38086-ch12>.

- Gartner (2009). *Market Trends: Software as a Service, Worldwide*. Retrieved 9 January 2016, from <http://www.gartner.com/>.
- Gartner (2015). *New Gartner Report: Hype Cycle for Cloud Security*. Retrieved 06 January 2016 from <http://certesnetworks.com/go/gartner-hype-cycle-for-cloud-security-2015/?gclid=CLbFhMmamsoCFcLnGwodQ6EKPQ>.
- Griffis, M. R . (2014). Bricks, mortar, and control: A multi-case examination of the public library as organization space. *Advances in Library Administration and Organization*. doi:10.1108/S0732-0671(2014)0000032001.
- Grover, V., Cheon, M.J. & Teng, T.C. (1994). A descriptive study on the Outsourcing of information systems functions. *Information & Management*, 27 (1), 33-44.
- Herrman, B.L. (2014). *State of SaaS 2014 and its Challenges*. Retrieved 28 January 2016, from <http://blog.compass.co/2014-saas-market-outlook/>.
- Hess, D. R. (2004). How to Write an Effective Discussion. *Respiratory Care*. 49 (10), 1238- 1241.
- Imo & Igbo (2011). *The challenges of software use in Nigerian university libraries: review of experiences from 1990-2009*. *Library Philosophy and Practice*. Retrieved from [http:// www.webpages. uidaho.edu/_mb](http://www.webpages.uidaho.edu/_mb).
- Judith, M. (2013). The impact of cloud computing on the future of academic library practices and services. *New Library World*, 114 (3-4), 132 – 141. <http://dx.doi.org/10.1108/03074801311304041>.
- Kari, K. H. & Baro, E. E. (2014). The use of library software in Nigerian

- University Libraries and challenges. *Library Hi Tech News*, 31(3), 15 – 20. <http://dx.doi.org/10.1108/LHTN-09-2013-0053>.
- Kim, Y. T. X (2015). User acceptance of SaaS-based collaboration tools: a case of Google Docs. *Journal of Enterprise Information Management*, 28(3), 423 – 442. <http://dx.doi.org/10.1108/JEIM-04-2014-0039>.
- Kippenberger, T. (2000). *E-security, The Antidote*. 5(1), 34 – 35. <http://dx.doi.org/10.1108/EUM00000000006742>.
- Kothari, C.R. (2004). *Research methodology, methods and techniques*. (2nd ed.) New Age New Delhi: International Publishers.
- Koul, L. (1984). *Methodology of Educational Research*. New Delhi: Vikas Publishing House PVT Ltd., pp. 12-30.
- Kumar, N. R. S. (2011). Comparative features of integrated library management software Systems. *The Electronic Library*, 29 (1), 121 – 146. <http://dx.doi.org/10.1108/02640471111111479>.
- Kumekpor, T. K. B. (2002). *Research methods and techniques of social research*. Accra: Sonlife Press.
- Leavey, B. (2004). Outsourcing strategies, opportunities and risks. *Strategy and Leadership Journal*, 32 (6), 20-22.
- Lee, J., Huynh, M.Q., Chi-wai, K.R., & Pi, S. (2000). *The Evolution of Outsourcing Research: What is the Next Issue?*. *Proceedings of the 33rd Hawaii International Conference on System Sciences*.
- Lisserman, M. (2010). *SaaS And The Everlasting Security Concerns*. *Community. Forrester Research*. Retrieved 8 January 2016.

- McHall, T. (2011). *Gartner Says Worldwide Software as a Service Revenue Is Forecast to Grow 21 Percent in 2011*. Retrieved 10 January 2016, from [http:// www.gartner.com/newsroom/id/1739214](http://www.gartner.com/newsroom/id/1739214).
- Mingle, J. (2015). *Social Media Network Participation and Academic Performance in Senior High Schools*. (Unpublished MPhil Thesis). University of Ghana, Legon.
- Onohwakpor, J.E., & Anre, O.S. (2007). Software selection and acquisition in Nigerian university and special libraries: the way forward. *Computing and Information Systems*, 11 (1), 11-18.
- Patel, N. S. & Rekha, B.S. (2014). Software as a Service (SaaS): Security issues and Solutions. *International Journal of Computational Engineering Research (IJCER)*, 4(6), 68.
- Powers, E. (2013). *SaaS 81 success secrets - 81 most asked questions on SaaS - what you need to know*. (Kindle ed.). Philadelphia, PA: Emereo House.
- Rader, D. (2012). How cloud computing maximizes growth opportunities for a firm challenging established rivals. *Strategy & Leadership*, 40 (3), 36 – 43. <http://dx.doi.org/10.1108/10878571211221202>.
- Rao, R. I.K., & Sainul, A.P. (1999). Features of library automation software: a comparative study. *Library science with a slant. Documentation and Information Studies*. 36(4), 211-28.
- Romero, N. L. (2012). Cloud computing in library automation: benefits and drawbacks. *The Bottom Line*. 25(3), 110 – 114. <http://dx.doi.org/10.1108/08880451211276566>.

- Safari, F., Safari, N., & Hasanzadeh, A. (2015). The adoption of software-as-a-service (SaaS): ranking the determinants. *Journal of Enterprise Information Management*, 28(3), 400 – 422. <http://dx.doi.org/10.1108/JEIM-02-2014-0017>.
- Saxena, S.C., & Srivastava, R.K. (1998). Evaluation of library software packages. *Bulletin of Information Technology*, 18(5), 9-17. India: DESIDOC.
- Sekaran, A. & Bougie, R. (2010). *Research Methods for Business*. Retrieved from http://www.amazon.com/s/ref=nb_sb_noss?url=search-alien%3Daps&field.
- Singh, A. (2003). Library automation and networking softwares in India: an overview. *Information Development*, 19(1), 51-55.
- Singh, Y. K. (2006). *Fundamental of Research Methodology and Statistics*. New Age Publishers: New Delhi., pp. 221-250.
- Tayntor, Ch.B. (2001). A practical guide to staff augmentation and outsourcing. *Information Systems Management*, 18 (1), 84-91.
- Tornatzky, L. G.& Klein, R. J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management*, EM-29: 28–45, doi:10.1109/tem.1982.6447463
- Treacy, M., & Wiersema, F. (1993). Customer intimacy and other value discipline. *Harvard Business Review*, 84-93.
- UPSA Students Hand book, 2013.
- UPSA website Retrieved on January 4, 2016, from www.upsa.edu.gh.

- Usher, N. (2003). Outsource or in-house facilities management: The pros and cons. *Journal of Facilities Management*, 2(4), 351 – 359.
<http://dx.doi.org/10.1108/14725960410808311>.
- Veronica, A., Paul, B., Ken, C., David, K., & Jane, P. (2008). *JISC & SCONUL Library Management Systems Study*. Retrieved from
<http://www.webarchive.org.uk/wayback/archive/20140615073047/http://www.jisc.ac.uk/media/documents/programmes/resourcediscovery/lmsstudy.pdf>.
- Vine (1990). *In-house library systems development at the University of Lancaster*. 20 (4), 24 – 26. <http://dx.doi.org/10.1108/eb040447>.
- Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, 26(2), 13-23.
- What is Outsourcing? Retrieved from
<http://searchcio.techtarget.com/definition/outsourcing>.
Accessed January 18, 2016.
- www.pcmag.com/encyclopedia/term/56112/saas.
- www.flatworldsolutions.com/articles/pros-cons-outsourcing.php.
- [www.en.wikipedia.org/wiki/End-of-life_\(product\)](http://www.en.wikipedia.org/wiki/End-of-life_(product)).
- Yuvaraj, M. (2015). Security threats, risks and open source cloud computing security solutions for libraries. *Library HiTech News*, 32 (7), 16 – 18.
<http://dx.doi.org/10.1108/LHTN-04-2015-0026>.
- Zaid, Y.A. (2004). Automating library records using GLAS software: the University of Lagos experience. *Journal of the Nigerian Library Association*, 38 (1), 56-67.

Ziff, D. (2014). Retrieved 28 2016 from

<http://www.pcmag.com/encyclopedia/term/56112/saas>.



APPENDIX

UNIVERSITY OF GHANA

DEPARTMENT OF INFORMATION STUDIES, LEGON.

(QUESTIONNAIRE FOR STAFF)

Topic: Library Management Systems: a comparative study of Cloud Service and In-house Software Implementation

INTERVENTION:

a. What is cloud Computing?

The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.

b. What is cloud SaaS (Outsourcing)?

Software as a Service (SaaS) is an emerging business model that delivers software applications to users through Web-based technology.

c. What is In-house Software?

In-house software is software that is produced by a corporate entity for purpose of using it within the organization

Dear Respondent,

The following questionnaire is prepared with the aim of data gathering for a Master Dissertation. The researcher is going to find out the rate of awareness about the potential of Library Management Software, (LMS), either to outsource or to build in-house, the perceived advantages and risks decisions. The demographic characteristics and response given are required only for determining the relationship between your perceived risks and advantages and will not be used for any other purposes.

I assure the confidentiality of your responses.

Your contribution in my research is highly appreciated in advance.

Thank you

Section A – (Background of Staff)

1. What is your educational level? ☐ Diploma ☐ First Degree ☐ Second Degree ☐ MPhil ☐ Other (please specify).....

2. Number of years in employment

☐ Under one year ☐ 1 – 5 years ☐ 6 – 10 years ☐ Over 10 years

☐ Other (please specify).....

3. Department.....

SECTION B – SECURITY ASSESSMENT

Please indicate the level of agreement with each statement below on a scale 1 to 5.
Where

(1=Strongly Agree, 2=Agree, 3=Moderately Agree, 4=Disagree, 5=Strongly Disagree)

Statements	1	2	3	4	5
Outsourcing LMS will leak out vital information					
Outsourcing will reduce staff potential skills					
Outsourcers may not have the library's interest at heart					
In-house LMS provides a safe and better secure environment					
There is a general risk reduction to have in-house LMS					
When you provide a service to users over the Internet, such as a LMS link to your webserver, you expose your organization to new risks					

SECTION C – PROCUREMENT COST

Please indicate the level of agreement with each statement below on a scale 1 to 5.

Where

(1=Strongly Agree, 2=Agree, 3=Moderately Agree, 4=Disagree, 5=Strongly Disagree)

Statements	1	2	3	4	5
Will outsourcing LMS truly improve library performance?					
The financial projections are accurate to outsource LMS					
Building own LMS will reduce cost for budgetary allocation					
Getting the best outsourcer to build LMS is a challenge					

SECTION D – HUMAN CAPITAL TRAINING

14. Does the university have the software experts to develop LMS?

- a. Yes b. No

15. Do you think that the internal IT staff lacks the expertise in the new technologies?

- a. Yes b. No

16. Do you think in-house LMS will ensure less complex staff training on the use of the software?

- a. Yes b. No

SECTION E – MAINTENANCE COST

Please indicate the level of agreement with each statement below on a scale 1 to 5.

Where

(1=Strongly Agree, 2=Agree, 3=Moderately Agree, 4=Disagree, 5=Strongly Disagree)

Statements	1	2	3	4	5
LMS maintenance cost is very expensive when outsourced					
It is easier to maintain in-house LMS than when outsourced					
There is quick response to resolve system failure when outsourced					
Developing in-house LMS provides easy access to error checking					

SECTION F – CHALLENGES

21. Does the library currently have a Library Management Software (LMS)?

a. Yes b. No

22. If yes, was it outsourced or built in-house?

.....
.....

23. What are some of the challenges being faced with this LMS?.....

.....
.....

24. Would you recommend management to outsource LMS or rather to be built in-house?

.....
.....

25. Please provide reason(s) why you think so

.....
.....

Thank you very much for your participation