Thesis
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AN EVALUATION OF WEBCT COURSE CONTENT MANAGEMENT SYSTEM AT THE UNIVERSITY OF BOTSWANA

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A PhD Thesis

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ABSTRACT

This study was conducted to evaluate WebCT course content management system (CCMS) at the University of Botswana from the perspective of perceptions of students and academic staff. The survey methodology was used and questionnaires were distributed to 503 students selected from six faculties. An in-depth interview was also conducted involving (20) twenty lecturers who teach via WebCT platform. The data collected through a questionnaire was analysed using the statistical Package for Social Sciences (SPSS) to generate percentages and frequency count, Pearson Multiple Correlation, Analysis of variance and Stepwise Multiple Regression; while qualitative data was analysed using (content analysis), and thematic categorisation.

The findings on the perceptions of students and staff suggest generally that WebCT CCMS at the University of Botswana has been reasonably successful. The findings also suggest that the quality of course materials uploaded on the system, service quality, the quality of the teaching and learning via the system are generally acceptable. By learning through WebCT students are able to self regulate their learning and that given an opportunity they are ready to use and continue learning using the WebCT platform. The results also suggest that generally students are satisfied with the performance of WebCT and there are many benefits associated with the system as far as teaching and learning at the university is concerned.

Moreover, the results of the tested hypotheses suggest that all the identified factors or measures (system quality, content quality, service quality, teaching and learning quality, student self-regulated learning, intention to use/ use, user satisfaction and net benefits) are good determinants of WebCT CCMS success. The study proposes CCMS success evaluation model that could be used in the evaluation of any e-learning course content management system. The model is based on the modified Delone and Mclean (2003) IS model. The proposed model outlines eight factors or measures that should be used in the assessment and evaluation of an e-learning system.

The problems associated with WebCT CCMS that are experienced by both the staff and students of the University include access, network /server failure, lack of a link between the administrative system integrated technology service (ITS) and Web based communication tool WebCT, lack of expertise to teach

using WebCT on the part of the lecturers, failure to remove completed courses from the system, and others.

The respondents suggest that there is need for the university to consider constructing more computer labs on the campus and provide more computers, train and induct both lecturers and students on how to use WebCT for teaching and learning purposes, make use of WebCT at UB" compulsory and improve bandwidth.

The study concludes by making several recommendations concerning the improvement in the use of WebCT at the University of Botswana. Further areas of research were recommended that include:

- Investigating the causal relationship between e-learning/WebCT CCMS success factors,
- Examining the attitude of non-users of WebCT CCMS at the University of Botswana,
- Impact of WebCT on leaning achievement,
- Cost-benefit analysis of WebCT usage at UB.

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Better is the end of a thing than the beginning thereof. Ecclesiastes 7:8.

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DÉDICATION

I dedicate this work to Almighty God, the Father Son and the Holy Spirit; my wife, Joy Olusola, my two daughters, Eunice and Elizabeth, and my older and; younger brothers and sisters, Sunday, Deji, Robert, Grace, Florence, and Tayo.

DECLARATION

I hereby declare that this thesis, which is submitted to the University of Botswana in fulfillment of the academic requirements for the award of a Doctor of Philosophy in Library and Information Studies, is an original work done by me. I also declare that the work has neither been submitted nor copied elsewhere and that the various materials used in the study have been duly acknowledged.

Finally, no part of this thesis can be reproduced by any means without the prior permission of the author or the University of Botswana on its behalf.

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List of Abbreviations and Acronyms

ADL: Advanced distributed Learning

ASTD: American Society for Training Development

CAD: Center for Academic Development

CBT: Computer Based Training

CCMS: Course Content Management System

CCQ: Course Content Quality

CD-ROM: Computer Disc Read Only Memory

CITE: Center for Information Communication

CMS: Course Management System

DEP: Dependability

ECAR: Educause Center for Applied Research

EG: Electronic Government

ERIC: Education Research Information Center

ERP: Enterprise Resource Planning

ESS: Enterprise System Success

ICT: Information and Communication Technology

ICTs: Information and Communication Technologies

IP: Internet Protocol

IS: Information System

ISDN: Integrated Digital Network

ISQ: Information System Quality

IT: Information Technology

ITU: Intention to Use

ITU-CCMS: Intention to Use Course Content management System

KMS: Knowledge Management System

LAN: Local Area Network

LOD: Learning On Demand

NB: Net Benefits

OSS: Open Source Software

PU: Perceived Usefulness

SQ: Service Quality

SSQ: Support Service Quality

SSRL: Student's Self-Regulated Learning

SWQ: Software Quality

TAM: Technology Acceptance Model

TLQ: Teaching and Learning Quality

UAE: United Arab Emirate

UB: University of Botswana

UBEL: University of Botswana E-learning Club

UK: United Kingdom

URL: Uniform Resource Locator

US: User satisfaction

USDE: United state Department of Education

UW: University of Wisconsin

VLE: Virtual Learning Environment

WEBCT: Web Based Communication Technology

WWW: World Wide Web

Operational Definitions of Terms

Blackboard: Blackboard refers to an object used as a supplement to traditional face to face teaching methods (Williams, 2007).

Course content: This refers to a variety of learning materials which instructors use to present information in many different ways from basic text to multimedia.

Content management: A system of methods and techniques used to collect, manage and publish content in a learning platform.

Course content management system: The use of series of information communication technology and web-based tools to manage online teaching and learning activities.

Course management system success: The course management system effects on information/content quality, individual users and the organization.

E-learning: The use of information and communication technologies (ICTs) to provide, support or enhance learning via the Internet, network or standalone computer (Social Care Institute of Excellence, 2004).

Individual Impact: This refers to the overall impact of the system on the individual, while organization impact refers to the system's impact on the overall organization.

Information system effectiveness: This refers to the results of the comparison between information systems performances to its predefined objectives (Hamilton and Chervany, 1981).

Information system success: This refers to the achievements of information systems based on performance characteristics such as resource utilization, hardware utilization, efficiency, reliability, response time, ease of terminal use, etc (Delone and Mclean, 1992).

Information Quality: This refers to the quality of the information produced by a system and thus available to the users; it defines the judgment of the degree to which systems' stakeholders are provided with information of excellent quality, with regard to their defined needs excluding user manuals and help screens (features of System Quality).

Intention to Use: This refers to the users' motivation for using an information system.

Net Benefits: This refers to capturing the balance of the positive and negative impacts of information systems on users, suppliers, employees, organisations, markets, industries, economies, and society as a whole.

System Quality: This refers to a judgment of the degree to which the technical components (including hardware, software, help screens and user manuals) of delivered IS provide the quality of information and service as required by stakeholders.

Service Quality: This refers to the measure of the overall support delivered by the service provider.

User Satisfaction: This refers to the degree to which users are satisfied with the overall use of the system.

WebCT: This is an online course management system which is accessed through a portal with a wide range of tools that support teaching and learning and enables online delivery of lecture notes, presentations, surveys and quizzes, coursework, discussion boards and others (The University of Greenwich, 2008).

CHAPTER ONE
INTRODUCTION

1. Introduction

The University of Botswana was established in 1982 after the break up of the multinational and multi-campus University of Botswana, Lesotho, and Swaziland, (UBLS) which had been established in 1964 to serve the three Southern African countriess. The University of Botswana (UB) introduced WebCT in 2002. WebCT is a course content management system which is a component of e-learning. WebCT at the University of Botswana is used to support and enhance teaching and learning and to ensure that all students are committed to lifelong learning. At the University of Botswana, WebCT provides an integrated environment for online teaching and learning. It provides academic staff with basic computer skills which enable them to manage web-based learning materials and to utilise a range of online communication tools in order to complement face-to-face teaching. WebCT is also used at the University of Botswana as a communication tool, a student learning activity tool and a content management tool. WebCT lends itself to the formation of communities of practice over and above the assignments where optional group work occurs. The University of Botswana students use the discussion tools to explore issues and to articulate their individual and eventually collective problems, forming connections that make their studying more meaningful. These connections are what helps them to make sense of their learning experience and give meaning to what they observe and how they participate. The University of Botswana embarked on a program of e-learning in 2001 when it mandated the EduTech unit within the Centre for Academic Development to transform technologically the education process at the University (Uys, 2003). EduTech carries out the training of faculty members in the effective and appropriate use of educational technologies at the University of Botswana. The Unit also provides resources such as state-of-the-art computer laboratories known as smart rooms. These laboratories are fully equipped with wireless Local Area Networks (LANs), videoconferencing facilities, digital projectors, scanners, and WebCT e-learning platform. Smart Classrooms (These classrooms are used for teaching purposes) were constructed for technology-based, open, active, and collaborative learning.

The University main campus is situated in Gaborone, the capital city. During 2007/2008, the University had a total enrolment of 15,710 students of which 12,602 were fulltime. Approximately 51% of the students were females. Of the total enrolment, 14,777 were pursuing undergraduate programmes (University of

Botswana, 2008). Currently, the University has seven faculties, namely: Business, Education, Engineering and Technology, Humanities, Science, Social Sciences and the Faculty of Health Sciences which has just started running. The seven faculties comprise over forty (40) departments. The University has a School of Graduate Studies and several specialised centres and research units. The University has a staff complement of 2,217 of which 827 are lecturing staff. The academic programs are offered at certificate, undergraduate and postgraduate levels (University of Botswana, 2008).

Several structural and curricular changes have taken place at the University of Botswana in the last 7 years. Notable among these are the implementation of WebCT e-learning platform in 2002/03 and semesterisation of the year-long academic programmes as part of key reforms aimed at marketing the university a leading academic centre of excellence in Africa and the World (University of Botswana, 2005:20). The rationale for the implementation of a WebCT program at the University of Botswana was to fulfil the University's responsibility to prepare students for effective participation in the wider information society; to use ICT in order to increase the success rates of students; provide an opportunity for the University to enhance flexible learning and at the student's own pace. It was also expected that through e-learning, access to relevant national and international resources would be facilitated and better ways of handling large classes would be achieved (UBel, 2002:16).

As part of the commitment of the university to the program, a lot of resources and facilities have been put in place. Correspondingly, there is an increased use of the WebCT among the staff and students (e.g. Mutula, 2002; Eyitayo, 2005; Batane and Mafote, 2007; Uziak, 2009). Uys (2003) has identified critical success factors contributing to the adoption of e-learning at the initial transformation stages as: Leadership, vision, dedication and appreciation of the systemic nature of the infusion of instructional technologies for open learning and a commitment to work with strategic partners in related systems.

The implementation of e-learning at the University of Botswana was intended to fulfill the University's vision (UBel, 2002:16); prepare students for effective participation in the wider information society; use ICT to increase the success rates of students; provide an opportunity for the University to enhance flexible learning anytime, anywhere and at the student's own pace. It was also intended to provide access to relevant national and international resources and handle large classes. Furthermore, according to the

University of Botswana strategic academic goals of 2006-2009, the emergence WebCT at the University was to enhance the quality of undergraduate programmes and ensure that all students are committed to life long learning. The key results areas include: improving the students' success rate; innovating and changing to meet students' needs and re-engineering the institutional process for enhanced service delivery.

The University of Botswana has a policy-guided e-learning programme that emphasises a blended approach to e-learning in which various modes, methods and media are integrated and organised for appropriate learning. E-learning at UB is supported by an information technology IT department which provides maintenance and technical support for the e-learning infrastructure in the University.

A Mimio-board is used to display, via a data-projector, what is written or drawn on the white-board. A mimio board is a low cost interactive whiteboard solution that integrates all the features of mimio and wireless technology into a high quality, whiteboard (Mimio, 2007). Microsoft-NetMeeting is used to project the white-board or any other aspect of the instructor's screen on the screens of all the participants, or the screen of any participant to all other participants. Microsoft-NetMeeting is a software that delivers a complete Internet conferencing solution for all windows users with multi-point data conferencing, text chat, whiteboard, and file transfer, as well as point-to-point audio and video equipment (Microsoft.com, 2008).

In 2003, a video-conferencing system was installed for synchronous teaching and learning, linking the main campus in Gaborone with other university campuses in the North via an Integrated Service Digital Network (ISDN) and leased lines. The University conducts video-conferencing internationally through this system using the Internet Protocol (IP) addressing or ISDN (Uys, 2003).

The e-learning Support Centre has trained more than 30 percent of the University academic community in various educational technologies. An e-learning Certificate programme designed by the Centre for Academic Development (CAD) for academic staff, has been offered since the beginning of 2003. This programme was designed to support and prepare lecturers for implementing e-learning (Gachago and Mafote, 2007). Workshops offered in the CAD e-learning certificate programme cover four areas namely; e-learning, information and computer skills, multimedia production, and WebCT training. With the university's acquisition of WebCT in 2002 as mentioned earlier, 343 new online courses had been created, out of

which 205 were created during the 2006-2007 first and second semester (CAD, 2007). A steady increase in lecturers interested in using e-learning for their courses has been recorded.

During 2006, 145 lecturers out of 827 teaching staff were using e-learning in the delivery of their courses. The number of students enrolling in e-learning course has also been growing. During the 1st semester of 2006-2007, more than 1,300 students used online courses (University of Botswana, 2007). The development of online courses has grown drastically from 7 departmental courses in 2002 to 258 in the first semester of 2007. However, it is difficult to tell the exact number of students using online courses because a student can register for more than one course; but there are probably more than 8000 students enrolled on WebCT (UB WebCT Report, 2007). The UB WebCT Report 2007 reveals further that the majority of the students find WebCT interesting and useful in their academic work which suggests that all courses should be put on WebCT so that they can learn at their own time, place and pace. This is said to underline the basic principle of e-learning, which is access at anytime, anywhere, flexibility that encourages lifelong learning (Batane and Mafote, 2007). The evaluation of the success of WebCT e-learning course content management system needs to be conducted at UB because a lot of efforts and resources have been invested on the program. Previous e-learning studies conducted at the University of Botswana have not addressed the issue of success of the WebCT in e-learning.

Given that e-learning at UB has been in existence for over seven years, there are issues that require investigation. These issues include the success of the e-learning program in terms of resource provision, process improvement and reengineering, the quality of learning at the university, return on investment capacity building, the level of users' satisfaction with the system, the quality of content, the value of the system to the users and the challenges faced by the users when using the system.

1.1. Background to the Study

The use and adoption of WebCT is gaining popularity in higher education the world over (Alhhayat et al. (2004). WebCT course content management system is a class of Information System that manages teaching and learning. It is a Learning Management System developed to support and enhance the organizational processes of content creation, storage and retrieval, transfer, delivery and application. WebCT is an integrated, user–machine system for providing information or content to support teaching and

learning operations, management, analysis and decision-making. Based on these actions, it is thus clear that WebCT is similar to early Information system ideas as defined by Delone and Maclean (1992, 2003; Davis and Olson, 1985). To these authors, "information system collects, transmits, processes, and stores data on an organization's resources, programmes, and accomplishments. The system makes possible the conversion of these data into management information for use by decision makers within the organization and thereby produces information that supports the management functions of an organization" (Davis and Olson, 1985:30). WebCT evaluation is recognized as one of the problematic issues that can be interpreted in many different ways. However, it is generally accepted that the evaluation of information systems is complex. It essence, multiple, interrelated success dimensions from both a stakeholder and technical perspective is more likely to capture changes in performance than one single item or even a set of financial measures (Segars and Grover, 1998).

Ferguson, Hilder and Kelly (2005) have pointed out that one hardly needs to labour the point that information systems evaluation is a critical activity. Given the overwhelming scope and emergence of course content management system in the e-learning environment, it is important for information system professionals to develop the means to evaluate this new service and delivery system. As observed by Ferguson et al. (2005), there has been considerable research into the evaluation of information systems. The considerable financial investment by organizations in information systems underlines the importance of evaluation for IS researchers and practitioners (Saarinen, 1996:103). Evaluation occurs twice in the traditional structural systems analysis and design approach: first, in the feasibility phase in which an attempt is made to establish the likely impact and cost, and, second, in the form of a post-implementation evaluation, which is an attempt to measure the impact the system has actually had (Smithson and Hirschheim, 1998:160, Serafeimidis, 2002:172-3). This second approach focuses on issues of whether the project was delivered on time, whether the budget was enough and whether it met the specifications (Smithson and Hirschheim, 1998:162). The second approach to evaluation of information systems indicated above is chosen for this study. This is because it is an attempt to measure the benefits of WebCT course content management system after implementation to determine its success in terms of its actual benefits on the primary consumers who are the students.

It should be noted that the evaluation of the WebCT system can be done from various perspectives. For instance, the system can be evaluated from the point of view of the administrative and academic staff; the

technical staff and the content of the system. However, an evaluation of the success of the system from the students' perspective was chosen in this study because they are the primary users of the system.

Several problems associated with WebCT have been identified in the literature. For instance, the inability to meet the usability requirements of the students or staff members, confusing navigation systems and multiple screen designs within the same course (Storey et al., 2000). According to the UB WebCT Report 2007, WebCT off campus access is still unpredictable and unstable. For instance, there were several reports of access problem, students' assignments submissions not being sorted out by IDs and surname, lost or forgotten passwords, the failure of either the server or the network, students' long distance from courses, classmates and instructors, logging problem, long download time for many files with large sizes. Students at the University of Botswana seem to be experiencing most of these problems associated with WebCT system, and this is why this study focuses mainly on the students.

Studies on course management systems or e-learning in general have largely focused on online course content creation; proportion of students using online content, online content development, securing content, the quality of content online, the management of students' marks and course materials (Morgan, 2003, Educause Centre of Applied Research, 2003; Eyitayo, 2005; Leem and Lim, 2007; Lowe and Kaplan, 2007). Despite the increasing use of course content management systems for teaching and learning, little attention has been given to examining issues of its evaluation, which are central to e-learning implementation (Drury, 1998; Gatian, 1994). A limited number of studies have evaluated course content management systems in e-learning environments. The evaluation of course content management systems deserves special attention because it is a contemporary information system whose evaluation has not been sufficiently reported in the literature (Zacharias et al., 2002). Seddon (1997) observes that limited studies have attempted to use a high profile IS model such as the Delone and Mclean IS Success Model as a lens to evaluate the success of e-learning-course content management systems. It presents most of the information system success models that have been used to determine information system success are borrowed from Delone and Mclean success model; but the number of studies addressing evaluation or success of e-learning systems are relatively small (Squires and Preece, 1999; Quinn et al., 2005).

The key issues that arise which are part of what this study addressed include limited studies that have used Delone and Mclean IS success model to evaluate e-learning course content management success.

Generally, the focus has been on other information system success and not course content management system success. Moreover, previous studies have focused more on the output of information system and not on the output of course content management system. Heeks (2000) approximates that 20-25% of ICT-related projects in developed countries are never implemented or are abandoned immediately following implementation while a further 33% fail to achieve their major goals or they simply do not produce the desirable outcomes. Much of the research on course content management systems is done in Europe, North America and Asia but very few studies of this nature have been undertaken in Africa. Related studies in developing countries would provide a comparative picture with those in developed countries and help address some gaps in the literature in this area. This study wishes to address these issues by adapting Delone and Mclean's Model and then use it to evaluate the success of WebCT course content management system at the University of Botswana.

The contribution of this study to the field of information management research cannot be under-estimated. Firstly, evaluating WebCT course content management system is considered here as an innovation to information research. This is because limited studies are available on the subject matter. The outcomes of this study will provide additional knowledge in information system literature.

1.2. Statement of the Problem

Universities the world over, including UB, are implementing course content management systems. This, in general, is to improve the quality of learning and enhance their competitive edge in the education environment where there are many players, both public and private. For the universities to meet these needs, an evaluation of e-learning projects they implement is important.

The University of Botswana in 2002 invested significant resources in e-learning in terms of ICT infrastructure and staffing. The University needs to know the level of e-learning success to justify continued investment in this programme. Moreover, WebCT has been reported to pose a number of challenges not only at UB but beyond. Some of these challenges were earlier identified in the background to the study to include: network failure, lack of access from outside campus, long download time for large files, forgotten passwords, etc.. An in-depth investigation of these challenges is necessary for designing adequate and effective interventions. The evaluation of e-learning at UB would help towards achieving the university's

vision of becoming a centre of excellence in the world. Wang et al. (2007) point out that in order for e-learning systems to be used effectively in an organization, there is need to evaluate their success and effectiveness.

An evaluation of WebCT course content management system is important for reviewing resource provision, process improvement and reengineering the quality of learning at the university, return on investment and capacity building to mention but a few. Little research has been carried out to address the evaluation of WebCT course content management system within organizations, particularly in education (e. g. Kerrey & Isakson, 2000; Zhang & Nunamaker, 2003) using Delone and Mclean Model. Most research has been undertaken largely in the context of the developed world, particularly among corporate organizations. Locally, studies on WebCT CCMS at the University of Botswana have been limited to management strategies of e-learning (Mutula, 2002; Bose, 2003; Uys, 2003, 2004; Eyitayo, 2005; Batane and Mafote, 2007). Unlike other information system models, the Delone and Mclean is considered a powerful model in the information management research based on its wide applicability. The model discusses variables relevant to this study, it has high validity and reliability because it has been consistently used/reused in many information system related studies, and it offers multi-dimensional views to IS success. Finally it is the most commonly used model in Information system studies to determine information system success. This model initially identified six interrelated dimensions of IS success. It suggests that success can be represented by the quality of the system, the output 'information quality', consumption (use) of the output, the user's response (user satisfaction), the effect of the IS on the behavior of the user (individual impact), and the effect of the IS on organizational performance (organizational impact). With later modifications, service quality and intention to use were added and as well individual and organizational impacts were collapse as net benefits. Moreover, it has been a commonly used model for determining information system success. In the light of this, this study attempts to evaluate WebCT course content management system at the University of Botswana using Delone and Mclean as lens to the evaluation. Variables that will be measured are informed by the model and these include the quality of the system, content quality, support services quality, intention to use/use, user satisfaction, and net benefits. Additional variables included in the evaluation of the system to reflect the educational setting where the evaluation is being carried out, the teaching and learning quality and students' self-regulated learning.

These variables are being studied because any IS must effectively recognize the primary mechanisms by which users work and build technological solutions. The success measurements, from the socio-technical viewpoint, should capture both technological and human elements (Garity and Sanders, 1998) and (Skok and Kalmanovitch, 2005). An effective CCMS typically requires an appropriate combination of both (Davenport, DeLong and Beers, 1998). As with most information systems, WebCT's success partly depends upon the degree of use (Poston and Speier, 2005), which itself may be tied to the quality of the system, information quality, user satisfaction, and usefulness. Thus, the technological dimensions (i.e. system and information quality) and the human dimensions (e. g. user satisfaction, perceived system benefits, and system use) can be a good starting point when considering suitable constructs for evaluating the success of WebCT.

The quality of the system depends on the intended operational characteristics. It is concerned with whether there are errors in the system, its ease of use, response time, flexibility and stability. The quality of the system measures the reliability and predictability of the system independent of the knowledge it contains. These criteria are equally applicable in measuring WebCT success. Information quality has been used as a success measure for traditional IS. In the CCMS context, the distinction between content and information depends on the context and the user. One course content can be another's information while content to a given user for a certain task at a certain time may be information for another task or at a different time (Holsaple, 2003). User satisfaction is one of the most frequently measured aspects of IS success. In addition, it is hard to deny the success of a system which users say they like. Thus, user satisfaction is also a good measurement for WebCT success. System use is also one of the most frequently assessed categories in measuring IS success (Straub, Limayem and Karahanna-Evaristo, 1995). However, as Seddon points out, system use is a good proxy for IS success when the use is not mandatory. Doll and Torkzadeh, Delone and Mclean argue that system use is an appropriate measure of success in most cases and is a key variable in understanding IS success (Doll and Torkzadeh, 1988). The traditional measure for system use is too simplistic to reflect the nature, extent, quality, and appropriateness of the system use. A reasonable measure could be determined by assessing whether the full functionality of a system is being used for its intended purposes. System use could thus be an appropriate measure for CCMS success, if it captures the richness and nature of CCMS use. The intention to use a system is the measure of the likelihood that a person will employ the application of the system. The perceived system benefit is the degree to which a user believes the use of the system results in benefits to the user or the organization,

often assuming that this results in an increase in job performance and productivity (Staple, Wong and Seddon, 2002). However, the perceived benefits of the system not only capture user feelings but also capture other dimensions such as IS effectiveness. Thus, it is desirable to use such a construct as the dependent variable in IS success and the researcher used perceived CCMS benefits as a measure for evaluating WebCT CCMS success.

As pointed out earlier, most researches on course content management systems have been done in Europe, North America and Asia, but few have been undertaken in Africa. The developing country context of related studies would provide a comparative picture with developed countries and help address some gaps in literature in this area.

1.3. Objectives of the Study

The main objective of the study is to evaluate WebCT Course Content Management System at the University of Botswana using Delone and Mclean IS Success model.

The specific objectives of the study are to:

1. Evaluate the WebCT system quality.
2. Evaluate the course content quality on WebCT from students' perspectives.
3. Determine the quality of support services provided for WebCT.
4. Investigate the students Intention to use WebCT.
5. Investigate students' satisfaction with WebCT.
6. Investigate the benefits of WebCT to students.
7. Determine the quality of teaching and learning through WebCT.
8. Determine how students self-regulate their learning via WebCT.
9. Determine organizational preparedness of the University of Botswana to implement successful e-learning programme.
10. Identify the challenges faced by students when using WebCT.
11. Suggest recommendations on how the challenges faced by students in using WebCT can be addressed.

1.4 Research Questions

The study attempted to answer the following research questions:

Main research question: To investigate how successful is WebCT at the University of Botswana. Other research questions are:

1. What is the quality of WebCT system from the perspective of students?
2. What is the quality of course content on WebCT?
3. What is the quality of WebCT support services provided to students?
4. What is the students' intention to use of WebCT?
5. What is the level of students' satisfaction with WebCT?
6. What are the benefits of WebCT to students?
7. What is the quality of teaching and learning through WebCT
8. How does WebCT assist students to self-regulate their learning?
9. What is the nature of organizational preparedness of the University of Botswana in implementing a successful e-learning programme.
10. What are the challenges of using WebCT at the University of Botswana?

1.5 Research Hypotheses

1. Course content management system success constructs (system quality, course content quality, service quality, teaching and learning quality, student self-regulated learning, content management system use, user satisfaction and net benefits) do not significantly determine the success of WebCT course content management systems.
2. The course content management system quality does not significantly determine the success of the WebCT course content management system.
3. Course content quality does not significantly determine the success of the WebCT course content management system.
4. Support service quality does not significantly determine the success of the WebCT course content management system success.
5. Students' intention to use course content management system does not significantly determine the success of the WebCT course content management system.

6. User satisfaction does not significantly determine the success of WebCT course content management system.
7. Perceived net benefits do not significantly determine the success of the WebCT course management system.
8. The quality of teaching and learning does not significantly determine the success of the WebCT course content management system.
9. Students' self-regulated learning does not significantly determine the success of the WebCT course content management system.
10. The organizational preparedness of the University of Botswana does not determine the success of WebCT course content management system.

1.6 Significance of the Study

It is hoped that the outcome of this study will benefit various University of Botswana stakeholders at different levels including government, faculty, departments, students, researchers and policy makers.

From the government perspective, evaluating the success of the system will enable it to acknowledge the fact that support that has been provided in terms of finance to the project is yielding positive results. At the faculty level, it will provide an insight into where pedagogical changes may be required to optimize the use of course content management systems by the faculty.

At the researcher's level, the reviewed Delone and Mclean information system model is a widely used model for studying IS success. However, this has not been applied in the context of e-learning, particularly WebCT.

For the higher education policy makers, the study will provide a roadmap for higher education institutions similar to the University of Botswana to improve e-learning processes. Moreover, the study will facilitate informed decision making to enhance the quality of learning not only at the University of Botswana but also at other higher education institutions in Botswana. Additionally, the study will give an indication of the level of success of e-learning at the University of Botswana.

The study will offer suggestions on how to proffer solutions to the challenges of using WebCT at the university thereby helping the academic staff and students to address these challenges.

Moreover, the outcome of this study will:

- Assist the University of Botswana in determining future resource needs in e-learning.
- Provide useful data for e-learning process reengineering and improvement.

1.7 Assumptions

The underlying assumptions of this study are that:

- E-learning has gone a long way at the University of Botswana and this has contributed to the enhancement of the quality of some services.
- WebCT will enhance the quality of teaching and learning and students' self-regulation and self-direction. Constructs of quality and user satisfaction will lead to the success of the system.
- The success of the system manifests in terms of increased number of users and improved learning/ performance.

1.8 Delimitation of the Study

This study is limited to the University of Botswana and focuses on evaluating WebCT course content management systems based on the perceptions of academic staff and students at the University using IS Delone/Mclean IS Success Model. An attempt is made to modify the model to suit the context of this study in order to be able to measure and evaluate course content management systems. The population used for this study is academic staff and students of the University of Botswana and the findings of the study are expected to be applicable to similar academic environments.

The study did not include the Center for Academic Development (CAD), the unit that provides WebCT at the University of Botswana. The focus of the study was on users rather than a service provider. Delone and Mclean posit that information system can be examined at various levels and percpectives such as user, organization, technical, administrative, producer/provider etc. This study only focused on the users who are

students and academic staff. The study was also constrained by the fact that academic staff only allowed 5-10 minutes for interview and this may have affected the quality of the responses that were given. No attempts were made to bench mark the results of this study with what obtains in other universities because of limited comapartive data.

1.9. Approach to Disseminate the Finding of the Study

A research project, no matter how useful, is not considered complete until the results are disseminated (Aina, 2002:187). The dissemination of the results is to enable peers to evaluate and appreciate the findings and also to enable the end-users to have the full benefits of the research findings. The findings of this study will be disseminated through conferences/workshop- According to Aina (2002), it is crucial in the academic circle first to disseminate the research findings verbally at seminars, conferences or workshops and secondly, to report research findings in the form of books. This is very common in the Humanities, particularly in Library and Information Science. The results from this work will be published as chapters in books and as journal articles.

1.10. Summary of the Chapter

This chapter has provided the overall framework for the study through the discussion of the background to the statement of the problem, the research objectives and research questions, hypotheses, justification for the study as well as its significance, limitations and the approach to the dissemination of the findings of the study.

CHPATER TWO
LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter is to review the literature on the evaluation of WebCT course content management system. Kothari (2004:12) suggests that there are two types of literature - the conceptual literature concerning the concepts and theories, and the empirical literature consisting of studies which are similar to the one proposed. The literature review of this study covers both the empirical literature which discusses related studies on the variables under this study (Chapter 2) and the conceptual/theoretical framework (Chapter 3). This literature review is organized as follows: First, a brief introduction of the Delone and Mclean information system model is made. Second is the review of relevant empirical literature on the subject of the study. This review follows the suggestion of Santa (2005) that suggests that a review of relevant empirical literature should be placed in the context of its contribution to the understanding of the subject under study; should describe the relationship of each work to the others under consideration; and should identify new ways, interpret, and shed light on any gaps in previous research. Furthermore, this chapter relates to the ongoing dialogue in the literature (Fraenkel and Wallen, 1990) with respect to course content management systems.

2.2 Background to Delone and Mclean Information System Success Model

Delone and Mclean's IS success model (Delone and Mclean, 1992) has received much attention among IS researchers, as it provides a foundation for research in the CCMS domain. This study, therefore, looks at Delone and Mclean's model to evaluate WebCT CCMS success, and validates its use in empirical surveys about CCMS. Because IS success is a multi-dimensional concept that can be assessed at various levels, the measure for the success of IS has neither been quite clear nor exactly defined (Wu and Wang, 2006). However, Delone and Mclean in 1992 made a major breakthrough. They conducted a comprehensive review of IS literature and proposed a model of IS success shown in figure 1.

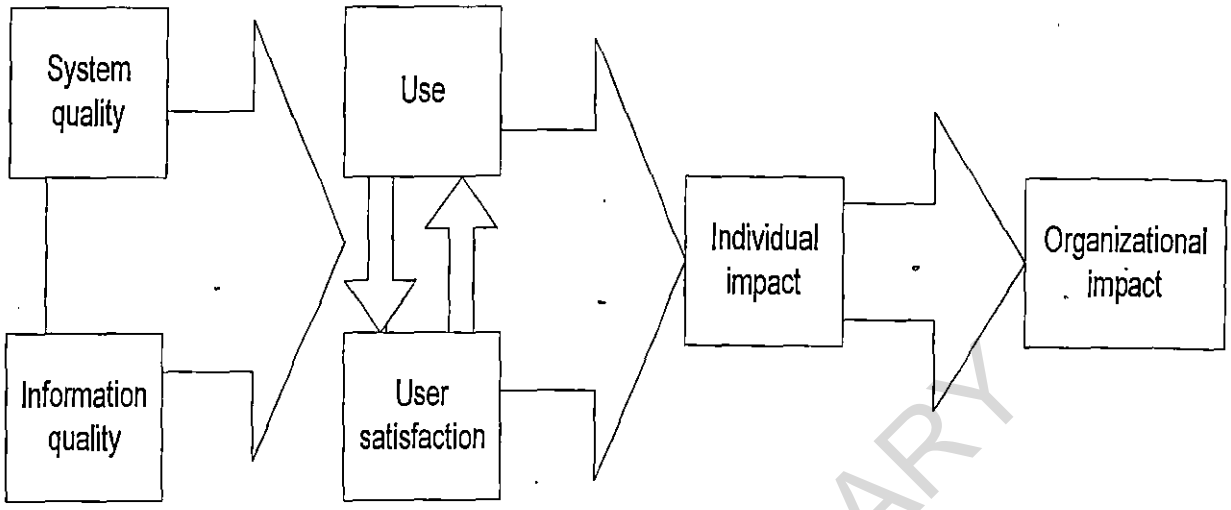

Figure 1: Original Delone and Mclean information System Success Model (Delone and Mclean, 1992:87)

This model identified six interrelated dimensions of IS success. It suggested that the success can be represented by the system quality, the output of information quality, consumption (use) of the output, the user's response (user satisfaction), the effect of the IS on the behavior of the user (individual impact), and the effect of the IS on organizational performance (organizational impact). This model provided a scheme for classifying the multitude of IS success measures and suggested the temporal and causal interdependencies between the six dimensions.

The original IS success model needed further validation; therefore, based on a review of the literature, Delone and Mclean proposed an updated model. This is shown in Figure 2 (Delone and Mclean, 2003).

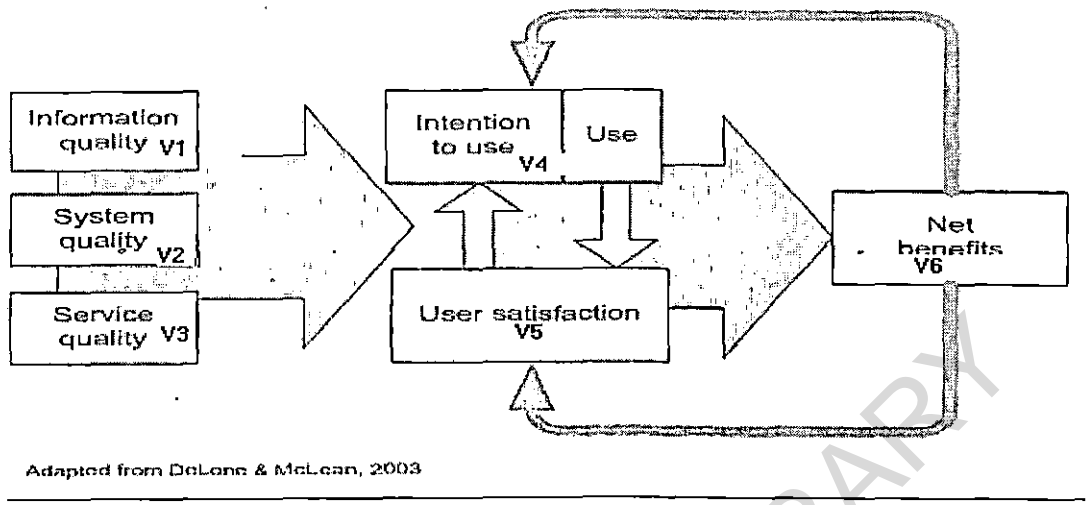

Figure 2: The Updated Delone and Mclean Model (2003:24)

The categories of the updated model were system, information, and service quality, intention to use, use, user satisfaction, and net benefits (Delone and Mclean, 2004). Based on this adapted model I am proposing a WebCT course content management system success model for this study and for the evaluation of e-learning system in general.

2.3 Information System Success

Crowston et al. (2003) identify a range of measures that can be used to assess the success of open source software (OSS) projects at Syracuse University in United State of America. Measures were derived from OSS development process and analysis of opinions of the developers. A question to the moderators of SlashDot software (a technology-related news website owned by Source Forge Inc which features user-submitted and editor-evaluated current affairs news with a "nearby" slant was posited. "Slashdot" is described by the site's owners as a sort of obnoxious parody of a URL) which was posted to a web-based discussion forum. Seventy two (72) SlashDot IDs which provided useful responses were identified and a content analysis process was carried out using Altlas-ti, a qualitative data analysis software package. The respondents felt that a project was successful if the developers are involved, satisfied, and enjoyed the process. Additionally, 23 percent of the respondents indicated that a project was successful if it satisfies users. Finally, the product's quality (13%) was suggested to be a measure of success by respondents.

Based on these findings, Crowston et al recommend that the relative importance of the content factor or construct remains to be tested in future research. This recommendation has theoretical implications on the present study. This study in part takes upon this recommendation by focusing on, content quality in course content management system as one of the variables.

Sabherwal et al (2006) used meta-analysis to compute a correlation matrix for the constructs in the model based on 612 findings from 121 studies published between 1980 and 2004 at St. Louis in Missouri, America. They used this correlation matrix as an input for a LISREL (scientific software for structural modeling) analysis of the model. Overall, findings revealed excellent support for the theoretical model. The results underline the importance of user-related (such as use, usage, satisfaction, etc) and contextual attributes in IS success and raise questions about some commonly believed relationships. The key finding relevant to this study concerns the issue of the importance of use and satisfaction which are part of the variables considered to determine CCMS success.

Cao, Zhang and Seydel (2005) identified what constitutes the quality of web site or what makes a web site effective among students at Arkansas State University, America. They examined and integrated four sets of factors that capture e-commerce web site quality using an IS success model of system quality, information quality, service quality, and attractiveness. A survey was conducted to verify the measures of web site quality. Based on technology acceptance model (TAM), a framework was developed relating web site quality to customers' beliefs (perceived usefulness and ease of use), attitudes (preferences for the site), and intentions (to revisit the site). A set of instruments of web site quality were developed and empirically validated by factor analysis. The research was based on a sample of students browsing several web sites. Cao et al. suggested that data in these domains (e. g. system quality) should be collected in any future research. The present study makes attempts to assess the quality of CCMS in the context of the University of Botswana, thereby incorporating Cao et al's suggestion.

Whyte and Bytheway (1996) in the UK engaged in 90 minute interview with business people on their perception of the success of information system in business in a matrix of about nine constructs, yielding 81 individual scores. These researchers observed that there is a continuing difficulty in achieving success with information systems, particularly in the sense of meeting users' expectations and offering attributes of information systems by which users perceive success and failure, and through which they establish their

expectations. They suggest that, in addition to the process and product viewpoint, an important factor in achieving success is the service management perspective. A repertory grid technique was applied to cover a total of 43 constructs which relate to the users' perception of success with information systems in business. The results revealed that the attributes were reduced to 21 which provide the basis of a new assessment and measurement framework, incorporating and augmenting the attributes found in previous work in this area: Some of these constructs include: user friendliness, responsiveness of personnel, reliability of system and personnel, system design of specification, data accuracy, project management, system complexity, etc. The constructs were reduced to 21 because they were perceived by the author as the ones that most influenced user perception of the success of information system (Whyte and Bytheway, 1996). Furthermore, the authors added that these constructs extended and complemented the attributes identified in previous research (e.g. Bailey and Pearson, 1983; Ives et al., 1983; Miller and Doyle, 1987; Zeithaml et al., 1990).

Hussein et al. (2007) investigated the influence of organisational factors using Delone and Mclean's IS success dimensions. The organizational factors are top management support, decision-making structure, management style, managerial IT knowledge, goal alignment, and resources allocations; whereas the IS success dimensions include system quality, information quality, perceived usefulness and user satisfaction. Using a survey method, data were gathered from 201 users from four electronic government (EG) agencies in Malaysia. The study found that all the organizational factors significantly correlated with the four IS success dimensions under investigation. Further analysis revealed that goal alignment is the highest predictor of IS success, followed by management support which appears to be the next highest predictor of IS success. The study concludes that the findings are generally consistent with previous studies. Huessein et al's. (2007) study and this present one are somewhat related. This is because this study uses a survey method for data gathering just like Hussein et al did. The survey method is considered necessary in this study because it is associated with the philosophical paradigm of positivist research which is the dominant approach used in this study. Additionally, the survey method gathers data from a relatively large number of cases at a particular time (Best and Khan, 2006:121) and it is considered an important and effective way in which a researcher can better understand respondents' thinking and doings about an issue (James, 2001:421).

The studies by Whyte and Bytheway (1996), Hussein et al. (2007) discussed above are relevant to the present study as they make attempts to determine the success of information system. Hussein et al. used organizational and technological factors as independent variables (IS facilities, IS competency, IS integration, User support, and IS structure) thereby side-stepping Delone and Mclean model variables. Whyte and Bytheway on the other hand, came up with 43 constructs to uncover the users' perception of success of information systems. These authors identified some variables (reliability of system, system response time, and system accuracy) which are of interest to the present study because they are used as indicators for describing some variables of focus (e.g. CCMS quality, content quality), etc. However, the present study differs from Hussein et al. (2007); Whyte and Bytheway (1996) in that it adapts and modifies the success dimensions of the Delone and Mclean IS success model. This study focuses on the updated model by Delone and Mclean which was discussed above based on some shortcomings identified with the original model by IS researchers which include the difficulty associated with interpreting the multidimensional aspect of the 'use' construct when the system is mandatory or voluntary. To overcome these shortcomings, Delone and Mclean came up with a modified edition of their IS success model in 2003. The difference between the original and updated model discussed above includes the introduction of service quality variables, the substitution of use variable with intention to use and the merging of individual and organizational impact variable as net benefits. Detail about this is discussed in chapter three under theoretical framework.

Chien and Tsaur (2007) investigated the success of enterprise resource planning (ERP) systems with case studies in three Taiwanese high-tech industries. The study developed a partial extension and respecification of the Delone and Mclean model of information system success. The Delone and Mclean model was applied to collect data using questionnaires answered by 204 users of ERP systems at three high-tech firms in Taiwan. The outcome reveals that system quality, service quality, and information quality are most important success factors. The methodological implication of the Taiwanese study to the present study is that the questionnaire used for data collection reveals the important factors for determining course content management system success at the University of Botswana.

Gable, Sadera and Chan (2003), presented a validated measurement model and instrument for assessing enterprise systems success from multiple perspectives among staff at all levels of 27 government agencies in the state of Queensland, Australia. The final validated study model employed 27 measures of the four

dimensions of IS Success Model: information quality, system quality, individual impact and organizational impact. The model was empirically tested with survey data gathered from 27 public sector organizations that implemented SAP R/3 in the late 1990s (SAP R/3 is the world's most-used standard business software for client/server computing. The study consisted of an exploratory inventory survey (model building) to identify the salient success dimensions and measures followed by a confirmatory weights survey, for testing model validity (model testing). Test results demonstrate the discriminating validity of the four dimensions as well as their convergence on a single higher-order phenomenon: enterprise system success (ESS).

Gable et al's. (2003) study and Chien and Tsaur's study differ considerably from this study. Gable et al's. study presents a validated measurement model and instrument for assessing enterprise systems success by extending the modified Delone and Mclean (2003) IS model. Chien and Tsaur's study followed the same trend by introducing the construct of ease of use to describe system quality thereby increasing the number of studies that extend the Delone and Mclean IS model. This study focuses on determining the success of course content management system at the University of Botswana. Just like the previous studies mentioned above, this study makes an attempt to extend and modify Delone and Mclean model by introducing support service quality, teaching and learning quality, and students' self-regulated learning to showcase how they determine success of CCMS.

Seddon and Kiew (1994) at the University of Melbourne, Australia, critically examined the meaning of four success constructs of IS success model and the relationship between them using the university's Accounting System, DAS. The study used both the conventional ordinary least square regression path analysis and structural equation modeling. The outcome was substantially similar in both cases. Three factors, system quality, information quality, and usefulness, were found to explain 75% of the variance in the overall user satisfaction measure. The empirical results also provided support for the use of the construct 'usefulness' as an IS Success measure, and of the hitherto-unreported importance of the task in user perceptions of IS usefulness.

Molla and Licker (2001) in a study at the University of Cape Town, South Africa, proposed a partial extension and respecification of the Delone and Maclean model of IS success to e-commerce systems. Customer Ecommerce Satisfaction (CES) was proposed as a dependent variable to e-commerce success

and its relationships with e-commerce system quality, content quality, use, trust and support were defined and discussed. Further research into developing, validating and empirically testing the model was proposed. The recommendation made by Molla and Licker has theoretical implications on the present study. This is because this study is an attempt to develop further Delone and Mclean's model; but not to validate or empirically test the model.

In the information system literature, Delone and Mclean's model (1992) was described as being comprehensive enough to take into account all the dimensions of information system success (Seddon, 1997; Ballantine et al, 1996). However, there are reserved opinions concerning the formation of the interactions within it and the causal interdependences among the dimensions, and /or the process position of its dimensions. To address these issues, this study adapts the updated Delone and Mclean success model where some of the reservations have been dealt with. The reservations centered on the 'use' construct which was considered to be very difficult to measure when a system is voluntary or mandatory. Delone and Mclean dealt with this issue by coming up with a modified version of the model in 2003. The "use" construct was replaced by "intention to use" arguing that an attitude is worthwhile to measure in some context. Service quality was added (e.g. IS support) as one of the important dimensions. Additionally, individual and organizational impacts were collapsed as net benefits. To compliment further the effort, this study modified the model in order to explain some of the shortfalls. A detailed explanation of this modification is contained in the theoretical framework section of the review in chapter three. Ballantine et al. (1996) pointed out the confusion about the model, questioning whether it was a model, taxonomy, or a framework. Perhaps the greatest challenge to Delone and Mclean's model came from Seddon (1997:240) who stated that "when a reader looks at Delone and Mclean model, his or her efforts to make sense of different parts of the model will frequently cause slippage from one meaning for a box or arrow to another". Seddon (1997) also objected to the perceived mix of variance and process concepts within one model.

Newman & Robey (1992) suggest that, the variance model in general means that any one of the independent variables is necessary and sufficient to cause variance in the dependent variable. By contrast, process models mean that each event in the process is necessary but not sufficient to cause the outcome. Arguing that the "use" construct causes confusion, Seddon suggested "Perceived Usefulness" to replace "use". He claimed that "Perceived Usefulness", "User Satisfaction", "Individual Impact", "Organizational Impact" and "Social Impact"- which he added to represent the impact of IS to the society, should become

an aggregated construct called' Net Benefits'. He showed the importance of clarifying who the target stakeholders are when applying the "Net Benefits" construct, due to their different interests and perspectives. Seddon suggested an additional construct to replace the use construct, but the present study substitutes the "use" construct with "intention to use" based on the suggestion by the proponents of the theory.

Bonner (1995) suggests that the System Quality dimension should include user quality. Myers et al. (1998) added two dimensions, 'Group Impact' and 'Service Quality' along with two contingency factors, 'External Environment' and 'Organizational Environment'. Ballantine et al. (1996) introduced a three- dimensional model which uses some aspects of Delone and Mclean's model, but changed it in a major way, focusing on information systems rather than information. Ishman (1996) broke Delone and Mclean's model into four levels which he called Individual Level, Dyad Level, Group Level and Organizational Level. Like Myers et al. (1998), he also added a 'Group Impact' dimension that precedes the Organizational Impact dimension in the Delone and Mclean model. Four dimensions were added to the Delone and Mclean's model by Garrity and Sanders (1995), i.e. Task Support Satisfaction, Quality of Work Life Satisfaction, Interface Satisfaction, and Decision Making Satisfaction. Woodroof and Kasper (1998) expanded each of these new dimensions into four categories, process, user satisfaction and dissatisfaction, outcome user satisfaction and dissatisfaction. In line with the addition and modification of the model, this study also added teaching and learning quality and student self-regulated learning and then modified information quality to mean content quality while service quality was changed to support service quality in Delone and Mclean model in order to determine the success of CCMS.

In responding to Seddon (1997) and other critics, Delone and Mclean (2003) revisit their original model. They suggested collapsing "Individual Impact" and "Organizational Impact", into a single construct, "Net Benefits", and stated that in applying the model the target audience should always be specified. Based on this suggestion, this study considers net benefits in the context of individual and organization impact of CCMS.

Delone and Mclean (2003) further agreed with Seddon on the confusion brought about by the mixed meaning of "Use". They recommended "Intention to Use" (ITU) to substitute" Use". However, they did not provide strong theoretical and empirical evidence to support this substitution. As a results, more theoretical

or empirical evidence is needed to add to their two propositions of the feedback loops from "Net Benefits" to" Use" and "User Satisfaction". Lastly, they recommended the addition of "Service Quality". This has been rebutted by Seddon (1997) and Van Dyke et al. (1999) on the grounds that no sufficient explanation has been provided for the inclusion of a service quality construct. Since the original Delone and Mclean (1992) IS Success Model has been criticized widely, the (2003) Delone and Mclean updated model will be adapted in this study with little modification as earlier explained to suit the context and the purpose of the study.

In adopting the model the names of some of the constructs in the model are changed; and retained, while others are added with the course content management system success construct representing the dependent variable.

2.4 Course Content Management System Quality

Quality is emerging as a key issue for information systems researchers and practitioners. The information system is often defined as a system, whether automated or manual, that comprises people, machines, and/or methods organized to collect, process, transmit and disseminate data that represent user information. Quality refers to the performance characteristics of the system under study (Seddon, 1997). System quality aims at the evaluation of its main components, i.e. system quality, data quality, information quality as well as model quality and method quality (Comyn-Wattiau and Cherfi, 2005). Von-Helen (1997) discusses the differences between software quality and information systems quality from three different viewpoints - managerial, organisational, and engineering. The objective is to highlight the true meaning of information systems quality (ISQ) by considering its role in organisations and by comparing it with software quality (SWQ). Von-Helen concludes that an understanding of the relationship between software quality and information systems quality are expected to influence the success of the system. This relates to the present study in the sense that the perception of CCMS quality by the users is expected to determine the success of the system.

Wang et al. (2007) in a study conducted in Taiwan on measuring the success of an e-learning system in an organisational context empirically revealed and emphasized the importance of a system quality variable as a determinant of the success of an e-learning system. Based on the results of their study (Wang et al, 2007) encouraged e-learning managers to include the measure of system quality in their evaluation

techniques of e-learning system success. This suggestion informed the inclusion of the course content management system quality as one of the variables of focus in this study. Models available for measuring quality are numerous and these include (.e.g. Delone and Mclean, 1992, 2003) IS success model, (Wang et al., 2007) e-learning success model, etc. Indicators identified by the literature as commonly used to measure quality include: ease of use, access, availability, reliability, accuracy, completeness, etc. In this study, indicators that are used to measure quality include: system access, system availability, attractiveness, user friendly, and ease of use.

2.5 Course Content Quality

Barron (2003) gave a report of a study conducted by the Learning on Demand (LOD) program of Consulting Business Intelligence on quality of e-learning components including content in America. The 24-question, Web-based survey, conducted with the participation of the American Society for Training and Development (ASTD) and other LOD partners involved 350 respondents, who were asked to rate the quality of various e-learning components used in their programs. Content emerged with the highest quality marks with 86%. Quality in e-learning was singled out by 81% of the respondents as learning effectiveness, 62% as learner experience and 60% as cost efficiency. Quality in this study was measured with a web-based survey and the indicators used are support from the IT department, speed of users PC, and the availability of bandwidth and interoperability of content. Barron (2003) remarked that this finding comes as a surprise, given the lower percentage overall content quality found in many online forums and industry conferences. In this study one of the objectives was to measure the quality of course content on WebCT.

Peng and Logan (2008) examined the relationships between demographic factors, content quality, and overall satisfaction with a health information website. The study provided more analytic approaches to assess how consumers converge on a health website and assesses consumer preference variables from a users' perspective. Results show that content quality strongly predicts both consumer affective evaluation and overall satisfaction. Usability predicts consumer affective evaluation, but not overall satisfaction. Content quality in this study was measured by asking the students to indicate their level of agreement with items on the quality of course content on WebCT.

Spallek et al. (2002) surveyed dental professionals on content quality assurance criteria for online courses at Bielefeld, Germany. The importance of courses being scientifically based, regularly updated, easy to navigate, have defined educational objectives, stimulate learning, created by appropriately qualified academics, and an appropriate level for the intended participants were indicated as important quality measures. These researchers concluded that content quality should always be determined from the users' perspective and not the producers. Based on this report, content quality of CCMS in this study is considered to be important and hence it is included as one of the variables to determine the success of the system. The quality of course content in this study, therefore, refers to the overall value of the content of the system to the users. This was measured by the importance of the content as perceived by users from the perspective of relevance, usefulness, completeness, currency, and accuracy. It is evident from the literature reviewed that the quality of the course content management system can only be determined by users rather than producers.

Leem and Lim (2007) examined the status of e-learning in Korean higher education institutions in order to find ways to encourage further use and development of e-learning systems. A total of 201 universities in Korea (27 national and public, 163 private, and 11 national universities of education) were examined. The surveyed respondents were 'neutral' on the question of whether the level of content quality in current e-learning was low. The result shows that respondents did not think the quality of the content was high. In fact, they said the quality of content in the national and public universities and national universities of education were lower than that in the private universities. However, there was no statistical significance in these three different types of universities, but the staff in the national and public universities were more concerned about the quality of their e-learning content in general. The issue about the quality of content on e-learning course management system is very important. This is why this study focused on the quality of course content management system at the University of Botswana.

It is clear from the review of previous survey studies that quality has been included in measuring success of an e-learning system and the variables used have include usefulness of the content, easy navigation, having defined educational objectives, learning stimulation. In the light of this, the survey method was also used to measure content quality in this study and the indicators used to capture it include relevance, ccurency, usefulness, etc. These were informed by the previous research.

2.6 Course Management Systems Use

Use in this case refers to the utilization of course content management system by the users at the University of Botswana. Morgan (2003), in a study of 740 faculty members' use of course management systems in selected US Universities, indicates that 80% were using the CMS in a hybrid manner with some face-to-face and some online instruction. Morgan asserts that 59% of professors surveyed indicated an increase in communication with students as a result of using the CMS. Morgan reports that "in the process of using these tools, many faculty members begin to rethink and restructure their courses and ultimately their teaching resulting in an accidental pedagogy and improvement in faculty teaching"(Morgan, 2003:4). These findings were largely replicated in the pilot study conducted by Devaney and Hancock (2006) in the United States of American at the District of Columbia. In this study involving 655 students from a sample of 1900, it was found that the majority (76.7%) of students had access to high speed Internet services, 87.2 % were enrolled in an online course, 94.6% were accessing course material primarily from home, and were utilizing online services with low anxiety as indicated on the anxiety subscale of the Teacher's Attitude Towards computers' questionnaire with an overall mean attitude equal to 1.58 (M = 1.568, SD = .631). While the first study was conducted among faculty staff lecturers, the second was among students. This indicates that the use of course management system is becoming popular among lecturers and students and these two have been the prominent stakeholders of CCMS. This in part informed the unit of analysis (students) for this study.

The Centre for Information Communication Technology (CITE) (2007) of the Hong Kong University conducted a survey from March to April 2007 among faculty members and students at the University to determine their experience with Course Management Systems (CCMS). The preliminary results showed that 88.0% of 8,000 students claimed they have used CMS and 12.0% claimed they never used a CCMS. The study also looked at students' CCMS use and considered other forms of technology that may be available in their learning experiences. The results show that most students have less than 1 to 2 years experience of CCMS use; and they use it on a weekly basis. The top three CCMS functions that students used most often are (i) to access course materials (ii) course announcement and (iii) submitting assignments. Among all the types of course management systems identified, WebCT attracted the highest percentage of use with 98%. Furthermore, 84% of 500 staff claimed to have used CMS and 16% never used it. The results generally show that the use of CCMS at Hong- Kong University is quite high.

The authors highlighted the strategies for enhancing the use of CCMS to include: 1) establishing support strategies according to the types of universities; 2) developing quality assurance systems for e-learning; 3) enhancing support systems for professors and learners; 4) developing knowledge sharing systems between schools and industry; 5) enhancing international collaboration for e-learning; and 6) developing and supporting e-communities of knowledge for research and education. The University of Botswana has met to a certain extent some of the strategies proposed including a substantial investment in e-learning infrastructure and training of staff. The University of Botswana WebCT report for 2007 points out that from 2003, a substantial amount of money is being spent annually on e-learning programme (UB WebCT Report, 2007).

Pituch and Yao-kueiLee (2006) conducted a study on the influence of system characteristics on e-learning use and tested alternative models that seek to explain students' intention to use course management system when used as a supplementary learning tool within a traditional class or a stand-alone distance education environment. Participants in the study consisted of postsecondary students who had completed basic computer literacy classes at a college in Taiwan and were currently enrolled in another computer course. The models integrated determinants from the well-established technology acceptance model as well as system and participant characteristics cited in the research literature (e.g. Davis, 1989; Rogers, 1995; Seddon, 1997; Delone and Mclean, 2003). Following a demonstration and the use phase of the e-learning system, data were collected from 259 college students. A structural equation modeling provided better support for a model that hypothesized stronger effects of system characteristics on e-learning system use. The implications for both researchers and practitioners include the fact that the perception of users on ease of using an e-learning might determine their intention to use such a system. The implication of these findings on this study is that the users' intention to use course content management system can enhance the use of the system. In this regard, the intention to use the course content management system is considered as one of the variables to determine the success of the system in this study.

Benson and Palaskas (2006) conducted a WebCT Vista pilot study which involved a small structured trial of the training, support, administrative and technical service in the first Semester, 2004. The study involved 15 units of study made up of 1,600 students, primarily studying on campus, at four out of the six University's Victorian campuses in Australia. An expanded trial in the second Semester involving 80 units across nine

faculties with approximately 5,500 students across all campuses (including Malaysia and South Africa) studying on campus, off campus or offshore were also involved. The study draws on two cycles of evaluation as *WebCT Vista* was introduced and piloted, highlighting the key issues that emerged from the evaluation. These issues are considered in the context of a selected model for examining the adoption and diffusion of information and communication technologies (ICTs) in higher education, with a view to analysing the outcomes of the initiative and guiding future planning. The findings indicate that the use of WebCT is increasing among both staff and students and many academic staff are now delivering their course via WebCT. The theoretical and methodological implications of these findings to the present study are that a model was advocated for examining the adoption and diffusion of information communication technology in higher education and to analyse the outcomes of the initiative; just like there is need for a model for the evaluation of WebCT CCMS success. This study was a response to this advocacy by adapting and modifying aspects of IS success model by Delone and Mclean (2003) so as to evaluate WebCT course content management system at the University of Botswana.

Lowe and Kaplan (2007) conducted a longitudinal case study to determine the use of Web-CT within an online proprietary Virtual Learning Environment (VLE). The study spanned a period of three years from 2004 when Lowe pioneered Web-CT in the School of Accountancy, University of the Witwatersrand, Johannesburg, South Africa. The study analysed the researcher's reflections upon using Web-CT, first as a learning tool to support students' development in electronic communication skills and managing their work, secondly as an administrative instrument for recording student marks, participation and attendance, and thirdly as a centralized data repository for lecture slides, extra readings, assignments and assessment criteria, and for links to relevant online journals. The focus for the research was upon a business communication course, a compulsory second year half-course for about 500 students.

The VLE used alongside the more traditional ways of delivering the course was aimed at combining and blending a range of delivery modes in order to develop good practice in teaching and learning. The Web-CT initiative within this research was contextualized to some of the related literature and complemented with semi-structured interviews, formal evaluations and written feedback from students and tutors with a particular focus on written reflections. The reports emphasize how the revised function and structure has created a value-added component of the course. Some of the problems discussed in the literature are interpreted within the environment of this research. Finally, the study acknowledges some of the shared

challenges and offers some insights into the solutions that were developed in response. These challenges include problems of logging in; lost or forgotten passwords; problems in submitting assignments; submitting the wrong files for an assignment, necessitating a submission reset; WebCT server being inaccessible arbitrarily; long download times for large files frustrating students working from home or under time constraints, etc. These have implications on the use of the system by the users in the sense that it lowers use, reduces the satisfaction level, and slows down the pace of work.

2.7 User Satisfaction and Course Content Management Systems

Ives et al. (1983) define 'User Satisfaction' as the extent to which users believe the information system available to them meets their information requirements. In this case I define users' satisfaction with CCMS as the users' belief that CCMS meets their content requirements and their overall satisfaction with the system. A research on faculty satisfaction with online teaching conducted through a large, state-wide online program, the SUNY Learning Network (SLN) at New York State University, Albany, presents fertile ground for investigations of faculty adoption of e-learning systems. More than 1,000 professors across a broad range of colleges teach using the technologies provided through the program each semester. With the assistance of the SLN instructional design and technology support staff, the program has delivered more than 3,000 online courses to more than 250,000 student enrollments since 1996. The SUNY Learning Network studies also have repeatedly found that students in online courses who reported the highest levels of interaction with their course mates also reported the highest levels of satisfaction (Fredericksen et al., 2000; Shea et al., 2001; Shea et al., 2002).

Shea, Picket and Li (2005) in a research involving 913 professors from community colleges and university centers attempt to determine potential barriers to the continued growth in adoption of online teaching in higher education. Shea et al concluded through a regression analysis that four variables were significantly associated with faculty teaching staff satisfaction and their likelihood to adopt or continue online teaching.

The IMS GLC Instructional Management System Global Learning Consortium (2007) released the latest version of its learning technology satisfaction and trends. This was based on responses from about 200 qualified leaders of Internet-supported learning initiatives in the North American Higher Education segment over 12 months. The major findings of the report reveal that categories ancillary to course management

systems (CMS), such as assessment, authoring, and digital content, scored higher in satisfaction than the course management systems category itself. Among the course management systems, eCollege, ANGEL, and Moodle scored highest in satisfaction.

Gibbons and Fearweather (2000), Clark (2002) in their different studies carried out in the US on students' use of e-learning found consistently that students were very satisfied with e-learning. Learners' satisfaction rate increased with e-learning compared to traditional learning, along with perceived ease of use, access, navigation, interactivity, and user-friendly interface design. Delone and Mclean's (1992) comprehensive review of different information system success measures concluded with a model of interrelationships between their six IS Success constructs (system quality, information quality, usage, user satisfaction, individual and organizational impact). Based on this model, Seddon and Kiew (1994) in a study at the University of Melbourne in Australia investigated an Accounting System (DAS) among those who were relatively senior clerical officers in each department or faculty office that uses the system for about 4-5 hours per week for maintaining the department's accounting records. The researchers examined critically the meaning of four of these constructs and the evidence of relationships between them. Tests were conducted using both conventional ordinary least squares regression path analysis and structural equation modeling. The empirical results provide substantial support for Delone and Mclean's model. Three factors: i.e. system quality, information quality, and usefulness, are found to explain 72% of the variance in the overall user satisfaction measure. Three factors: i.e. system quality, information quality, and a measure of the importance of the system to the user and user Involvement, are found to explain 56% of the variance in usefulness. Seddon and Kiew concluded that of the four measures studied, the best "omnibus" measure of IS success is user satisfaction.

In 2003, University of Wisconsin, Madison, implemented Learn@UW project, based on the Desire2Learn learning environment software as its centrally supported course management system. In the past five years, usage of Learn at the University of Wisconsin had steadily increased, making it one of the most frequently used enterprise applications at the institution. Overall satisfaction with Learn@UW was relatively high and has risen steadily over the years. Of the UW-Madison faculty respondents to the 2007 UW System Web-based Teaching & Learning Survey, 73% agreed or strongly agreed that their overall experience with Learn@UW was positive or very positive. This is nearly identical to the findings of the 2006 DoIT Academic Technology Survey, in which 72% of faculty members and staff surveyed reported a

positive or very positive experience with Learn@UW. Furthermore, as reported in the 2007 UW System Web-based Teaching & Learning Survey, the satisfaction level of faculty using Learn@UW at UW-Madison is slightly lower than at other UW System institutions (73% vs. 78%). The size of classes or number of semesters using Learn@UW made little to no difference in instructor satisfaction. Finally, 10% of UW-Madison's faculty respondents stated that they disagreed or strongly disagreed with the statement, "My overall experience with Learn@UW/D2L has been positive." Student satisfaction with Learn@UW is clearly on the rise. Of the students reporting in the 2007 UW-Madison Student Computing Survey that they have used Learn@UW, 77% reported positive experiences, an increase when compared with similar data from surveys conducted in 2004-2006 by DoIT Academic Technology. The reason given for the high satisfaction rates among students include their positive experience with the system and their improved performance as a result of using the system.

West et al. (2007) conducted a study on students' satisfaction with Blackboard course management system in Georgia State University in America using surveys, call-log and interview. The results revealed that instructors and students are moderately satisfied with the course management tool, only when it is stable. However, for all of the features available through the CMS, there are only four features regularly used, primarily to increase the efficient transfer of information from teacher to student. West et al.'s study discusses the benefits and challenges reported by students and lecturers. It was acknowledged that the tool has become critical to many participants' practices. When Blackboard worked without technical difficulties, most students and instructors reported being satisfied with the tool because it was convenient for them to use, easy to learn, and helpful in their studies. Sixty-six percent of the students surveyed in the winter semester (67% in fall semester) preferred that their instructors use the tool, and 73% (winter) and 75% (fall) of the students said blackboard was easy to use. Most instructors also indicated that they were comfortable with using Blackboard in their teaching, and that it was not difficult for them to use the CMS. The features of Blackboard with which instructors and students were most satisfied were the announcements, course documents, gradebook, and sometimes email features. The features with which they were most dissatisfied were the ones commonly referred to on campus as the pedagogical features: synchronous chatting tools, discussion boards and assessments, and the digital dropbox (a tool that the Instructor and Students can use to exchange files. The Digital Drop Box works by uploading a file from a disk or a computer to a depository. Files can be sent back and forth from the Instructor's Drop Box to the Drop Box of other users in the course).

The University of Missouri-St. Louis (2002) in a summary report of evaluation of MyGateway course management system stated three items related to student satisfaction with courses using MyGateway course management system. The results indicate that students who were average users (the *lower use* group) disagree with positive statements about their satisfaction with MyGateway course management classes while students in high use group agree with the question item ("I am very satisfied with this course because it used MyGateway") course management system. Just like it has been indicated in the literature, User satisfaction was shown here to be a feature for measuring success. This finding is important to this study because user satisfaction with course management system was one of the variables that was measured to determine the success of CCMS at the University of Botswana. However, establishing strategies to improve only one success variable was considered incomplete (Wang, et al. 2003). Based on this argument, the present study includes other success factors emanating from the literature to determine the success of course content management system at the University of Botswana.

Clerkin (2004) in a study conducted at Berkeley College in the US on comprehensive plan for preparing online students found that 56.8% of the students felt that it covered everything they needed to know about taking an online course. Moreover, 28.5% felt that it covered most of what they needed to know about taking an online course. Therefore, the majority of Berkeley's online students were satisfied with the course. It was further revealed that 42.9% and 52.4% felt that online degree was very helpful and helpful. Again, the majority of Berkeley's online degree students were satisfied with the orientation. The Berkeley study and its results are relevant to this study, in the sense that this study is aimed at determining how user satisfaction with course management system contributes to the success of the CCMS system.

Lasic et al. (2006) analysed and defined a range of international and global trends of higher and continuing education in the context of e-learning with particular reference to the Croatian context. Concepts of distance and blended learning are discussed with the special emphasis on its implementation at the universities educating students in the field of social sciences and humanities. The case study was based on transforming traditional learning environment (teacher-centred), to the blended learning environment (student-centred) using open-source Learning Management Systems, Moodle, at the Faculty of Humanities and Social Sciences in Zagreb, Croatia. The empirical evaluation confirmed that following the blended

project-based learning contributed to an increase in students' satisfaction and motivation to participate actively in the course.

The United Arab Emirate UAE Laptop Project (2004) conducted a questionnaire survey on its web-based learning programmes by the end of the winter semester of the academic year 2002/2003. The survey was initially aimed at evaluating the learning quality, students' satisfaction, technical reliability, and ease of use. The questionnaire was emailed to 5,740 students who had at least one Blackboard course. The number of respondents was 1,435 students (25 per cent) with completed and usable questionnaires. The survey analysis revealed that satisfaction and improvement of learning and teaching process were found to be 78.4 per cent and 70.5 per cent, respectively. The implication of this finding to the present study is based on the fact that the success of CCMS can be assumed if the users' satisfaction level on this study is reported to be as high as 78-80%.

2.8 Impact of Course Content Management Systems

Impact refers to the 'effect' or 'impression' of one thing on another. Therefore, impact here refers to the effects of CCMS on the users. Some empirical studies have shown the impact of course content management systems. For example, Schelgel (2007) investigated the intersections of teaching and learning by keeping the faculty practice and student learning visible at Indiana University, Bloomington, Indiana. The result reveals that course management systems improve student learning and provide them with a process for exploring and developing ways of learning. The learning community is made visible in ways that support intellectual and personal growth. The evidence of student learning captured can be utilized in real life and later reflected on to make evidence-based changes in teaching practices. In some other studies, students reported their perception that the use of course management system improves learning. For example, Bonnell (2004) reports that in the University of Southern Indiana, students were asked to indicate the degree to which CMS supported their learning. Overall, students perceived that the system supported their learning with a mean of 2.17 where 1= very much, 3= somewhat, and 5= not at all. Additionally, 52 percent of the students perceived that they felt their academic performance could be improved by using the CMS.

West et al. (2007) through a combination of surveys, call-log analysis, and interviews at Georgia State University, America; investigated the impact of CCMS. Findings show that the biggest impacts were gains in efficiency, convenience, and class organization and management. Many instructors felt that the Blackboard course management system was a tool that saved them in-class and out-of-class time and made teaching more convenient. Exactly half of the instructors responding to the fall survey and 41% of the winter respondents felt that CMS saves time compared with about 26% of instructors who felt Blackboard cost them more time. The majority of students also felt that using Blackboard course management system helped them to be more efficient (65% in fall semester and 57% in winter semester). Moreover, Song et al. (2003) conducted a study at the University of Georgia to gain insights into undergraduate learners' perceptions of online learning. Seventy-six (76) graduate students were surveyed to identify helpful components and perceived challenges based on their online learning experiences. Results of the study indicated that most learners agreed that course design, learner motivation, time management, and comfortableness impact the success of an online learning. In another study at the University of Georgia, students responded to the statement, "the CMS site, as a whole, was useful to my learning," on a five points scale with about 80% strongly agree to the statement (Angulo & Bruce, 1999).

A few studies have explored learners' perceptions of online learning, particularly in terms of perceived strengths and weaknesses. In a qualitative study, Petrides (2002) interviewed learners to obtain their perceptions on Web-based learning. The research context was a one-semester regularly scheduled class in a higher education setting (University of California, Los Angelis) using Web-based technology (LearningSpace) as a supplement. When interviewed, some participants indicated that they tended to think more deeply about the subject areas when responding in writing as compared to giving verbal responses. They explained that they were able to reflect continually upon each other's responses because of the public and permanent display of the discussion postings on the Web. As stated by one participant: "There is something that forces you to think more deeply about subject areas when you have to respond in writing" (Petrides, 2002:72). Another participant reiterated this sentiment, indicating that the online technology allowed more reflection than what might occur for some individuals in face-to-face classroom discussions. In Vonderwell's (2003) study, the author interviewed 22 students with regard to their perceptions of their asynchronous online learning experiences at the department of educational foundations and leadership, College of Education, University of Akron, United States of America. Some participants expressed that the asynchronous environment allowed them to write carefully about their ideas. For example, one participant

stated: "the discussion questions were not just for writing the answers; they required reflection" (p. 86). Other research studies (e. g. Agostinho, Lafoe, and Hedberg, (1997); Grabinger and Dunlap (2000) reported similar findings to those of Petrides' (2002) and Vonderwell's (2003), reporting participants' perceptions that thoughtful and responsible comment are fostered by asynchronous online technologies.

Aldhafeeri (2006) reports a study conducted in Kuwait among public school teachers to investigate teachers' opinions of the impact of e-learning course management system on the public education system. Based on responses by 519 teachers, to a questionnaire survey consisting of 36 items, the study identified the following six educational improvement areas: 1) basic operations and computer concepts; 2) ethical and human issues; 3) productivity tools; 4) research tools; 5) problem-solving and decision-making tools; and 6) communication tools. The study showed significant correlations among the six e-learning course management system competency areas. Wentling et al. (2000) and Clark (2002) revealed that quite often e-learning is as good as, if not better than, traditional instructor-led methods such as lectures in contributing to demonstrated learning.

Harris et al. (2006) investigated the implications of conducting a large study into the impact of e-learning in further education in Glasgow, Scotland. Findings indicated that key informants were positive about the impact of e-learning on participation, retention and attainment, with a potential impact to occur by creating a sense of engagement, excitement and involvement; the personalization of the learning interface to individual needs; and by improving communication. While the technological infrastructure was thought to be generally acceptable, there was a view that there was still a need to develop teachers' skills and confidence in using e-learning across the curriculum, with implementation varying greatly between subjects and departments. Further results revealed that key informants expressed views on the potential impact of e-learning on learners, teachers, courses and institutions.

Sokolove (2007) identifies several types of online discussion boards which aim at extending collaborative learning outside the classroom. Examples included open discussion, in which students answered each other's questions, with minimal facilitation from faculty members. Other examples included discussions based on study problems posted by faculty members and a peer review of abstracts posted by students. Participation rates were high, and attitudes towards the experience were positive. Schlegel (2007) was also successful in using a course management system to foster collaborative learning. Small teams of students

developed portfolios throughout a semester. Team portfolios were made visible to the whole class through the course management system. Attributes of successful student teams were also documented.

Kingsbury (2007) demonstrated how using a course management platform would help integrate laboratory experiences into a program of anatomy and physiology. Students were able to experience virtual dissections, together with other course materials, via a course management system. Examination outcomes were positive, and the intervention met with a high degree of student acceptance. Michael (2006) emphasizes the importance of active learning strategies in general and how course management systems can facilitate their incorporation into a teaching program.

Chumley and Dobbie (2002) in a study conducted in the US on web-based learning revealed the printing and distribution of educational materials to be less costly than creating and disseminating e-learning content. In addition, Advanced Distributed LearningNet ADL, (Namahn, 2008) suggests that technology based instruction (of which e-learning may be considered as-part) may reduce costs of achieving a wide range of instructional objectives by 30 to 60 percent. The time to achieve instructional objectives can be reduced by 30 percent and student skills and knowledge can increase by 30 percent. The evidence from the literature review for this study confirms the fact that course content management system is capable of saving cost and time.

Despite the findings of these studies, it is surprising how little research and evaluation has been done about the impact of using CCMS. A search of several major databases in the fall of 2005 (ERIC, Education Full Text, WebSPIRS, PsychInfo and Ingenta) found 164 published articles that mentioned course management systems, Blackboard, WebCT, and Moodle CCMSs, or other similar terms in the abstracts (West et al., 2007). But of these, only 74 appeared to be data-driven articles, and most of these were quick evaluations of how a CMS impacted a particular class or context (West et al., 2007). Less than 10 studies seemed to attempt a more general evaluation of the impact from using a CMS over multiple contexts, such as multiple university departments. Two of the more extensive evaluations of CMS technologies have been completed by the Educause Center for Applied Research and published through peer review (Morgan, 2003; ECAR, 2005). In these reports, the authors have used survey research and found that there are many positive effects from using course management systems, and that the majority of instructors and students are satisfied with these technologies. Similarly, this study is an attempt to evaluate the success of

the CCMS system in a single context (University of Botswana) with multiple departments. Just like some previous studies, the survey method was used.

2.9 Benefits and Impact of CCMS at the Organisational Level

Most organisations implementing the course management system do so with a view to improving learning services, thereby achieving certain business goals (Ettinger, Holton and Blass 2005; Dublin 2004; Roffe, 2002; Young, 2002). These organisations believe that improving learning services improves business outcomes. E-learning solutions have been known to support strategic outcomes (Fry, 2001). Many educational institutions seek course content management system solutions to maintain or enhance their market position in a highly competitive environment with declining public subsidy.

A research study conducted by Skillsoft and reported by India Web Developers (2008) clearly shows the relevance effectiveness and impact of the e-learning course content management system on 15 organizations. Another related study found that cost savings and convenience emerge as the strongest drivers for corporate uptake of CCMS (Forrester Research, 2000). Similarly, Gill (2000), reported that Cisco Systems makes between 40-60 per cent cost savings using e-learning CCMS when compared with instructor-led training, and that more than 80 per cent of Cisco's technical employees currently participate in online training, with 100 per cent of the sales force being directed to online learning, saving time which is then spent directly on customers. These results have implications in the context of students' use of e-learning in the sense that using CCMS by students results in saving time.

Ansorge and Bendus, (2004) conducted a survey of 192 faculty members at the University of Nebraska at Lincoln in USA, on the benefits of course management systems on lecturers, students, and institutions. The study revealed that students' feedback on CCMS suggests that communication and convenience stand out as major benefits offered by the CMS to both students and instructors. Herrington, Gordon and Schibik (2004) conducted a survey of a national random sample of 350 academic department chairpersons. A list of institutional members of the American Association of State Colleges and Universities, and private institutions was identified. The researchers were interested in the perceived degree of utilization of course management systems over time, and the perceptions of department chairpersons regarding the degree to which they perceived that the use of course management systems led to measurable increases to either

student learning or the quality of instruction. The on-line survey was structured to collect data and information on an assessment of the degree to which CMS utilization over time had contributed to students' learning and quality of teaching. An analysis of the data consisted of simple descriptive statistics. When asked to indicate the perceived degree to which the quality of teaching and instruction had been affected over time by course management systems, the majority of respondents (51.4%) felt that CMS utilization had not affected the quality of teaching in the department (Herrington, Gordon and Schibik, 2004). The implication of this is that institutions at the early use stage of CMS may not see the benefit or impact at the beginning until after some time. Being at the early use stage of the system may be responsible for the feeling that the system has not affected the quality of teaching. However, as time passes by when more infrastructures are provided and many users begin to show interest in the system with good support services and other logistics properly put in places then users can begin to feel the benefits of the system.

Hanson (2003) in a report of a pilot study on course management system project among undergraduate students at Brandies University in America reports that students reflected their perceptions that there were learning benefits derived from using the CMS. The top seven learning benefits by percentage of the students were:

- Access to sample examinations and quizzes for learning purposes (82.2 percent).
- Access to audio/video material (78 percent).
- Sharing material among students (71 percent).
- Online readings and links to other text-based course materials (61.8 percent).
- Online discussion board (posting comments, questions and responses (49.6 percent).
- Taking examinations and quizzes online for grading purposes (46.3 percent).
- Getting assignments back from professor with comments and grade (46.2 percent).

Rivera and Rice (2002) in a study at the University of Alabama measured the extent to which IT improved learning by comparing average examinations scores of three different sections of the same business course. The first section was a traditional lecture/discussions format; the second was a web-based section; and the third was a hybrid section using a CMS, employing a mix of traditional and web-based delivery methods. The results indicated little difference in examinations scores among the sections. Gibbons and Fairweather (2000) cited several studies from the pre-Internet era, including two meta-analyses that

compared the utility of computer-based instruction to traditional teaching methods in New York, America. The studies used a variety of designs and the results obtained were mixed. However, learners' knowledge, measured by pre-post test scores, was shown to improve.

Chickering and Gamson (1987) wrote that feedback was a critical element to effective undergraduate instruction. Many instructors and students felt that CCMS made the giving of feedback more efficient, thus allowing instructors to give feedback more quickly and more often. Instructors found that when they used CCMS to communicate scores to students, there were less disagreements about mistakes, because the students were more aware of their standing in the course at all times. One instructor said, "It's a good way to keep track of grades, and make the students responsible for their own grades". Also the email feature and discussion board features allowed instructors and students to communicate outside of class time more easily, and thereby increasing the interaction and opportunity for feedback on performance.

Chizmar and Walbert (1999) in a study on Web-Based Learning Environments Guided by Principles of Good Teaching Practice conducted at the Illinois State University, America, found that the public display of online discussions made learners more careful in posting their comments. Participants indicated there were several reasons for the careful posting. One of these is the knowledge they have that it was there for the entire class, and indeed the world, to read (Chizmar & Walbert, 1999). Flexibility is another reported strength of online learning (Petrides, 2002; Schrum, 2002). Petrides (2002) states that participants reported it was easier to work in collaborative groups in an online course without rearranging everyone's schedule as one might do in a traditional face-to-face course. In addition to flexibility with time, choices related to the learning experience were also reported as positive. Participants in the Chizmar and Walbert (1999) study indicated that the ability to freely pick and choose from the menu of diverse learning experiences enabled them to find the approaches that best fit the way they learn.

Convenience is another advantage identified in the online learning literature. A good example is Poole's (2000) study on student participation in a discussion-oriented online course among undergraduate students' in a university in the United State of America. The results indicated that students participated in online discussions at times most convenient to them, such as on Saturdays. Poole also found that students mostly accessed course materials from their home computers and the place most convenient to them. Murphy and Collins (1997) in a study among students registered for a course titled "Applications of

Telecommunications in Education at Texas University found similar results in their study of communication conventions in instructional electronic chats. Participants indicated they read and responded to comments in online discussions during times convenient to them (e.g., early morning, late evening). This indicates that part of the benefits of an online learning or course content management system is convenience of participating in an online discussion.

Kvavik and Caruso (2005) in a study of students and information technology conducted at the University of Wisconsin, Madison, US asked students if IT in their courses improved their learning. More than 74 percent of the students agreed or strongly agreed. When correlated with experience with a CMS, 84.9 percent of the students who reported a very positive experience with a CMS agreed or strongly agreed that IT in courses improves their learning. The report stated further that when students were asked about the benefits and features of course management system, they responded that all but one of the features were valuable or very valuable. The most valued feature was keeping track of grades on assignments and tests, followed by access to sample examinations and quizzes while online discussion boards were valued least. Morgan (2003), in a study of 740 faculty members' use of course management system in selected universities in the US stated that 59% of professors surveyed indicated an increase in communication with students as a result of using the CCMS. Perhaps best of all, Morgan reports that "in the process of using these tools, many faculty members begin to rethink and restructure their courses and ultimately their teaching improved as a result" (Morgan, 2003:4).

A 2005 study at the University of Michigan in America on students' use of course management system, showed that out of 13 functions such as syllabus, online readings, sample quizzes/examinations, and turning in/getting assignments online were the most helpful (Berger, 2005). Moreover, learners using computer-based instruction learned more efficiently and demonstrated better retention (Morgan, 2003; US Department of Education, 2007). Reviews of the e-learning (specifically web-based learning) literature in diverse education contexts revealed similar findings (Chumley, Dobbies and Alford, 2002). Chumley et al. (2002) in Canada reviewed 76 studies from medical, nursing, and dental literature on the utility of web-based learning. In terms of learners' achievement in knowledge, web-based learning was equivalent to traditional methods. Of the two studies evaluating learning efficiency, only one demonstrates evidence for more efficient learning via web-based instruction. The reason for this may be due to the assessment method used which was multiple choice written tests. There are other reports of studies where methods like

essay test were used; it was demonstrated that learners who used Web-based learning demonstrated creativity in their response and mastery of the content (Kvavik and Caruso, 2005; Schlegel, 2007).

2.10 Challenges of Using Course Content Management Systems

West et al. (2007) through a combination of surveys, call-log analysis, and interviews at Georgia State University reports that the implementation of a CCMS has been a very large project with many other services on campus, such as the library registration. The author points out that there are bound to be some stability problems. However, it seems that the stability problems with Blackboard course management system were excessive. In the fall of 2005, 76% of the instructors said they had experienced technical problems with Blackboard, but this increased to 100% for the winter respondents.

Students seemed slightly less likely to have difficulties with Blackboard, but this number also increased in the winter semester to 90% of the students having encountered problems. The report further indicates that one of the biggest frustrations during academic year was that Blackboard was unstable in some of its most critical areas, and there were many sad cases of students' test scores being lost after a long exam, critical emails with important information being lost without any warning given to the instructor and students being locked out of courses or exams. These stability problems negated, for many, the benefits derived from using a CCMS. As reported by West et al., most students and instructors, when asked if they liked the tool, indicate only "when it's stable." Furthermore, it was reported that one instructor shared his story of how Blackboard lost 25% of his students' test scores, and several critical emails were not delivered, his relationship with his students was permanently damaged. "Whatever teacher ratings Blackboard will take 1/2 a point off, it looks like it works great, but there are glitches," he said. Consequently, he was much less motivated to use Blackboard or any computer-based educational technology in the future. "It's made me think I need to go back to the Stone Age and use hard copies. Then if I lose something, I've lost it," he said. The findings above indicate that as users of blackboard experience various challenges with the use of the system, it is expected that all other CCMS are not free from such challenges. This is why one of the objectives in this study is to determine the challenges of using CCMS.

Kim, Liu, and Bonk (2005) examined the challenges perceived by the students enrolled in an MBA program at Indiana State University, America. These researchers completed a survey with 100 second-year online

students and conducted in-person interviews with 22 students. In the study, 30 percent of the participants viewed their online learning experiences in a negative manner. In contrast, delayed feedback, difficulty in communicating with team members in different time zones, and a lack of emotional connection were perceived as challenges.

Lack of a sense of community and feelings of disconnectivity have often been expressed as challenges to online learning. Vonderwell (2003), for instance, collected data from interviews with 22 pre-service teachers, email transcripts, and asynchronous discussion transcripts to investigate learners' perspectives and experiences in an asynchronous online course at the department of educational foundations and leadership, college of education, University of Akron, United States of America. The findings of this study indicated that interactions or social involvements found in the face-to-face classroom seemed not to develop in the online context during the 10-week course duration. The students considered online communication less personal. The low level of social interactions with the instructor and delayed feedback were perceived as a challenge to their learning. Even though the students wanted to build interpersonal and social relationships with instructors and peers, the students did not seem to actively contact each other. Vonderwell argued that establishing a learning community and facilitating activities were important steps in helping students to be open to each other and starting the social interaction processes and norms necessary for successful online learning.

In a meta-analysis of the research on online learning at the Texas Technology University, Tallent-Runnels, Thomas, Lan, & Cooper (2006) ascribed shallow or low level thinking found in student as challenges to instructors' insufficient guidance in synchronous and asynchronous discussions. A report from Woods (2002) examined how instructor's personal emails sent to students in a graduate course influenced their (1) perceptions of the relationship between students and the instructor, (2) sense of community, (3) satisfaction, and (4) participation in group discussions. The study reported that no differences were found between groups in their perceived sense of community, satisfaction, or personal relationship with the instructor. These were considered as parts of the challenges to online learning and learning through e-learning course content management system.

Duemer et al. (2002:4) examined a synchronous group discussion on ethical and professional development issues for university engineering students' at Urban University, Texas Technology University. Noting the

relationship between the role of the online instructor and learning community development, this study showed that some behaviors of the facilitators (i. e., also referred to as the "authority") in synchronous discussions had a negative impact on the information of a learning community. During the discussion, it was observed that authoritative mentors "posed questions, made judgment statements about the responses, and paced the discussion". The researchers pointed out that their strategies might hinder diverse views, meaningful negotiations, social interactions and they attributed the inappropriate moderating behaviors to the lack of skills and knowledge about online teaching and learning. This therefore, calls for faculty training to prepare them for new roles in online environments in order to make them more effective.

Wang (2004) examined multicultural aspects of online learning. In this study, the researcher interviewed and observed Asian students who enrolled in synchronous online courses in the United States of America. The study reported that the students preferred face-to-face courses over online courses even though they thought that synchronous courses were useful. The researcher maintained that synchronous environments were deficient in the sense of learning community and informal interactions among course participants. Particularly, language difficulties were found to be the highest concern of the students. Language barriers kept the students from being active participants in the synchronous discussions. To promote Asian student learning in a synchronous course, several suggestions were made including: (1) regular face-to-face meetings, (2) use of slower speech than face-to-face discourses, (3) opportunities for asynchronous interaction, (4) inter-group activities, and (5) summaries of discussions at the end of such synchronous classes.

Several weaknesses related to online learning were also described in the literature. For instance, in a study by Petrides (2002) at the University of California, Los Angelis, some participants reported they felt a lack of immediacy in responses in the online context in comparison to what could typically occur in a structured face-to-face class discussion. This appears to be especially obvious in asynchronous online discussions when students have to wait for others to read and respond back to their bulletin board postings or e-mail messages. Participants in Hara and Kling's (1999) qualitative case study of a Web-based distance education course at a major U.S. university also reported the lack of immediacy in getting responses back from the instructor, and as a result they felt frustrated. Some studies indicate similar results. For example, in Vonderwell's (2003) study, it was reported that the disadvantage of an online course was the delay of immediate feedback from the instructor. One participant in the study stated that when he emailed a

question to the instructor, "it might take hours, maybe a day or so before he gets an answer back for the question" (Vonderwell, 2003:84). The perceived level of expertise is another weakness identified in online learning studies. Participants in Petrides' (2002) study report skepticism of their peers' supposed expertise. In contrast, the participants indicated they felt comfortable relying on the instructor's expertise. Lack of a sense of community and/or feelings of isolation were other challenges learners reported in their online learning experiences. Vonderwell (2003) reports that online learning participants indicate a lack of connection with the instructor especially "one-on-one" relationship with the instructor. As stated by one participant in the study, "I still feel like I know a little bit about my instructor, but not the same way that I would if I was in a class. I don't know much about her personality at all" (p. 83). Other studies found similar results. For example, Woods' (2002) conducted a study at the Regent University, Virginia Beach, Virginia. The purpose was to find out how much communication is enough in online courses. By exploring the relationship between frequency of instructor-initiated personal email and learners' perceptions of and participation in online learning; it was reported that online learners felt isolated from faculty tutors as well as other learners in the online courses they had taken. Conrad (2002) examined how online learners' experiences in the first class of an online course effected their preparation and engagement in online courses in the faculty for Master of Arts degree in communication and technology, University of Alberta in Canada. It was revealed that learners' anxiety and concern about a new learning environment negatively impacts on online experiences. The literature above indicates that there are challenges associated with online learning of which learning, through course content management system is one of them.

Nijhuis and Collis (2003) in a report at the Faculty of Educational Science and Technology of the University of Twente, Netherlands, gives an overview of all instructor contributions stored in the faculty's web system during the academic year 2000–2001. Data for an ongoing analysis of tasks that instructors must manage while using a web-based course management system was provided. In addition, the time spent by instructors was also presented. The results revealed that the amount of use of the system, the number of characters typed, and the number of attachments submitted relate directly to the time costs for instructors. In fact, capturing time-related data is difficult. As a preliminary study, three courses were followed in detail; instructors maintained logs of all use of TeleTOP course management system, and the logfiles of TeleTOP course management system were used to compare the instructors' record keeping of time expenditure to actual time logged in (Aartsen and Bouwmeester, 2001). It was found that even when the instructors tried conscientiously to record their times, there were many discrepancies when compared to the logfiles. Thus,

either the logfiles or the instructor-maintained logs, or both are not reliable. In addition, during the previous academic year (1999–2000) 32 instructors from two different faculties were interviewed and asked to estimate the time they spend on course preparation and delivery (Collis and Messing, 2001). Some of these instructors already had a year or more experience using TeleTOP; others were in their first year. The instructors admitted that they would just have to guess, but their perception was that a considerable amount of time was involved. This research is important for a number of reasons. First, the perception of the heavy time and management costs dissuades many instructors from making use of a tool such as a web-based course-management system. By providing better information as to what to expect in terms of time and management tasks and also by providing guidelines for streamlining the time and management costs, it is likely that instructors will make use of such an environment and will not waste time while doing so. Second, the manner in which the instructor manages a web-supported course has a direct impact on student appreciation of the course and also on learning results (Bloemen, 1999). If instructors do not provide a clearly and consistently organized environment, students will not only waste time and become frustrated, but they also may fail to make use of resources that are available or be unclear as to how and where they should be submitting their assignments and carrying out other course activities.

In an ECAR study in 2003 on the impact and challenges of using course management system at the University of Wisconsin, Madison, USA, it was stated that when teaching, challenges can be as basic as how to write and easily distribute information in an online environment. Lack of technology proficiency was also cited in terms of confusion when operating software, lack of awareness when the server crashes, and real or perceived course content management shortcomings. Unreliable technology can hinder the instructor's ability to monitor students' activities. Students can claim to log in when the system is down, if it does not come back up, the students can then use that as their excuse when they are late with their assignments. In another study of faculty use of course content management system at the University of Wisconsin in Madison by (Morgan, 2003), it was revealed that faculty members consistently report that their students seem to have inadequate technology proficiency and that this inhibits their course content management use. Complaints about students' technological literacy focus on their lack of technical problem solving skills and basic technology literacy such as file management. Morgan (2003) reported further that widespread problems with student access to technology certainly contribute to the perception that students have weak technology skills, and that students do not have access to enough bandwidth to be able to use the course content management system effectively and that access itself is not always reliable. The study

summarized the challenges of using the course content management system as the instructors' lack of knowledge to design courses with technology, the instructors' lack of confidence in using technology for teaching, the instructors' lack of technology knowledge, inconsistent platform, tools and software, keeping up with the instructors' demand to learn new technology, network/software crashes down during classes (Morgan, 2003:76) and so forth.

Jackson and D'Alessandro (2004) outline the planning and development of a new staff development package to facilitate the implementation of WebCT Vista at the University of Tasmania. The study explores the challenges that emerge as the University migrates from the 'comfort zone' of WebCT Campus Edition 3.8. The report highlights a number of challenges. Firstly, there is lack of flexibility: The program was designed for those new to online teaching and learning and around the basic use of the main WebCT tools, with the assumption that users would be both developing and teaching through WebCT. It did not cater for the different levels or types of engagement except for the designer, teaching assistant/instructor, designer and instructor, or for those who might only have a limited number of tools or intentions in mind. Furthermore, it did not provide for different levels of entry skills and/or understandings (e.g. of other CMSs). It was essentially a fixed, 'stand alone', 'one size fits all' course with only one entry and a planned exit point. These matters highlighted the need for a more flexible program, with multiple entry and exit points, to meet the varying immediate needs, entry skills and interests of faculty, and to avoid programs' failure because of participants' not completing particular components. The other problem is unfulfilled 'product' expectations. An integral part of the module activities was for the participants to build their own online unit, which they could then 'showcase' at the plenary workshop. In reality, few participants completed any significant work for a variety of reasons. These include the fact that they only intended to play a teaching not designer role and lack of developed content to use in building their online unit.

Song et al. (2003) conducted a study at the University of Georgia to gain insights into undergraduate learners' perceptions of online learning. Seventy-six (76) graduate students were surveyed to identify helpful components and perceived challenges based on their online learning experiences. The results of the study indicated technical problems, perceived lack of sense of community, time constraints, and the difficulty in understanding the objectives of the online courses as challenges. Suggestions for addressing the challenges were provided. These include the fact that course design should consider not only technological elements, but also the goals, objectives, and expectations for the learners. In addition, they

claimed that learners should be encouraged to develop their own learning strategies to adjust to these new learning environments. The researchers stated: "Online courses are dynamic on multiple levels: information is received in a variety of formats and different times. When learners are accustomed to learning in more static, real-time contexts, this can create significant time management issues." (p. 69).

2.11 Summary of Literature Review

From the foregoing studies on course content management system, the common variables that have been studied are online course content creation; proportion of students using online content; level of online content development; pattern of securing content; support provided for online content development; quality of content online; management of students' marks, course materials, challenges of using the system, etc. On the other hand, previous studies on the success of using the information system revealed the following, information quality, service quality, user satisfaction, use and intention to use, individual and organizational impact and net benefits common variables and constructs that have been studied to determine success of information system.

2.12 Strengths of the Literature Review

The major strengths of the literature reviewed so far have been in the area of theory used to evaluate and determine IS success using Delone and Mclean IS success model, the method adopted to carry out studies on determining the success of Information systems and the empirical values which showcase constructs identified to determine the success of the information systems. Theoretically, Delone and Mclean's IS model (old and updated) have been shown to be the commonly used IS success model adapted to determine success of information systems in IS research. However, there were other models revealed in the literature but Delone and Mclean was considered to be more adeqquate than the others. This is due to its validity and reliability, and wide application in the determination of the success of various information systems. Empirical literature on the success of information system evaluation studies shows that most of the variables and constructs that have been examined and studied relate much to Delone and Mclean information system success model.

Methodologically, literature has shown that the most common method used to carry out studies to determine information system success has been the survey technique. This informs the choice of survey

methods used in this study. Moreover, empirical findings from the literature have revealed common constructs used to determine the success of IS as system quality, information quality, service quality, intention to use/use, user satisfaction, individual and organizational impact and net benefits.

The related variables identified from the literature were extracted and modified to define a framework/model on which this study was anchored to determine the success of the course content management system at the University of Botswana. The quality of empirical literature on this study made this possible.

The review of empirical literature on this study has provided autentic information on how to use Delone and Mclean model in the context of e-learning. Furthermore, it is the quality of information and review in this study that makes adaptation and extension of the Delone and Mclean model possible. This allowed the researcher to use the Delone and Mclean success model as a paragon to evaluate the success of WebCT course content management system at the University of Botswana and then test it in a WebCT e-learning environment in an African setting/context.

2.13 Weaknesses of the Literature Review

There is no doubt about the quality and strengths of the empirical literature for this study. It is hereby observed that none of the studies on course content management systems and information system success examined, attempted to measure the success of WebCT course content management systems using the Delone and Mclean IS success model. Furthermore, the review has so far indicated that research on course content management systems and even on information system success is concentrated in Europe, North America and Asia.

The Delone and Mclean model is a powerful model that has been widely used for studying IS success; but has been hardly applied in the context of e-learning. The existing model for studying IS success such as Delone and Mclean are based on data collected in developed world. All these models put together do not reflect the background and culture of Africa and ways of using information system.

Furthermore, the literature has revealed that an evaluation of Information Systems has mostly been conducted in the corporate world than in education setting. This study therefore, attempts to overcome these shortcomings by focusing on an educational setting in a developing country.

CHAPTER THREE
THEORETICAL FRAMEWORK

3.1. Introduction

The review of empirical literature has shown that different studies have been conducted which focus on the evaluation of information systems. It is noted that various factors are involved when evaluating IS to determine its success, such as the systems quality, information quality, service quality, use, intention to use, user satisfaction, impact and net benefits of the system. In the light of these variables, this chapter presents a discussion of the research model to evaluate the success of the WebCT course content management system at the University of Botswana. The chapter brings together the various theoretical elements, ideas, and threads identified in the empirical literature in order to help define theoretical framework/models upon which this study is anchored.

3.2. Delone and Mclean IS Success Original Model

Based on the initial work by Shannon and Weaver (1949), and by Mason (1978), Delone and Mclean's model (1992, 2003) (figures 2 and 3) became the focus of further theoretical research especially in evaluating or measuring the success of IS/IT success. In fact, the model itself became the subject of research more than a tool of measurement. Delone and Mclean (2003) suggest that Mason's adoption of the communication theory to accommodate information systems' measurements implied the need for success in measuring information communication.

Delone and Mclean produced a taxonomy of research and a model of IS/IT success. The components of the original model are system quality, information quality, user satisfaction, use, individual and organisational impact (Figure 1 in Chapter 1). The primary conclusions of the original model were (Delone & Mclean, 1992:88):

The multidimensional nature of I/S success requires a careful attention to the definition and measurement of each aspect of this dependent variable. It is important to measure the possible interactions among each

of the success dimensions in order to isolate the effect of various independent variables with one or more of these dependent success dimensions.

A selection of success dimensions and measures are contingent on the objectives and context of the empirical investigation. However, where possible, tested and proven measures have been used in this study.

Despite the multidimensional and contingent nature of IS success, an attempt is made to reduce significantly the number of different measures used to measure the success of IS so that research results can be compared and findings validated.

3.3. The Weaknesses and Challenges of the Original Model

There is no doubt about the fact that Delone and Mclean's Original IS model has contributed a lot to the evaluation of information system in IS research. However, some weaknesses of the model have been noticed by researchers. For instance, Seddon (1997) argues that Delone and Mclean have "attempted to combine both process and causal explanations of IS success in their model. Seddon proceeds further to say that after working with this model for some years, it has become apparent that the inclusion of both variance and process interpretations in their model leads to so many potentially confusing meanings" (Seddon 1997:240). He argues for the removal of 'system use' as a success variable in the causal success model, claiming that 'use' is a behavior, appropriate for inclusion in a process model but not in a causal model. He argues that 'use' must *precede* impacts and benefits, but it does not *cause* them. However, Delone and Mclean disagree with Seddon believing that system usage is an appropriate measure of success in many cases.

Pitt et al (1995) observed that "commonly used measures of IS effectiveness focus on the products rather than the services of the IS function. Thus, there is a danger that IS researchers can mis-measure or misevaluate IS success / effectiveness if they do not include in their assessment package a measure of IS service quality" (Pitt et al 1995: 173). Other researchers have agreed with this, citing the need for a service quality measure to be a part of IS success (Kettinger & Lee 1995, Li 1997, Wilkin & Hewitt 1999).

The Delone and Mclean (1992) IS Success Model is based on an integration of several research studies that used some form of system success as a dependent variable. However, based on the identified shortcomings of the 1992 version of the model by researchers, Delone and Mclean came up with a modified version in 2003. This was based on the suggestions of researchers who have made an attempt to modify the model (e. g. Seddon and Kiew, 1994; Seddon, 1997; Gable et al., 2003), etc (See Figure 2).

3.4. Updated D&M IS Success Model

Delone and Mclean updated their original success model. This was based on the contribution and changes in the role and management of information systems and the shortcoming of the original model noticed by researchers. The updated model is presented in Figure 2.

Given the difficulties in interpreting the multidimensional aspects of the use of mandatory versus voluntary, informed versus uninformed, effective versus ineffective measure. Delone and Mclean suggest an intention to use may be a worthwhile alternative measure. They explained that intention to use is an attitude, while use is a behavior. Substituting the former for the latter may resolve some of the process versus causal concerns that Seddon (1997) has raised. However, attitudes, and behavior are notoriously difficult to measure and many researchers may choose to stay with 'use' but hopefully with a more informed understanding of it (Seddon, 1997: 5). As was true in the original formulation of the D&M Model, use and user satisfaction are closely related. Use must precede user satisfaction in a *process* sense, but positive experience with use will lead to greater user satisfaction in a *causal* sense. Similarly, increased user satisfaction will lead to increased intention to use. As a result of this use and user satisfaction, certain net benefits will occur (Delone and Mclean, 2002). If the information system or service is to be continued, it is assumed that the net benefits from the perspective of the owner or sponsor of the system are positive, which will influence and reinforce subsequent use and user satisfaction. These feedback loops are still valid, however, even if the net benefits are negative. The lack of positive benefits is likely to lead to decreased use and a possible discontinuation of the system or of the IS department itself (e. g., wholesale outsourcing) (Delone and Mclean, 2002). The challenge for the researcher is to define clearly and carefully the stakeholders and context in which net benefits are to be measured.

Seddon (1997) found that Delone and Mclean's model requires a contextual variance specification. In response to this, Delone and Mclean (2003) noticed three components: the first is production, the second is use, and the third is net benefits. Delone and Mclean agreed to add a third dimension, service quality, to the two original characteristics, systems quality and information quality. Delone and Mclean, however, pointed out that it appears more parsimonious to combine individual and organizational impacts into single variable, net benefits.

As the original IS success model needed further validation, Delone and Mclean added Service Quality (e. g., IS support) as one important dimension. In addition, they added Intention to Use as an alternative measure of 'use' because an attitude is worthwhile to measure in some context. Finally, they combined Individual and Organizational Impact into one dimension, named Net Benefits; to broaden the impacts of IS to cover groups, industries and nations, depending on the context (See Figure 2 in Chapter 2).

Rai et al (2002) tested empirically and theoretically Delone and Mclean's model and Seddon's model. Both models deal with IS success, but Seddon's model treats IS Use as a behavior, not as a process leading to an individual or organizational impact as in the original model of Delone and McLean. Seddon's model focuses on the causal aspects of the interrelationships of the categories. According to Rai et al the principal difference between these two models is in the definition and placement of IS use. More information about the empirical test conducted by Rai et al has been discussed in the empirical literature. Various studies on these models have been discussed under empirical literature. The primary differences between the original and updated models of Delone/Mclean included the:

- Addition of 'service quality' to reflect the importance of service and support in successful e-commerce systems,
- Addition of 'intention to use' as a measure of user attitude, and;
- Collapsing of individual and organizational impact into a more parsimonious net benefits construct.

Delone and Mclean hypothesized that there is an interrelationship between all the six IS Success constructs. According to Delone and Mclean both system quality and information quality influence use and users' satisfaction, which in turn shape the impacts of the system on individual users and the organization.

According to Delone and Mclean (2003), the updated model is a modification of the original model. In this sense, some variables from the old model were retained while some were added. Only the added variables are discussed here.

Service quality refers to the entire quality of support provided when using an information system. The Intention to use is a measure of the likelihood a person will employ the application. It is a predictive variable for use of the system. However, only when the system use is difficult to assess can measuring the intention to use be worthwhile (Lederer, Maupin, Sena, Zhuang, 2000).

The Intention to use is the willingness to use an information system and it is expected that resources such as human effort will be consumed as the system is used. IS use might be measured in hands-on hours, hours spent analyzing reports, frequency of use, the number of users, or simply as a binary variable, namely the use or non-use (Seddon, 1997) of the system.

Net Benefit is the degree to which a user believes that the use of the system results in benefits to the user or the organization, often assuming that this results in an increase in job performance and productivity (Staple, Wang, Seddon, 2002). However, perceived system benefits not only capture user feelings but also other dimensions, such as IS effectiveness. On this note Wu and Wang (2006) suggested that it is desirable to use such a construct in an IS success measurement. This is considered a welcome development. Therefore, this study uses CCMS benefits as a measure for the success of CCMS.

Information system success is a measure of the degree to which the person evaluating the system believes that the stakeholders in whose interest the evaluation is being made is better off. Logically, if success could be measured with precision, IS Success would be equivalent to Net Benefits (Seddon, 1997).

3.5. Utilization of the Success Model

Delone and Mclean (2004) applied their updated model to organize the e-commerce success metrics identified in the literature and demonstrated how the model can be used through two case examples. In both cases, usability was seen as an important measure of System Quality leading to an increased number of visits in web sites (Use) and repeat purchases (User Satisfaction). In addition, they suggested that e-

commerce studies should include net benefits measures (e. g., incremental sales, market valuation) and not collect only surrogate measures, such as Web site hits (Use). On the other hand, to understand these net benefit results, they argue that the quality of the user's experience and the customer's usage of, and satisfaction with, the system should be measured (Delone and Mclean, 2004).

Rai et al (2002) support Delone and Mclean's observation that IS success models must be carefully specified in a given context. They also suggest that future research should examine how "IS success models perform in different contexts, including settings that range from strictly voluntary to strictly involuntary use, and recommend refinements as appropriate". Livari (2005) tested the IS success model by using a field study of a mandatory information system. The test was conducted with Oulu City Council in Finland. The council was working on the adoption of a new information system and trying to accomplish its organizational acceptance. Livari collected data with questionnaires which were given to new information system's primary users. The questionnaire was based on standard measures. System Quality was measured with six scales: flexibility of the system, integration of the system, response/turnaround time, error recovery, convenience of access, and language. Information quality was also measured with six scales: completeness, precision, accuracy, reliability, currency, and format of output. They concluded that the perceived quality of the system and perceived information quality were significant predictors of user satisfaction with the system, but they did not matter to the use of the system. User satisfaction was a strong predictor of individual impact.

Bryd et al (2006) contributed to an IS success research through the development and empirical testing of a process-oriented model of IS success that was based on the model of Delone and Mclean. They examined the influence of lower-level intangible IS and information technology (IT) benefits on higher-level financial measures. They also introduced an IS quality plan as an antecedent to the model's input variables. They supported a process-oriented view of the benefits from IS and showed how the effects of IS along a path that can lead to a better organizational performance, in their case, lower overall costs.

Wu and Wang (2006) proposed a knowledge management systems (KMS) success model. Based on an analysis of current practice of knowledge management as well as the Delone and Mclean's model, they used five dependent variables (system quality, knowledge or information quality, perceived KMS benefits,

user satisfaction, and system use) in evaluating KMS success. These variables relate to most of the variables used in this study to determine the success of the course content management system.

Lai et al (2006) attempted to extend the Delone-Mclean model by adding a new concept, 'dependability'. To test their new concept, they conducted a questionnaire survey in internationalized companies in Taiwan. In their study, Lai et al had questions that were related to Information Quality (IQ), System Quality (SQ), Dependability (DEP), Perceived Usefulness (PU), User Satisfaction (US) and Intention to Use (IU). They found that SQ had the largest total effect on DEP, PU and IU. Their findings imply that when dealing with enterprise applications, System Quality can help to build users' beliefs regarding dependability, satisfaction, and intention to use. Because 1) employees need to have the right information from the right place at the right time, 2) employees' efforts must be maximized and 3) enterprise applications must provide an integrated service to help employees complete their daily tasks despite using different systems. Dependability is a significant factor for the success of enterprise applications. Lai et al suggest that researchers need to understand the importance of dependability. The quality of a system and information quality affect the intention to use it and the users' satisfaction through dependability.

Empirical and theoretical literature suggests that different variables and factors influence the success of various information systems including system quality, information quality, services quality, user satisfaction, use/intention to use, individual and organization impact. Since the present study is an attempt to determine the success of course content management system on a contemporary information system, there is need to come up with a model that reflects some of these variables and constructs. This study adapts the generic framework of the updated Delone and Mclean Information System Success Model, and customizes it to the context of course content management systems. On this note, the next section discusses the proposed research model for this study and shows how variables are adapted and how the reviewed Delone and Mclean updated information system success model is used in this study.

3.6. Proposed Research Model for This Study

Research on assessing the evaluation of information systems has been ongoing for nearly three decades (Hussein et al, 2007). However, the scope and approach of these IS evaluation studies has varied greatly, with little consensus on measures of IS success, thus complicating the comparison of results across studies and confounding the establishment of a cumulative research tradition (Gable, Sedera and Chan,

2003). This present study adapts and extends the updated Delone and Mclean IS success model. Studies such as this evaluation of WebCT course content management systems at the University of Botswana falls within the context of information systems research. This study was done in the light of the need to search for the appropriate model to evaluate the success of course content management systems. The literature review has so far revealed variables and constructs used in evaluation of information systems. These variables are most common to the constructs of IS success in Delone and Mclean success model.

Though many studies have attempted to extend the Delone and Mclean Original IS Success Model, (e. g. Seddon, 1997), some have done so to overcome the shortcomings of Delone and Mclean use construct while, others have done so to suit the context in which their studies have been conducted. The current study attempts to adapt and extend the updated Delone and Mclean IS success model to evaluate the WebCT course content management systems at the University of Botswana. This is supported by Wu and Wang (2006) argument that, although Delone and Mclean proposed an updated conceptual IS success model, it clearly needed further validation before it could serve as a basis for the selection of appropriate IS measures. In addition, researchers have to choose several appropriate success measures based on the objectives and the phenomena under investigation, as well as consider possible relationships among the success dimensions when constructing the research model. Going by this argument, some appropriate CCMS success measures (e. g. teaching and learning quality and learners' self-regulation) was added to the updated Delone and Mclean model to capture the phenomenon under study, namely, evaluation of CCMS in an education setting/context. Teaching and learning quality was added to the constructs based on the fact that researches have proved over the years that technology enhances and improves teaching and learning (Morgan, 2003; ECAR, 2005; US Department of Education, 2007), etc. Moreover, this study was conducted in an educational setting focusing on teaching and learning. Therefore the need to include variables that reflect this setting are germane.

The perception of quality in teaching and learning by user with regard to course content management system is assumed to increase the use of the system and eventually to the success of the system. It is on this assumption that this research was intended to find out if the quality of teaching and learning in an e-learning environment could determine the success of WebCT course content management system at the University of Botswana. On the other hand, students' self-regulated learning is added, based on the observation that students utilise applications to construct more complicated meanings. However, not all

learners are able to manage their learning process and master the content at hand, especially in e-learning course content management system environments (Neiderhuser and Stoddart (2001). Thus CCMS can provide the support to guide learners in the use of the appropriate tools to help them acquire, for example, the strategic knowledge to collect and organize data and then demonstrate what they have learned (Niederhuser and Stoddart, 2001). The extent to which CCMS system makes learners to self-regulate their learning the better is its success. Therefore, students' self-regulated learning is considered critical to the measure of success in academic context. It is on this premise that student self-regulated learning is considered as one of the CCMS success constructs in this study.

Based on the updated Delone and Mclean's (2003) IS success model, a research model for this study is developed as shown in figure 3 on page 60.

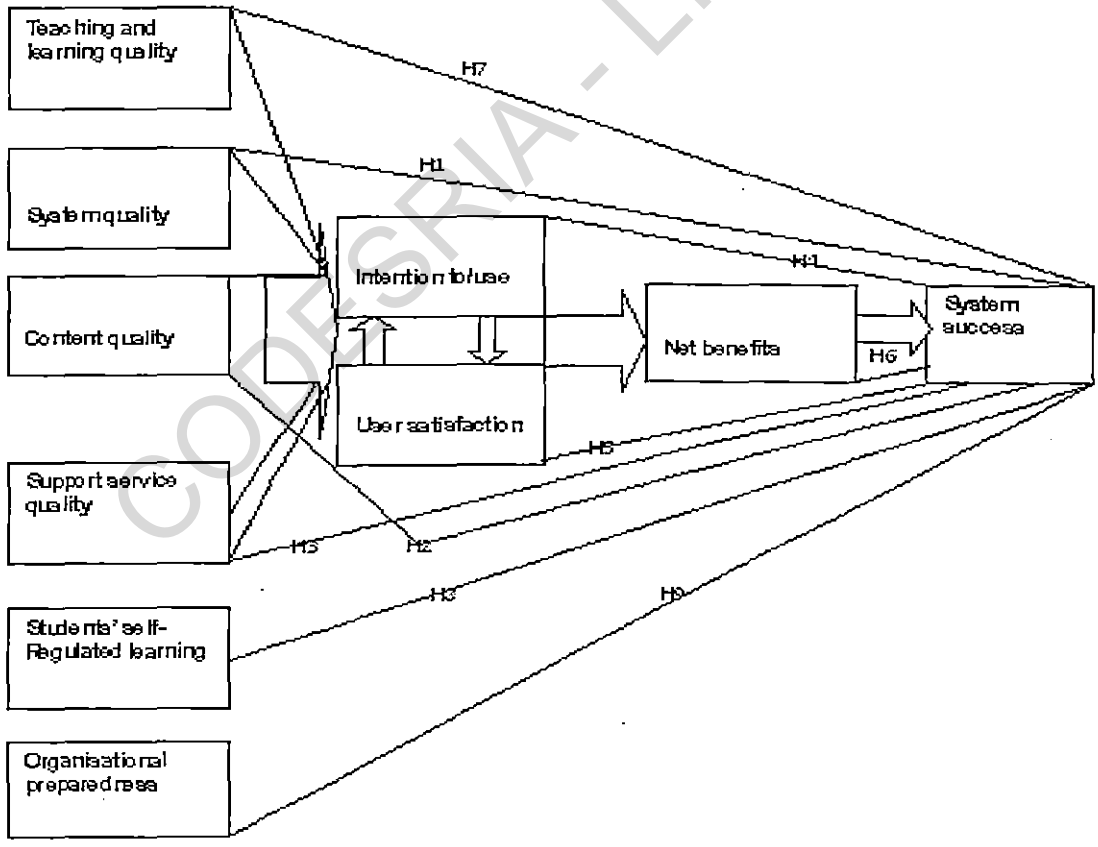

Figure 3: The research Model Used.

In this study, the independent variables are CCM system quality, Course content quality, CCM support service quality, teaching and learning quality, student self-regulated learning, intention to use/use, user satisfaction, and net benefits. The dependent variable, on the other hand, is course content management system success. In the application of IS Success Model to this study, the success constructs identified by Delone and Mclean (2003) and the additional ones by the researcher are defined below:

System quality (V1, modified variable): This is taken directly from Delone and Mclean (2003) and refers to an overall quality of hardware and software of WebCT CCMS and to the elements of a system that affect the end user in the way they interact and use a system. Therefore, a system quality in this study refers to the elements of course content management system that affect students at the University of Botswana in the way they interact and use course content management system. The quality of course content management system in this study was determined by the degree of the availability of the system on request; reliability: how CCMS is error free, response time: the time taken to respond to the user's request (e.g., download time) are examples of qualities that are valued by users of course content management system.

Course Content Quality (V2 modified variable): The course content quality in this study is defined as the judgment by (the students) of the degree to which course content management systems are provided with valuable content, with regard to the defined needs of the students. The quality of course content is measured by its timeliness, relevance of course content to students' needs, usefulness to students, accuracy, importance, availability, and completeness. Information quality in IS research refers to output that information system provides. Since the output of information system is information in IS research, in this study; content quality is used because the output of course content management system is the content it produce. Therefore content is used instead of information.

Service Quality (V3, modified variable): Service quality is considered as the overall support delivered by the CCMS service provider or support rendered to the students in the CCMS environment or platform. It applies regardless of whether this support is delivered by the IS department, CCMS support team, a new organizational unit, or outsourced to an Internet service provider (ISP).

Intention to Use/Use of Course Content Management System (V4, modified variable): This construct is concerned with issues such as the amount of hours spent on using the course content management system by students. The use of course content management system was examined using both objective and subjective measurements. Objective measurements concentrated on the behavioral aspect of the system. Common objective measurements include the amount of time used, frequency, intensity with respect to total services rendered or individual service encounters, and specific system functions used or not used. Also, the course content management system was assessed subjectively; i.e., treated as a surrogate for perceived CCMS benefits. To this end, attitudinal measurements related to technology acceptance such as perceived system usefulness, ease of use, ease of learning, convenience of access, and user support were also considered. The intention to use is known to be a strong predictor of information system use in IS research (Davies et al, 1989; Venkatesh et al, 2003) which is one of the most influential models in the information system domain explaining IS adoption and use. Therefore, a high intention to use is more likely to lead to high CCMS use, and then in turn increase net benefits and eventually success of CCMS. This variable was assessed using indicators such as motivation for use, nature of use (voluntary and mandatory), frequency of use, access and availability.

Users Satisfaction (V5): This construct is concerned with perceptions of satisfaction by the students in terms of individual outcomes on a pleasant-unpleasant continuum (Naylor, et al, 1980). User satisfaction in this study refers to the degree to which an individual user is satisfied with his or her overall use of the course content management system under consideration. Collective findings from prior IS research has suggested that user satisfaction is a strong and critical manifestation of a system's success (Delone and Mclean, 1992, 2003). User satisfaction has been extensively studied in IS research. As a result, several measurement inventories have been developed and validated. These inventories provide an adequate starting point for measuring user satisfaction in the targeted University of Botswana. In this study, this variable was measured using the modified user satisfaction scale where users (students) indicate how satisfied they were using CCMS at the University of Botswana upon a five point scale. Indicators that were used to measure satisfaction include relevance, dependability, accuracy, usefulness, adequacy and effectiveness.

Net Benefits (V6): This is an idealized comprehensive measure of the sum of all past and expected future benefits of CCMS, without including past and expected future costs, attributes to the use of course

management system (Wu and Wang, 2006). It is the valuation of the benefits of course content management systems to the students. Any use of resources, including the time taken in building course content management system at UB, learning to use, and using the course content management system. To measure Net Benefits, one had to adopt some stakeholders' (students) points of view about what is valuable and what is not about course content management system as suggested by (Seddon, 1997). Net benefits in this study was measured by the perception of users on how valuable the course content management system to them was. This was measured using a modified net benefit sub-scale used by Wang et al (2003).

Net benefits included the increased performance of individual student's learning or individual academic staff's teaching activities. For a University of Botswana student, important net benefits resulting from the use of a course content management system included improvements in the learning outcome and performance, decision-making, the quality of the (students) produced by the University though the system. It has been suggested that learning outcomes, performance and decision making should be measured using quantitative terms (Wang et al, 2003). Through the virtual service connections, students can learn and enhance their knowledge. By actively participating in virtual service connection, a student can become more visible to their peers. Net benefits are also concerned with improved performance at the University of Botswana, improved outcome/outputs, quality of graduates, cost reduction as well as increased work volume.

Learning and Teaching Quality (V7, added variable): This is concerned with an improved quality of teaching and learning as perceived by the students. This is because the core business of course content management system is learning and teaching. Therefore, in this study the teaching and learning quality will mean the improvement in the way courses are delivered, through CCMS platform and the quality of tutors' interaction with the students on the platform. This will be measured by the perception of users (students) in terms of learning and teaching improvement on a five points scale.

***Learners' Self-Regulated Learning (V8, added variable)*:** Schunk and Zimmerman (1994) defined self-regulated learning as "the process whereby students activate and sustain cognitions and affects that are systematically oriented toward an attainment of their goals". Cognitive self-regulation can be taught to students (Hwang and Liu, 1994). CCMSs should inspire, motivate, and guide students to develop self-

regulated learning cognitive skills. This means that students are guided in order to play an active role in learning, become self-organized, self-directed, independent, and actively participate in the learning process to construct their knowledge (Vovides et al, 2006). According to the constructivist learning theory, students utilise open applications to construct more complicated meanings. However, not all learners are able to manage their learning process and master the content at hand, especially in e-learning environments. This is where CCMS can provide the support to guide learners in the use of the appropriate tools to help them acquire, for example, the strategic knowledge to collect and organize data and then demonstrate what they have learned (Niederhuser and Stoddart, 2001). This construct is defined in this study as the way learners actively participate and take decisions regarding their learning.

The opportunity learners have to self-regulate their learning under CCMS can go a long way in determining the success of the system. Students' self-regulated learning is considered as one of the CCMS success factors in this study because it is critical for measuring success of a system in educational context. Therefore, with this variable, what was measured is the way learners self-regulated their learning under the course content management system. This was measured using a modified learners' self-regulated scale developed by Schunk and Zimerman (1994). This scale was developed to measure the students' self regulated learning. It was hoped students would be able to play an active role in learning, become organised, self-directed, self-independent, and actively participate in the learning process to construct their own knowledge via course content management system would determine the success of the system.

Organisational Preparedness (V 9-added variable): This denotes the level of readiness of the University of Botswana in implementing an effective e-learning WebCT CCMS. The indicators used to measure this variable are e-learning infrastructure, funding, skills and capacity building.

WebCT Course Content Management System Success (dependent variable): In this study, course content management system's success refers to the degree to which the person evaluating the system believes that the stakeholder (students) in whose interest the evaluation is being made is better off. In other words, the success CCMS is the extent to which the system supports the fulfillment of the objectives that underpin its implementation at the University of Botswana in terms of its conformity to the resources (costs and time) assigned to it and the improvement of teaching and learning. Therefore, the success of the course content management system in this study was determined by the success construct in the research

model developed for this study. This includes CCMS quality, content quality, support service quality, teaching and learning quality, student self-regulated learning, user satisfaction and net benefits of CCMS. The addition of responses to all the eight CCMS success constructs in this study amount to the measure of CCMS success score.

3.7. Hypotheses and Relationships between Dependent and Independent Variables

According to Delone and Mclean's IS success model, both the quality of the system and information quality influence use and users' satisfaction, which in turn shape the impacts of the system on individual users and the organization. This provides the basis for the first hypothesis in this study:

H1: Course content management system constructs (system quality, course content quality, service quality, teaching and learning quality, student self-regulated learning, content management system use, user satisfaction and net benefits) would not significantly determine the success of course content management systems.

Information and system quality constructs were developed from a product focus as opposed to a system, tool, or goal directed focus (Garity et al, 2005). As pointed out earlier in the literature, Information quality defines how good the system is in terms of its output as well as the success of the system. While the output of an information system is information, the output of course content management system is content. The quality of content produced by the course management system determines the level of use by the user. This construct is applicable when the use of a system is voluntary (Jennex, et al., 1998; Seddon and Kiew, 1994; Delone and Mclean, 1992:68; 2003). When usage is compulsory, the number of hours a system is used conveys little information about the system's usefulness, and success (Seddon and Kiew, 1994). Based on these postulations, it was assumed that the use of the content of CCMS based on its quality would contribute to the success of the system. This provided the basis for hypotheses 2 and 3.

H2: The quality of the course content management system would not significantly determine course content management system success.

H3: Course content quality would not determine the success of course content management system.

Service quality concerns the support and the help given to users in terms of operating CCMS. The importance of user support to the success of information system has been highlighted in many studies (e. g. Amoroso, 1988; Amoroso and Cheney, 1991; Buyukkurt and Vass, 1993; Igberia et al., 1997). Many researchers have found significant support for the relationship between personal computing success and user support (Mirani and King, 1994; Vijayarama and Ramakrishna, 1990; Bergeron et al., 1990). In the CCMS environment, the quality with regard to user support at the University of Botswana is crucial. Hence, it can be hypothesized that:

H4. Support service quality would not significantly determine the success of course content management system.

In a voluntary environment use as an IS success measure is potentially problematic (Molla and Licker, 2001). In the CCMS context, most users use the system only when they intend to. Therefore, fostering intention to use is imperative for CCMS providers. Given the difficult interpretation of the multidimensional facets of use and its potential problem as an IS success measure in the context of CCMS, intention to use is adopted instead of its use. Delone and Mclean (2003) also suggested that intention to use is an alternative measure. Based on this, it was expected that the intention to use would influence the success of the system. This provided the basis for hypothesis 5.

H5: Intention to use course content management system would not determine course content management system success.

User satisfaction is a construct that measures perceptions of the system by users. It is considered a good surrogate for measuring the success of a system when the use of the system is required, and therefore the amount of use would be equal regardless of the effectiveness of the system (Jennex et al, 1998). Yeo, Aurum, Handzic and Parkin (2002) posited that one commonly acknowledged factor in the successful implementation of any application of an information system is user satisfaction. Based on this assertion, it is expected that user satisfaction would determine course content management system success in this study. This provides the basis for hypothesis 6.

H6: User satisfaction would not determine the success of course content management system.

Although it may be more desirable to measure benefits in terms of numeric costs (e. g. cost savings, increase performance, improved learning outcomes, and time savings), such measures are often not possible because of intangible impacts and intervening variables that may influence the net benefits (McGill and Hobbs, 2003). Therefore, there has been little consensus on how net benefits should be measured objectively. Therefore, "perceived system benefits" has been adopted as an important surrogate of IS success (Wixon and Watson, 2001). In this study therefore, it was expected that perceived net benefits of CCMS would determine course management system success. This provided the basis for hypothesis 7.

H7: Perceived net benefits of CCMS would not significantly determine the course management system success.

The main objective of course, is that the content management system in the educational context is to improve teaching and learning in terms of the quality content delivery in an effective manner with students understanding of what they learn. It is expected in this study that the quality of teaching and learning will determine the success of the course content management system at the University of Botswana. This provided the basis for hypothesis 8.

H8: The quality of teaching and learning would not significantly determine the course content management system.

From the literature review, it is evident that self-regulation can be taught to students (Hwang and Liu, 1994). In this regard, the CCMS should, motivate students to develop self-regulated learning skills. This means that students are guided to play an active role in learning, become self-organized, self-directed, and independent, and actively participate in the learning process to construct their knowledge. This provides the basis for H9.

H9: Students' self-regulated learning would not significantly influence the success of the course content management system.

The educational context where the evaluation of WebCT is being carried out refers to the context. Therefore, a very important variable which reflect this setting should not be overlooked. In the light of this, adding a variable which show case how prepared is UB in terms of implementing successful e-learning is considered. Organisational preparedness refers to the availability of WebCT CCMS resources, funds, skills and capacity building and IT infrastructure provided by UB during WebCT project implementation.

Infrastructural facilities were found to be positively related with IS success and adoption (Grover, 1993). In an empirical study by (Grover, 1993), IS infrastructure was found to be one of the top predictors of IS success among several factors investigated. In a latter study, Wixon and Watson (2001) found that the technology used for development is associated with technical implementation success. Bry et al. (1995) defined IT infrastructure as the shared information services delivery based within an organization that is built around information technologies and a specific body of knowledge such as skills and experience. Using multiple case studies, the author focused on the influence IT infrastructures on the nature of the IT planning process in large, public organizations. The author used IT innovativeness and IT sophistication to operationalised the IT infrastructure and found that larger agencies with mature IT infstructure were better able to develop higher quality IT plans. In a study conducted by Zu et al. (2003), it was found that physical IT infrastructure contributed to e-business adoption in European firms. It is believe in this study that provision of sufficient and good facilities in any WebCT CCMS implementation will results in success. Similarly, resources lead to a better organizational commitment and also overcome organizational obstacles (Beath, 1991; Tait and Vessey, 1988). Sufficient resources also lead to organizational implementation success and project implementation success (Wixom and Watson, 2001). Furthermore, Ein-Dor and Segev (1978) and Wixom and Watson (2001) have found that a significant relationship between resources and IT project implementation. They observe that having sufficient funds, appropriate people with good skills had a positive effect on a project's outcome. Based on the above arguments, this study suggest that funds allocated, resources and infrastructure, skills and capacity building provided in support of WebCT CCMS system at UB may have important impacts on WebCT CCMS success. This provides the basis for H10.

H10: Organisational preparedness would not significantly influence the success of the course content management system.

Table 1: Relationships between Delone and Mclean Success Constructs and Constructs of this study				
ISSM Constructs	**Constructs/Variables equivalent in this study and definitions**	Measures	**Indicators**	**Sources/Related Research**
System Quality	Course Content Management System	CCMS-Q Items 5-9	System Availability System Access User friendly Ease of use Attractiveness & Interactiveness	Delone & Mclean, (1992, 2003). Wang et al (2007).
Information Quality	Course Content quality	CC-Q Items 10-13	Importance Relevance Usefulness Currency	Wang et al. (2007), Hussein et al.(2007). Delone & Mclean (2003).
Service Quality	Support services quality	SS-Q Items 14-16	Assistance/ Explanation Satisfactory support	Wang et al (2007) Kerttinger & Lee (1997). Wang et (2007).
Intension to Use	Intension to Use/Use of	ITU-CCMS Items 24-28	Frequency of use Voluntary/Mandatory Access	Wang et al (2007) & Seddon & Kiew (1994). Chung et al., (2008).
User satisfaction	User Satisfaction	US Items 29-34	Relevant Dependability Accuracy Usefulness Adequacy Efficiency	Doll and Torkzadeh, 1988; Hussein et al., 2007; Seddon and Kiew, 1994).
Net Benefits	Net Benefits	NB Items 35-39	Enhanced Performance Innovativeness Save cost Effectiveness/Efficiency Change	Wang et al (2007) Wu and Wang (2006).
Teaching/learning	Teaching and Learning Quality (added variable)	T&L-Q Items 17-19	Stress Free Comparability Active learning	Morgan (2003), ECAR (2005), & US Dept. of Edu. (2007).
Students' self regulated learning	Students' Self-Regulated Learning (added variable)	SSRL Items 20-23	Active participation Self-Directed Self-Independent Self-Organised Independent Decision	Pintrinch and DeGroot (1990).
Organisation Preparedness	University of Botswana Preparedness		Infrastructure Skills and capacity building Funding	Hussein et (2007).

Key: CCMS- Course Content Management System L&T-Q- Learning and Teaching Quality

CC-Q- Course Content Quality ISSM- Information System Success Measure

SS-Q- Support Service Quality NB- Net Benefits

SSRL – Students Self-Regulated learning

ITU-CCMS- Intention to Use Course Content Management System

US- User Satisfaction

3.8. Summary

According to Gable et al., (2003:578), "the development of IS success models, such as Delone and Mclean model has been an important contribution toward our improved understanding of IS management; however, several issues in IS success models remain." Looking at the issue of the success measures, Gable et al point out that while some researchers feel the various success categories (e. g., information quality vs. system quality) offer surrogate, or perhaps alternative, measures of success (Bailey and Pearson 1983; Doll and Torkzadeh 1988; Ives et al, 1983; Saarinen 1996), other researchers have suggested that they represent distinct dimensions of a complex, higher-order phenomenon (Chandler 1982; Ein-Dor and Segev 1978; King and Rodriguez 1978). An analogous example of the latter view, to which this study subscribes, is Gable's (1996) study of 150 computer system selection projects involving external consultants, wherein he tested a multidimensional model of consultant engagement success. Gable argues that these dimensions can be combined usefully to yield an overarching measure of success.

An important criterion that this current study aimed to satisfy, based on Gable's argument, is to ensure that each measure in Delone and Mclean not only addresses an important aspect of IS success but also the course content management system focus in this study. On the issue of the success of a model completeness, it is observed that only two studies have considered all six of the Delone and McLean dimensions of success (none prior to 1992) (Gable et al, 2003). The employment of only one or a subset of the dimensions of success as a surrogate for the overall success may be one of the reasons for mixed results reported in the literature regarding the antecedents of success (e. g., Barki and Hartwick 1989; Gatian 1994; Ginzberg 1981; Hawk and Aldag 1990; Ives and Olson 1984, Myers et al., 1997). Gable (1996:1177) notes that "the completeness of the model becomes critical as adding good and bad, high and low, positive and negative, or hot and cold effects may otherwise mask, neutralize, or distort results." So in this study, all the dimensions of success in the Delone and Mclean success model were employed in this study. While some were modified to suit the purpose of the study, others were added to achieve the same purpose.

On the issue of choice of IS success dimension, it was observed that most studies in this area did not elaborate on the rationale for their choice of success dimensions and success measures employed (Gable et al, 2003). The current study caters for this by providing the justification for each of the modified and additional variables in the model. Furthermore, there was subjectivity in the selection of success measure

by past researchers (Melone, 1990). And to measure fully the dimensions of success, model completeness becomes critical. Based on this factor, Gable et al. suggest that to gain a full view of success, it is critical that the complete set of success dimensions be employed, not a selected subset (Gable et al, 2003:578). In the light of this, this study employed, modified and adapted all the complete set of success constructs identified by Delone and Mclean (2003) (updated model) and further added more to it in order to reflect the evaluation of CCM system success in an educational setting (the University of Botswana).

The changing nature of the contemporary IS environment has also been identified as one of the gaps in the IS success research. This is because the transition from direct oriented use of IS to more direct, online and integrated IS has changed the way organizations produce and manage information. This modern trend is contributing to change in organizational structures and behaviours that facilitate interorganisational activities (Gable et al, 2003). This means that new measures and evaluation models are required to measure the success of IS (Isman, 1996; Sedera et al., 2003c). Yet, most IS success studies continue to rely on instruments and measures that were validated with what are now outdated information systems (Jurison, 1996:75-159; Saarinen, 1996). This is why this study identifies a contemporary IS (course content management system) in order to evaluate its success using Delone and Mclean IS Success Model as a benchmark. And instead of using already validated measures, the study adapted various contemporary IS measures identified in the literature, pre-tested them to determine their validity and reliability before implementing them in the study.

Considering the evidence above, very few of the studies mentioned in the literature use the Delone and Mclean IS success model as a benchmark to evaluate the WebCT CCMS. This is a gap that needs to be filled particularly in an educational setting. It is important to fill these gaps because research in the area of course content management system success measurement, evaluation or assessment is just beginning to gather momemntum. This is incomparable with other information system studies which have included the adoption and implementation of such technologies that are readily available in the literature (Akkermans and van-Helden, 2002; Al-Manshari et al, 2003; Esteves and Pastor, 2001; Mabert et al, 2003; van-Everdingen et al, 2000). Furthermore, there is lack of knowledge on the part of some practitioners about what to measure or assess in the context of course content management system. In other words this study is an attempt aimed at responding to the call made by researchers (e. g. Wang et al, 2007) for more studies to investigate other aspects of e-learning. Hence, this study focuses on adapting and modifying

dimensions of success in the updated Delone and Mclean IS Success Model to evaluate course content management system at the University of Botswana.

The success and effectiveness of e-learning studies (Gibbons and Fearweather, 2002, Bernard et al, 2004) have limitations, because of the variability in their scientific design (Benard et al, 2004; Letterie, 2003). Often, they have failed to define the quality of the content, and type of e-learning CCMS being analysed. In addition, most of these studies have included several different instructional and delivery methodologies, which complicate the analysis (Piemme, 1988). Most of these studies only focus on determining success of information systems in the corporate world but less on educational settings. This study therefore attempts to bridge some of these gaps in a number of ways. For example, a scientific design based on a positivist approach will be employed and the quality of the content is one of the constructs that was focused upon to determine the success of the course content management system. In addition to this, it is expected that the variables in the research model for this study would determine the success of the CCMS at the University of Botswana.

Another problem in the literature are the challenges faced by the users when using CCMS. From the review of studies conducted at the University of Botswana on the course content management system, some challenges were identified facing the users of the system. These challenges affect the students (e. g. log on problem, loss or forgotten password, etc). It is because of this problem that this study focuses mainly on the students to determine the success of CCMS at the University of Botswana.

From the review of literature on course content management systems, the variables that have been identified include online course content creation; proportion of students using online content; level of online content development; pattern of securing content; support provided for online content development; quality of content online; management of students marks and course materials, etc. However, none of the studies has made an attempt to measure the success of course content management systems in general. Moreover, research on course content management systems has been done mostly in Europe, North America and Asia. In addition, studies about e-learning in general and those that have been undertaken in Botswana (University of Botswana in particular) have largely focused on issues relating to content development and use, the proportion of content online, the number of active students and staff online, and the benefits and challenges of e-learning (Uys, 2004, Mutula, 2002, Bose, 2003; Eyitao, 2005, Lee et al,

2006). Little attention has been given to examining issues of success or failure (Drury, 1998; Gatian, 1994) which is the subject of this study.

The next chapter discusses the methodology of the study.

CHAPTER FOUR
METHODOLOGY

4.1. Introduction

The purpose of this study is to evaluate the WebCT course content management system using Delone and Mclean IS success model as a benchmark to determine its success at the University of Botswana. The outcome of this study is expected to, among other things, assist lecturers to provide a roadmap for the University of Botswana and other similar institutions to improve e-learning processes.The rationale of this study which is to evaluate WebCT management system, underpins the research methodology selected for data collection.

The information systems research has used a number of research paradigms, especially the work of Burrel and Morgan (1979), Wood-Harper (1984), Klein and Lyytinen (1984) and Iivari (1991). These studies have suggested four paradigms namely Functionalism, Interpretivism, Radical Humanism, and Radical Structuralism. These paradigms, they argue, can be analysed on four dimensions: ontology, human nature, epistemology and methodology. The functionalist paradigm assumes that society has a concrete existence and follows a certain order. These assumptions lead to the existence of an objective and value-free social science that can produce true explanatory and predictive knowledge of the reality. It assumes that: scientific theories can be assessed objectively by reference to empirical evidence; there are universal standards of science, which determine what constitutes an adequate explanation of what is observed; there are external rules and regulations governing the external world; scientists do not see any role for themselves within the phenomenon that they analyze, and the goal of the scientist is to find orders that prevail within that phenomenon (Paulden, 2005). The functionalist paradigm seeks to provide rational explanations of social affairs. It emphasizes the importance of understanding order, equilibrium and stability in society and the way in which these can be maintained. This study is relevant to the position of functionalist paradigm because scientific theory of Delone and Mclean was objectively assessed and adapted with reference to empirical evidence.

The interpretive paradigm sees the social world as a process that is created by individuals. Social reality, insofar as it exists outside the consciousness of any individual, is regarded as being a network of assumptions and inter-subjectively shared meanings. These assumptions lead to the belief that there are

shared multiple realities which are sustained and changed. The goal of interpretive researcher is to find out the orders that prevail within the phenomenon under consideration (Paulden, 2005). The interpretive paradigm believes that scientific knowledge is socially constructed and socially sustained; its significance and meaning can only be understood within its immediate social context. Interpretative research enables scientists to examine aggregate behaviour together with ethical, cultural, political and social issues. This paradigm is line with qualitative study method used in this study by trying to find out order that is prevailing from the lecturers on the WebCT CCMS under study.

The radical humanist paradigm assumes that reality is socially created and sustained. It provides critiques of the status quo. It tends to view society as anti-human. It views the process of reality creation as feeding back on itself; such that individual and society are prevented from reaching their highest potential. Radical humanists believe that everything must be grasped as a whole, because the whole dominates the parts in an all-embracing sense. The paradigm usually seek to dramatically see constrain the behavior of the targeted audience. This study is different from this paradigm because no attempt was made to dramatically constrain the behavior of the respondents that participated in the study.

The radical structuralist paradigm assumes that reality is objective and concrete. It uses scientific methods to find the order that prevails in the phenomenon. It views society as a potentially dominating force (Burrel and Morgan, 2003). This paradigm is based on four central notions. Just like functionalism this paradigm; this study used scientific methods to find to answer to some of the question raised and to collect data on the prevailing phenomenon under study which is the evaluation of the success of WebCT CCMS. Radical paradigm seeks to make major changes in the existing operation. This is in line with this study because the study aimed at the evaluating the CCMS in order to make recommendations for improvement.

In line with the position of Burrel and Morgan (1979, 2003), the current study does not attempt to use subjective assumptions, neither is it concerned with understanding subjective meanings. Furthermore, it uses research paradigms such as interpretist and positivist. It also attempts to provide a rational explanation of the phenomenon under study by adapting and modifying an existing model to explain its findings. With this in mind, the study falls under the positivist paradigm so that one cant test independent variables (CCMS success constructs) and dependent variable (CCMS success), and show relationships among them. The dependent variable in this study is the course content management systems success,

while the independent variables are: course content management system quality, content quality, support service quality, teaching and learning quality, student self-regulated learning, user satisfaction, intention to use/use and net benefits. The choice of the positivist approach is based on the assumption that this study seeks to quantify objective reality through testing a set of hypotheses.

Positivism is associated with the 1920/30s work of Moritz, Schlik, Rudolf Carnap, Otto Neurath and Hans Reichenbach, among others. It stipulates that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his instrument (Myers, 1997), which is uninfluenced by the researcher's values and assumptions (Summer and Tribe, 2004). Positivist epistemology formulates and tests formal propositions that typically portray a subject matter in terms of independent variables, dependent variables, and relationships among them. Positivism is the form of research which is mostly used by scholars of information systems (Lee, 1994). However, one is aware that researchers in IS are beginning to challenge this. Now research which uses interpretism and other approaches is increasingly being used.

A combination of the positivist approach (associated with quantitative studies) and the interpretive approach (associated with qualitative studies) is used in this study. The quantitative paradigm is applied using a survey design. The justification for using the quantitative approach is in line with positivism based on Kaplan and Duchon (1988); Kaplan and Maxwell, 2005); and Allen (1995) position. These researchers point out that the dominant approach to information technologies studies is based on a positivistic research in which researchers examine the effects of one or more variables on another. Through positivism, the researcher creates, tests, and explains the empirical reality that is being investigated. This explanation, also called the scientific theory, is made up of constructs that belong exclusively to the observing researcher as opposed to observed human subjects" (Lee, 1991:351). In this study, both positivist and interpretist approaches were used to complement one another because part of the data collected was of quantitative and the other was of qualitative nature. Creswell (1994) says both quantitative and qualitative methods can be used developmentally because the first would help inform the second while the second can provide additional information to buttress the first. Both methods were used to enhance the validity of the study findings and to increase the reliability of information gathered from the respondents.

The qualitative paradigm was used as a less dominant approach to compliment the quantitative data. In this study, it was done by sampling a small sample of lecturers who are using WebCT at the University of Botswana. The debate surrounding the use of both quantitative and qualitative research methodologies in a single research design has been intense, especially, in the social sciences and sciences where the idea was raised by Campbell and Fiske (1959) and Allen (1995). The use of the two methods is supported by the argument that in spite of the mutually exclusive nature of the two methods, aspects from different paradigms can be combined in one research design (Wildermuth, 1993). From this perspective, research methods from different paradigms can be simultaneously or consecutively used (Allen, 1995). Creswell (1994) put forward five reasons for combining methods in a single study; which are first to triangulate data in order to neutralise bias and to seek convergence of results. Second, the two approaches are seen as complementary in that, by their use, overlapping and different facets of the phenomenon may emerge. Alternatively, the approaches may be used developmentally, where the first method is used to help inform the second method. Moreover, a combined approach can be used to bring out contradictions and fresh perspectives and to add scope and breadth to a study.

This study used the Delone and Mclean Information System Success Model (ISSM) as a benchmark to evaluate the success of a WebCT course content management system at the University of Botswana. The quantitative paradigm was applied using *students at the University of Botswana* as the unit of analysis. The choice of the unit of analysis was informed by Giddens (1984) structural theory which deals with the evolution and development of groups and organisations. It considers technology (such as course content management system in this study) as an external force having impacts which are moderated by human actors (such as students in this study) and organizational contexts (such as the University of Botswana in this study). This theory views groups and organisations as systems with observable patterns of relationships and communicative interaction among people creating structures. Gidden identifies what to study in an organisation to include resources, systems, processes, technologies, human actors, and organisations. In this study the focus was on an organisation i.e. the University of Botswana, human actors; namely, students and lecturers, system- course content management system and process e. g. teaching and learning.

4.2. Research Design

This study adopted a survey research design. Babbie (1990) defines survey as a scientific social research method that involves selecting a random sample of people to answer some questions, designing a standardized questionnaire to get information about the research questions, administering the questionnaire, coding the responses in a standardised form, analyzing the results to provide descriptions about the people in the sample and finding the relationship between different responses, and generalizing the results to the population from which the sample was drawn. Scheuren (2004:9) defines a survey as a "method of gathering information from a sample of individuals". A survey design is used in this study because of its uniqueness in gathering information not available from other sources.

A survey research design has been successfully used in research similar to this one. Hussein et al (2007) used a survey method to investigate the impact of technological factors on information system success in the electronic government context in Malaysia. Lee and Kim (2006) used a survey method to examine factors affecting the implementation of Internet-based information systems among Korean companies that have adopted Internet Information system (ISS). Palm et al. (2006) also used survey method to determine users' satisfaction in a clinical information system at Georges Pompidou University Hospital in Paris, France. Garity et al (2005) used a survey method to investigate web-based information system in the context of electronic commerce in United State of America. Xiao and Dasgupta (2002) in an empirical study similarly used a survey to examined measurement of user satisfaction with web-based information system at the Mid Atlantic University in America. Dias (1998) used the same method to determine managers' motivation for using information technology in Brazil. The implication of the above is that the use of a survey method is very common when evaluating success of information system. The identification of survey method by the above studies as a common research design for evaluating the success of an information system, informed the choice of the method used in this study.

Moreover, the survey approach was chosen because it's mostly associated with the philosophical paradigm of positivism (Oates, 2007). A cross sectional form of a survey design was used in this study. This was done by collecting data at one point in time from a sample (students) selected to represent the larger population of students at the University of Botswana.

4.3. Population of the Study

A population is any group of individuals that has one or more characteristics in common and that are of interest to the researcher (Ezeani, 1998). The target population of this study consists of undergraduate students and lecturers at the University of Botswana using the course content management systems.

The following is the profile of the study population (UB WebCT Report, 2007; UB Fact and Figures, 2006/07).

-There are 16, 238 students at the University of Botswana;

-Students are distributed in 7 faculties and 42 departments;

-8,000 students were using CCMS across all faculties;

-About 258 faculty/lecturers were delivering their course via CCMS

4.4. Sample and Sampling Procedure

There are two main methods of sampling (De Vos, Strydom, Fouche and Delport, 2002:13); probability and non probability sampling. A simple random probability sampling was used to select a sample from the students' population. Generally, the sample size was determined from the total number of students of 8,000 who are users of CCMS at the University of Botswana (UB WeCT Report, 2007. The students' population distribution of WebCT CCMS per faculty was not available.

The sample selection was based on Israel's (2003) model. The model posits that given a total population of N, if ±5% is taken for precision levels where confidence level is 95% and P=.5, the sample (n) should be = X (Israel, 2003). See table 2.

Table 2: sample size for ±3%, ±5%, ±7%, ±10% Precision levels where confidence level is 95% and P=.5.				
Size of	Sample (n) for precision (e) of:			
Population	±3%	±5%	±7%	±10%
5,000	909	370	196	98
6,000	938	375	197	98
7,000	959	378	198	99
8,000	976	381	199	99
9,000	989	383	200	99
10,000	1,000	385	200	99
15,000	1,034	390	201	99

Table 1: Israel Sample Selection Table

By applying the Israel Model to this study, the total population of students enrolled for WebCT courses N= 8,000, if ±5% (e) is taken for precision levels where the confidence level is 95% and P=.5, the sample (n) = 381. From the perspective of Israel model the study sample may be more than the actual figure given by the calculation but should not be lesser than it. This justifies the 503 used as sample in this study which is more than 381. Looking at the illustration in table 2 above, there is no ±4 or ±6. This means that the sample may be more than 381 but should not be equal to 976 when ±3 is taken for precision and the population is 8000. This justified 503 respondents used as sample in this study.

The sampling frame for this study was a register containing WebCT courses and number of student users per faculty at UB and the UB WebCT 2007 Report which contained information on students who are using the course content management system at the University. It was from this report that the sample for this study was taken following Israel's (2003) model.

4.5. Sample Selection Procedure

Faculties were censured. Within each faculty, a core course was chosen from each year of study excluding year 1. **(Core courses are compulsory foundation courses which all students must take and pass before graduating from the University of Botswana).** This means that 3 core courses were chosen from each faculty. The total number of students taking each of the core courses was identified and added to give a total for each faculty. From this total, ±10% was taken for precision. The results obtained represent a sample for each faculty (See Table 5 and 6). Overall, a total of 503 students represent the sample for the study.

A total of 258 lecturers were reported teaching and delivering their courses on WebCT. Out of this figure, 22 of them who were in charge of the core courses were the respondents. Twenty (20) of these 22 lecturers agreed to be interviewed. This represents 10% of the total population of lecturers using WebCT. These 20 lecturers were interviewed in order to collect qualitative data. The lecturers were interviewed on two issues - the benefits of teaching through WebCT and the challenges they encounter using WEbCT.

4.6. Data Collection Procedure

Data was collected from the students through a survey questionnaire. The aim of the questionnaire was to ascertain how students perceive the success of CCMS. It was also to determine user satisfaction level with CCMS. The questionnaire was used to capture the data necessary to describe the success of CCMS at the University of Botswana. The questionnaire was self-administered by the researchers in respective faculty during a core course. Instruction and direction on how to respond to the items in the questionnaire were read by the researcher.

The questionnaire was administered by the researcher to the selected respondents in their respective faculties and department. Prior arrangement was made with each of the lecturers in charge of the selected core courses in each of the faculties on the administration of the questionnaire. A time table was drawn up which indicated the date and time for meeting the respondents. All the lecturers in charge of the selected courses agreed to spare the first 15 minutes of their time for the administration of the questionnaire. The researcher distributed the questionnaire to the respondents. Fifteen minutes was given for the completion

and the questionnaires were collected immediately. In all, 503 questionnaires were administered and all of them were returned representing a 100% return rate. The entire 503 questionnaires were properly filled and these were used for the analysis in the study.

A pre-test and pilot study was conducted for both the questionnaire and the interview items prior to administration. This was to ensure the consistency and clarity of the questions which resulted in the questionnaires and interview items being refined and rephrased accordingly. (Section 4.11 contains the details of the results obtained).

4.7. Techniques for Maximizing the Return Rate of the Survey Questionnaire

A survey must have a good response rate in order to produce accurate and useful results. The percentage of people who respond to a survey is called the response rate and maximizing this rate is very important in a research. The rate of return in a survey usually depends on three major factors: how important the survey is to the people who receive it; how well the survey has been designed; and how long it is. The strategies that were employed to maximize the return rate of the questionnaire include the saliency of questionnaire content, using of covering letter -giving a good example of the purpose of the study, a face-to-face administration of the questionnaire and using of a positive reinforcement.

The saliency of questionnaire content to the respondents has been found to be highly correlated to a high survey return rate (Heberlein and Baumgartner, 1978). Therefore, this study ensured that survey topics and content were highly relevant to the target population. By using a covering letter, the importance of the study and the need to return responses to the researcher were emphasized. A good explanation of the purpose of the study and what was to be learnt from it was provided (Oates, 2007). It has been pointed out that a face-to-face administration of a questionnaire usually leads to high return rate (Oates, 2007). In the light of this, the questionnaire was hand delivered and self administered to the respondents. A positive reinforcement strategy was also used such as appreciating, praising and thanking the students for using their time to respond to the questionnaire.

4.8. Techniques to Ensure Reliable and Valid Data

Ensuring reliable and valid data is very important when conducting a survey study. This is because collecting valid and reliable data is essential for a proper analysis (Heberlein and Baumgartner, 1978). Techniques to ensure that the quality of data gathered is good involves: selecting an appropriate mechanism for data collection, developing a data collection instrument and conducting a pilot test. These were achieved in this study by following the data collection procedure laid down in the study methodology. The data collection instrument i.e. questionnaire used in this study was developed and this was pilot tested with 40 students before the actual implementation of the study.

4.9. Data Collection Instruments

A questionnaire was used to gather data from the respondents in this study. The items in the questionnaire were adapted from various previous IS success measures. The design of the questionnaire was guided by the literature review, previous survey questionnaires used in similar studies, the statement of the problems, research problem and hypotheses. The forced choice was adopted to overcome the problem of 'not sure' or 'don't know' responses (Zikmund, 2003). A forced choice indicates forcing respondents to pick from the options or alternatives provided. The forced choice is used mostly in research to overcome the problem of too many neutral responses, which are common among people when given options from which to choose (Hussein et al, 2007). The questionnaire consisted of 40 items organized in ten domains/constructs, eight of which were intended to capture separate dimensions of success. In designing the questionnaire care was taken not to replicate problems encountered in previous studies (such as duplication of items). Moreover, the use of unfamiliar terminology was avoided as research shows respondents avoid such questions (Jankowska, 2004).

The choice of a questionnaire for the collection of data was based on the fact that most studies on information system success have adopted the use of questionnaire for the collection of data (Gibbons and Fearweather, 2000; Clark, 2002; Hussein et al, 2007; Gable et al., 2003), etc. Moreover, the measurement of information system evaluation has been through questionnaire scales for which either likert or semantic differential scales have been used (Chien and Tsaur, 2007; Lee and Kim, 2007; Chin and Lee, 2000; Seddon and Kiew, 1994; Ives et al., 1983).

There are several potential measuring scales for the success of e-learning system from which this study relied in developing the survey questionnaire. They include information system performance, enterprise systems success, enterprise resource planning system success, knowledge management system success, web success, e-learner satisfaction, user information satisfaction, end-user computer satisfaction, web user satisfaction, open source software system success, system use, information service quality, web quality, organizational benefits, information success in e-government (e. g., Abdala, 2007; Bailey and Pearson, 1983; Chien and Tsaur, 2007; Delone and Mclean, 1992; Dool and Torkzadeh, 1988; Gable et all, 2003; Hussein et al, 2007; Ives and Baroudi, 1983; Lohman, 2007; Rai et al,2002; Saarinen, 1996; Wang, 2004; Wang and Tang, 2003). The implication of all these is that, most of these scales were reliable and valid. This in part enhances the validity and reliability of the instrument used in this study.

The following domain constructs were included in the questionnaire:
Criterion measure (Success of CCMS), System quality, Content quality, Service quality: learning and Teaching quality, Self- Regulated Learning, Intention to use/ System use, User satisfaction, Net benefits and Challenges of using WebCT CCMS. Items in the questionnaire were rated on a 4 point likert scale with end points of '4' Strongly Agree, and 1 Strongly Disagree; the two midpoints were '3' Agree and '2' Disagree.

The survey questionnaire consisted of 4 pages containing 40 items. The questionnaire comprised two Parts, with Part 1 requiring the demographic information of the participants. These included gender, year of study, faculty, and department. Part 2 contained the items sub-dived into ten sections each containing items on each of the construct in this study.

Section A covered (items 1-4). The items covered the aspect of CCMS success at the University of Botswana.
Section B covered (items 5-9). The items in this section covered aspects of the CCMS quality.
Section C covered (items 10-13). The items in this section covered the quality of the Course Content
Section D covered (items 14-16). The items in this section covered Support Service Quality.
Section G covered (items 17-21). The items in this section covered Intention to Use/ Use of CCMS.
Section H covered (items 22-27). The items in this section covered Use satisfaction.
Section I covered (item 28-32). The items in this section covered Perceived Net benefits of CCMS.

Section E covered (items 33-35). The items in this section covered Teaching and Learning Quality. Section F covered (items 36-39). The items in this section covered Students' Self-Regulated learning. Section J. (40). There is only one item in this section and it covers challenges of using CCMS.

All items from section A-I are close-ended items while the only item in section J is open-ended (See detail in Appendix 1). A four point likert scale was used for all the cloze ended items ranging from Strongly Agree- SA; Agree- A; Disagree-D and Strongly Disagree- SD. The NS – Not Sure/Indifferent was excluded from the response choice to overcome the neutral and don't know responses (Hussien et al, 2007); and moreover to avoid the distortion of results. The questionnaire was hand distributed to the participants. The questionnaire was pre-tested on sub-part of the envisage population to ascertain the validity and reliability of its items. It was assumed that since most questions were based on previous empirical studies, they had already been validated.

4.9.1. Interviews Questions

In addition to the use of a questionnaire described above, an interview was carried out to gather detailed and in-depth information from academic staff on how the WebCT CCM system has affected the quality of learning and teaching, its benefits and challenges to the teaching and learning at the University of Botswana. The interview questions include:

1. Explain how you implemented your course through the WebCT course content management system.
2. What benefits have you experienced from the use of the WebCT course content management system since you have been using it to teach your course?
3. What are your general observations about using the WebCT CCMS for teaching courses?
4. What are the problems you have encountered using the WebCT course content management system?
5. What solutions would you proffer for the problems identified above?

It should be noted that some questions for the interview (Items 1, 2) were asked to confirm whether the interviewees were really delivering their course via WebCT CCMS. Other questions in the interview items

were targeted to capture data on 3 of the objectives of the study and not all. These are item 3 (which captured data on objective 6- net benefit), item 4 (which captured data on objective 7- teaching and learning) and item 5 and 6 (which captured data on research question 10-11: challenges/problems of WebCT and solutions). The responses and results of the interview are hereby reported thematically as follows:

4.10. Instrument Validity

Instrument validity is the extent to which a test instrument measures what it is expected to measure (Best and Khan, 2006), or the extent to which a questionnaire fully and unambiguously captures the underlying, unobservable construct it is intended to measure (Wang et al, 2007). To ensure the validity of the questionnaire used in this study, two experts in e-learning who have consistently used WebCT CCMS since its implementation at the University of Botswana were requested to review the questionnaire. Through their input, the instrument was modified based on the advice and suggestions of the experts. This exercise ensured the face and content validity of the instrument. Moreover, since all the questions in the questionnaire were adapted from other pre-tested tools, this in a way enhanced the validity of the instruments.

4.10.1. Content Validity

Content validity implies that the questionnaire will consider all aspects of the constructs by generating items that exhaust the domain (Churchill, 1979). This study provides a conceptual framework of CCMS bringing out the eight constructs (CCMS quality, Content quality, Support service quality, learning and teaching quality, Student self-regulated learning, Intention to use/use, user satisfaction and Net benefits) underlying the CCMS success construct in an attempt to enhance content validity. Part of the effort to ensure the content validity of the questionnaire used in this study was giving the instrument to experts. The recommendations of the experts in e-learning authenticate the relevance of the items in the questionnaire to the content of what is being measured in the study. Therefore, the procedure used in conceptualizing the WebCT evaluation questionnaire construct, generating items, and purifying the WebCT Success measures suggest that the questionnaire has a strong content validity.

4.10.2. Criterion Validity

Criterion related validity refers to concurrent validity in this study where the total scores on the CCMS instrument and scores on the valid criterion are measured at the same time (Hussein et al, 2007). Besides the overall items, the questionnaire included four criterion measures of overall success of the course content management system. These include:-

- Overall, the impact of course content management system on my institution has been positive.
- Overall, the impact of course content management system on me has been positive.
- Overall, the performance of course management system at UB is beneficial.
- Overall, the course content management system at UB is successful.

Moreover, the criterion related validity was assessed by the correlation between the total scores on the instrument (sum of the 36 items) and the measures of valid criterion (sum of the four criterion items). Usually, a positive relationship between the total score and the valid criterion of the instrument implies the capability of the instrument to measure the CCMS success construct. A higher correlation (e. g., 0.65-0.99; at a significant level of 0.000) represents an acceptable criterion-related validity of the questionnaire (Campbell and Fiske, 1959; Hussein et al, 2007). In other words, a higher correlation suggests a strong correspondence between the criterion measures and the success dimensions of the questionnaire (Gable et al, 2003; Kerlinger, 1988). In this study, the 40 items on the questionnaire had a criterion-related validity of 0.71 at significant level of 0.01, which represents an acceptable criterion validity.

4.10.3. Construct Validity

Construct validity refers to the extent to which an instrument accurately measures or represents a construct and produces an observation distinct from that produced by a measure of another construct (US Environmental Protection Agency, 2007). To achieve the construct validity of the instrument used in this study, a factor analysis was performed using a principal component method of analysis. It is expected that the results were similar to those obtained by the items of each similar construct of the original instruments where the items were adapted. All loading is expected to be in the good to excellent range (Comrey, 1971) thereby authenticating the suitability of the instrument for use in this study.

An exploratory factor analysis was performed to examine the factor structure of the 40-item questionnaire. Prior to identifying the factor structure of the WebCT CCMS success construct using factor analysis, a chi-square value of 6412.72 and significant level of 0.05 were obtained. This suggests that the inter-correlation matrix contains sufficient common variance to make factor analysis worthwhile. The responses were examined using the principal component factor analysis as the extraction technique. An iterative sequence of factor analysis was also executed. At this stage none of the items were deleted. At the end of the factor analysis procedure, 9 factors with 40 item on the questionnaire were obtained. The nine factors were interpreted as WebCT CCM System Quality, Content Quality, Support Service Quality, Intention to Use, User Satisfaction, Net Benefit, Teaching and Learning Quality, Student Self-regulated Learning and Organisational Preparedness explaining 75% of the variance in the data set. Table 3 on page 88 summarises the factor loading for the 40 item questionnaire. The significant loading of all the items on the single factor indicates unidimensionality. It was observed that no cross-loading was found. This supports the discriminant validity of the questionnaire.

4.11. Instrument Reliability

Reliability of instrument is the degree of consistency of an instrument to measure what it is expected to be measured (Best and Khan, 1998; 2006). To ensure the reliability of the questionnaire used in this study, *a* test re-tests reliability method of two weeks interval using Cronbach alpha was adopted to determine both internal consistency reliability and overall reliability of each of the factors or variables identified in the study. The correlation co-efficient of 0.76 and above suggests the questionnaire is highly reliable and can be recommended for future use (Marsh and Hocevar, 1988). Before testing the reliability of the questionnaire used in this study, it was assumed that if the reliability co-efficient falls below this figure, this would still not stop its use in the study, only that recommendation for its future use will not be made. The results demonstrate that all variables display similar results for internal consistency reliability as the original form of the instruments where the items were adapted. Reliability in this study was achieved by examining whether the same patterns or thematic constructs are replicated in different settings. Reliability was evaluated by assessing the internal consistency of the items representing each factor using Cronbach Alpha. The 40 item questionnaire had a reliability of 0.91, exceeding the minimum standard of 0.80 suggested for basic research (Wang and Tang, 2003). The reliability of each factor was as follows: Criterion Measure, r = 0.68;

System Quality, r =0.68; Content Quality, r =0.61; Service Quality, r = 0.30; Teaching and Learning Quality, r =0.60; Self-Regulated Learning, r = 0.74; Intention to Use/Usage, r = 0.53; User Satisfaction r = 0.61; Net Benefits, r = 0.75 and Challenges of Using WEbCT System r = 0.11 (See Table 5). These indicate that nearly all the sections of the items in this study are reliable for use in this study except the Service quality and Challenges sections that have a lower reliability co-efficient. However, these were used in this study but the two sections need to be revalidated in case of future use. The lower value of reliability of co-efficients of the service quality and Challenges of WebCT CCMS sections could be due to the small number of participants used during the validation of the questionnaire. The table below contains information about item purification on the questionnaire.

Table 3: Summary of Results from Scale Purification

Notation	Dimension/Item	Reliability	Factor loading of items on dimension to which they belong	Corrected item-to-total correlation
	Criterion Measure	0.68		
CM1	Overall the impact of WebCT course content management system on learning at UB has been positive		0.872	0.689
CM2	Overall the impact of WebCT course content management system on me has been positive		0.770	0.538
CM3	The performance of WebCT course management system at UB to me as student is beneficial		0.737	0.651
CM4	From my own perspective as UB student, use of WebCT CCMS is a success.		0.825	0.699
	CCM System Quality	0.68		
SQ5	WebCT course content management system		0.632	0.362
SQ6	WebCT course content management system is easy to use		0.858	0.674
SQ7	availability is very high			
SQ8	WebCT course content management system is user-friendly		0.832	0.652
SQ9	WebCT course content management system provides interactive features between users and system		0.784	0.671
	WebCT course content management system provides high-speed access to information		0.896	0.636
	Content Quality	0.61		
CQ10	I think course content on WebCT is always presented in a useful format		0.758	0.408
CQ11	WebCT course content management system provides up-to-date information		0.818	0.557
CQ12	WebCT course content management system provides course content/information that seems to be exactly what I need.		0.842	0.615
CQ13	WebCT course content management system provides content/information relevant to my discipline.		0.893	0.585
	Service Quality	0.30		
SerQ14	The WebCT CCMS system provides a proper level of on-line assistance and explanation.		0.751	0.532
SerQ15	The IT department/e-learning support staffs are always available for consultation relating to WebCT.		0.759	0.379
SerQ16	The IT department/e-learning support staffs provide satisfactory support to users using the WebCT course content management system at UB.		0.712	0.487
	Teaching and Learning Quality	0.60		
TLQ17	Learning through WebCT course content management system is stress free.		0.802	0.516
TLQ18	Learning through WebCT course content management system is easier.		0.902	0.546
TLQ19	WebCT course content management system aides active learning		0.820	0.539
	Self-Regulated Learning	0.74		
SRL20	WebCT CCMS allows me to ask myself questions to make sure I understand the material and courses I have been studying and offered.		0.879	0.421
SRL21	WebCT CCMS helps me to practice exercises/answer assignment and quiz questions.		0.786	0.650
SRL22	WebCT CCMS helps me decide on the things I will need to do to learn before offering a course.		0.871	0.384
SRL23	WebCT CCMS enables me to control my learning progress		0.828	0.732

Table 3 cont: Summary of Results from Scale Purification

Notation	Dimension/Item	Reliability	Factor loading of items on dimension to which they belong	Corrected item-to-total correlation
	Intention to use/CCMS usage	0.53		
ITU24	The frequency of my using WebCT course content management system is high		0.855	
ITU25	If WebCT course content management system were not mandatory, I would still use it.		0.899	
ITU26	I spend many hours per week with WebCT course content management system.		0.878	
ITU27	I do not spend long hours per week with WebCT course content management system.		0.950	
ITU28	Assuming I have access to WebCT CCMS, I intend to use it		0.767	
	User Satisfaction	0.61		
US29	The WebCT course content management system is efficient		0.795	0.307
US30	I find the WebCT CCM system dependable			
US31	I am satisfied with the accuracy of the WebCT CCM system		0.823	0.705
US32	The output of the WebCT CCM system(content) is presented in a useful format		0.884	0.529
US33	The WebCT system is adequate to meet the information processing needs of my area of responsibility		0.904	0.634
US34	Over-all, I am satisfied with the WebCT CCM system		0.831	0.464
	Net Benefits	0.75		
NB35	The WebCT course content management system helps me improve my learning performance		0.863	0.360
NB36	The WebCT CCMS helps me think through problems.		0.832	0.558
NB37	The WebCT CCMS enables the University to respond more quickly to change regarding teaching and learning.		0.854	0.695
NB38	The WebCT CCMS helps the University to produce better products.		0.900	0.842
NB39	The WebCT course content management system helps the University save cost relating to teaching and learning.	0.11		
	Challenges of Using WebCT CCM System		0.842	0.670
			0.857	0.533

4.12. Data Analysis

Questionnaire Analysis- Since this study employed a positivist paradigm; quantitative methods of analyzing data were employed. Data collected was subjected to a descriptive analysis involving mean, standard deviation and frequency count. Data collected was coded using the Statistical Package for Social Science (SPSS) version 16.0 for windows. Inferential statistical analysis such as ANOVA, Stepwise Multiple

Regression and Beta were also undertaken to determine the success determinant/predictive capability of each of the WebCT CCMS construct evaluation as shown in Table 4.

Table 4: Research hypotheses and how each was measured

No	Research Hypotheses	Variables	Strategy	Methods of Statistical Analysis.
1	I H1: Success constructs (system quality, Content quality, support service quality, teaching and learning quality, student self regulated learning, system use, user satisfaction and net benefits will not determine course content management system success.	Success constructs and CCMS success	Questionnaire	Pearson Multiple Correlation and Stepwise Multiple Regression.
2	H2: Course Content Management System quality Will not determine CCMS success.	CCMS quality and CCMS success	Questionnaire	Pearson Product Moment Correlation
3	H3: Course Content quality will not determine course content management system success.	Course Content quality and CCMS success	Questionnaire	Pearson Product Moment Correlation
4	H4: Support service quality would not Significantly determine course management system success.	Service quality and CMS success	Questionnaire	Pearson Product Moment Correlation
5	H5: Intention to use/CCMS use would not determine CCMS success.	Intention to use/CCMS use and CCMS success	Questionnaire	Pearson Product Moment Correlation
6	H6: User satisfaction would not determine Course Content Management System success.	User satisfaction and CCMS success	Questionnaire	Pearson Product Moment Correlation
7	H7: Perceived net benefits of course content management system would not significantly determine course content management system success.	Net benefits: values of CMS systems to users and CMS success	Questionnaire Interview	Pearson Product Moment Correlation
8	H8: Quality of teaching and learning would not significantly determine course content management system success.	Quality of teaching and learning and CMS success	Questionnaire & Interview	Pearson Product Moment Correlation
9	H9: Students' self-regulated learning would not significantly determine course content management success.	Students' self-regulated learning and CCMS success	Questionnaire	Pearson Product Moment Correlation
10	H10. Organisational preparedness of UB would not determine the success of course content management system.	Organisational preparedness	Literature Review and Document	

From the table above the dependent variable in this study was WebCT Course Content Management System Success and the independent variables were the WebCT CCMS constructs or variables (CMS Quality, Course Content Quality, CMS Service Quality, Quality of Teaching and Learning, Students' Self-Regulated Learning, Intention to use CMS, User satisfaction and Net Benefits of CMS).

In this study, the researcher was interested in testing whether a dependent variable (CCMS Success) was related to more than one independent variable (CCMS Constructs). However, it is possible that an independent variable could obscure each other's effects. For an example, CCMS success could be a function of both system quality and content quality. The system quality may override the content quality effect, leading to a regression for content qualify. In solving this problem, a regression was performed with an independent variable and then tested whether a second independent variable is related to the residuals from this regression. This was continued with a third variable and other variables as well.

4.13. Ethical Issues

Neumann (2004) observes that ethics is an issue that is important for social researchers. Besides, it is difficult to appreciate fully the ethical tensions and dilemmas that researchers face until you actually begin to do research. The respondents were briefed on the importance of the study towards their organization as a way of giving them an opportunity to understand the aims of the study. To achieve this, a short introduction showing the purpose of the exercise and the assurance of anonymity was provided on top of the instrument. Besides, respondents were guaranteed of confidentiality of their identity and the information they provided in this study. The respondents were given a voluntary choice to participate in the study. The information given by the respondents was labeled as anonymous.

The ethical standards of research were achieved by observing the core ethical principles articulated in Belmont's report of 1979. These principles are respect for the research person, beneficence, justice and respect for the community. Respect for persons implies that the dignity of all research participants was respected in terms of making their responses confidential. Beneficence on the other hand means that the study will ensure commitment to minimizing the risks associated with research, including psychological and social risks, and maximizing the benefits that accrue to the research participants. As far as justice is concerned, research has to ensure a fair distribution of the risks and benefits resulting from the study. Besides, only people expected to benefit from the knowledge were asked to participate. Finally, respect for communities confers on the researcher an obligation to respect the values and interests of the community in which the research is being conducted and to protect the community from harm (Weijer, et al, 1999).

According to Streubert and Carpenter (1999:33), a new set of ethical considerations is applicable when conducting a research whether one is using a quantitative or qualitative approach. The first ethical principle in this study, which considers respect for person and autonomy, implies that respondents had the right to decide voluntarily if they wanted to participate in the study or to terminate their participation. To achieve this in this study, the researcher obtained an informed consent of the respondents before conducting the research. The respondents were informed about the nature of the study and what was to become of the findings once the study was completed. Respondents were informed and reminded throughout the study that their participation is voluntary.

The second and third ethical principles which consider beneficence and justice were achieved with the researcher ensuring that appropriate confidentiality was implemented. No name or department was linked to any response. The research report did not mention any respondent or department, thus, maintaining anonymity in the report.

Further ethical considerations were assured by seeking permission from appropriate government authorities to conduct the study at the University of Botswana.

4.14. Summary

This chapter has presented the methodology used to carry out the study. The methods include the design, the population, the sample selection and data collection procedures, technique for maximizing the return rate of survey, technique to ensure reliable and valid data, data collection instrument, its validity and reliability including factor analysis and scale purification, the procedure of data analysis and ethical issues in research.

CHAPTER FIVE
DATA ANALYSIS AND PRESENTATION OF FINDINGS

5.1. Introduction

The previous chapter outlined the research methodology used in this study. The purpose of the chapter was to give a description of the research procedures including the selection of the research population, the research instrument used, data collection procedure and the data analysis techniques used. This chapter analyses the data that were collected from the survey of WebCT evaluation questionnaire. The overall aim of the survey was to collect data from the students and lecturers on the evaluation of WebCT course content management system at the University of Botswana. The results of the survey are presented in a descriptive format supported by presentations of tables.

The survey was carried out from the 20th of February to March 30th 2009 at the University of Botswana. Out of the 600 questionnaires administered to the students, 503 were returned giving an 84% response rate and of the 22 lecturers in charge of the courses delivered on WebCT, only 20 accepted to be interviewed giving a 91% response rate. The two response rates of 84% and 91% achieved are considered good in a survey research (Babbie 2004:261) and one suspect that the high response rate was largely attributed to the clear instructions and informed consent of the respondents that was sought before collecting the data (See Appendix I). It was observed that there was a growing resistance on the part of the students in participating in the research when the questionnaire was administered. This was because it was the time when the students were busy doing assignments, term papers as well as preparing for their final examinations. The researcher sought the lecturers' support before approaching the students to participate in the survey.

5.2. Background of the Participants

The data presented in this section provides a summary of the major characteristics of the students that were surveyed with regard to gender distribution, age, year of study and the faculty to which they belong. The main target population was the students taking courses via WebCT at the University of Botswana. The questionnaire was directed to this set of students to ensure that the necessary information was captured

and measured accurately. The demographic characteristics of the students in this study are presented as bellow.

The students were asked to indicate their faculty. The results are shown in Table 5.

Table 5: Distribution of Respondents' by Faculty (N = 503)

Name of faculty	Frequency	Percentage %
Faculty of Business	99	19.7
Faculty of Education	89	17.7
Faculty of Engineering Technology	97	19.3
Faculty of Humanities	52	10.3
Faculty of Science	106	21.1
Faculty of Social Sciences	60	11.9
Total	**503**	**100.0**

The distribution of the students according to faculty shows that 21.1% of them were from the faculty of science, 19.7% were from the faculty of Business, 19.3% were from the Faculty of Engineering and Technology, 17.7% are from Faculty of Education, 11.9% were from the Faculty of Social Sciences and 10.3% were from the Faculty of Humanities. This data indicate that more students from the Faculty of Science participated in the study than other faculties.

Respondents were asked to indicate their department. The results are shown in table 6.

Table 6: Distribution of Respondents across Department (N = 503)

Department	Frequency	Percentage %
Accounting and Finance	76	15.1
Architecture and Planning	13	2.6
Chemistry	44	8.7
Civil Engineering	51	10.1
Educational Foundations	22	4.4
Electrical Electronics	15	3.0
Environmental Science	62	12.3
Language and Social Science Education	5	1.0
Library and Information Studies	37	7.4
Management	23	4.6
Mechanical Engineering	16	3.2
Physical and Health	58	11.5
Political and Administrative Studies	46	9.1
Population Studies	6	1.2
Primary Education	4	.8
Statistics	8	1.6
TRS	15	3.0
Urban and Regional Planning	2	.4
Total	**503**	**100.0**

The distribution of the students across departments shows that the students were distributed in18 out of 42 departments in the University of Botswana. The findings show that 15.1% of the students were from the department of Accounting and Finance. The department of Environmental Science follows with 12.3% while 11.5% were from the department of Physical and Health Education. The data reveal that 10.1% of the respondents were from the department of Mechanical Engineering, 9.1% from the department of Political

and Administrative Studies, while 8.7% and 4.4% were from the department of Chemistry and Educational Foundations respectively. None of the students who were WebCT users from each of the remaining participating departments exceeded to 4%.

Respondents were asked to indicate their year of study. The results are shown in table 7.

Table 7: Respondents Distribution by Year of Study (N = 503)

Year of Study	Frequency	Percent
Year 2	173	34.4
Year 3	124	24.7
Year 4	179	35.6
PGDE/PGD	27	5.4
Total	**503**	**100.0**

Key- PGDE/PGD = Post Graduate Diploma in Education/ Post Graduate Diploma

The students' distribution according to their year of study shows that 35.6% of them were from year 4 while 34.4% were from year 2. The data further reveal that 24.7% were from year 3 and 5.4% were post graduate diploma in education PGDE/PGD students. These findings show that there were more students who are WebCT users in year four than other years or levels of study.

Respondents were asked to indicate their gender. The results were shown in table 8.

Table 8: Respondents Distribution by Gender

Student Gender	Frequency	Percent
Male	233	46.3
Female	270	53.7
Total	**503**	**100.0**

The distribution of students using WebCT according to gender shows that there was a slight difference in the distribution along gender lines. The results in Table 8 show that 53.7% were female while 46.3% were male.

5.3. Analysis of Research Questions

This part presents the results of the survey conducted to evaluate the WebCT CCMS. The purpose was to determine the CCM system quality, content quality, support service quality, learning and teaching quality, self-regulated learning, intention to use/use, user satisfaction and net benefits of WebCT course content management system.

5.3.1. Main Research Question- How successful is WebCT course content management system at the University of Botswana?

The purpose of this question was to find out the success rate of WebCT CCMS at the University of Botswana. To answer this research question the researcher used the responses to the four items that measure the overall success evaluation of WebCT course content management system. The results are shown in Table 9.

Table 9: Evaluation of WebCT Course Content Management System Success N = 503

S/N	Criterion Measure (Success of CCMS)	SA	A	D	SD
1.	Overall the impact of WebCT course content management system on learning at UB has been positive	103 (20.5)	306 (60.8)	74 (14.7)	20 (4.0)
2.	Overall the impact of WebCT course content management system on me has been positive	95 (18.9)	299 (59.4)	81 (16.1)	28 (5.6)
3.	The performance of WebCT course management system at UB to me as student is beneficial	135 (26.8)	278 (55.3)	69 (13.7)	21 (4.2)
4.	From my own perspective as UB student, use of WebCT CCMS is a success.	94 (18.7)	264 (52.5)	108 (21.5)	37 (7.4)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results in Table 9 suggest that 81.3% of the respondents strongly agreed that the impact of WebCT course content management CCMS on learning at UB has been positive while 18.9% disagreed and strongly disagreed. Furthermore, 78.1% strongly agreed that the impact of WebCT CCMS on them as students has been positive, while 82.1% indicated that they strongly agreed and agreed from their own perspective as students that the performance of WebCT system at the University of Botswana is beneficial; while 71.2% strongly agreed that they perceived the system to have been a success at the university. Looking at the responses to the items on the overall measure of WebCT success at the University, it is clear that the number of those who strongly agreed and agreed was far more than those who disagreed and strongly disagreed. These results suggest generally that WebCT course content management system is doing well at the University of Botswana and hence the system has been a success. Having answered the main research question for this study, the results in Tables 10 to Table 19 provide answers to the specific research questions for the study.

5.3.2. Research question 2: What is the quality of WebCT course content management system to students?

The purpose of this research question was to find out how the students perceived the quality of WebCT Course Content Management (CCMS) at the University of Botswana. To answer this research question the researcher used the responses to the five items that measure the quality of WebCT course content management system. The results are shown in Table 10 below.

Table 10: Quality of WebCT Course Content Management System N = 503

S/N	WebCT Course Content Management System Quality	SA	A	D	SA
1.	WebCT Course content management system availability is very high	68 (13.5)	238 (47.3)	166 (33.0)	31 (6.2)
2.	WebCT Course content management system is easy to use	100 (19.9)	310 (61.6)	75 (14.9)	18 (3.6)
3.	WebCT Course management system is user-friendly	115 (22.9)	292 (58.0)	79 (15.7)	17 (3.4)
4.	WebCT Course content management system provides interactive Features between users and system	73 (14.5)	305 (60.6)	109 (21.7)	16 (3.2)
5.	WebCT Course content management system provides high-speed access to Information.	90 (17.9)	230 (45.7)	145 (28.8)	38 (7.6)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results in table 10 suggest that 60.2 % of the respondents strongly agreed that the systems'availability is high while 39.2% strongly disagreed. The data also show that 81.5% indicated that the system is easy to use while 18.5% strongly disagreed. Responses to WebCT course management system is user-friendly show that those who strongly agreed (80.9%) were more than those who strongly disagreed. Moreover, the results show that the system provides interactive features between users and the system with 71.1% who strongly agreed, while 24.9% strongly disagreed. Similarly, the data reveal that respondents strongly agreed that the system provides high speed access with 63.6% indicating that they strongly agreed while 36.4% strongly disagreed to the statement. It is clear from these results that respondents who strongly agreed to the measure of quality of WebCT system were more than those who disagreed and strongly disagreed. This suggest generally that the quality of WebCT to the respondents is very high.

5.3.3. Research question 3: What is the quality of WebCT Course Content Management system (CCMS) to the students?

The purpose of this question was to find out the quality of the content of the courses on WebCT CCMS at the University of Botswana. To answer this research question, the researcher used the responses to the four items that measure the quality of the WebCT course content management system. The results are shown in Table 11.

Table 11: Content Quality of Courses on WebCT CCMS (N = 503)

S/N	Content Quality	SA	A	D	SD
1.	I think course content is always presented in a useful format	85 (16.9)	288 (57.3)	112 (22.3)	18 (3.6)
2.	Course content management system provides up-to-date information	65 (12.9)	282 (56.1)	129 (25.6)	27 (5.4)
3.	Course content management system provides course Content/information that seems to be exactly what I need.	56 (11.1)	260 (51.7)	163 (32.4)	24 (4.8)
4.	Course content management system provides content/information relevant to my discipline.	72 (14.3)	317 (63.0)	98 (19.5)	16 (3.2)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results in Table 12 suggest that 74.2% strongly agreed that course content on WebCT is always presented in a useful format while 25.9% strongly disagreed. The results also suggest that 69% strongly agreed that the system provides up-to-date information to them while 31% strongly disagreed. Furthermore, the results reveal that 62.8% strongly agreed that the system provides course content that seems to be exactly what they need while 38% were indifferent to this. Moreover, 77.3% indicated that they strongly agreed that the system provides content/information that is relevant to their discipline/course of study, while 22.7 % strongly disagreed. Looking at the percentage of responses to the measure on content quality, the findings suggest the percentage of strongly agreed outnumber the percentage of strongly disagreed. This implies that the content of courses on WebCT course content management system at the University of Botswana is of a high quality. This answers the third research question for this study.

5.3.4. Research question 4: What is the quality of support services provided to students who are users of WebCT?

The purpose of this question was to find out the quality of services provided to the users of WebCT CCMS at the University of Botswana. To answer this research question, the researcher used the responses to the three items that measure the service quality of the WebCT course content management system. The results are shown in Table 12.

Table 12: Quality of Support Service (N = 503)

S/N	Service Quality	SA	A	D	SD
1.	The WebCT CCMS system provides a proper level of on-line assistance and explanation.	51 (10.1)	274 (54.5)	146 (29.0)	32 (6.4)
2.	The IT department/e-learning support staff are always available for consultation.	50 (10)	150 (29.8)	193 (38.4)	110 (21.8)
3.	The IT department/e-learning support staff provide satisfactory support to users using the WebCT course management system at UB.	57 (11.3)	200 (39.8)	157 (31.2)	89 (17.7)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results in table 12 suggest that 64.6% indicated that they strongly agreed that WebCT system provides a proper level of on-line assistance and explanation while 35.4% strongly disagreed. The data also show that 39.8% strongly agreed that the IT department / e-learning support staff are always available for consultation, while 60.1% strongly disagreed. On whether or not the IT department/ e-learning support staff provide satisfactory support to users using the WebCT system at the University, 51.1% strongly agreed while 49.9% strongly disagreed. From these results, it is clear that there is only a slight difference in the percentage of strongly agreed compared to the percentage of strongly disagreed. The result suggest that the support service is of high quality.

5.3.5. Research question 5: What is the students' intention to use the WebCT course content management system?

The purpose was to find out the students intention to use and use of the WebCT CCMS at the University of Botswana.

To answer this research question, the researcher used the responses to the five items that measure the intention to use/ use of the WebCT course content management system. The results are shown in Table 13.

Table 13: Intention to Use/Usage of WebCT CCMS (N = 503)

S/N	Intention to use/Content Management Usage	SA	A	D	SD
1.	The frequency of my using WebCT course content management system is high	87 (17.3)	198 (39.4)	162 (32.2)	56 (11.1)
2.	If WebCT course content management system was not mandatory, I would still use it.	78 (15.5)	247 (49.1)	126 (25.0)	52 (10.3)
3.	I spend many hours per week with WebCT course content management system.	55 (11.0)	155 (30.8)	219 (43.5)	74 (14.7)
4.	Assuming I have access to WebCT CCMS, I intend to use it	130 (25.9)	297 (59.0)	57 (11.3)	19 (3.8)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results in Table 13 suggest that 56.7% strongly agreed that their frequency of using WebCT course content management system is high while 43.3% indicated that they strongly disagreed. The response to the item 'If WebCT course content management system was not mandatory, I would still use it' reveals that 64.6% strongly agreed that if the system was not mandatory they would still use it; while 33.3% indicated that they strongly disagreed. Results on the item 'I spend many hours per week with the WebCT course content management system' show that 41.8% strongly agreed that they spend long hours per week on the WebCT CCMS while 48.2% strongly disagreed to the statement. Responses to the last item 'Assuming I have access to WebCT CCMS, I intend to use it' show that an overwhelming majority (84.9%) of the respondents strongly agreed that if they have access to WebCT CCMS, they they would use it while 15.1% strongly disagreed. These results suggest that the percentage of students who strongly agreed compared to strongly disagreed. On the third item in the table is very close. In spite of this, the result still confirms the fact that respondents made good use of WebCT CCMS and still have the intention of using it.

5.3.6. Research question 6: What is the level of students' satisfaction with WebCT course content management system?

To answer this research question, the researcher used the responses to the six items that measure users' satisfaction with WebCT course content management system. The purpose was to find out the level of

satisfaction of the users concerning their use of WebCT CCMS at the University of Botswana. The results are shown in Table 14.

Table 14: Users' Satisfaction and WebCT CCMS (N = 503)

S/N	User Satisfaction with CCMS	SA	A	D	SD
1.	The course content management system is efficient	88 (17.5)	285 (56.7)	102 (20.3)	28 (5.6)
2.	I find the CCM system dependable	73 (14.5)	239 (47.5)	155 (30.8)	36 (7.2)
3.	I am satisfied with the accuracy of the system	91 (18.1)	234 (46.5)	139 (27.6)	39 (7.8)
4.	The output of the system(content) is presented in a useful format	78 (15.5)	300 59.6)	100 (19.9)	25 (5.0)
5.	The system is adequate to meet the information processing needs of my area of responsibility	78 (15.5)	266 (52.9)	129 (25.6)	30 (6.0)
6.	Over-all, I am satisfied with the system	105 (20.9)	237 (47.1)	116 (23.1)	45 (8.9)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results on users' satisfaction with the WebCT system suggest that 71.2% strongly agreed that the WebCT system is efficient while 28.8% strongly disagreed. On the response to the second item, 'I find the CCM system dependable, the findings reveal that 62% strongly agreed that they find the system dependable while 38% strongly disagreed. Responses to the item 'I am satisfied with the accuracy of the system' show that 64.6% strongly agreed that they are satisfied with the accuracy of the WebCT system while 35.4% strongly disagreed. Data on the fourth item 'The output of the system (content) is presented in a useful format' reveal that 75.1% strongly agreed and agreed that the output of WebCT system is presented in a useful format while 24.9 % strongly disagreed. Also, 68.4% strongly agreed while 31.6% strongly disagreed that the WebCT system is adequate to meet the information processing needs of their area of responsibility. Overall, 68% strongly agreed that they are satisfied with the WebCT CCMS while 32 % strongly disagreed. However, this percentage is not as high as 78-80% reported in the UAE Laptop project Web based learning; but since, the 68% is far above the average (50%), it can be concluded that CCMS is a success at the University of Botswana. It is clear from these results that users are satisfied with the output of WebCT followed by its efficiency, its adequacy in meeting information processing needs of the

users and moreover its dependability. These results suggest clearly that users are generally satisfied with the WebCT course content management system at the University of Botswana thereby answering the 7th research question on the study.

5.3.6. Research question 7: What are the benefits of WebCT course content management system to students?

The purpose was to find out the benefits of WebCT CCMS to the users at the University of Botswana. To answer this research question, the researcher used the responses to the five items that measure the net benefits of WebCT course content management system. The results are shown in Table 15.

Table 15: Net Benefits and WebCT CCMS (N = 503)

S/N	Net Benefits	SA	A	D	SD
1.	The course content management system helps me improve my learning performance	116 (23.0)	275 (54.7)	87 (17.3)	25 (5.0)
2.	The CCMS helps me think through problems.	72 (14.3)	235 (46.7)	174 (34.6)	22 (4.4)
3.	The CCMS enables the University to respond more quickly to change regarding teaching and learning.	114 (22.7)	195 (38.8)	152 (30.2)	42 (8.3)
4.	The CCMS helps the University to produce better products.	103 (20.5)	221 (43.9)	130 (25.8)	54 (10.7)
5.	The course content management system helps the University save cost relating to teaching and learning.	119 (23.7)	219 (43.5)	111 (22.1)	54 (10.7)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

Results on whether the WebCT CCMS helps in improving the students' learning performance shown that 77.7% strongly agreed while 22.3% strongly disagreed. The results reveal further that 61% strongly agreed that WebCT helps them to think through problems while 39% strongly disagreed. Furthermore, results show that 61.5% strongly agreed that WebCT CCMS enables the university to respond more quickly to change regarding teaching and learning.However, 38.5% strongly disagreed, while, 64.4% strongly agreed that WebCT has helped the university to produce better products in terms of the quality of graduates. The results further show that 67.2% strongly agreed that WebCT CCMS helps the university to save costs

relating to teaching and learning. On the other hand, 32.3% strongly disagreed with the statement. It can be inferred from these findings that besides the benefits of the WebCT CCMS there are other benefits such as improvement in learning and teaching, helping students thinking through problems, facilitating quick response to change regarding teaching and learning, enhancing better products and save costs relating to teaching and learning.

5.3.7. Research question 8: What is the quality of learning through WebCT CCMS?

The purpose was to find out how teaching and learning is via WebCT CCMS at the University of Botswana. To answer this research question, the researcher used the responses to the three items that measure the quality of teaching and learning on the WebCT course content management system. The results are shown in Table 16.

Table 16: Teaching and Learning Quality and WebCT CCMS (N = 503)

S/N	Teaching and Learning Quality	SA	A	D	SD
1.	Learning through WebCT course management system is stress free.	60 (11.9)	230 (45.7)	169 (33.6)	44 (8.7)
2.	Learning through a course content management system is easier.	64 (12.7)	253 (50.3)	150 (29.8)	36 (7.2)
3.	Course content management system aides active learning	78 (15.5)	273 (54.3)	112 (22.3)	40 (8.0)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results suggest that 57.6% strongly agreed that learning through the WebCT course content management system is stress free while 42.4% strongly agreed. The results further show that 63% strongly agreed that learning though the WebCT system is easier while 37% strongly disagreed. Moreover, 69% strongly agreed that the WebCT system fosters active learning while on the other hand, 30.2% strongly disagreed. Looking at the responses to the items, it is clear that strongly agree responses to the teaching and learning quality of WebCT is greater than those of strongly disagree. This suggest that the quality of

teaching and learning through WebCT CCMS at the University of Botswana is high and of a good quality. This hereby answers the fifth research question on this study.

5.3.8. Research question 9: How does student self-regulate their learning through WebCT course content management system?

The purpose was to find out how WebCT assists the students to self-regulate their learning at the University of Botswana. To answer this research question, the researcher used the responses to the four items that measure self-regulated learning. The results are shown in Table 17.

Table 17: Students Self-Regulated Learning and WebCT CCMS (N = 503)

S/N	Self-regulated learning	SA	A	D	SD
1.	WebCT CCMS allows me to ask myself questions to make sure I understand the material and courses I have been studying and offered.	80 (15.9)	251 (49.9)	147 (29.2)	25 (4.9)
2.	WebCT CCMS helps me to practice exercises/answer assignment and quiz questions.	97 (19.3)	282 (56.1)	100 (19.9)	24 (4.8)
3.	WebCT CCMS helps me decide on the things I will need to do to learn before offering a course.	64 (12.7)	211 (41.9)	179 (35.6)	49 (9.7)
4.	WebCT CCMS enables me to control my learning progress	57 (11.4)	247 (49.1)	154 (30.6)	45 (8.9)

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results in Table 17 suggest that 65% strongly agreed that the WebCT system allows them to ask questions in order to make sure they understand the material and courses they have been studying and offered. On the other 34.2% strongly disagreed to the statement. The findings also reveal that 75.4% strongly agreed that the WebCT system helps them to answer assignment and quiz questions while 24.6% strongly disagreed. Furthermore, 54.6% strongly agreed that the WebCT helps them make decisions on things that they need to learn before offering courses on the platform, while, 45.4% strongly disagreed. In addition, the results reveal that 60.5% strongly agreed that the WebCT system enable them to monitor their learning progress while 39.5% strongly disagreed. Comparing the percentage of strongly agreed with

strongly disagree on this issue of self-regulated learning; it is suggest that the WebCT has enabled the learners to self-regulate their learning activities.

5.3.9. Research question 9: What is the organizational preparedness of UB to implement successful e-learning programme?

This research question was achieved through literature review and analysis of documents and reports. The detail is presented on page 125 under qualitative findings section 5.5.5.

5.3.10. Research question 9: What are the challenges of using WebCT course content management systems at the University of Botswana?

The purpose was to find out the challenges faced by the users of WebCT CCMS at the University of Botswana. To answer this research question, the researcher provided five challenges users usually face. The respondents were given an opportunity to add others which were not included in the list. The results of the analysis based on the Friedman Test are shown in Table 18.

Table 18: Challenges of Using WebCT CCMS (No = 503)

S/N	Challenges of using WebCT CCMM	No	Frequency	Mean	SD
1.	Access problem	503	400	1.54	.50
2.	Network/Server failure	503	366	1.29	.46
3.	Long download time for large adobe and PPT files	503	355	1.32	.47
4.	Long on problem	503	244	1.56	.50
5.	Loss or forgotten password	503	209	1.63	.48

Note: Strongly agree and agree were collapsed to strongly agree

Disagree and strongly disagree were collapsed to strongly disagree

The results in the table suggest that access as the most common problem faced by users of WebCT course content management system at the University of Botswana has a frequency Mean of 1.54 and SD of 0 .50. This is followed by network/server failure which was indicated by 366 respondents with a Mean of 1.29 and

SD 0.46. The next problem is long download time for large adobe and PPT files indicated by 355 respondents with Mean 1.32 and SD 0.47. Other results follow in this order: long on problem indicated by 244 respondents with a Mean of 1.56 and SD of 0.50 and loss or forgotten password indicated by 209 respondents with the Mean 1.63 and SD 0.48. These results clearly show that all challenges are significant and need to be dealt with. Other challenges identified by the respondents regarding their use of WebCT at the University of Botswana are: assignment submission problem, completed courses not removed from the system, course information not uploaded on time, difficulty in opening important documents, inadequate information on courses, unavailability of Information on the area of study, invalid links and lack of access outside campus, irrelevant course content on WebCT, unwillingness of IT staff to help everyday, late opening of computer labs, virus interruption, and few hours operation of computer labs in some faculties e.g. Faculty of Engineering Technology (FET), course materials not regularly updated, shortage of computers relative to students' population, and lastly, course content do contain outdated information and courses not registered by students do appear under their profile.

5.4. Hypotheses Testing

This section presents the results of the generated hypothesis tested to establish how the research model in this study can be used to evaluate WebCT CCMS success. The results are presented hypothesis by hypothesis.

5.4.1. Hypothesis 1:

The first hypothesis states that 'Course content management system success constructs (system quality, course content quality, service quality, teaching and learning quality, student self-regulated learning, content management system use, user satisfaction, and net benefits) does not significantly determine course content management systems success'.

To test this hypothesis, a stepwise multiple regression analysis was conducted. This started from finding the multiple correlations between the dependent variable (WebCT evaluation) and the independent variables (evaluation measures or factors of evaluation). The result is presented as follows.

Table 19: Descriptive Statistics and Inter-correlation Matrix between the Factors (N = 503)

	Mean	Std. Deviation	N	Ev sc	S. Qual.	C. Qual.	Ser. Qual.	T & Learn. Qual.	S.R Learn.	ITU	U. Sat.	Net Bene.
Ev. Sc.	102.4314	23.987	503	1.000								
S. Qual.	14.874	2.874	503	.464	1.000							
C. Qual.	11.169	2.315	503	.497	.588	1.000						
Service Qual.	7. 411	2.694	503	.367	.336	.418	1.000					
T& L Qual.	7.986	2.067	503	.497	.506	.525	.393	1.000				
S.R Learn.	10.451	2.472	503	.511	.331	.421	.342	.485	1.000			
ITU	13.161	2.551	503	.482	.356	.368	.273	.436	.424	1.000		
U Sat.	16.041	3.904	503	.615	.571	.553	.389	.567	.515	.535	1.000	
N. Bene.	13.456	3.389	503	.500	.296	.343	.242	.393	.511	.423	.551	1.000

Legend- Ev.Sc- Evaluation Score, S.Qual.-System Quality, C.Qual.- Content Quality, Service Qual.- Service Quality, T&L Qual- Teaching and Learning Quality, S.R. Learn-Students' Self-Regulated Learning, ITU-Intention to use, USat-User Satisfaction, N.Bene-Net Benefits

Table 19 reveals that correlation exists between the overall evaluation score of WebCT and other factors/measures of evaluation. The data suggest that user satisfaction had the highest correlation (r = 0.62) with WebCT CCMS system success evaluation. This is followed by students' self-regulated learning (r = 0.51) and net benefits (r =0.50). A correlation of other factors with WebCT evaluation reveals that content quality and teaching and learning quality as having (r = 0.49), Intention to use / usage (r = 0.48), system quality (r = 0.46) while service quality had the lowest correlation with (r = 0.37). This suggest that all these factors are associated with WebCT evaluation and other factors. The next analysis focuses on the factors which cause change on the dependent variable.

Table 20: Summary of Multiple Regression Analysis on the Combine Causes/Effect WebCT Success Evaluation (Dependent Variable) by the Eight Evaluation Measures /Factors (Independent variables) (N = 503)

Model Summary				
Model	R	R. Square	Adjusted Square	Standard Error of the Estimate
1	.699	0.50	.480	15.77644

ANOVA						
Model		**Sums of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	109154.767	8	13644.346	42.040	.000
	Residual	114243.352	495	324.555		
	Total	223398.119	503			

Table 20 suggests that the R square = 0.50, R value adjusted =0.48, and the overall correlation of all the evaluation measures to WebCT evaluation yielded an R = 70, while the standard error of the estimate yielded 15.78. In the second step, the analysis of variance performed on multiple regression yielded an F-ratio value of 42.04. This was found to be significant at 0.05 levels. These results suggest that all the WebCT success evaluation measures together made 48% of WebCT success evaluation. This suggest that all the success evaluation factors jointly influence the success of the WebCT system evaluation.

Table 21: Relative Contribution of the Factors that Determine the Success of WebCT Evaluation (N = 503)

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std Error	Beta		
1	(Constant)	14.081	5.012		2.809	.005
	System Quality	.689	.342	.090	2.017	.004
	Content Quality	1.191	.436	.125	2.734	.007
	Service Quality	.582	.306	.072	1.900	.058
	Teaching Learning Quality	1.089	.476	.104	2.308	.021
	Self-regulated Learning	1.171	.388	.130	3.014	.003
	Intention to use/ Usage	.750	.360	.085	2.081	.038
	User satisfaction	1.220	.290	.214	4.212	.000
	Net Benefits	.942	.277	.145	3.402	.001

Table 21 above suggest that each of the independent variables (measures/factors) made a significant contribution to the prediction of WebCT success evaluation. In terms of the magnitude of contribution, user satisfaction made the most significant contribution (Beta = 0. 214, t = 4.21) of WebCT success evaluation. In the light of this, the next determinant value was exerted by net benefits (Beta = 0.15, t = 3.402. This is followed by students' self-regulated learning (Beta = 0.13, t = 3.01). The other factors made a significant contribution in the following order: content quality (Beta 0.13, t = 2.73); teaching and learning quality follows with (Beta = 0.10; t = 2.31); intention to use/usage (Beta = 0.85; t = 2.08); system quality (Beta = 0.90; t = 2.02) while service quality made the least contribution with (Beta = 0.07; t = 1.90). This suggest that all the measures/factors, system quality, content quality, service quality, teaching and learning quality, students self-regulated learning, intention to use/usage, user satisfaction and net benefits are good measures for WebCT evaluation. The next analysis focuses on the testing of the relationship between each of the measures with the WebCT system success evaluation.

5.4.2. *Hypothesis 2:*

The hypothesis states that the WebCT Course content management system quality does not significantly determine the success of the course content management system. The purpose was to determine whether or not the variable of quality can determine the success of WebCT evaluation. In testing this hypothesis, the researcher correlates respondents' overall score on the WebCT evaluation questionnaire with the score on WebCT system quality section. The results are shown in Table 22.

Table 22: Correlation between WebCT System Quality and WebCT Evaluation (N= 503)

	No	Mean	Std Dev	r	P	Decision
Evaluation Score	503	102.43	23.99	.46	0.05	S***
System Quality	503	14.16	2.87			

Table 22 shows the correlation between WebCT success evaluation and WebCT system quality based on 503 respondents. The data suggest the absolute value near of .05 which is considered positive. This means that the two variables have strong tendency to cohere. This indicates that there is a significant correlation or relationship between WebCT system quality and WebCT system success. From the table, r = 0.46, and P> 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggest that the WebCT system quality does determine WebCT system success; hence we reject the null hypothesis.

5.4.3. *Hypothesis 3:*

The third hypothesis states that 'Course content quality does not determine the success of the course content management system. The purpose was to determine the relationship or whether or not the variable content quality can determine WebCT success evaluation. . In testing this hypothesis, the researcher correlates respondents' overall score on the WebCT evaluation questionnaire with the score on the WebCT system content quality section. The results are shown in Table 23.

Table 23: Correlation between WebCT Course Content Quality and WebCT Evaluation

	No	Mean	SD	R	P	Decision
Evaluation Score	503	102.43	23.99	0.50	0.05	S***
Content Quality	503	11.17	2.32			

Table 23 shows the correlation between WebCT CCMS success evaluation and WebCT system content quality based on 503 respondents. The data suggest the absolute value equal to .5 which is considered to be a positive correlation. This means that the two variables have a strong tendency to cohere. This indicates that there is a significant correlation or relationship between WebCT content quality and WebCT system success. From the table, r = 0.50, and P> 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggest WebCT content quality determines WebCT system success, hence the null hypothesis is rejected.

5.4.4. Hypothesis 4:

The hypothesis states that 'Support service quality does not significantly determine the success of the course content management system. The purpose is to determine whether or not the variable service quality can determine WebCT success evaluation. In testing this hypothesis, the researcher correlates respondents' overall score on the WebCT evaluation questionnaire with the score on WebCT system service quality section. The results are shown in Table 24.

Table 24: Correlation between WebCT Service Quality and WebCT Evaluation (N = 503)

	No	Mean	SD	R	P	Decision
Evaluation Score	503	102.43	23.99	0.37	0.05	S***
Service Quality	503	7.41	2.69			

Table 24 shows the correlation between WebCT CCMS success evaluation and WebCT system service quality based on 503 respondents. The data suggest the absolute value near of .05 which is considered a weak positive correlation. This means that the two variables have a weak tendency to co vary. This suggests that there is a weak correlation between WebCT system service quality and WebCT system

success. From the table, r = 0.37, and P> 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggests WebCT support service quality causes the WebCT system to succeed; hence the null hypothesis is rejected.

5.4.5. Hypothesis 5:

The hypothesis states that the Students' intention to use and use of course content management system does not determine the success of the course content management system evaluation. The purpose is to determine whether or not the variable can determine the success of the WebCT evaluation. . In testing this hypothesis, the researcher correlates the respondents' overall score on the WebCT evaluation questionnaire with the score on the students' intention to use WebCT. The results are shown in Table 25.

Table 25: Correlation between Intention to Use/Usage of WebCT and WebCT System Evaluation

	No	Mean	SD	r	P	Decision
Evaluation Score	503	102.43	23.99	0.48	0.05	S***
ITU	503	13.16	2.55			

Table 25 shows the correlation between the success of the WebCT CCMS success evaluation and the students' intention to use WebCT based on 503 respondents. The data suggest the absolute value of .5 which is considered to be a positive correlation. This suggest that the two variables have a strong tendency to vary which indicates that there is a significant relationship between the students' intention to use and use of the WebCT and its success. From the table, r = 0.48, and P> 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggests that the students' intention to use WebCT does influence the success of WebCT system; hence the hypothesis is rejected.

5.4.6. Hypothesis 6:

The hypothesis states that User satisfaction does not determine the success of the course content management system. The purpose is to determine whether or not the students' satisfaction with WebCT can influence the success of WebCT evaluation. . In testing this hypothesis, the researcher correlates respondents' overall score on the WebCT evaluation questionnaire with the score on user satisfaction with WebCT. The results are shown in Table 26.

Table 26: Correlation between User Satisfaction and WebCT System Evaluation

	No	Mean	SD	r	P	Decision
Evaluation Score	503	102.43	23.99	0.62	0.05	S***
User Satisfaction	503	16.04	3.90			

Table 26 shows the correlation between the success of the WebCT CCMS evaluation and students' satisfaction with it based on 503 respondents. The data suggest the absolute value above .5, and any value close to .1 is considered a positive correlation. This means that the two variables have a strong tendency to vary together. This indicates that there is a relationship between students' satisfaction with the success of the WebCT system. From the table, r = 0.62, and P< 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggests that the students' satisfaction with WebCT does influence the success of the WebCT system; hence the null hypothesis is rejected.

The finding further suggests that the higher the satisfaction towards individual components of the WebCT system- system efficiency, dependability, accuracy, usefulness, responsibility content and format of the output of the system- the higher the overall satisfaction towards the system. Furthermore, a more favourable perception of WebCT CCM systems usefulness (in terms of improved teaching and learning, content delivery efficiency, and learning performance) results in the greater satisfaction of the system. Generally, the finding suggests that the users are satisfied with the WebCT course content management system.

5.4.7. Hypothesis 7:

The hypothesis states that Perceived net benefits of CCMS do not significantly determine the course management system success. The purpose is to determine whether or not net benefits of the WebCT course management system can influence the success of the WebCT evaluation. . In testing this hypothesis, the researcher correlates the respondents' overall score on the WebCT evaluation questionnaire with the score on WebCT net benefits. The results are shown in Table 27.

Table 27: Correlation between WebCT Net Benefits and WebCT Success Evaluation

	No	Mean	SD	R	P	Decision
Evaluation Score	503	102.43	23.99	0.50	0.05	S***
Net Benefits	503	13.46	3.39			

The table above shows the correlation between WebCT CCMS success evaluation and WebCT net benefits based on 503 respondents. The data suggests the absolute value near of .5 which is considered a positive correlation. This means that the two variables have a strong tendency to vary together, which indicates that there is significant correlation between WebCT net benefits and the success of the WebCT system. From the table, r = 0.50, and P> 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggests that WebCT net benefits influence the success of the WebCT system; hence the null hypothesis is rejected.

5.4.8. Hypothesis 8:

The hypothesis states that the quality of teaching and learning does not significantly determine the success of the course content management system evaluation. The purpose was to determine whether or not the quality of teaching and learning can determine WebCT success evaluation. . In testing this hypothesis, the researcher correlates respondents' overall score on the WebCT evaluation questionnaire with the score on WebCT teaching and learning quality. The results are shown in Table 28.

Table 28: Correlation between Teaching and Learning Quality and WebCT System Success Evaluation

	No	Mean	SD	R	P	Decision
Evaluation Score	503	102.43	23.99	0.50	0.05	S***
T & L Quality	503	7.99	2.07			

Table 28 shows the correlation between WebCT CCMS success evaluation and WebCT system teaching and learning quality based on 503 respondents. The data suggest the absolute value equal to .5 which is considered a positive correlation. This means that the two variables have a strong tendency to vary. This suggests that there is a significant correlation between WebCT teaching and learning quality and the

success of the WebCT system. From the table, r = 0.50, and P> 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggests that the quality of teaching and learning influences the success of the WebCT system; hence the null hypothesis is rejected.

5.4.9. Hypothesis 9:

The hypothesis states that Students' self-regulated learning does not significantly determine the success of the course content management system. The purpose is to determine whether or not students' self-regulated learning can determine WebCT success evaluation. . In testing this hypothesis, the researcher correlates respondents' overall score on the WebCT evaluation questionnaire with the score on students' self-regulated learning. The results are shown in Table 29.

Table 29: Correlation between Self-Regulated Learning and WebCT System Success Evaluation

Variable	No	Mean	SD	R	P	Decision
Evaluation Score	503	102.43	23.99	0.51	0.05	S***
S.R. Learning	503	10.45	2.47			

Table 29 shows the correlation between WebCT CCMS success and students' self-regulated learning based on 503 respondents. The data show the absolute value equal to .5 which is considered positive correlation. This suggests that the two variables have a strong tendency to vary, indicates that there is a significant correlation between students' self-regulated learning and the success of the WebCT system. From the table, r = 0.51, and P< 0.05, therefore the finding is not consistent with the stated null hypothesis. This suggests students' self-regulated learning influences the success of the WebCT system; hence the null hypothesis is rejected.

5.4.10. Hypothesis 10:

The hypothesis states that University of Botswana organizational preparedness does determine the success of the course content management system. The purpose is to determine how prepared is the university to implement successful e-learning programme. In testing this hypothesis, the researcher makes use of the information available in the literature review, report and documents collected from the center for academic development at the University of Botswana. The data was analysed qualitatively. The result is presented in section 5.5.5.

5.5. Interview Report

As stated in the methodology, this study used a combination of methods to collect data. The quantitative method was the dominant method. The quantitative data collected have been analysed quantitatively and the results have been presented in the previous section. The qualitative method was used as a complementary method to the quantitative method. The aim was to use the collected qualitative data to buttress the quantitative findings. The results of the interview conducted with some lecturers who are in charge of courses where respondents in this study were selected, are reported in this section. These interviewed lecturers and their courses in the respective faculties are presented in Table 30.

Table 30: Distribution of Interviewed Lecturers Per Faculty

Faculties	Course on WebCT	No of Lecturer in Charge
Business	ACC 100 BIS 205 Mgt 302	1 1 1
Education	BNS 101 EFR 220 ESR 220 EDT 545	1 1 1 1
Engineering Tech	MMB 222 ARC 322	3 2
Humanities	BMS 101 BIM 202 TRS 417	1 1 1
Science	CHEM 101 ENV 216 ENV 311 ENV 476	2 1 1 1
Social Sciences	STA 106 PAD 304	1 1
Total	18 Courses	22

Note: Lecturers who teach the year one courses were given an opportunity to participate but their students were not because they were using WebCT for the first time.

Table 30 shows that 22 lecturers were teaching the courses where respondents were selected for this study. All the 22 lecturers were sampled for the interview. Out of the 22, 20 agreed to be interviewed. The interview questions put across to the lecturers are shown below.

- For how long have you been teaching and delivering your courses on WebCT?
- Explain how you implemented your course through WebCT course content management system.
- What are the benefits of WebCT course content management system which you have seen since you started using it to teach your course?
- What are your general observations about using the WebCT CCMs for teaching courses?
- What are the problems you have encountered in using the WebCT course content management system?
- What solutions would you proffer for the problems identified above?

It should be noted that some items in the interview items (Items 1, 2) were asked to confirm whether the interviewee were really delivering their courses via WebCT CCMS. Other questions in the interview items were targeted to capture data on 3 of the objectives of the study. These are item 3 (to capture data on objective 6- net benefit), item 4 (to capture data on objective 7- teaching and learning and item 5 and 6 (to capture data on research question 10-11: challenges/problems of WebCT and solutions. The responses and results of the interview are hereby reported thematically as follows:

5.5.1. Years of Teaching on WebCT

Findings on the number of years the respondents have been teaching and delivering their course on WebCT course content management system indicate that 6 out of the 20 have been teaching via the system for the past 2 years. Those who have been using the system for 3 years are 8, 2 have been using the system for 5 years while 2 have been teaching on WebCT for the past 8 years. It should be noted that WebCT was not introduced at the University of Botswana 8 years ago. However, those who indicated that they have been using the system for 8 years refer to their former universities before they came to the University of Botswana. The results suggest that the lecturers who participated in the study have some experience of teaching via WebCT which ranges from 2-8 years.

5.5.2. Course Implementation on WebCT

Response on how respondents implement their courses via WebCT CCMS at the University of Botswana varied among the respondents. The results reveal that some lecturers upload their courses on WebCT themselves pointing out that they have been trained to do so. Others indicated that they seek the assistance of the WebCT support staff at the Center for Academic Development (CAD). One of the lecturers who indicated seeking the assistance of the WebCT support staff reports "I got assistance from Eductech UB to mount the course on WebCT. All I did was to give them the class list". Another person in this category emphasized that "I registered with CAD, Educatech. Then I was linked to WebCT, and my courses are available. All I need is just to manage the courses. The application was done electronically and I submitted class list of my students".

Those who indicated that they do it themselves is the reported: "I post all parts of my courses on the WebCT. These parts are handouts, reading materials and practical skills. All the students get access to the WebCT where they are able to get the work for that week. I also post the assignments for them to respond (answer) using the same technology. The response by one of the lecturer confirms this. "I was trained to teach on WebCT so I started by putting the reading and content materials in files this semester. I was informed recently that I needed to structure the content of my course through learning module, this I have done". This respondent adds that "I used to ask students to use google to search the Internet and retrieved materials then uploaded the materials on WebCT content file for them. Sometimes, I upload power point presentations, I have used self test and I intend to use it in all courses this semester and I have also used discussion forum in all courses this semester". Those who teach larger classes explained that they used WebCT mainly to give notes to students. Assignments and tutorials exercise were also sent to students through WebCT. Alternatively, others used traditional face-to-face method predominantly and used WebCT only to post some course materials like notes and links which they feel students would need for their reading. It is clear from these responses that some respondents teach their courses on WebCT simply by preparing the courses themselves and post them on WebCT while others seek the assistance of the personnel in charge. Moreover, materials posted include power point slides, handouts, course notes/outlines, etc, while students are made to submit their assignments through the WebCT platform.

5.5.3. Benefits of WebCT CCMS to Teaching and Learning

It was pointed out in the literature review that the core business of e-learning is teaching and learning. It was in the light of this that lecturers who teach via WebCT were asked questions about the benefits of WebCT CCMS to teaching and learning at the University of Botswana. The purpose of this was to get data from the lecturers who teach via the system since data on net benefits which relate to this subject matter has been quantitatively collected from the students. It is assumed that this data will complement the benefits identified by the students. Findings reveal that respondents indicated many benefits and advantages of WebCT CCMS to teaching and learning.

On assessment, it was emphasized that the system leads to the highest level of engagement in discussion between students and teachers on course related topics. For instance, through bulletin board, teaching is more facilitated and through online discussion, students have the opportunity of expressing themselves. The results also reveal that the system facilitates monitoring of students' participation as regards what they have done and what they are doing. It was also pointed out that putting announcements and course notes across to the students becomes easier for the lecturers. On access, the system makes provision for students to access course materials even outside class and these can be accessed at their own convenient time. It was confirmed by the lecturers that the system helps to create a paperless teaching and learning environment and increases access to material and enhances communication. Respondents further enphasised that WebCT CCMS also leaves room for tracking students' engagement which helps learners and teachers in the learning process.

Another benefit identified is the mode of communication at different times and place it also increase the opportunity of learning in an accessible and customizable manner to individual learners. In other words, the results reveal that the system facilitates effective communication. Furthermore, it was found that the system allows teaching a course repeatedly and keeps the record of the course taught. This tracking of teaching and learning was emphasized as leading to accountability, and facilitated the keeping of students' marks not by the teacher but by WebCT CCMS itself. One respondent emphasized that "students cannot claim that they submitted an assignment if they didn't because WebCT keeps very good records".

The feature of the system that gives students an opportunity to compare activities of the lecturers and their own in a particular course was also emphasized. Overall, the results reveal that the system improves service delivery to the students. One respondent emphasized that "the assessment tool reduces the time spent on marking since the students' work can be marked automatically". Related to this, another respondent pointed out that the assessment tool reduces problems with assignment since both the students and lecturer have access to confirm if the assignment was submitted. Deadlines are also easy to implement and individual feedback is also easy.

Still on the benefits of WebCT to teaching and learning, the results reveal that the system brings flexibility in learning. It allows students to work at their own pace. One respondent had this to say "students need not come to your office, they can email and have concepts clarified and students are able to do group discussion without having to meet". Another respondent explained that "there is too much work and information to learn. It is not easy for the students to write everything in class. They are able to print the handouts before the class. I teach the class using their handouts where I expand them by explaining more and they add more information to the handouts". Similarly, another respondent maintained: "it improves collaboration and interactivity and is less intimidating for students contact with lecturer". The fact that the system increases interactivity was also emphasized. Many students usually participate in the interactive class activities like online discussions, chats, etc.

Another very important finding is the fact that WebCT contributes to learning performance. Learning through WebCT also enhanced students' performance. Students' participation in the discussion exercise and group discussion contributes to the students' performance. It was explained that the students are usually more excited when they are learning through WebCT than in a face-to-face classroom. It was pointed out by a respondent that this does not pertain to all students but only to those students who participate in class discussion and those who access the material uploaded on the WebCT. One respondent explained that the self-test feature increases students' performance.

There is also evidence that WebCT CCMS system saves time and cost. One respondent explains that "electronic version of documents saves money for buying printing papers". Another respondent explained that "I can move faster in my lectures as I only need to explain the notes to the students most of the time. I still have to do worked example of problems in class. It has also saved me and the department the agony

and cost of having to photocopy hundreds of pages of some handouts and assignments. Occasionally, problems with handwriting are also saved".

Besides the fact that WebCT improves teaching and learning, the quality of teaching and instructional delivery has also improved. Most of the respondents explained the flexibility of delivery of instruction through the platform has helped them to use more time in preparing course notes and materials uploaded on WebCT compared to the face-to-face method where they have to struggle to write note, struggle to explain in class while students also struggle to take the notes.

5.5.4. General Observation about Using WebCT at UB

On this subject matter, individual lecturers made various observations. It was found that many students do not make use of the system especially in discussing amongst themselves. The confession by one of the respondents confirms this: "it is a great environment to learn but students hardly utilize the platform". Other confessions include the following: "I think WebCT is an effective tool for teaching and learning especially when dealing with a large class". "The system works fast if the students are willing to participate". "I think it is a great technological development too, but needs to be well managed to reduce abuse especially by students". Furthermore, another respondent indicated that "it is very good because you can contact many students and many can contact you. It really improves the teaching of courses".

Furthermore, results reveal that resources are limited to facilitate the use of the system for teaching and learning at the University. In relation to this, one respondent pointed out that "to optimize the uses of the system at the university is impossible since the university does not have enough smart class rooms and that it is not suitable for large classes due to insufficient available resources". Most importantly, it was pointed out that students may not see the value of attending classes if all notes are uploaded on WebCT and moreover, usage has been mainly for announcements, uploading notes but others should also be explored. On this issue, one respondent cautioned that there is a need to be very careful about how and when materials should be put online because some students as a result of this do not come to class at all.

5.5.5. Organisational Preparedness

From the review of literature and documents collected from center for academic development CAD at the University of Botswana, it is evident that the University has being fully prepared for the implementation of WebCT e-learning programme. This reflects on the following indicators.

Infrastructure-

A Mimio-board used for display, via a data-projector has been provided. This a e-learning equipment that integrates all the features of mimio and wireless technology into a high quality, whiteboard. Microsoft-NetMeeting was also provided. This is being used to project the white-board or any other aspect of the instructor"s screen on the screens of all the participants, or the screen of any participant to all other participants. A video-conferencing system was installed in 2003 for synchronous teaching and learning, linking the main campus in Gaborone with other university campuses in the North via an Integrated Service Digital Network (ISDN) and leased lines. This has been given the university opportunity to conducts video-conferencing internationally through using the Internet Protocol (IP) addressing or ISDN (Uys, 20034).

Skills and capacity Building- For the UB staff to have the skills on how to use the e-learning system, the university has being embarking on training and capacity building for UB staff. As at 2007/2008 academic session, the e-learning Support Centre has trained more than 30 percent of the University academic community in various educational technologies. An e-learning Certificate programme has been designed by the Centre for Academic Development (CAD) for academic staff. This has been offered since the beginning of 2003. This programme was designed to support and prepare lecturers for implementing e-learning. Similarly, reports and document also revealed that Workshops offered in the CAD e-learning certificate programme cover four areas namely; e-learning, information and computer skills, multimedia production, and WebCT training. The training sessions and workshops are organized twice in a session, once in each semester. The training is ongoing until all the members of staff at UB are properly trained on how to use the e-learning system.

Funding- Report also has it that the University has committed significant amount of money on the e-learning project and it's still making fund available in support of the programme.

5.5.6. Problems of Using WebCT for Teaching and Learning

From the interviewed respondents, it was evident that many problems are being encountered in the process of using WebCT at the University of Botswana for teaching and learning. One common problem which was mentioned by nearly all the interviewed respondents is the issue of limited access by both the lecturers and the students. This ranged from the number of computers available not being commensurate with the number of students. One respondent stated thus: "I teach large classes, 70 students sometimes; therefore computers are not enough in the laboratory for all students". The majority pointed out that sometimes when they want to use the laboratory they found that it is booked by another person. This means they have to wait for the other lecturer to finish. It is also observed that most of the computer laboratories on campus cannot contain more than 60 students at a time and there are courses with 80 students or more. Some respondents pointed out that access to computers is not always possible, especially after working hours.

The issue about the lack of a link between ITS and WebCT was also pointed out. A respondent had this to say regarding this matter: "ITS and WebCT are independent of each other making the job becoming unpleasant. WebCT do not have all the names of students registered, and there is also the fact that most of the time registered students on ITS are different from those registered on WebCT".

Findings also reveal that as a result of using this system for teaching and learning gives an opportunity to download class notes, assignments and other course materials. Students therefore are reluctant to attend classes. On this issue, one respondent states that "students tend not to come to class the moment they get the handout for the day. I normally tell my students to take advantage of having the handout before the class, but they should not stop coming for classes because the handouts do not carry everything that the lecturer teaches". Similarly, another respondent said "a major problem is the significant drop in students' attendance for lectures which unfortunately is affecting and will continue to affect their performance in the courses".

Another problem identified is the unavailability of the network. It was pointed out that sometimes the system can be very slow even during class time and some other times. A respondent explained that the Internet is slow, and one cannot switch into one's lesson before time because another lesson is in session. The

Internet may not even come up at all. Still on this network problem, another respondent had this to say, "With logging-in and with general network performance (last year it was actually not possible to log-in from outside), this defeats the issue of students learning anytime, anywhere associated with CCMS". Other respondents point to the fact that they find it difficult to design courses by themselves to the point where it would be more interesting to the students.

Furthermore, the results reveal another important problem regarding the fact that the content uploaded for previous years always appears in the course content. Also, some respondents pointed out that most of the problems are technical, like students forgotting their password or access code, and sometimes the slow response of the technical team. One respondent stated that "there is also a problem of staff not really participating; it is not related to my course but it is a problem. Using WebCT is not only to put some material there for students to see but also to use the system for assessment, communication etc. That requires time and effort, it will not happen without some incentives". This respondent tried to emphasize that the majority of staff, particularly lecturers, do not show interest and willingness to use the system for teaching and learning.

It was revealed that preparing materials like course notes and handouts for students wastes a lot of time. This section has revealed the fact that there are problems with the use of WebCT for teaching and learning at the University of Botswana and most of these have been elaborated.

5.5.7. Solutions to the Problems of Using WebCT for Teaching and Learning at the University of Botswana

The interviewed respondents were asked to indicate possible solutions to the identified problems of using WebCT for teaching and learning. The results revealed that as far as access is concerned, there is need for the university to improve the access to WebCT system in terms of making provision for more computers and consider establishing more computer laboratories throughout the campus. The fact remains that the number of students at the university keeps on increasing every year. And if more computer laboratories are not built the university will continue to have these problems.

On the issue of integrated technology service such as linking together ITS and WebCT, it was suggested that there should be improvement of IT at the university. ITS should be linked with WebCT and better access to computers at the university for the students should be ensured. On the issue of a slow network connection of the Internet and the WebCT, it was suggested that the University should increase the bandwidth so as to allow the system to work faster.

Concerning the issue of the lecturers not being competent to use the system for teaching and learning, a call was made by one of the respondents on the need for such lecturers to be trained. It was emphasized that an orientation should be organized regularly on how to use WebCT and its tools. Students should also be inducted to the use of WebCT. Moreover, it was pointed out that the support system for WebCT needs to be improved and lecturers should always be ready for training on the use of WebCT tools like assessment, assignment, discussion and other tools of the WebCT. Furthermore, the need to seek assistance at an appropriate time and from the right people, with regard to editing materials online and finding electronic ways of taking attendance at lecturers, was also emphasized.

On the issue of outdated course materials that still remain on the system after they have been completed, it was suggested that such courses need to be removed the people in charge of uploading courses on WebCT should always liaise with the lecturers so that they know which courses have been completed so that such courses can be removed from WebCT. They can do this by mailing the administrator telling him or her that at a particular date, a course or some courses have been completed and they should be removed from the WebCT. In addition, it was suggested that the university authorities should compel the use of WebCT for all lecturers as this will force both the students and lecturers to have WebCT literacy skills. Moreover, the results revealed that educational technicians on campus need to move round the class during lessons to switch on the projector for staff use and should do the same to put them off. Staff should be shown how to operate the equipments.

5.6. Summary of Findings

Findings from this study reveal generally that WebCT CCMS is doing well at the University of Botswana and that the system has been a success. The results also confirm the fact that the quality of WebCT system, content of course materials uploaded on the system, service quality, quality of the teaching and

learning via the system are of a high quality. Furthermore, by learning through the system students are able to self regulate their learning and that given an opportunity they are ready to continue learning on the platform. Results also indicate that generally student are satisfied with the performance of the WebCT CCMS and that there are several benefits derived from using the system especially regarding teaching and learning at the university. Findings also reveal that the organizational preparedness of the university in terms of provision for infrastructure, funding, skills and capacity building needed to implementation a successful WebCT e-learning programme have being so great.

Moreover, the results of the tested hypotheses reveal that all the identified factors or measures (system quality, content quality, service quality, intention to use/ usage, user satisfaction and net benefits, teaching and learning quality, student self-regulated learning, and organizational preparedness) are good determinants of the success of WebCT and that all have positive relations with the evaluation of WebCT CCMS.

The results obtained from the test of hypotheses on this study are very surprising based on the fact that all the factors returned a positive correlation with the dependent variable. The researcher was expecting that some of the factors such as support service quality and the quality of the system would at least be negative. This is because support services provided for WebCT CCMS has not been up to standard. Similarly, on quality of the system there have been reported cases of incessant network connection problems, slow bandwidth and other associated problems. Although all the variables have a positive correlation, however much of the correlation is very weak except for user satisfaction that returned $r = 0.62$. No other factors out of those tested exceed $r = 0.5$. Hence, the need for recommendations for improving each of the factors, considering the fact that they are important evaluation factors of the success of WebCT CCMS.

The problems associated with WebCT CCMS by both the staff and students of the University include access, network /server failure, lack of link between ITS and WebCT, lack of expertise to teach on the platform by lecturers, students' absence from class, completed courses not being removed from the system, etc.

The solution to the problems include the fact that the university should consider building more computer labs on campus, train both lecturers and students on how to use WebCT for teaching and learning, enforce the use of WebCT at UB and improve the bandwidth of the Internet and WebCT CCMS system, among others.

As can be noted in the responses, there are inconsistencies in the qualitative and the quantitative responses. This may be explained as a result of the variation in the perception of the success of the system by the respondents. For instance, the lecturers perceived the system to be less successful than the students. This may be because they have better knowledge of the system than the students.

CHAPTER SIX
DISCUSSION OF FINDINGS

6.1. Introduction

The previous chapter presented the data from the survey. The data presented in the chapter addressed the research questions and hypotheses posed in the study. The research questions and hypotheses were based on the broad objectives of the study. The main objective of this study was to evaluate the WebCT course content management system at the University of Botswana. The specific objectives of the study were to: evaluate the quality of the WebCT Course Content Management system at the University of Botswana, evaluate the quality of WebCT course content available to students, determine the quality of support services provided to students who are users of WebCT, find out the students intention to use/use of WebCT course content management system, find out students' satisfaction with WebCT course content management system, investigate the benefits of WebCT course content management system to students, find out the challenges facing students when using WebCT course content management system and suggest recommendations on how the challenges faced can be addressed.

The following discussion focuses on the results of the quantitative analysis of the survey data and thematic analysis of the (interview) qualitative data from the in-depth information collected from the lecturers to complement quantitative data collected from the survey. The discussion of the results is presented according to the overall objectives of the study, and the discussion is presented section by section, with each section focusing on each of the objectives of the study.

The survey that was carried out generally revealed that WebCT CCMS is doing well at the University of Botswana and that the system has been a success. The results also confirm the fact that the quality of WebCT system, content of course materials uploaded on the system, service quality, quality of the teaching and learning via the system are all very high. Furthermore, by learning through the system students are able to self regulate their learning and that given the opportunity, they are ready to continue learning on the platform. The results also indicate generally that students are satisfied with the performance of the WebCT

CCMS and that there are several of benefits associated with the system as far as teaching and learning at the university is concerned.

Moreover, the results of the tested hypotheses reveal that all the identified factors or measures (system quality, content quality, service quality, teaching and learning quality, student self-regulated learning, intention to use/ usage , user satisfaction and net benefits) are good determinants of the success of WebCT evaluation and that all have positive relations with the evaluation of WebCT CCMS. It is clear from the results that users are mostly satisfied with the output of WebCT and its efficiency, its adequacy in meeting learning and teaching requirements, information processing needs of users and its dependability. Generally, the results suggest that the evaluation of WebCT CCMS at the University of Botswana is a success. User satisfaction, WebCT CCMS benefits, self-regulated learning and quality of the content play more roles than other factors in terms of determining the success of WebCT CCMS evaluation. The problems associated with WebCT CCMS identified by both the staff and students of the University include access, network /server failure, lack of link between ITS and WebCT, lack of expertise to teach on the platform on the part of the lecturers, students absenting themselves from classes, and completed courses not being removed from the system.

6.2. Discussion of Findings

The theoretical framework adopted for this study is a modified edition of Delone and Mclean information system success model. This model was discussed and presented in chapter 2 and 3 (Figure 1, 2, and 3) which is the research model for this study. The model has six factors that determine the success of an information system. These are system quality, information quality, service quality, intention to use, user satisfaction and net benefits (Delone and Mclean, 2003). Chapter 3 also indicates that despite the quality of the model in predicting and determining the success of the information system, the researcher and other researchers (Seddon and Kiew,1994, Seddon, 1997; Rai et al, 2002) who reviewed the model recommend modification at any level to suit the context of the information system being evaluated. To suit the purpose of this study, since the evaluation of information system is not common in educational settings, some variables were added to this model. The aim is to be able to capture and reflect the core business of the information system (WebCT CCMS) evaluated in this study which is teaching and learning. In the light of this, the quality of teaching and learning and student self-regulated learning were added to the variables in

the model while changing the names of some others as a way of modifying it to suit the research model of this study. Eventually, system quality, content quality, support service quality, teaching and learning quality, self-regulated learning, intention to use/use, user satisfaction and net benefits were derived from the research model as factors or measures of WebCT success evaluation.

6.3. Success Evaluation and WebCT Course Content Management System

To understand the context of WebCT system evaluation at the University of Botswana, the main objective of the study which was to evaluate the WebCT Course Content Management system at the university was considered. The research question that guided this objective asks how successful WebCT course content management system is at the University of Botswana. The relevant hypothesis states that the success of the course content management system (system quality, course content quality, service quality, teaching and learning quality, student self-regulated learning, content management system use, user satisfaction, and net benefits) does not significantly determine the success of the course content management systems. The student users of WebCT surveyed were required to respond to all the items on the evaluation measure or factors (independent variables) in the WebCT evaluation questionnaire. These were analysed and regressed against the dependent variable (WebCT success evaluation).

The results of the percentages and frequency count, Pearson correlation and regression analyses suggest that the WebCT course content management system is doing well at the University of Botswana and hence the system has been a success and that all the independent variables (system quality, content quality, service quality, teaching and learning quality, students' self-regulated learning, intention to use and use, user satisfaction and net benefits) significantly correlate with WebCT evaluation. This to me suggests that each of the factors is capable of determining the success of WebCT. The finding is consistent with other findings (e. g. Chien and Tsaur, 2007) who investigated the success of enterprise resource planning (ERP) systems with case studies in three Taiwanese high-tech industries that reported that system quality, service quality, and information quality are important factors that determine the success of the system. Others also reported similar findings that all the six factors identified by Delone and Mclean (system quality, information quality, service quality, use, user satisfaction and net benefits) are good measures of the success of the information system (Wang 2003; Hussein et al, 2007; Wang et al, 2007). Similarly, Crowston et al, (2003) support this present finding. They identify a range of measures that can be used to assess the success of

open source software (OSS) projects at Syracuse in United State of America with the report that respondents felt a project is successful if the developers are involved, satisfied, and enjoyed the process; and that a project was successful if it satisfies users. Finally, the quality of products was suggested to be a measure of success by respondents. This study identifies involvement, quality, satisfaction and enjoyment of process as factors for success evaluation of system. Satisfaction and quality are part of the factors considered in this study as reflected in the research model, but involvement and process are not included. This implies that there are many other factors apart from the ones focused in this study that can be used to evaluate information system success. Similarly, the report by Sabherwal et al. (2006) who used meta-analysis to compute a correlation matrix for the constructs in the model based on 612 findings from 121 studies published between 1980 and 2004 at St. Louis in Missouri, America, corroborates this finding. The results indicated the importance of user-related factors such as use, usage, satisfaction, etc and contextual attributes in IS success and raised questions about some commonly believed relationships. The fact that factors like use/usage, user satisfaction, system quality, service quality, and information quality identified by Crowston et al (2003; Sabherwal; 2006; and Chien and Tsaur, 2007) support the research model of this study. Furthermore, Hussein et (2007) who investigated the influence of organisational factors using Delone and Mclean's IS found that all the organizational factors significantly correlated with the four IS success dimensions under investigation which lends credence to the findings of this study. Further analysis reveals that goal alignment is the highest predictor of the success of IS success, followed by management support factors which appear to be the next highest predictor of IS success and its influence. The others are user satisfaction, net benefits and self-regulated learning.

6.4. WebCT CCMS Success and System Quality

Objective 1: The first objective of this study was to evaluate the quality of WebCT course content management system. The research question that was posited is the extent of the quality of WebCT course content management system. The relevant hypothesis on the other hand states that the course content management system quality does not significantly determine course content management system success.

The results on this research question suggest that the majority of the respondents generally felt that the quality of WebCT CCMS was high. This answered the first specific research question on this study. Similarly, the results of the test hypothesis to this research question reveal a significant relationship

between the quality of the WebCT system and WebCT success evaluation which implies that the quality of the WebCT system determines the success of the WebCT system, and that; without the judgment of the users regarding the quality of a particular system, it is difficult to say whether such system is successful or not. The finding is supported by Wang et al.'s (2007) report of a study conducted in Taiwan on measuring the success of e-learning in an organisational context. They revealed the importance of system quality variables as determinants of the success of e-learning system. Based on the results of (Wang et al, 2007) study, they encouraged e-learning managers to include the measure of system quality in their evaluation techniques of e-learning. The statement by Von-Helen (1997) that an understanding of the relationship between system quality and information (e. g. WebCT CCMS) systems quality are expected to influence the success of the system buttressed this finding. This is because if users understand that the system is of a good quality; this influences their eventual use of the system and satisfaction. In this regard, one can conclude that the information system is a success only if there is increased users' satisfaction.

6.5. WebCT CCMS Success and Content Quality

Objective 2: The objective is to evaluate the quality of content of the WebCT course content management system to students. The research question for this objective is: what is the content quality of WebCT course content management system? The relevant hypothesis states: course content quality does not determine the success of course content management system.

The result reveals that the content of WebCT CCMS is of a good quality. Similarly, the results of testing the hypothesis revealed that content quality correlates significantly with WebCT CCMS evaluation. This to me, suggests that, the higher the quality of the content on WebCT to the users (students) the better the success of the system.

Barron's (2003) report of a study conducted in America by the Learning on Demand (LOD) program of Consulting Business Intelligence on the quality of e-learning components including content supports this finding. In the report, it was revealed that content and quality scored the highest marks with 86% quality in e-learning, 81% for effectiveness, 62% for learner experience and 60% as cost efficiency. Other findings which are consistent with this finding include Peng and Logan (2008) who demonstrated that content quality strongly predicts both consumer affective evaluation and overall satisfaction. However, Leem and

Lim (2007) findings contradict the present finding by showing that respondents did not think the quality of the content was high while only the members of staff who participated in the study were more concerned about the quality of their e-learning content in general. The contradiction between the findings of the previous studies and this study may be due to the fact that other studies like that of Leem and Lim (2007) included many schools in their study and tried to compare the content of the e-learning system in all the schools. The case is different in this study where WebCT CCMS evaluation was conducted only at the University of Botswana as a case study. Another reason that may account for these differences may be due to the platform used. Although it is WebCT in this study, other studies did not indicate a particular platform but generally referred to it as an e-learning system.

6.6. WebCT CCMS Success and Support Service Quality

Objective 3: The objective is to determine the quality of support services provided to students who are users of WebCT CCMS. The research question for this objective state: What is the quality of support services provided to students who are users of WebCT? The relevant hypothesis to this objective states support service quality does not significantly determine course content management system success.

The results of the research question on this objective reveal that the quality of service of WebCT CCMS is high. The results of the hypothesis also show that service quality exerted positive but a weak correlation with WebCT evaluation. This result to me suggests that, service quality is as well a good determinant of the success of WebCT evaluation despite its weak correlation with WebCT evaluation. The result presupposes that the services provided to the user of any information system are very important as these can go a long way to influence the success of the system. This is line with the assertion by Chien and Tsaur (2007) that there will be a risk of misjudging the success of an information system if service quality is not included in the evaluation package. This finding also corroborates Rocket's (1982) report that the quality of information service as perceived by its users becomes a key indicator of IS success. Rocket adds that poor support for whatever reasons will result in a loss of customers (users). However, where the services are not good enough there is the tendency that the overall use of the system and its eventual success may be affected. The service provided to users of WebCT CCMS on this study is high and correlated with the WebCT evaluation. However; the correlation is low but still positive, suggesting that more effort is needed to improve the quality of the support services.

6.7. WebCT CCMS Success and Intention to Use/Use

Objective 4: The objective is to find out the students' intention to use and use of the WebCT course content management system. The research question that addressed this objective state what is the students' intention to use and use of WebCT course content management system? The hypothesis relating to this objective state: Students' intention to use and use of the course content management system does not determine course content management system success.

The result demonstrates that students' intention to use WebCT CCMS is very high and that the intention to use and use correlates with WebCT success and hence the factor is a good measure of WebCT success evaluation. This is consistent with the studies by Devaney and Hancock (2006), Morgan (2003), CITE (2007), Benson and Palaskas (2006), Lowe and Kaplan (2007) which all support the use of e-learning. On the other hand, Pituch and Yao-kueiLee's (2006) structural equation modeling provided better support for a model that hypothesized stronger effects on an e-learning system. This confirms that the use/intention to use is a good factor of WebCT CCMS. This is because use affect satisfaction and the two eventually lead to success of the system.

6.8. WebCT CCMS Success and User Satisfaction

Objective 5: The objective is to find out students' satisfaction with the WebCT course content management system. The research question on this objective state: what is the level of students' satisfaction with WebCT course content management system? The relevant hypothesis states: User satisfaction does not determine course content management system success.

The results reveal that students are satisfied with WebCT CCMS and that user's satisfaction correlate significantly with WebCT CCMS success and as well found to be the best determinant of or good measure of WebCT CCMS success evaluation. This to me suggests that, without users' satisfaction, the success of the WebCT course content management system is unachievable.

This finding is in consonance with other studies including West et al. (2007) who revealed that instructors and students are moderately satisfied with the course management tool. However, for all of the features available through the CMS, there are only four features regularly used to increase the efficient transfer of information from teacher to student. Similarly, the University of Missouri-St. Louis (2002) report of evaluation of MyGateway course management system states three items related to students' satisfaction with courses using MyGateway course management system. These findings are consistent with this finding. The results indicate that students who do not use the system often *disagree* with positive statements about their satisfaction with MyGateway course management classes while students who use it frequently agree with the question item ("I am very satisfied with this course because it used MyGateway") course management system. In this study, the respondents indicated (that overall they are satisfied with the WebCT CCMS). Just like it has been indicated in the literature, user satisfaction was proved here to be a feature for measuring success. Other relevant findings from previous research are Clerkin (2004), Lasic et al. (2006) and the United Arab Emirate UAE Laptop Project (2004). All these findings corroborate the fact that the success of WebCT CCMS is determined by users' satisfaction level and this is reported to be as high as 78-80%. Similarly, the conclusion by Delone and Mclean's (1992) which shows the interrelationship between the six IS Success constructs (system quality, information quality, usage, user satisfaction, individual and organizational impact) is confirmed by Seddone and Kiew (1994) who provide substantial support for the finding by stating that system Quality, Information Quality, and Usefulness, explain the variance in the overall User Satisfaction measure.

6.9. WebCT CCMS and WebCT CCMS Benefits

Objective 6: The objective is to investigate the benefits of WebCT course content management system to students. The research question on this objective state: what are the benefits of WebCT course content management system to students? The relevant hypothesis is: Perceived net benefits of CCMS do not significantly determine course management system success.

The results reveal that the most important benefits of WebCT CCMS to the students is that the system helps them to improve their learning, enables the university to respond more quickly to issue pertaining to teaching and learning and affords them the opportunity to think through problems. Related to this, the result of the test of hypothesis suggests that the net benefits of WebCT course content management system

correlates significantly with the success of the system and this is a measure of success for the evaluation factor.

The report by Hanson (2003) that students thought there were learning benefits using the CMS supports this present finding. Similarly, the reports by Gibbons and Fairweather (2000) that learners' knowledge, measured by pre-post test scores, was shown to improve as a result of using CMS is supported by Kvavik and Caruso (2005) who reported that more than 74 percent of students agreed or strongly agreed. In this study, 84.9 percent of students reported very positively on using CMS as agreed or strongly agreed that IT improves learning. The participants in Kvavik and Caruso (2005) indicated that the most valued feature of CMS was keeping track of grades on assignments and tests and access to sample examinations and quizzes while online discussion boards were valued least. Similarly in this study the most valued benefit was indicated as improvement in learning. The results after testing the hypothesis are that net benefit correlates with WebCT success. This corroborates earlier studies by Seddon (1997); Staple, Wang, and Seddon (2002); Wu and Wang (2006) that net benefits are desirable construct in IS success measurement. The various responses by lecturers interviewed also corroborate thisfinding. As emphasized by one respondent: "the assessment tool reduces time spent on marking since the students' work can be marked automatically". Another respondent noted that "students need not come to your office, they can send an e-mail and have concepts clarified and through this, they are able to do group discussion without having to meet". The interview report confirms further that CCMS is beneficial to learning and teaching. Based on this, one respondent had this to say: "there is too much work and information to learn, it is not easy for the students to write everything in class, with the system, they are able to print handouts before class. I teach the class using their handouts and expand them by more explanations and students add more information on their own" Related to this, another respondent stated "it improves collaboration and interactivity and is less intimidating for students in contacts with a lecturer"

6.10. WebCT CCMS Success, Learning and Teaching Quality and Student Self-Regulated learning

Objective 7 & 8: The objective is to determine the quality of teaching and learning and how students self-regulate their learning via WebCT. The research question on this objective state what is the quality of teaching and learning and how does WebCT assists students to self-regulate their learning? The relevant

hypothesis states: The quality of teaching and learning does not significantly determine the course content management system and students' self-regulated learning does not significantly determine the course content management system success.

The result reveals that the quality of teaching and learning through WebCT course content management system is high and that the system enables the students to self-regulate their learning. Similarly, the results on the findings of the hypothesis reveal that teaching and learning together with student self-regulated learning correlate with WebCT success evaluation. This to me suggests that without improvement in the teaching and learning and students' self-regulated learning, it is difficult to determine the success of the WebCT course content management system.

The core business of the e-learning system is teaching and learning. Therefore, the extent to which an e-learning system contributes to the teaching and learning in an education institution determines its success. This is exactly the case in this study. The correlation of teaching and learning with the success of WebCT evaluation in this study is not accidental considering the objective of its implementation at the university, which was to enhance teaching and learning. The result on the issue of teaching and learning quality surport the results of Uziak (2009) reported that the majority of participants for a WebCT/Blackboard project improved their learning experience. The majority of participants thought that incorporating blackboard/WebCT in the teaching provided them with more insight into a particular topic than the lecture method. Similarly, the participants in Uziak's study indicated that Blackboard was helpful in supporting the lecture's content. Some responses to the interview confirm that WebCT is improving learning and quality of teaching. One respondent said: "the system gives me opportunity to make several materials available for students to download unlike before when my students only depended on the notes I gave in class. In essence, the students now have more information to answer exam questions, assignments and pass their tests, by so doing more quality and value is being added to learning and teaching".

On the other hand, the correlation of self-regulated learning, which suggests that it is a good measure of WebCT success evaluation, is congruent with the position of Vovides et al, (2006). The researchers demonstrate that CCMSs should inspire, motivate, and guide students to develop self-regulated learning.. This means that students are guided to play an active role in learning, become self-organized, self-directed, independent, who actively participate in the learning process to construct their knowledge. However, the

finding by Herrington, Gordon and Schibik (2004) does not agree with this finding by reporting that over time the quality of teaching and instruction is affected by course management systems The majority of respondents (51.4%) felt that CMS utilization had not affected the quality of teaching. The difference between Herrigton et al's (2004) finding and mine may be due to the fact that they engaged in a national survey of chairpersons of academic departments on the perceived degree of utilization of course management systems over time, and the perception regarding the degree to which they perceived that the use of course management systems led to measurable increases to either student learning or quality of instruction. This study, on the other hand, is not a national survey but a case study of only the University of Botswana. Moreover, it is an evaluation of WebCT CCMS where the quality of teaching and learning was only focused upon as a factor which might determine the success of the system.

6.11. WebCT CCMS Success and the University of Botswana Organisational Preparedness

Objective 9: The objective is to find out the organisationa preparedness of the University of Botswana in terms of implementing successful e-learning programme. The research question on this hypothesis state: what is the organizational preparedness of the University of Botswana to implement successful e-learning/WebCT CCMS system? The relevant hypothesis state: The organizational preparedness of UB does not determine the success of WebCT course content management system.

The information in the literature review, documents and reports collected from the center for academic development at the University of Botswana provided answer to the research question and data on the hypothesis. It was suggested that the University in term of its preparation for the implementation of its e-learning/WebCT CCMS has invested significant resources on the project. Moreover, significant infrastructural facilities have been put place which includes WebCT platform, smart classrooms, scanners and projectors, video conferencing systems, Mimio board, etc. The reports and documents also suggest that the university has tried a lot in terms of capacity building by organisng training and workshops on e-learning for academic staff for them to develop skills to teach through the WebCT CCMS platform. All these confirm the position by Byrd et al. (1995); Wixom and Watson (2001); and Zu et al. (2003), all of whom reported that organizational preparedness in terms of infrastructure, availability of funds (money), skills and capacity building positively correlate with and predict IS implementation success.

6.12. WebCT CCMS Challenges

Objective 10: The objective is to find out the challenges facing students when using WebCT course content management system. The research question on this research question state: What are the challenges of using WebCT course content management systems at the University of Botswana?

To answer this research question, a list of likely challenges faced in e-learning was provided and the participants were required to respond in a multiple format. The purpose was to determine the challenges commonly faced by the users when using the WebCT course content management system at the University of Botswana.

Both students and lecturers indicated that they encountered problems when using WebCT CCMS at the University of Botswana. Students' results suggest that the most common challenge is inadequate access. This is followed by network/server failure and long download time for large adobe and PPT files. Besides the problem of downloading and loss or forgotten password which the results indicate as the least faced challenges, other challenges mentioned by the users are: assignment submission problem, completed courses not removed from the system, course information not uploaded on time, difficulty in opening important documents, inadequate information on courses, unavailability of information on the area of study, invalid links and lack of access outside the university campus, etc. Lecturers reported limited access similar to that of the students was also identified. Lack of linkage between the ITS and WebCT, low class attendance by students, slow network connection and sometimes its unavailability are the challenges they identified. In the literature, studies have been cited that indicate that in the process of implementing and using e-learning, there is bound to be a problem. Some of the studies that point out this problem are West et al. (2007) who identified technical problems as the major problems and challenges faced by blackboard users in their study; and Runnels, Thomas, Lan, & Cooper (2006) who ascribe shallow or low level thinking found in student contributions to instructors' insufficient guidance in synchronous and asynchronous discussions. Relevant to these technical problems, log on problems were identified by the lecturers interviewed in this study. On this issue, one interviewed respondent said, "with logging-on and with general network performance last year, it was actually not possible to log-in from outside". Another respondent stated that, "sometimes the system can be very slow, and may not even come up at some other times"

Also, Kim, Liu, and Bonk (2005) identified delayed feedback, difficulty in communicating with team members, and lack of emotional connection. Lack of a sense of community and feelings of dis-connectivity, level of social interactions with the instructor and delayed feedback were identified by Vonderwell (2003). In addition, other studies that report similar results to the present findings include (Aartsen and Bowmester, 2001; Duemer et al. 2002; Perides, 2002; Conrad, 2002; Woods, 2002; Nijhuis and Collis, 2003; Song et al. 2003; and Jackson and D'Allessandro, 2004). All information systems face challenges of implementation and use. This is exactly the case with the WebCT course content management focused on this study.

6.13. WebCT Challenges and Solutions

Objective 9: The objective is to suggest ways of finding a solution to the various identified challenges. The research item on this issue states: suggest recommendations on how the challenges faced can be addressed. To answer this research question the researcher used the interview data collected from the lecturers interviewed.

The results suggest that most of the lecturers interviewed testified to the fact that they were facing challenges in the process of using WebCT CCMS for teaching and learning in the university. Some of them have been earlier identified. The solutions to the challenges include the fact that as far as access is concerned, there is need for the university to improve the access to WebCT system in terms of making provision for more computers and consider building more computer laboratories throughout the university. The need for general improvement level of IT at the university and linking ITS with WebCT to enable better access to computers at the university was also identified. On the issue of slow connection of the Internet and the WebCT, one respondent suggested that "the University should consider increasing the bandwidth so as to allow the system to work faster and better'". The need to train lecturers on the use of WebCT was identified so that number of those who teach via the platform can increase. Moreover, the removal of outdated courses that still remain on the WebCT were also suggested. On the technical problems one respondent said "educational technicians on campus should always move around during lessons to switch on the projector for staff use and should do the same to switch them off and besides; staff should be inducted on the operation of the CCMS equipment".

6.14. Summary of Discussion

It is evident from the discussion above that the findings of this study suggest there are relationships between all the WebCT CCMS evaluation constructs and WebCT CCMS system success. This implies that each of the constructs is important when evaluating the success of WebCT CCMS system. Also the discussion is relevant in that it corroborates the literature and the Delone and Mclean model in particular which claims that inter-relationship between all the models and and success of the system.

CHAPTER SEVEN
CONCLUSION AND RECOMMENDATION

7.1. Introduction

The purpose of this study was to evaluate WebCT Course Content Management system at the University of Botswana using Delone and Mclean IS Success model. The specific objectives of the study are to:

- Evaluate the WebCT system quality.
- Evaluate the course content quality on WebCT from students' perspectives.
- Determine the quality of support services provided for WebCT.
- Determine the quality of teaching and learning through WebCT.
- Determine how students self-regulate their learning via WebCT.
- Find out the students' Intention to use WebCT.
- Find out students' satisfaction with WebCT.
- Investigate the benefits of WebCT to students.
- Find out the challenges faced by students when using WebCT.
- Suggest recommendations on how the challenges faced by students in using WebCT can be addressed.

This chapter contains a summary of the findings of this study on the evaluation WebCT course content management system at the University of Botswana. The summary is based on chapter 5 and 6 which analysed the data and discussed the findings.

7.2. Summary of Findings

Based on the evaluation of WebCT CCMS and on the review of relevant studies undertaken internationally and locally, it can be concluded that WebCT CCMS has achieved success at the University of Botswana. The quality of WebCT system, content of course materials uploaded on the system, support service quality, quality of the teaching and learning via the system are all very high. Furthermore, by learning through the system students are able to self regulate their learning, and given an opportunity, the students are ready to

continue learning on the platform. Results also suggest that generally students are satisfied with the performance of the WebCT CCMS and that there are lots of benefits associated with the system as far as teaching and learning at the university is concerned. This is in line with the claim by Delone and Mclean that an information system is successful if the users report high quality of the system and the services provided to the users; if the users are satisfied with the system and the intention to use it is high; and if the benefits of the system are felt at all levels of the organization who use it.

Moreover, the results of the test of hypotheses revealed that all the identified factors or measures (system quality, content quality, service quality, teaching and learning quality, student self-regulated learning, intention to use/ use, user satisfaction and net benefits) are factors that contribute to the success of WebCT evaluation. This suggests that the research model developed in this study is a good model to measure and evaluate the success of course content management system at the University of Botswana.

The problems associated with WebCT CCMS by both the staff and students of the University include access, network /server failure, lack of link between ITS and WebCT, lack of expertise to teach on the platform, students absenting themselves from classes, completed courses not being removed from the system, etc. In addition, the solution preferred to the identified problems includes the fact that the university should consider constructing more computer laboratories to provide more computers, train and induct both lecturers and students on how to use WebCT for teaching and learning, make compulsory the use of WebCT at UB and improve bandwidth of the Internet and WebCT CCMS system among others.

7.3. Recommendations

The aim of the study was to use Delone and Mclean information system success model as a benchmark to evaluate the success of WebCT CCMS at the University of Botswana. Based on the findings, the study makes a number of recommendations that attempt to address the shortcomings in the use and implementation of WebCT CCMS at UB. The following sections provide the based on the findings.

7.3.1. Success of WebCT Course Content Management System

The main objective of the study was to evaluate the WebCT Course Content Management system at the University of Botswana using Delone and Mclean IS Success model. The purpose was to determine how the Information success model by Delone and Mclean can be used as a benchmark to evaluate the success of WebCT course content management system at the University of Botswana.

The results of the Percentages and frequency count, Pearson correlation analysis, and Multiple Regression show that WebCT course content management system is doing well at the University of Botswana and that all the independent variables (system quality, content quality, service quality, teaching and learning quality, students' self-regulated learning, intention to use and use, user satisfaction and net benefits) significantly correlate with and determine the success of WebCT CCMS evaluation.

Recommendation 1

Since the results show that factors with the least correlation and prediction value to WebCT CCMS are content quality, teaching and learning quality, use and service quality, it is recommended that:

1 The university needs to improve the support services provided for the users of WebCT course content management system.
2 Teaching and learning is the core business of an e-learning system. It was expected that this should have been the highest correlation value of the success of the WebCT. Teaching and learning quality correlated with WebCT success evaluation. However, there is need for improvement in the quality of teaching and learning through WebCT at the university. The content of the materials (course note, PPT, assignments, other activities) on WebCT should be improved.
3 Improved use of WebCT CCMS at the university is essential. The university should make it compulsory for every lecturer at the university to teach via the platform. If this is done, it means all the students, whether they like it or not will have to learn via the platform thereby increasing the number of users.

7.3.2. The Quality of WebCT Course Content Management System

The objective is to evaluate the quality of system of WebCT course content management system.

The result reveals generally that the quality of WebCT system is very high. Similarly, the result of the test of hypothesis revealed that there is a significant correlation between WebCT system quality and WebCT system success which implies that the success of WebCT system quality determine WebCT system.

Recommendation 2

1 The university should not compromise the quality of WebCT CCMS already attained but rather improve upon it by setting benchmarking with WebCT system in other Universities in the developed countries.
2 Improving the quality of the WebCT system calls for increasing access to the system. The access points to WebCT system at present are very minimal. In the light of this, the university should consider it a matter of urgency to increase access points to the WebCT at the university. This will enable more access to the system.

7.3.3. Content quality of WebCT Course Content Management System and Student

The objective is to evaluate the quality of content quality of WebCT course management system to students. The result reveals that the content of WebCT CCMS is of a good quality compared to face-to-face method. Similarly, the result of the test of hypothesis reveal that content quality correlate significantly with WebCT CCMS evaluation and that the higher the quality of the content on WebCT by the users (students) the better the success of the system.

Recommendation 3

1 In order to improve the quality of the content of the system, there is need for the people in charge of the system at the university (e.g. WebCT Administrator or UB e-learning support team) to make sure that information relevant to courses they are teaching is uploaded on the system. In other words, there is a need for course content quality control. This is necessary to ensure all the content on the system is up

to standard. In addition, completed courses should be removed from the system to avoid conflicting with current active courses.

2 Lecturers should make sure that course materials are presented in user friendly formats. Also, course information should always be current and up-to-date.

3 The courses and content must have varied and current resources, systematically organized and easy to navigate for the learners. The lecturers need to consider these issues when preparing materials to be uploaded on the system for students' use.

4 Moreover, there should be a strong student's interaction and reflection as well as multiple methods of accessing course contents/information.

5 Lecturers should always stress the use of a variety of assessment methods both online and on paper, supplement lesson with CD to provide ease of access to multimedia with low bandwidth and interactive discussion and responses.

7.3.4. Support Service Quality and WebCT CCMS

The objective is to determine the quality of support services provided to students who are users of WebCT. The results reveal that the quality of WebCT service is very good. On the other hand, results from the testing of the hypothesis show that service quality exerts a lower positive correlation with WebCT success evaluation.

Recommendation 4

1 There is need for improved support service provided to WebCT users at the University of Botswana. The WebCT support staff should always consider making themselves available for assistance bearing in mind that the system is all about technology and it can develop technical faults at any time.

2 The University of Botswana should consider increasing the number of WebCT support staff on campus. By doing so, ready made assistance will always be available to users whenever they encounter problems in the process of using WebCT CCMS at the university.

7.3.5. Intention to Use/Usage of WebCT Course Content Management System

The objective is to find out the students' intention to use WebCT course content management system. The result demonstrates that students have the intention to use WebCT CCMS. However, the time spent using the system per week is very little and that the intention to use correlates with WebCT success which shows that it is a good measure of WebCT evaluation.

Recommendation 5

1 Students need to increase the number of hours they spend using WebCT on campus. If this is done, it will enable the university authority to acknowledge that the success of the system is inevitable when students use it for their learning.
2 The issue of access is still given that many students use the system only if they they know they will be successful. The university should consider building more computer laboratories on campus so that students' can use the WebCT CCMS.

7.3.6. Students' Satisfaction with WebCT Course Content Management System

The objective is to find out the students' satisfaction level with WebCT course content management system. The results show that students are satisfied with WebCT CCMS and that the users' satisfaction correlates significantly with WebCT CCMS success

Recommendation 6

1 The university should consider improving the efficiency of WebCT CCMS in order to make it more dependable. This is because efficiency and dependability are necessary aspects of the use of WebCT CCMS.
2 The output of the system was indicated to be the most satisfactory aspect by the users. In the light of this, it is recommended that the content should be more presentable. Those who have not been using it before may become attracted and convinced of using it.

3 To further enhance the overall satisfaction of the users, there is a need for regular upgrading of the system perhaps after 3-5 years to ensure that the system keeps pace with new developments and modifications. Part of the modification could include adding more activities to what is currently available on the system.

7.3.7. Benefits of WebCT Course Content Management System to Students

The objective is to investigate the benefits of the WebCT course content management system to students. The results show that the most important benefits of WebCT CCMS to the students is that it helps them to improve their learning, enables the university to respond more quickly to issue pertaining to teaching and learning and affords them the opportunity to think through problems. Other benefits revealed through the qualitative data are a high engagement in discussion between the students and teachers, facilitates monitoring and tracking of students' records of participation in learning activities, flexibility in terms of anytime anywhere learning, improvement in service delivery and improvement in the quality of teaching and instructional delivery. Related to this, the result of the test of hypothesis reveals that net benefits of WebCT course content management system correlates significantly with the success of the system and this makes it a good WebCT evaluation measure.

Recommendation 7

1 Students, trainers and WebCT support team should make it necessary to have control over users' access to the platform to ensure the tracking of the learners' activities.
2 There is a link between quality and budget earmark for undertaken courses on WebCT. It should be noted, therefore, that tutoring and the development of specific content increases quality but requires a lot of funds. The university should provide more funds for upgrading the system to accommodate more content.

7.3.8. Quality of Teaching and Learning and how Students Self-regulate their Learning through WebCT

The objective is to determine the quality of teaching and learning and how students self-regulate their learning via WebCT. The results reveal that the quality of teaching and learning through WebCT course

content management system is high and that the system enables the students to self-regulate their learning. Similarly, the result from testing of the hypothesis reveals that teaching and learning, and student self-regulated learning correlate with WebCT success evaluation.

Recommendation 8

1 Lecturers are called upon to consider always engaging learners in activities that do promote independent, self-directed learning so that they can be active and life-long learners. Such activities should be capable of developing appropriate cognitive, affective, and psychomotor skills. The activities should encourage critical thinking, creativity and problem solving in line with university ideas (learning attributes).
2 Activities and materials presented on WebCT should be presented sequentially in order of difficulty. Learners should consider interacting more with one another in order to benefit from the experience and professional expertise of one another.
3 Learners should be linked to resources beyond the course material. It is also important for instructors to make sure that activities are realistic and appropriate which can be performed with the resources and time available to the learners.
4 Lecturers should consider being facilitators of learning rather than mere providers of content.

7.3.9. Challenges Facing Students when Using WebCT Course Content Management System

The objective is to find out the challenges facing students when using WebCT course content management system. Both students and lecturers indicated that they encounter challenges when using WebCT CCMS at the University of Botswana. Students' results show that access is inadequate. This is followed by the failure of network/server and the next is the long time downloading of large adobe and PPT files. Apart from the long time taken and loss or forgotten passwords, other challenges are: assignment submission problem, completed courses not being removed from the system, course information not uploaded on time, difficulty in opening important documents, inadequate information on courses, unavailability of information on the area of study, invalid links and lack of access outside the university campus, etc. Lecturers reported limited access, lack of link between ITS and WebCT, low class attendance by students, network availability and other problems were reported.

Recommendation 9

1 The University of Botswana should consider it a matter of urgency to improve the access to WebCT system in terms of making provision for more computers and consider building more computer laboratories throughout the campus, bearing in mind that enrollment to the university is increasing. This call for more facilities to cater for the increasing enrollment rates.

2 There should be general improvement in the level of IT at the university. ITS should be linked with WebCT and there should be better access to computers at the university. The University should increase the bandwidth so as to allow the system to work faster and better. This issue is making it impracticable to use some e-learning facilities on campus. Hence, the university (especially the IT department), should find lasting solutions to this problem.

3 Orientation should be organized regularly on how to use WebCT and its tools and students should also be inducted.

4 Lecturers who encounter problems should always seek assistance at appropriate times and quarters.

5 WebCT administrators or those in charge of uploading courses on WebCT should always liaise with the lecturers to know which courses have been completed so that they can be removed from WebCT (i.e. by mailing the administrator telling him or her that at a particular date, particular course or courses have been completed and should be removed from the WebCT).

7.4. Implications of the Study

7.4.1. Implication for Practice

This study has several implications for the success of e-learning and its effectiveness. The empirical results emphasized the importance of assuming a multi-dimensional approach. Therefore, it is important for educational institutions implementing e-learning to put emphasis on various system levels. As indicated by Delone and Mclean (2003) the quality of information, system quality, service quality, system use, user satisfaction, and net benefit determine the effectiveness of the system. Designing strategies to improve only one variable is an incomplete if the effects of the others are not considered. The results of this study will encourage WebCT managers/administrators to include the measures of content quality, system quality, service quality, teaching and learning quality, self-regulated learning, intention to use/use, user satisfaction

and net benefits into their evaluation techniques of whatever e-learning system they use notwithstanding the overall evaluation, the WebCT evaluation questionnaire developed for this study can be used to to compare the success of an e-learning system with specific factors (i.e. content quality, system quality, support service quality, teaching and learning quality, self-regulated learning, user satisfaction and net benefits). If any tertiary institution implementing e-learning finds itself lacking in any of these dimensions, then it can do a more detailed analysis and take the necessary corrective actions. The WebCT CCMS evaluation questionnaire was designed to be applicable across a broad spectrum of e-learning systems, and to provide a common framework for a comparative analysis. This framework (Figure 3) can be adapted, modified or supplemented to suit specific practical needs of a particular e-learning environment. It is observed that apart from the quality of teaching and learning which reflects the core business of e-learning, there are still other relevant variables that can be added. These two variables are expected to help future researchers come up with other variables that reflect this core business of e-learning.

To ensure the success of e-learning system in tertiary institutions, e-learning policy makers can borrow ideas from the results of this study. This could contribute to the success of their e-learning system.

This study has brought about new measures and evaluation models required to measure success with contemporary IS as suggested by Isman, 1996; Sedera et al. (2003c). In this regard, instead of relying on instruments and measures that were validated with what are now outdated information systems (Jurison, 1996:75-159; Saarinen, 1996), information system researchers can now make use of contemporary IS measures validated in this study to determine the success of their IS success.

Moreover, this study has extended the bridge of our knowledge into CCMS success evaluations. The study has responded to the call made by researchers (e.g. Wang et al., 2007) for more studies to investigate other aspects of e-learning. Hence, this study has adapted and modified the dimensions of success in the updated Delone and Mclean IS Success Model to determine the success of WebCT course content management system at the University of Botswana.

7.4.2. Implications for Theory

Many factors have been employed as measures of IS success and most of these have been measured in some previous studies. However, in previous IS literature, the success of information systems as a multi-

dimensional construct has been measured only through user satisfaction or system use. This study has conceptualized the construct of WebCT CCMS success, provided a validated construct and its underlying dimensionality, and developed a questionnaire instrument with psychometric properties for measuring WebCT course content management system success.

Theoretically, this study contributes significantly to the identification of learning factors such as teaching and learning quality, students' self-regulated learning that may lead to WebCT course content management system being modified and the model pioneered and revised by Delone and Mclean (2003). In addition, the evidence should assist e-learning support team and WebCT administrators in universities and other educational institutions, public or private to improve the existing systems. To ensure e-learning/WebCT course content management system is successful, educational institutions should make sure CCMS objectives are aligned, administrators are trained and equipped with IT knowledge, top administrative staff are involved in all activities pertaining to IT/WebCT system use, and resources such as time, money and manpower are sufficiently allocated.

Furthermore, the factors examined provide a strong basis for the understanding of the success of WebCT CCMS. The study has also bridges the gap of limited evaluation of success of IS which is very rare in an educational setting. It has also contributed to the body of research on the course content management system although much of the literature exists in Europe, North America and Asia. As it has been shown in this study, the modified Delone and Mclean (2003) information system success model was adapted to develop a model for the evaluation of WebCT Course Content Management system success at the University of Botswana. The original Delone and Mclean (1992) IS model consisted of system quality, information quality, use, user satisfaction, and the individual and organizational impact. The addition of other variables like service quality and the synthesis of individual and organizational operations impacts as net benefits.

The approach to this investigation could be replicated in other tertiary institutions implementing e-learning. It is hoped that the model that has been proposed can be adapted and tested in institutions similar to the University of Botswana. The findings of this study may influence policy and practice at UB and beyond.

The recommendations of the present study may be used to design or improve WebCT at UB and other tertiary institutions.

It should be noted that there is no model developed for the evaluation of WebCT CCMS system particularly in an educational setting. This is why researchers who have worked in this area have made use of available relevant IS models. The same thing was done in this study by making use of the Delone and Mclean IS model. This was done by way of modifying the model to suit the purpose and setting in which the study was conducted. This adaptation led to the introduction of educational variables, to reflect an educational setting. As a result, "the model" now has system quality, content quality, support service quality, teaching and learning quality, students' self-regulated learning and organizational preparedness. Other variables are intention to use/use, user satisfaction and net benefits, thereby increasing the variables in the model from six by the original author to nine as in this study (See Figure 4).

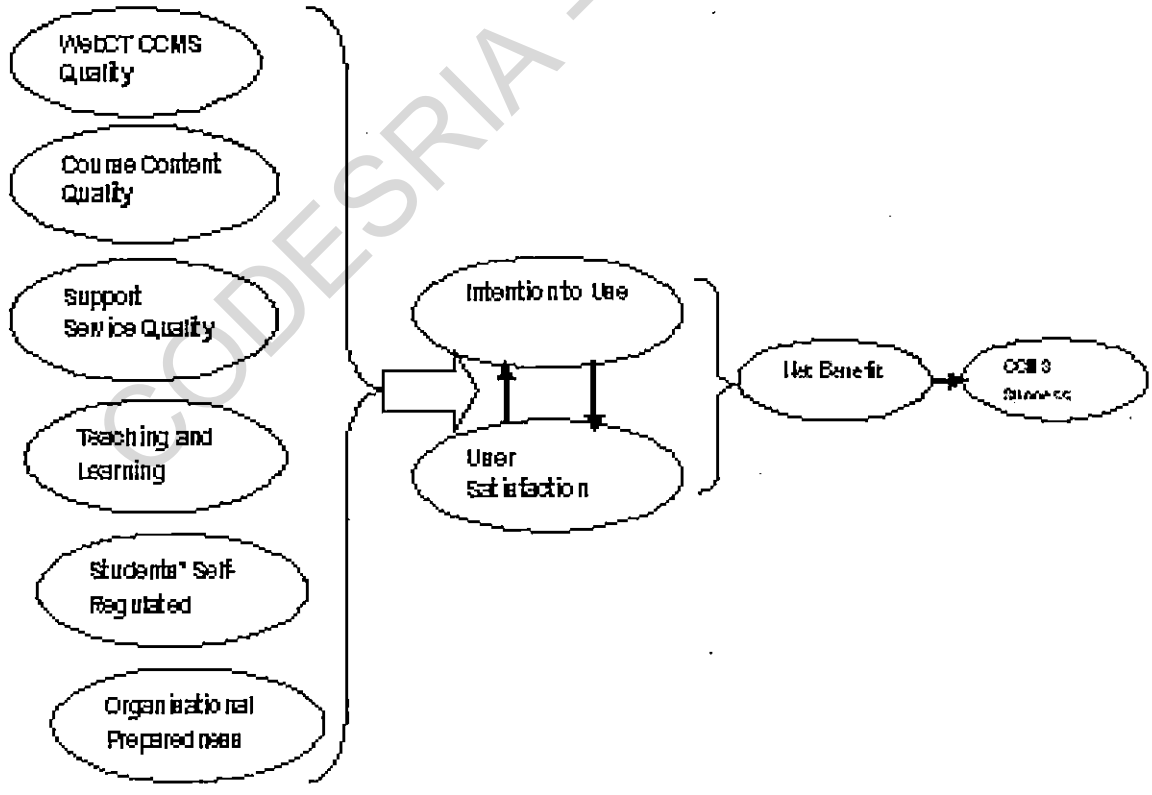

Figure 4: Adaptation and Modification of Delone and Mclean Model

The results in this study have proved that all the variables in the model made 48% prediction of WebCT success and so they are good measures of e-learning/WebCT CCMS success evaluation (See figure 5). This has extended the model for evaluating e-learning which e-learning researchers have been grappling with over the years. It is now expected that educational institutions, corporate organizations or researchers should make use of this model when carry out an evaluation of their e-learning system.

It should be noted that there is no specific prediction power considered reliable in the IS literature. Osborne (2000) observes that there are no guidelines in the literature on the acceptable predictive power. Literature on this study indicates that individual prediction ranges from 13% (Crowston et al, 2003) to 75% (Seddon and Kiew, 1994) but this is peculiar to users' satisfaction measures and not the prediction of the success of the information system. The 48% prediction reported in this study is considered reliable because the prediction of most information system constructs in IS literature ranges from 40 to 65% (Hussein et al, 2007; Seddon and Kiew, 1994).

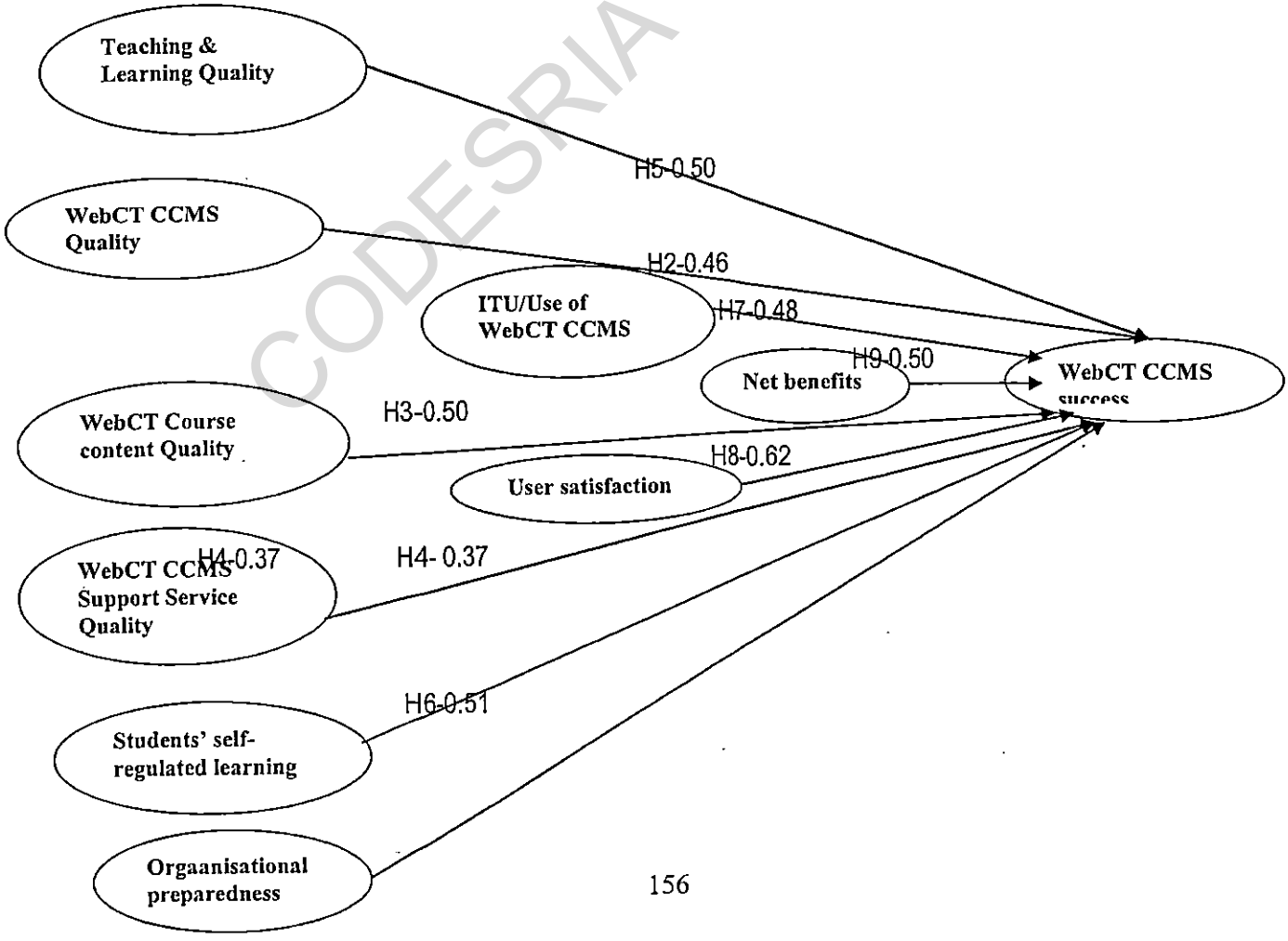

Figure 5: The Resulting Study Model on Course Content Management System Success

7.5. Areas of Further Research

This study has endeavoured to establish a research model for the successful evaluation of WebCT course content management system at the University of Botswana. However, the study has some limitations that can be addressed in future research.

First, this study approached the evaluation of WebCT course content management system from the students' perspective and used interview data collected from the teachers who teach through WebCT platform to produce in-depth information on the benefits of the system to teaching and learning. However, the system can be evaluated from several perspectives. For instance, the system can be evaluated from other dimensions. Therefore, similar studies can focus on these perspectives from which WebCT CCMS success can be evaluated.

In terms of scope, this study is confined to the University of Botswana. Future research could include more tertiary educational institutions in Botswana that are implementing the course management system.

The Delone and Mclean's modified IS success model was used as a benchmark to develop the research model on this study which helped to design the WebCT evaluation questionnaire. However, by evaluating WebCT CCMS, this study did not examine the causal relationships between the eight WebCT CCMS success factors. The Delone and Mclean (2003) model emphasized that IS success is multidimensional with interdependent constructs. It is therefore necessary to study the inter-relationships among those dimensions. Based on an updated IS model proposed by Delone and Mclean (2003) and the research model developed in this study, future research efforts could explore and test the causal relationships among content quality, system quality, support service quality, teaching and learning quality, intention to use user satisfaction, net benefits and other identifiable or justifiable WebCT/e-learning success constructs. Findings from such an effort could provide more information on how to implement e-learning/WebCT CCM systems within tertiary institutions.

Methodologically, this study does not allow for an elaborative understanding of the WebCT CCMS as a case study should. Therefore, further research should focus how the University of Botswana achieves the WebCT CCMS success in order to be helpful to the providers of the future WebCT CCMS/e-learning projects.

The findings of this study have shown that WebCT at UB has achieved reasonable measure of success from the perspective of students and staff. However, there is need for benchmarking of UB WebCT use with the state of the art.

It is evident that e-learning is beneficial to educational and corporate organizations. However, not many organizations use it or have plans to implement its use. In the light of this, there is need for studies to find out why this is so. Is it because they don't have the resources for implementation, or the workers don't have the skills? There is a need to find out the users attitude towards the implementation of e-learning in an educational setting.

7.6. Conclusion

This study proposed a WebCT CCMS success model and empirically tested the relationships between variables. In brief, the study discovered that content quality, system quality, support service quality, teaching and learning quality, self-regulated learning, intention to use/use, user satisfaction, net benefits and organizational preparedness are important factors for evaluating the success of WebCT CCMS. Generally, the results suggest that the evaluation of WebCT CCMS at the University of Botswana is successful. User satisfaction, WebCT CCMS benefits, self-regulated learning and content quality play more roles than other factors in terms of determining WebCT CCMS success evaluation.

The study has shown that there is room for the reevaluation of the Delone and Mclean (2003) model by addressing the problems that hinder a successful implementation and to test the factors that contribute to success in different environments.

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Appendix I

WebCT Evaluation Questionnaire

Dear Respondents,

The purpose of this questionnaire is to collect information on the evaluation of WebCT course content management systems at the University of Botswana. The questionnaire is meant for the students at the University of Botswana. Information provided will be meant purely for research purposes and besides, the information is anonymous. Your responses will contribute greatly to the success of the research. All information will be treated with utmost confidentiality, and no individual will be identified by name in the final document.

Direction: Please indicate (by ticking) your agreement with the following items on course content management systems.

Strongly Agree = SA

Agree = A

Disagree = D

Strongly Disagree = SD.

Note: Course content management system (CCMS) is defined as the use of series of information communication technology and web-based tools to manage online teaching and learning activities. Example of course content management system used at the University of Botswana is WebCT.

Now respond to the following items:

	A. Criterion Measure (Success of CCMS)	SA	A	D	SD
1.	Overall the impact of course content management system on learning at UB has been positive				
2.	Overall the impact of course content management system on me has been positive				
3.	The performance of course management system at UB to me as student is beneficial				
4.	From my own perspective as UB student, use of WebCT CCMS is a success.				

	B. Course Content Management System Quality	SA	A	D	SA
5.	Course content management system availability is very high				
6.	Course content management system is easy to use				
7.	Course management system is user-friendly				
8.	Course content management system provides interactive Features between users and system				
9.	Course content management system provides high-speed access to Information.				

	C. Content Quality	SA	A	D	SD
10	I think course content is always presented in a useful format				
11.	Course content management system provides up-to-date information				
12.	Course content management system provides course content/information that seems to be exactly what I need.				
13.	Course content management system provides content/information relevant to my discipline.				

D.	Service Quality	A	SA	A	D
14.	The CCMS system provides a proper level of on-line assistance and explanation.				
15.	The IT department/e-learning support staff are always available for consultation.				
16.	The IT department/e-learning support staff provide satisfactory support to users using the e-learning course management system at UB.				

	E. Intention to Use Content Management Usage	SA	A	D	SD
17.	The frequency of my using course content management system is high				
18.	If course content management system were not mandatory, I would still use it.				
19.	I spend many hours per week with course content management system.				
20.	I do not spend long hours per week with course content management system.				
21.	Assuming I have access to CCMS, I intend to use it				

	F. User Satisfaction with CCMS	SA	A	D	SD
22.	The course content management system is efficient				
23.	I find the CCM system dependable				
24.	I am satisfied with the accuracy of the system				
25.	The output of the system(content) is presented in a useful format				
26.	The system is adequate to meet the information processing needs of my area of responsibility				
27.	Over-all, I am satisfied with the system				

	G. Net Benefits	SA	A	D	SD
28.	The course content management system helps me improve my learning performance				
29.	The CCMS helps me think through problems.				
30.	The CCMS enables the University to respond more quickly to change regarding teaching and learning.				
31.	The CCMS helps the University to produce better products.				
32.	The course content management system helps the University save cost relating to teaching and learning.				

	H. Teaching and Learning Quality	A	SA	A	D
33.	Learning through a course management system is stress free.				
34.	Learning through a course content management system is easier.				
35.	Course content management system aides active learning				

	I. Self-regulated learning	SA	A	D	SD
36	CCMS allows me to ask myself questions to make sure I understand the material and courses I have been studying and offered.				
37.	CCMS helps me to practice exercises/answer assignment and quiz questions.				
38.	CCMS helps me decide on the things I will need to do to learn before offering a course.				
39.	CCMS enables me to control my learning progress				

J. Challenges of using WebCT CCMS

40. Which of these problems and challenges do you face when using the WebCT course content management system?

	J. Challenges of using WebCT CCMM	Please Tick
11.	Log on problem	
2.	Loss or forgotten password	
3.	Network/Serve failure	
4.	Access problem	
5.	Long download time for large adobe and PPT files.	
6.	Others please specify...	

Your Faculty.....

Your Department.....

Year of Study.....

Gender.....

Appendix II
Interview Items

Explain how you implemented your course through WebCT course content management system.

What benefits and advantages have you experience from the use of WebCT course content management system since you have been using it to teach your course?

What are your general observations about using WebCT CCMs for teaching courses?

What are the problems you have encountered using WebCT course content management system?

What solutions would you proffer for the problems identified above?

APPENDIX III
SAMPLES OF INTERVIEW RESPONSES BY THE LECTURERS

RESPNDENT 1

QUESTION: Sir, how long have you been teaching and delivering your courses through WebCT course content management system?

RESPONSE: Thank you very much the questioner. Let me see....., let me see.....I have been teaching and delivering my courses through WebCT for.....like em.....for, yes, yes.....for the past three years now.

QUESTION: Sir, Please kindly explain how you implement your course or courses through WebCT course content management system.

RESPONSE: Thank you very much. I provide for the students the following teaching and learning materials- lecture notes, lecture presentations, tutorial sheets, extra (solved) examples, multiple choice-tests, and sometimes extra lecture materials presented in different ways to my lectures. The students also submit their lab reports and assignments via WebCT. Through WebCT, I communicate with my students' and distribute their marks.

QUESTION: Thank you very much sir. You said you have been teaching and delivering your courses on WebCT for the past three years, so; what do you consider as the benefits of WebCT course content management system to teaching and learning?

RESONSE: Thank you very much. That is a very good question. WebCT is beneficial, and that is that is why some of us....., I said some of us who are aware of its benefits are using it. The university implemented it because of its benefits. Back to your question....., the main benefit is to the students. And this have to do with their access to the material at any moment in time and from anywhere "remember the idea, 'anytime anywhere'". It also allows the students to work at their own pace. Moreover, er....., it improves collaborations and interactivity and is less intimidating for students in contact with a lecturer.

QUESTION: Apart from the benefits you have identified sir, what are your general observations about using WebCT for teaching courses?

RESPONSE: The system work fine if the students are willing to participate.

QUESTION: Sir, you have identified the benefits of WebCT course content management system; what problems have you encountered using the system?

RESPONSE: The major problems I have encountered are:

1. No link between integrated technology service (ITS) and WbCT. ITS and WebCT are independent of each other. This makes the job becoming unpleasant. WebCT do not have all the names of students registered, and there is also the fact that most of the time registered students on ITS are different from those registered on WebCT.

2. Students willingness to work on their own because they now have an opportunity of to download class notes, assignments and other course materials, they are therefore reluctant to attend classes.
3. Access to computers especially after working hours is very difficult.
4. Network problems; with logging-in and with general network performance. For instance, last year, it was practically not possible to log-in from outside the campus.
   There are others but time will not permit to mention more, anyway; I have giving you the most important ones.

QUESTION: Thank you very much. Now that you have identified the problems, what solutions would you proffer for the problems identified?

RESPNSE: Solution, solution, okay, there is need for improving the general level of IT at UB; link ITS and WebCT and provide better access to computers for students.

There is also a problem of staff not really participating: it is not related to my course but it is a problem. Using WebCT is not only to put some material there for students to see but also general use of the system for assessment, communication, etc. That require time and effort, it will not happen without some incentives.

RESPONDENT 2

QUESTION: Sir, how long have you been teaching and delivering your courses through WebCT course content management system?

RESPONSE: I am not new to the system. I have been using it in my former university. It is exactly 8 years now that have been using the system for teaching and delivering courses.

QUESTION: Sir, Please kindly explain how you implement your course through WebCT course content management system.

RESPONSE: Through recipe; though WebCT can be utilized in many ways for teaching. There are features and functionality that guides, such as, announcement, email and others. I put questions on the system, when students respond through email, I assume that I get my response. Through the system, I disseminate information related to the courses, course outlines, slides, link to relevant materials on the web and time table.

QUESTION: Thank you very much sir. You said you have been teaching and delivering your courses on WebCT for the past 8 years, what do you consider the benefits of WebCT course content management system to teaching and learning?

RESPONSE: There are many benefits:

For assessment for instance, the system provide an opportunity to have highest time and engagement in discussion between students and teacher on course related topics. Through bulletin board, teaching is well facilitated.

It's allows for monitoring of students' participation. Through the system, the teacher knows what the students have done, who is participating and who is not.

There is no need for meeting the students face-to-face. Course outlines and other course content materials are put online for the students. And if there is information to put across to the students, the announcement feature is used.

As a repository to information, the system helps create a paperless teaching and learning environment, increase access to materials and enhances communication. It also leaves room for tracking students' engagement which helps learners and teachers in the learning process.

In addition, the mode of communication at different times and place is worthy to mention. It increases the opportunity of learning in accessible and customisable manner to individual learners. The system also allows teaching a course repeatedly and keeps the record of the course taught. This tracking of teaching and learning usually leads to accountability and facilitate keeping of students marks not by the teacher but by WebCT itself. This is because students cannot claim they submitted an assignment if they did not because WebCT keeps very good records.

Just like I said, there are many benefits but now there is no time to continue mentioning all the benefits now because I will be having a lesson very soon. However, let me add that em....., the features of the system give students an opportunity to compare activities of the lecturers and their own in a particular course. Moreover, I can say that ...that.....that.....the system improves service delivery to the students for instance the assessment tool, I mean the assessment tool of the system reduces the time spent on marking since the students' work can be mark automatically.

QUESTION: Apart from the benefits you have identified sir, what are your general observations about using WebCT for teaching courses?

RESPONSE: The system does not operate well. It's requires high broad band.

QUESTION: Sir, you have identified the benefits of WebCT course content management system; what problems have you encountered using the system?

RESPONSE: Access is limited. I teach large class 70 students sometimes. Computers are not enough in the laboratory for all the students. Sometimes, the laboratory is booked by another lecturer meaning that I have to wait for the lecturer to finish. Most of the computers laboratory on campus cannot contain more than 60 students at a time and there are courses with 80 students or more.

QUESTION: Thank you very much. Now that you have identified the problems, what solutions would you proffer for the problems identified?

RESPONSE: I think I have answered this in what I have explained earlier. There is need to increase the broadband of the system so that it can operate better. Moreover, building more computer laboratory is very important. The university has to consider this.

RESPONDENT 3

QUESTION: MMa, (MMa is used to address woman in Setswana Language) how long have you been teaching and delivering your courses through WebCT course content management system?

RESPONSE: Thank you very much. I have been teaching on WebCT for three years now.

QUESTION: Ma, Please kindly explain how you implement your course through WebCT course content management system.

RESPONSE: I post all parts of my courses on WebCT. These parts are handouts, reading materials, and practicals. All the students get access to the WebCT where they are able to get the work for each week. Also I post assignments there for the students to respond using the same technology.

QUESTION: Thank you very much Mma. You said you have been teaching and delivering your courses on WebCT for the past 3 years, what do you consider as the benefits of WebCT course content management system to teaching and learning?

RESPONSE: These are numerous un un un .....but I will be brief.
First, the system improves delivery speed, because notes are uploaded, students can listen rather than worrying about note taking. Secondly, those who did not attend class can have access to lecture notes. Thirdly, it saves paper, since there is no need to print handouts; and it's encourages teachers to always prepare and be organised.

QUESTION: Apart from the benefits you have identified ma, what are your general observations about using WebCT for teaching courses?

RESPONSE: Thank you. The system is very good because you can contact many students and many students can contact you. Apart from that, let me say..... The system is.....anyway, it really improves the teaching of courses.

QUESTION: Mma, you have identified the benefits of WebCT course content management system; what problems have you encountered using the system?

RESPONSE: I have observed that .....em .....students tend not to come to classes the moment they get the handouts for the day. I normally tell my students to take advantage of having the handouts before the class, but they should not stop coming for classes because the handouts do not carry everything.

I have also found that .....em.....courses are still found on the system even after completion.

QUESTION: Thank you very much. Now that you have identified the problems, what solutions would you proffer for the problems identified?

RESPONSE: Every year when you upload/register a course with Edutech, your course profile should just be empty so that you can upload new content. At the end of the semester they should give you an option of whether you want to use the materials from previous year or not.