Derrick Katunzi

TOWARDS ADOPTION OF E-LEARNING TECHNOLOGIES AT LAPPEENRANTA UNIVERSITY OF TECHNOLOGY: Understanding Teachers' Adoption of Blackboard Learning System

Dedication

In memory of my beloved father

RICHARD MWOMBEKI KATUNZI

ABSTRACT

Author: Katunzi, Derrick

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The electronic learning has become crucial in higher education with increased usage of learning management systems as a key source of integration on distance learning. The objective of this study is to understand how university teachers are influenced to use and adopt web-based learning management systems. Blackboard, as one of the systems used internationally by various universities is applied as a case. Semi-structured interviews were made with professors and lecturers who are using Blackboard at Lappeenranta University of Technology. The data collected were categorized under constructs adapted from Unified Theory of Acceptance and Use of Technology (UTAUT) and interpretation and discussion were based on reviewed literature.

The findings suggest that adoption of learning management systems by LUT teachers is highly influenced by perceived usefulness, facilitating conditions and gained experience. The findings also suggest that easiness of using the system and social influence appear as medium influence of adoption for teachers at LUT.

Keywords: E-learning, UTAUT, Learning management systems, Information systems, Technology acceptance, Adoption

резюме

Автор: Катунзи, Деррик

Тема: Переход на дистанционные технологии обучения в Лаппеенрантском технологическом университете: факторы влияния на освоение преподавателями системы поддержки образовательного процесса BlackBoard

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Ключевые слова: дистанционное обучение, система управления учебной деятельностью, информационные системы, приобщение к технологиям

Дистанционное обучения становится неотъемлемой частью образовательного процесса в Высших учебных заведениях, а системы управления учебным процессом– необходимым условием интеграции многочисленных высокотехнологичных инструментов обучения. Целью данной работы является выявление факторов влияния на освоение преподавателями информационных систем поддержки образовательного процесса Исследование проведено на примере внедрения системы Blackboard, как одной из наиболее широко используемых в мире платформ информационной поддержки обучения. В полуструктурированных интервью приняли участие профессора, старшие преподаватели и ассистенты Лаппентрантского технологического университета. Систематизация эмпирического материала проведена в соответствии с единой теорией принятия и использования технологии (UTAUT).
В работе было выявлено, что приобщение к новым образовательным технологиям преподавателей Лапеентрантского технологического университета во многом зависит от понимания ими полезности ИТ-инструментария, уровня сопровождения системы Blackboard, а также приобретенного опыта взаимодействия с элементами системы. В то же время удобство использования, а также различные социальные факторы оказываются второстепенными при принятии преподавателем решения о регулярном применении дистанционных технологий обучения в учебном процессе.

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This topic has turned out to be a key for my understanding and practicing of professionalism by having a unique chance of integrating with professors and lecturers and discuss very contemporary issues around their working environment. Therefore, I want to present my respectful gratitude to all professors and lecturers who participated in this research for their enormous contribution of information, advices and inspiration.

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16.05.2011 Derrick Katunzi

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ABBREVIATIONS

ALT	Association for Learning Technology
CD-ROM	Compact disc read-only optical memory
DOI	Diffusion of Innovation
DTPB	Decomposed Theory of Planned Behaviour
IDT	Innovation Diffusion Theory
IT	Information Technology
ICT	Information and Communication Technology
IS	Information Systems
LMS	Learning Management Systems
LLC	Limited Liability Company
LUT	Lappeenranta University of Technology
MM	Motivational Model
MPCU	Model for Personal Computer Utilization
PC	Personal Computer
SCT	Social Cognitive Theory
TAM	Technology Acceptance Model
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behaviour
UTAUT	Unified Theory of acceptance and Use of Technology
VPN	Virtual Private Network

1 INTRODUCTION

This study focuses on individual-level adoption of learning management systems at Lappeenranta University of Technology in Finland. The current chapter introduces the study by presenting the background focuses on LUT environment of electronic learning and an overall e-learning concept. Afterwards, the purpose of the study which describe the determination of the study, to what group it is focusing and who will benefit from the findings, is presented. The remaining sub-chapters defines objectives of the study and research questions, structure of the study, definitions of the key terms which are used in this research, and lastly delimitations which explains the boundaries of this study.

1.1 Background

Technology advance has impacted almost all areas of production and services including teaching and learning. There are various changes on uses of technology on teaching and learning driven by many factors within and outside academic institutions. Private and public firms, government institutions, as well as academic institutions, participate and emphasize on usage of e-learning systems to maximize their production and performance value. Lappeenranta University of Technology is one of the academic institutions in Finland that uses online learning management systems for teaching. LUT implemented Blackboard learning system in spring of 2008, replacing older version of WebCT. The currently used version of Blackboard in LUT is known as "*Blackboard CE 8*" and it is mainly used by LUT teachers to supports face-to-face teaching (Lappeenranta University of Technology, 2011). Other web-based tools currently utilized at LUT include WebOodi, Noppa and Venla.

Although e-learning systems are equipped with a lot of useful features, obligations to technology advance, the use of emerging information technology in general has fallen below expectations (Johansen & Switgart,

1996; Moore, 1991; Weiner, 1993). This is also seen at LUT, where some of the teachers have adopted Blackboard in their teaching while some have rejected it. How users are influenced to adopt learning management systems and what are the reasons for rejection is worth to understand by all LUT's stakeholders, including management, instructors and system administrators.

Before moving further on introducing the purpose and objectives of this study, it is necessary to understand the notion of e-learning, since learning management system such Blackboard is one of the facilitators of e-learning. The common definition of e-learning has not yet been confirmed by researchers, but some of them perceive it as a way of teaching by using electronic media, such as internet, audio/video tape, interactive TV, satellite broadcast, CD-ROM and intranets (Engelbrecht, 2005; Urdan & Weggen, 2000), while others view it as online learning which utilizes web-based communication, knowledge transfer, collaboration and training which add values to the individuals and organizations (Kelly Bauer, 2004). Raab, Ellis, and Abdon (2002), describe e-learning as a situation where instructors and learners are separated by distance, time, or both. According to Liaw (2008), e-learning involves network technologies to create, operate and enable learning anytime and anywhere.

E-learning is highly dependent on technology (Keskinarkaus, 2010), thus describing the relation between users of e-learning and technology is essential. Technology integration in education settings has enforced the institution and system developers to analyse the best methodologies for teaching and learning through technology. With such interdependent situation, interpersonal factors for successful use and adoption of a teaching system, such as end users' acceptance, play a major role in determining the full implementation of e-learning system. Manross and Rice (1986) indicated that, when an institution introduces new technologies, full implementation and successful adoption will not be

achieved, unless the workforce accepts technologies. Furthermore, the introduced system should reflect the users' perception of it, since the value of technology depends on its acceptance by users, as Davis et al., (1989, p 982) said;

> "*Computer systems cannot improve organizational performance if they are not used. Unfortunately, resistance to systems for the 'end user' among executives and professionals is a generalized problem. In order to forecast, explain and enhance user acceptance, we must understand better why people accept or reject computers*"

1.2   Goal of the study

The purpose of the study is to uncover and describe LUT teachers' perspectives on factors that determine continuance usage and adoption of Blackboard learning system as a web-based system that is currently used in Lappeenranta University of Technology. The study also presents practicality and barriers for adoption perceived by teachers on their daily usage of the system. This will enable the academic institutions and universities to understand "what" the teaching staffs expect from the learning management systems, and for system developers to understand "how" they could improve their learning management systems. The technology acceptance theories reviewed in this study are able to shed light on individuals' adoption of online learning technologies and findings are presented in the format that will allow university managers and system developers to see "what" is needed from online learning management system and "how" they could improve it by reflecting the users' needs.

Prior reviewed empirical studies on this area (e.g. Pynoo et al. 2011; Selim, 2007) suggest general factors that influence e-learning adoption, but have not identified the insightful view or shared belief about what influences adoption of e-learning systems among teaching staff.

Additionally, this study is not aiming at finding out management opinions, although they play significant part on decision of buying the system instead, the study emphasizes on instructors as one group of end-users of the system. Without the majority adoption of the learning management system by instructors within the university, the buying decision is of less value (Davis et al. 1989). Various researches have been conducted on different online information systems. Nevertheless, more research is needed to examine the specific factors that influence end-users' decision to adopt e-learning system. Through combination of elements from wide range of user acceptance models and theories, this study scrutinizes and opens up users' depth opinions towards adopting learning information systems which has been dominated with tacit, often hidden, aspects among staff in higher learning institutions.

The information found will be useful for Lappeenranta University of Technology in its plans and decisions regarding usage of learning management systems by teachers. Since the study is conducted on both extensive users of Blackboard systems and those who are average users, findings will assist on uncovering the influences and barriers for adoption.

1.3   Objectives and research questions

The objective of this thesis is to understand the view of professional teaching staff of LUT regarding their decision to adopt Learning management system. Little research has been conducted on LUT teachers' adoption of learning management systems, thus important issues are not yet exposed. Theories of user adoption of technology available from the literature facilitated the data collection as well as analysis of findings. Streams of literature and prior studies of user acceptance of technology and adoption were reviewed to understand the factors that determine behavioural intention and adoption. A combined theory of user acceptance of technology symbolized by UTAUT model is

adapted to fit university context. Principal constructs of UTAUT model are adapted and new construct of trust is added. This model is appropriate for understanding individual user intention to use and adopt technology due to its extensive coverage of most elements which determine adoption of technology.

An increased use of technology in the classroom in today's information society makes it important to find out the factors that influence teachers towards adoption of e-learning systems. Although computers have been used in education for several years now (Eteokleous-Grigoriou, 2009), technologies involved have been continuously changing thus becoming a challenge for teachers, and therefore, a need for constant adaptation to new technologies and refining of their skills. There is a concern about behavioural factors such as belief of what the technology can do for a teacher on his or her work before he or she can adopt it (Robertson, 2004). In conjunction with beliefs, teacher's goals and plans at the present situation in addition to prior history and experience have impact on his or her decision making on technology use (Schoenfeld, 1998). Thus this study will examine teachers' perception toward learning management system as a tool for teaching reflecting their goals. In addition, the study will explore teachers' opinions on available internal and external support such as facilitating conditions and social influence for adopting the LMS reflecting their plans, history and experience.

This study focuses on teachers since they play a central role in integrating technology in learning (Romano, 2003) and they are important on influencing other users within the institution such as students (Hu, Clark and Ma (2003). Thus it is sensible to understand how they are induced to adoption or rejection of learning management systems. According to Marland (1997) teachers' values and beliefs influence their ways of implementing innovation, thus examining their individual perspectives would lead to the understanding of how they adopt LMS. This study

stands on individual's analysis, thus it relies on teachers' viewpoint as prime component of analysis.

The main research problem of this study is:

How are teachers influenced to adopt Blackboard learning management system at Lappeenranta University of technology?

In order to answer the main problem, the below sub-question were developed:

- What are the teachers' perceptions of Blackboard design on influencing their adoption?
- What are the teachers' opinions of internal and external supports on influencing their adoption?
- What are the barriers for teachers' adoption of Blackboard learning systems?

The answers to the research problems are provided in the theoretical and empirical parts of this study.

1.4 Structure of the thesis

Figure 1 presents the structure of this thesis. The study starts with introduction chapter that delivers the background of this study, purpose and objectives and research problem. Second chapter is the literature review which encompasses of all theoretical parts of the study. This chapter presents the theory as reviewed from journals, books, and other academic publications and also description of the case from the author's observation. The empirical part includes firstly, methodology chapter which describes the methods used for this study, secondly, findings chapter which presents the results and then the discussion chapter which

discusses the results. The last chapter collects conclusion and finalizes the thesis with a summary and recommendations.
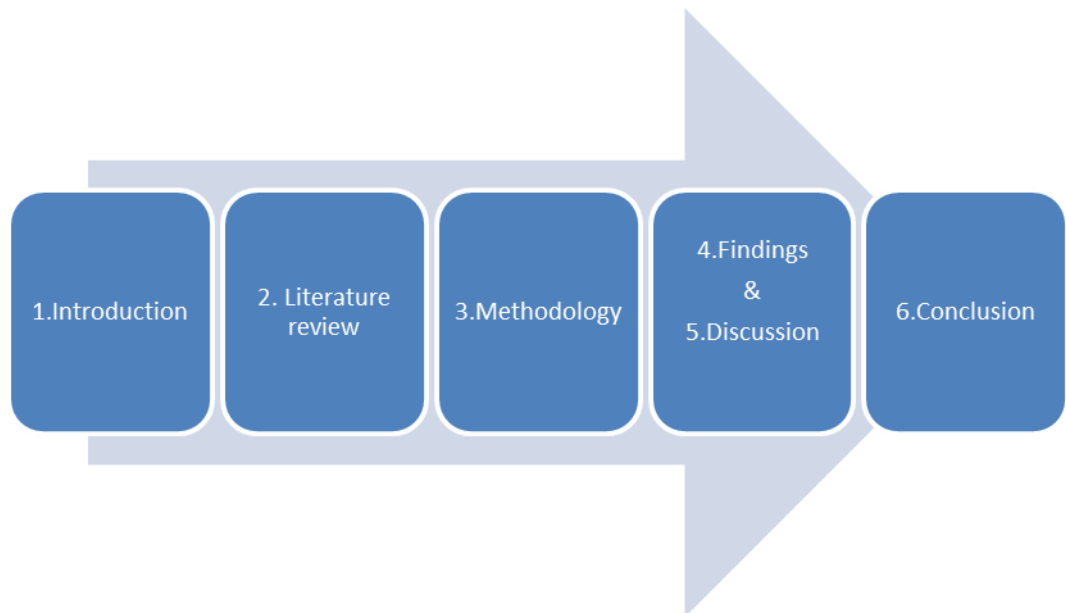
Figure 1: Thesis structure

1.5   Definitions of key terms

Technology refers to "practical knowledge of know-how, skills, and artefacts that can be used to develop a new product or service and/or a new delivery system. Technology can be embodied in people, materials, cognitive and physical process, plant, equipment and tools" (Moriarty & Kosnik, 1989, 7)

Behavioural intention is an indication of an individual's readiness to perform a given behaviour. (Ajzen, 2002) Behavioural intention has been referred under different names by other researchers in their models i.e. intention, intention to use, and adoption intention, but it is originated from TRA model founded by Fishbein and Ajzen (1975).

Adoption is a mental process of an individual from the stage of hearing about innovation to the last stage of adopting it (Spence, 1994, 83). The

relative speed in which innovation is adopted by individual is called rate of adoption (Rogers, 1995, 221). Since LMS such as Blackboard allow users on complete or partial usage, in this study full using of a single function of Blackboard learning system will be considered as adoption just as using multiple functions or entire functions available.

1.6 Delimitations

This study is limited to learning management systems, particularly Blackboard, however, some arguments can be adapted to other eLearning systems with the same nature as Blackboard. The study was solely conducted at Lappeenranta University of Technology therefore no other academic institutions were involved. Moreover this study is focused on instructors as end-users of the system thus the functions of the system and other applied matters are beheld from teachers' point of view. While teachers represent a significant segment of e-learning systems users, it is important to consider opinions of other stakeholders when generalizing this study. Views of students, system administrators, university management and makers of the LMS were not included in this study. Research framework of this study is merely linking factors derived from available literature with the scope of the study however any emerged novel factor from the findings will be presented at the end of the study.

2 LITERATURE REVIEW

In order to form a comprehensive understanding of the research field, various areas of literature are reviewed. Based on the focus of the study, adoption of e-learning by academic institution and technology acceptance theories are highlighted. First, the literature on web based technology and adoption of LMS is reviewed to present a clear understanding on e-learning evolution, learning management systems and Blackboard system. Then literature of technology acceptance of information systems (e.g. learning management systems) which involves various models of user acceptance is reviewed in order to get the overall view of how principals of

these models were formed and how they can be used in understanding Blackboard adoption by teachers. Lastly, a theoretical framework is formed based on literature of user acceptance and adoption of technology.

2.1 E-learning technologies

Teaching and learning through electronic systems is commonly known as e-learning as it incorporates various electronic systems and tools to the learning process (Keskinarkaus 2010; Goyal & Puhorit , 2009). The reasons for e-learning preference are many, depending on tool or system used, but to mention the most common ones, these are freedom by learning on one's own time and space, flexibility, accessibility, economical, access to experts (Papp 2000; Bounhik & Markus 2006; Keskinarkus 2010). A user of an e-learning system can work freely at anytime and anywhere where the network is available, therefore, is not necessarily required to be in a classroom. Using online system is also flexible to users in terms of wider choice of how to work and with what tools, therefore, creating more autonomy to the user. There is also a notion of cost-effectiveness when using online systems because a user can, for example, stay home and do his or her work there, thus saving transport cost to school for users of e-learning utilizes advantages of e-learning systems in order to assist their learning activities.

Selim (2005), argued that adoption of e-learning in the university context involves four categories i.e. instructor, student, information technology and university support. These elements are all necessary when considering e-learning implementation although there are other minor factors, such as culture (Al-hamari & Hamad) which have found to affect implementation of e-learning. Investigating these factors of e-learning adoption independently reveals different circumstances of adoption depending on other sub factors. In categorizing critical successes of adoption of e-learning, Selim (2005), places a teacher category as a significant key for

empowering e-learning adoption. The role of teachers in higher education is facing essential modification to fit within e-learning environment just like other users of new technology in e-learning. For instance, computer skills, creativity of new instruction mode, and preparedness for technology challenges (Webster and Hackley, 1997) are essential for teachers who are adopting e-learning systems.

2.1.1 Web-based technologies for learning

Web-based learning environment has provided attractive mode of instruction, thus teaching and learning with technology is more evident in educational institutions particularly in higher education (Ndahi, 2001). The development of web technologies is impacting a dynamic change in instruction where internet is now a key instrument for distance learning in higher education (Roach, 1999). In their study, Hope and Breitner (2003) marked that from year 1993 up to 2004 e-learning was dominated by web based tools and from 2005 onwards, emerging of mobile technology is accelerating the use of web based learning systems. The most enabling e-learning accomplishments is learning management systems (LMS) which are software with extensive range of automatic and organized applications. Through LMS, new types of learning and teaching modules for academic environment are now possible. Also, distance learning is encouraged for higher learning institution; many programs are designed involving distance learning primarily enabled by LMS (Goyal & Puhorit, 2009).

2.1.2 Adoption of web-based learning systems

Learning management systems are becoming an essential aspect in educational environment due to rapid development of information technology and internet. Within an e-learning environment, learners and instructors are separated by distance, hence adopting tools with specific design for communication in order to achieve their goals is necessary.

Although e-learning tools are differentiated from simple audio tape to the complex web-based systems (Engelbrecht, 2005), its growth has been mostly supported by adoption of web-based technologies such as learning management systems. According to Selim (2007), e-learning gained sustenance on university courses integration as a result of IT rapid expansion. In LMS, communication between users is enabled more than in any other e-learning tools as the Association for Learning Technology (ALT) specified that "learning technology makes use of a range of communication and information technologies to support learning and provide learning resources" (Littlejohn & Higgison, 2003). Currently, various web-based e-learning systems are implemented by numerous universities and other academic institutions to support traditional teaching and learning. The overall factors for adoption within university context include organizational, socio-cultural, intra and interpersonal (Elgort, 2005).

One of the most adopted licensed learning management system is Blackboard, used in learning and teaching activities in many educational institutions as well as regular organizations. Since LMS can be combined with traditional teaching or used as a replacement for classroom face to face teaching, many educational institutions worldwide including Lappeenranta University of Technology have accepted them for usage (Mathew, 2000). The technology involved in learning management systems is generally based on computer and information technology. Therefore, the availability of better, reliable and capable IT infrastructure as well as preparedness of users within university facilitates the success adoption of LMS. Skills of LMS usage need to be built by continuous training and support. Insufficient concerns on supporting users, listening and reflecting their views on LMS can lead to the rejection of LMS since failed e-learning adoptions have been contributed by lack of technical advice and support to users (Adexander, McKemzie, & Geissinger, 1998). Besides technical support and training for using LMS, teachers are given

opportunity to work hand in hand with many other professionals in their institution on designing their course and lead on discovering resources and technical aspects of the course. Sharing is not only encouraged to professionals, but among teachers particularly in sharing teaching resources with others and re-using materials created by others (Littlejohn & Higgison, 2003). Therefore, the effectiveness and utility of e-learning tools on users encourage adoption, although specific factors depend on type of tool and users perception.

According to Delta Initiative, LLC (2010), an independent management consulting company specializing in higher education, most of learning management systems started in universities in mid 1990s. Licenced learning management systems were first to start operations then open source learning management systems such as Moodle came later on 1999 and gained significant market share from 2006. Up to 2008, Blackboard was a largest LMS in terms of market share and it has grown through merger and acquisition of other companies. Besides Blackboard, other LMS brands that had significant market share up to 2008 were Moodle, Sakai, and Desire2Learn. Figure 2, illustrate the evolution and market share of major LMSs' up to year 2008.
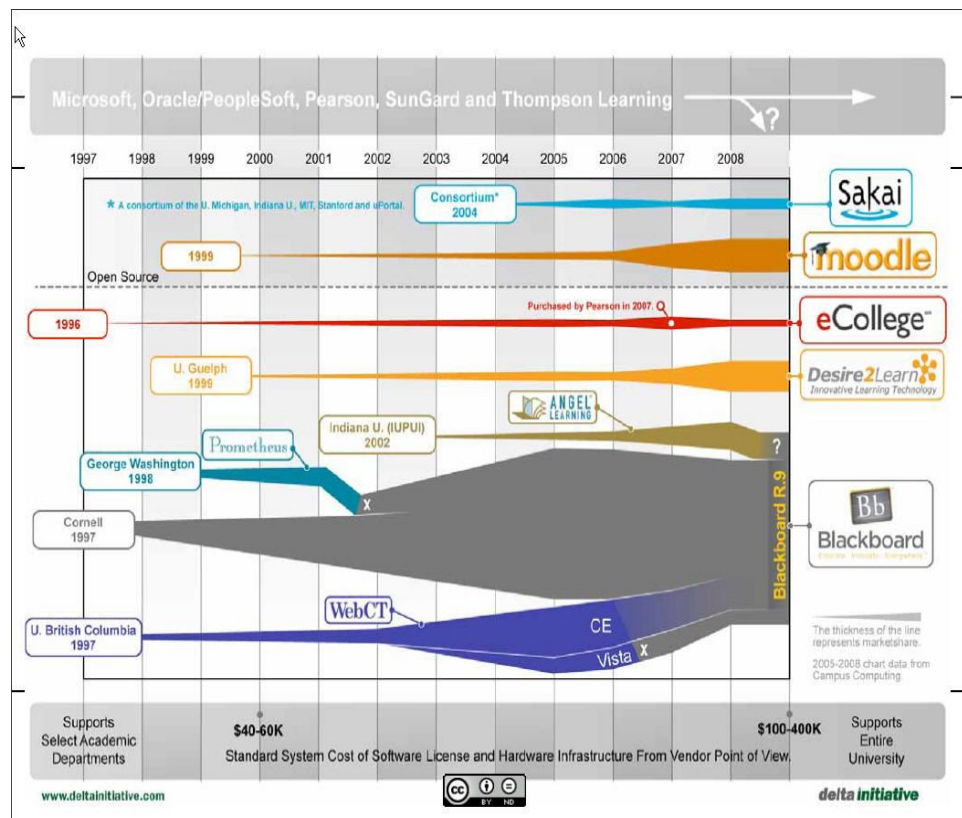
Figure 2: Evolution of LMS and their market shares (Source: Delta Initiative, LLC 2010)

2.1.3 Blackboard learning system

According to Blackboard Inc. (2011), Blackboard Learn™ is "the comprehensive technology platform for teaching and learning, community building, content management and sharing, and measuring learning outcomes and consists of integrated modules, with a core set of capabilities that work together". Blackboard learning system can be used through a web browser from any network connection. The system's common features includes; web-space for course materials, tests and quizzes, digital assignment submissions for students, grade management, group collaboration within courses, online discussions, chat and virtual classroom. These features can assist instructor to design a course structure (e.g. creating course contents, syllabus, and student profiles), assessing students, communicating and collaborating with other students. However, efficient access for teachers and students (McEwen, 2001), and

privacy protection from outsiders (Burgess, 2003) has remained a challenge to many web-based systems, including Blackboard systems.

Blackboard system is designed to be used either entirely online or partially with traditional teaching on one side and online on the other side. The main goal is to ensure that courses are delivered, evaluated, and learning materials are managed online (Iskander, 2008). Course designers or teachers in collaboration with software administrators select the appropriate way in which Blackboard should be used, either fully or by selecting a particular tool from the system. Available sets of online tools, which can be used partially or entirely enable universities to extend the learning environments by engaging students more effectively and speeding up their interaction with teachers and among themselves. Blackboard platform is known for its flexibility and control (Gallagher, 2001; El Tigi & Branch, 1997) with inclusion of a curriculum-driven content management to an instructor. However, integrating Blackboard system for teaching a course that has traditional modules requires adjustment for that particular course; teachers' computer skills, and availability of digital resources i.e. teaching materials in electronic format. The simplicity and swiftness of Blackboard software in usage has led to its acceptance by many users in online environment (Lane & Shelton, 2001)

Functions of Blackboard (WebCT CE 6.1)

The features of Blackboard system (WebCT CE 6.1) which is currently implemented in LUT are grouped into five categories namely: Organization tools, Communication tools, Student learning activities, Content tools, and Student tools. On designing the course, a designer can pick any of the tools included in these categories by selecting the check boxes. Also, the tools can be removed from the course format by clearing the check boxes. The designing of the course takes place at the initial phase of course set-up and progress can continue in other phases. Three ways of accessing

tools dedicated for a designer, instructor or student can be grasped through tabs located on the top-right of Blackboard interface. The tabs are titled as *Build, Teach and Student view*. Tools to be selected by designer or instructor of the course are presented in Figure 3.

Designer tools	Instructor tools	My tools
BUILD	TEACH	STUDENT VIEW
	Manage Course	
	Assessment Manager	
	Assignment Drop box	
Manage course	Grade Book	My Grades
File manager	Grading Forms	My Files
Grading Forms	Group manager	My Progress
Selective Release	Tracking	Notes
	Notes	
	Selective release	

Course tools
Course Content, announcements, Assessments, Assignments, Calendar, Chat, Discussions, goals, Learning Modules, local Content, Mail, Media Library, Roster, Scorm, Search, Syllabus, Web Links, Who's online

Figure 3: Various tools for designing a course in Blackboard

Organizational tools

These tools are designed for instructors and students to organize various sets of activities as well as enabling students to see how the course has been organized. A *Calendar* is for the instructor to enter important occasions and deadlines. At the same time it allows students to enter their own activities. The format of the calendar can be set into printing mode when user needs to print the entries. When selecting this tool, an instructor is able to limit entered information to be seen personally or by students enrolled in the course. The entered information appears on the week of the occasion with time and date just when an instructor or

students log-in to their Blackboard accounts. Another tool under organization category is *Search,* which allows searching of contents in the course. Searching can be specified through search area (i.e. title, author, subject etc.), tool to be searched (i.e. assignment, discussion, all searchable tools etc.) date, and sorting of results. A *Syllabus* tool arranges requirements, objectives and policies of the course.

Communication tools

These are mainly for allowing interaction among users' whether it is instructors with students or students with other students, as long as the various tools of communication are available. Tools under this category are: *Announcements*, which enable the instructor to post information in a central location to be seen by all users. When using this tool, the instructor is able to select who should receive the announcement among the group users. In addition, there is a choice of when the announcement should be delivered and when it should stop to be displaying. A *Chat* tool allows a real-time dialogue with other users and display of images in a whiteboard. There are few adjustments for the chat tool e.g. limiting number of participants, choice on type of chat, connecting other tool (*Goals*) with chat room and permitting users on private message and alias. Another tool with a closer role to that is *Discussion,* which enables users to post and respond to messages on any started or on-going topic. A discussion topic can be created as threaded topic, blog topic or journal topic with every type carrying a format as its title. The *Mail* tool works as other mailing tools in other systems, ideally to send messages to other users. Also, another communication tool is *Who's Online* which let users see whoever logs in and are using the system at the moment. This tool also allows chatting. *Roaster* is mainly allowing access to profiles of other users enrolled in the course.

Student learning activities

These tools are designed to test and evaluate students during the course electronically i.e. the tasks can be accessed anywhere. *Assessment* tool is enabling an instructor to create quizzes, surveys and self-test to students. The instructor can also manage the assessments through the teach tab located at on the top of the Blackboard display. Through *assessment manager* an instructor views submitted students' works in various sorts, such as graded, not graded, not submitted and all submissions. Another tool named *Assignments*, allows the instructor to create assignments for students which can be done in team or individually and submitted online. Through instructor tools available under the teach tab assignments can be managed through *Assignment Dropbox* which displays the students' works that are submitted, not submitted, graded, published and all unsorted submission. Lastly, the other tool in this category is *Goals* which an instructor can create goals showing list of performance expected in a curse in quantitative and qualitative mode.

Content tools

These are tools designed to enable uploading and accessing various types of material for the course. *Learning Modules* is for the instructor to organize and present various contents and undertakings to students. Since large files are complicated when downloading, *Local Content* tool allow these files to be accessed from a portable medium instead of downloading them from the system. *Media Library* is for glossary or image collection while a tool called *SCROM* enable the display of course content, home page etc. *Web link* tool is for creating links to web resources.

Student tools

By selecting these tools on the check boxes an instructor or course designer will let the students have access and also enable them to perform various activities related to self-management. *My Files* let students store their own files similarly; *My Progress* let students track their own progress. *My grades* tool is for student to check their own grades and *Notes* allow students to take notes. Grades can be managed by an instructor through instructor tools available under teach tab. The *Grade Book* with options like enrolling members, importing from spreadsheet and reorder columns gives the instructor a broad area of grading spectacle. *Grade Book* allows the grade information to be sorted out through various options, such as grades members, custom view, view all and SCORM grades.
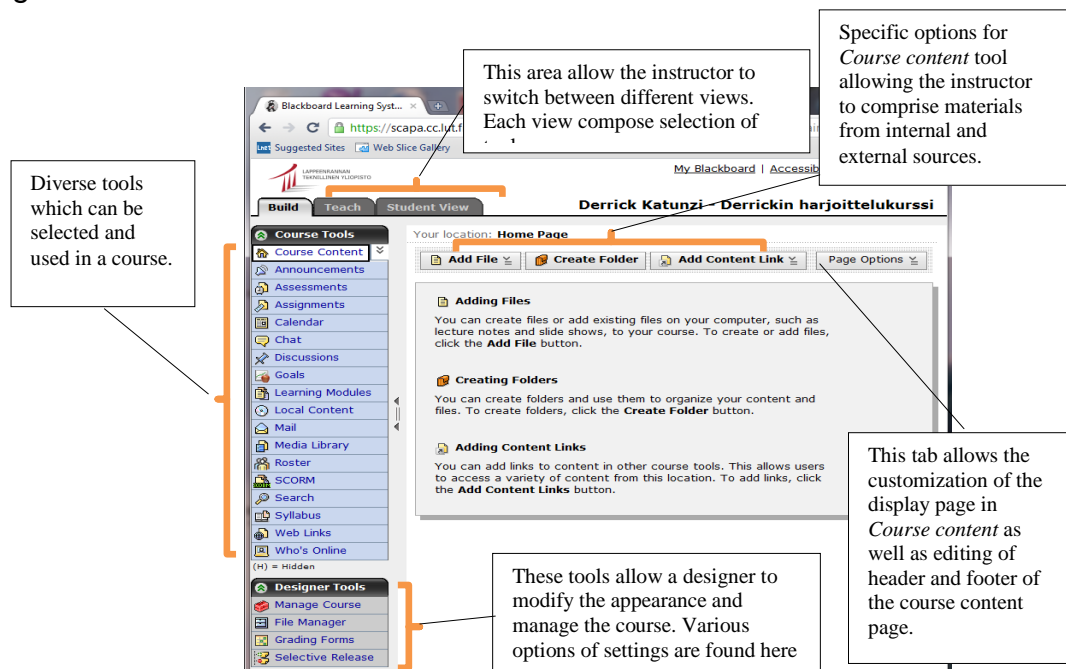
Figure 4: User interface of Blackboard platform (WebCT 6.1 CE) from an instructor standpoint.

2.1.4 Prior studies on adoption of Blackboard

Abuloum and Khasawneh (2006) investigated the intention of students to use Blackboard systems and perceived technical problems of the system at the University of Hashemite in Jordan. They noted that, understanding users perceptions on how learning management system appear to users will give an indication to the administrators about users' intention to adopt or reject that technology, thus inserting a perfect plan for progresses i.e. training, stimulating more usage etc. Although their study was conducted on students as end-users of Blackboard, some of the aspects can be applicable to teachers as well. In their results, they found that certain features of Blackboard learning system i.e. course grade, help desk and course contents were more valuable for students while, submitting assignments, discussion board interaction, and login-in were rated higher in technical problems. Through their study, they found that students' attitudes were positive on intention to adopt Blackboard system and they suggested that:

1. *Universities that have not adopted LMS should do so.*
2. *Prior presentation of Blackboard features to students is necessary before adoption.*
3. *Technical support should be available.*

Similarly, Marchewka *et al.* (2007) investigated the students' perception of learning management system through UTAUT model taking Blackboard as the case. Their quantitative analysis results were supporting some of the suggested relationship of UTAUT constructs by showing correlation between intention to adopt and other main constructs except performance expectancy. Additionally, Ndubisi (2004), in his study on factors influencing intention to adopt e-learning, studied Blackboard system seeing it as an innovative tool in education. He suggested that students should develop positive attitude through perceived usefulness, ease of use and security in order to enhance e-learning adoption.

2.1.5 Blackboard usage at LUT

There are total of 412 courses which use Blackboard system on various ways from simple course announcements to online teaching at LUT during 2011. All these courses are communicated through Blackboard partially since there is no fully virtual course via Blackboard so far at LUT. The total number of enrolments by students in courses which use Blackboard at LUT this semester is 15,540. Teachers using Blackboard in their courses are nearly 149. Figure 5, presents the proportion of number of courses that use Blackboard system as seen in each department.
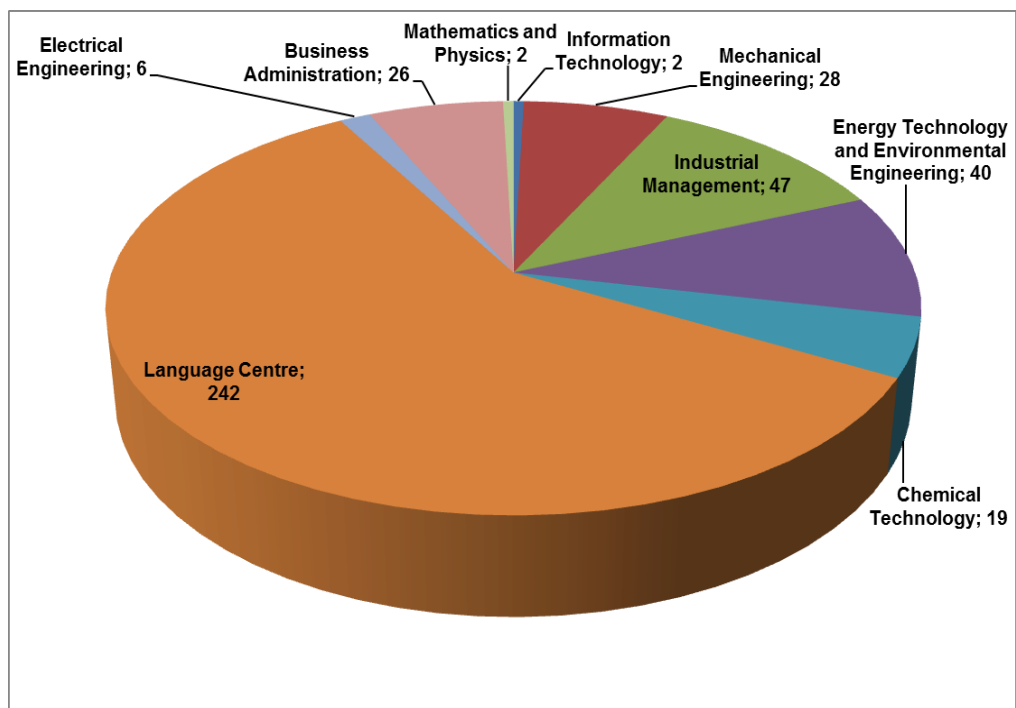
Figure 5: The proportion of courses which are managed via Blackboard system in LUT's departments.

2.2 User adoption theories

Studying acceptance of technologies by users has been researched by many scholars with the aim of finding common causes of acceptance and adoption. Due to different circumstances and type of context researched,

various theories and models have been developed all fitting particular circumstances but sometimes sharing elements and scales of measurements. These models are rooted in different theoretical origins in the field of behavioural psychology and information technology and compete through their diverse sets of acceptance determinants (Venkatesh *et al.* 2003). User acceptance of new technology is labelled as a significant and mature area of research in information system literature (Hu *et al.* 1999). The development of user acceptance models has come from separate disciplines such as psychology, sociology and information systems, all aiming at explaining individual's intention to adopt and use new technology (e.g. Davis *et al.* 1989; Taylor & Todd, 1995; Moore & Benbasat, 1991; Venkatesh & Davis, 2000).

2.2.1 Models of user's adoption of technology

Most of technology acceptance models involve "intention to use" and "actual usage" as the key dependent variables. Intention to use is the key predictor of adoption or actual usage as Venkatesh *et al.* (2003) recalled it. In order to understand the role of intention as predictor of adoption which is also referred as usage, it is necessary to understand the relationship between these two variables. The conceptual framework *(*see Figure 6) presented below has grouped the class of models focusing on individual acceptance of information technology presenting their basic idea of explanation of individual adoption of IT (Ibid).
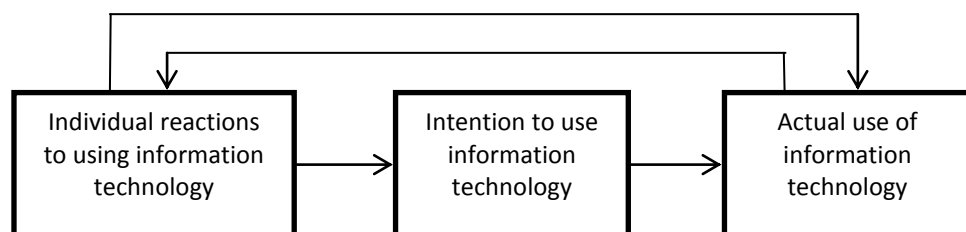
Figure 6: The view of basic concept underlying user acceptance models (Venkatesh et al., 2003)

As the figure shows, intention to use information system is a direct determinant of actual use (adoption) of information system, therefore revising models which are having relation to "intention to use" or "adoption" will generate a necessary understanding of user's acceptance and adoption of information systems. In this chapter eight models are reviewed and, lastly, the combined model developed by Venkatesh *et al.* (2003) known as Unified Theory of Acceptance and Use of Technology is revised. Involved theories to be discussed in this chapter are:

- Theory of Reasoned Action
- Technology Acceptance Model
- Theory of Planned Behaviour
- Motivational Model
- Decomposed Theory of Planned Behaviour
- Model of User acceptance of PC
- Diffusion of Innovation
- Social Cognitive Theory
- Unified Theory of Acceptance and Use of Technology

The Theory of Reasoned Action (TRA)

Theory of Reasoned Actions (TRA) was developed by Fishbein and Ajzen in 1975 to explain broader range of behaviours based on situational specific combinations of personal beliefs and attitude and the effect of belief of others close to the individual (See Sheppard et al. 1998; Szajna, 1996). The components of TRA include three constructs which are behavioural intention, attitude and subjective norm. Individual's attitude towards any object is considered as a sum of the beliefs about that object multiplied by their respective evaluation aspect (Ajzen and Fishbein, 1980). Subjective norms have been found to be insignificant in voluntary contexts when users are not mandated to use information system (e.g. Ndubisi 1994) or have relevant information on it (Tan and Teo, 2000).

Intention is referred as an *"indicator of a person's readiness to perform certain behaviour and is considered to be the immediate antecedent of behaviour"* (Ajzen, 2002). During the early stages of technology implementation, users encounter limited access to information and experience for reflection before developing attitudes (Taylor and Todd 1995), therefore friends, family, colleagues of the adopter as suggested by Chua (1980) become a possible influence of adoption. In the case of learning management system (e.g. Blackboard) the fellow department teachers or research colleagues who are using the system could be an influence to potential adopter. The fundamental concepts of TRA (See Figure 7) are based on the fact that an individual will adopt a specific behaviour if he or she perceives it to be leading to the positive results (Compeau and Higgins, 1995)
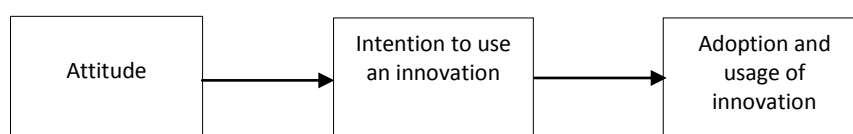
Figure 7: Theory of Reasoned Action (Ajzen, 1975)

TRA is the oldest user acceptance of technology model with its roots in psychological theories, and it is fundamental and influential human behaviour theory providing foundation to TAM and its extensions. Davis et al. (1989) applied TRA to individual acceptance of technology and found the results were consistent with results of other studies that have used TRA model in different behaviour contexts. TRA has passed through different stages of growing and has been used in various studies in which its contribution to user acceptance of technology as well as foundation to other models is quite remarkable (See Liao et al., 1999). Over the years TRA has been refined, advanced and tested and some of its limitation as noted by Ajzen (1985), was correspondence i.e. the theory cannot explain habitual or irrational actions which is not consciously considered.

The Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) proposed by Davis, (1986) is one of the most recognized, influential and used models in the field of information technology adoption and diffusion. Main objective of TAM is to provide an explanation of user behaviour across a broad range of end-user computing technologies, thus it was tailored to IS context (Davis 1993). TAM was derived from the Theory of Reasoned Action (TRA) which was the first model to mention psychological factors affecting computer acceptance (Fishbein and Ajzen, 1980).

The classical TAM which was intended to explain "intention parsimoniously" includes two main variables; *perceived ease of use* (PEOU) and the *perceived usefulness* (PU). The suggestion from regression analysis shows that the perceived ease of use (PUEU) may be the causal antecedent to perceived usefulness (PU). Perceived ease of use and perceived usefulness are common in technology-usage settings (Taylor & Todd 1995a).The explanation of the model is that external variables affect attitude towards using (AT) and the behaviour intention (BI) through PEOU and PU which finally affect the use (U) of information system (IS) (Davis, 1989). The objective of TAM is to offer a clarification of the determinants of the adoption and use of information technology. (Davis *et al*, 1989)

TAM has evolved into various modified and extended versions to fit the researcher's objectives. Other extension versions of TAM are TAM2, C-TAM-TPB. TAM and its extended versions have been credited for its ability on explanation of attitudes toward usage of technology surpassing other models (such as TRA and TPB) (Taylor and Todd, 1995; Gefen and Straub, 2000; Mathieson, 1991; Pavri, 1988). In a revised model TAM2 (Venkatesh and Davis, 2000), the attitude towards using a component is removed, thus the perceived ease of use and perceived usefulness are directly linked to intention to use. Many researchers have used TAM model in the variety of studies in predicting technology acceptance

through behavioural intentions (e.g. Davis, 1989; Venkatesh 1996; Rigopoulos *et al.*, 2008; Succi and Walter, 1999; Moon and Kim, 2001; Mathieson, 1991). Furthermore, TAM has diffuse into marketing studies (Childers *et al.*, 2001; O'Cass and Fenech, 2003; Gentry and Calantone, 2002) and education field (e.g. Sanchez-Franco, 2010; Teo *et al*, 2008)

However, classical TAM (See figure 8) has been criticized by its ignorance of social and organizational factors such as mandatory use of technology and subjective norms and job requirements, which possess significant influence on information technology usage and adoption (Taylor and Todd, 1995). In the second version (TAM2), subjective norm (adapted from TRA/TPB) was included as an addition predictor intention in the case of mandatory settings but the need for further integration with broader model which will include more variables increased. This created demand for such model hence the formulation of UTAUT (Venkatesh & Davis, 2000; Legris *et al.*, 2003).
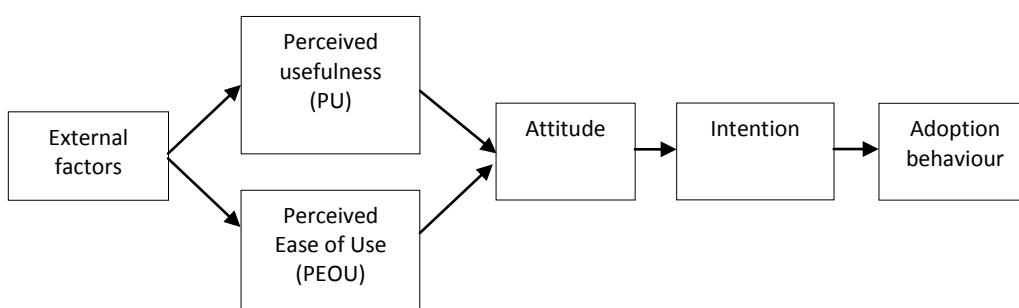
Figure 8: Technology Acceptance Model (Davis et al, 1989)

The Motivational Model (MM)

Motivational model introduces social influence which is the amount of influence that members of social group have over an individual's decision. Verbal and non-verbal messages and signals are used to deliver social influence (Vallerand, 1997). Motivational model basically consists of two constructs of motivation; extrinsic and intrinsic. Davis *et al.* (1992) tried motivational model on computer usage in workplace and the findings

showed the workers' extrinsic and intrinsic motivation to use computer technology, is connected to the intention of usage and adoption. Their interpretations showed that, intention to use technology was primarily influenced by perceived usefulness of computers for work performance supported with expected reward for usage (extrinsic motivation) and secondarily by perceived enjoyment when using the technology even if the technology is not very useful (intrinsic motivation). Igbaria *et al*. (1996) extended the study by integrating other three constructs of: perceived usefulness, fun, and social pressures to study individual's decisions to use microcomputers and found consistency with previous studies' results. However, their extension model was able to explain part of the variance and they call for additional research which will integrate other measures.

The Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour as shown in *Figure 9* was an extension of TRA by Ajzen (1985) to cover the consideration of a situation where people do not have complete control of their behaviour, which was limited in TRA. Therefore, in TPB, constructs of attitude toward behaviour and subjective norm are adapted from TRA model, however, the new construct of perceived behavioural control is added. Perceived behavioural control is defined as "the perceived ease or difficulty of performing the behaviour" (Ajzen 1991 p. 188). This determinant, perceived behaviour control refers to "perception of internal and external constraints on behaviour" (Taylor and Todd, 1995) and is denoted as facilitating conditions, e.g. government support and technology support (Ajzen and Madden, 1986). In TPB, attitude, subjective norm and perceived behaviour control have impact on behavioural intention to adopt technology (Ajzen, 1985).

Many studies (e.g. Chau & Hu, 2002; Liao et al., 1999; Bhattacherjee, 2000), have supported the TPB's ability to explain individual intentions and behaviour in adopting new information technologies on various context.
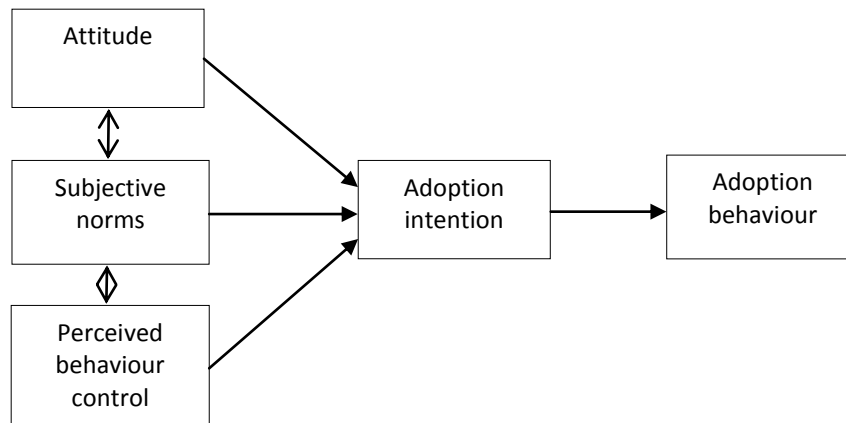
Figure 9: Theory of Planned Behaviour (Ajzen, 1985)

The Combined TAM and TPB (C-TAM-TPB)

Decomposed Theory of Planned Behaviour is the combination of predictors of TPB borrowed from TPB, TRA and TAM. The decomposed TPB model uses these constructs by decomposing them into more specific dimensions. The understanding of DTPB can be the guide of IT managers and researchers on system implementation study (Taylor & Todd, 1995), Ndubisi (2004), applies this model to study the influence of its main determinants on students' intention to adopt e-learning.
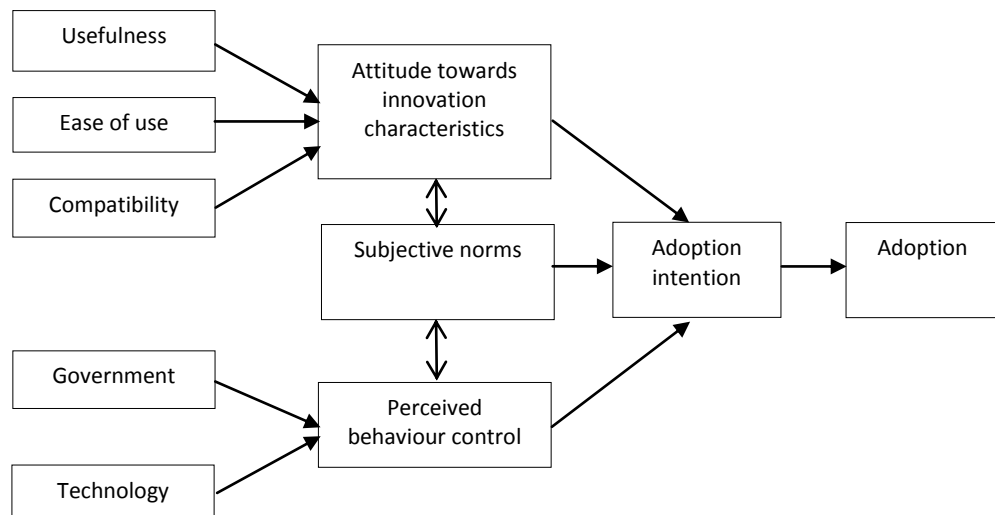
Figure 10: Combined Theory of Planned behaviour (Ajzen, 1985)

The Model of PC utilization (MPCU)

This model (See Figure 11) has its main roots in theory of human behaviour by Triandis (1977). By adapting human behaviour theory, Thompson et al. (1991) refined it to fit the IS context therefore to be used in predicting PC utilization. This model can also be used to predict individual acceptance and use of various information technologies.
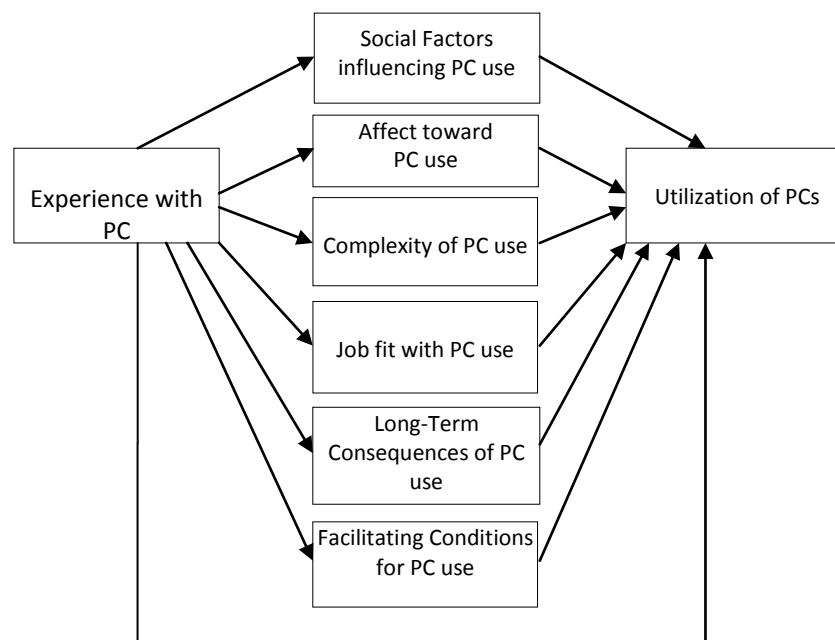
Figure 11: Factors that are influential to Personal Computers usage (Thomson et al, 1994)

Innovation Diffusion Theory (IDT)

Innovation diffusion Theory (IDT) was developed by Rogers (1983, 1995) to explain the process of innovation diffusion and adoption, and assist in predicting how a new invention would be accepted. Rogers (1995), held that technological innovation is communicated through particular channels and passes overtime through stages he labelled as: knowledge, persuasion, decision, implementation and confirmation. The main three elements of IDT are: characteristics of innovation, individual categories and communicational channels as the determinants of adoption of innovation of new technology.

Innovation characteristics play a significant role in adoption rate of innovation and they are identified as: *relative advantage, compatibility, complexity, trialability, observability* (Rogers, 1995). Another element of innovation diffusion theory is adopter categories which also plays crucial role in technological innovation. Classification of innovation categories based on innovativeness, identified innovators, early adopters, early majority and laggards as main adopter categories. Based on his work, he introduced a bell-shaped curve with adopters segments representing each group in percentages. Innovators who are 2.5% were described as first adopters of technology who want to try and are risk takers. The following 13.5% are early adopters described as people who are interested with technology itself. Another group is early majority adopters accounting for 34%, differentiated from innovators and early adopters by their longer decision period. Then another 34% of adopters belong to late majority known for being cautious about new technology and waits till it has been adopted by others. Lastly 16% of adopter category is laggards who are described as the individuals or organization that resist the innovation. The adopter categories concept was supported by an empirical observation. Zemsky and Mass (2004) engrossed on adopter categories on studying e-learning adoption.   Besides innovation characteristics and adopter categories, communication channels such as mass media and word of mouth is crucial for innovation adoption. (Rogers 1995)

However, Moore and Benbasat (1991) adapted these characteristics of innovation and refined them through information systems contexts in order to be used in studying individual acceptance of technology (see Figure 12). These constructs have been validated by other researchers and thus become reliable in testing individual acceptance of technology (see Agarwal and Prasad 1997, 1998; Karahanna et al. 1999; Plouffe et al. 2001)
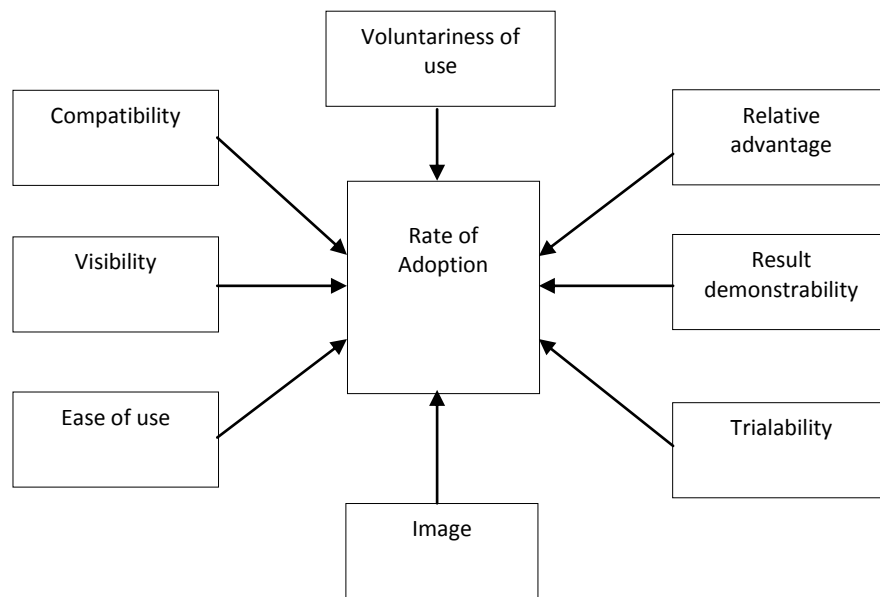
Figure 12: The seven scales in Moore & Benbasat's study (1991)

The Social Cognitive Theory (SCT)

Social Cognitive Theory based on human behaviour is "one of the most powerful human behaviour theories" (Bandura's 1986) and was extended by Compeau and Higgins (1995) to study computer use. Compeau et al. (1999) applied SCT with the intention of testing the influence of computer self-efficacy, outcome expectations, affect, and anxiety on computer usage. The model general findings provided robust validation that self-efficacy and outcome expectations have impact on an individual's affective and behavioural reactions to information technology. SCT's core constructs are: *outcome expectation (performance/personal), self-efficacy, affect* and *anxiety*. (Venkatesh et al., 2003)

Linking SCT with Rogers' Diffusion of innovation theory (IDT), in order to show adoption behaviour by understanding the interaction of innovation attributes and network structures, Bandura (2006, p.119) stated that:

> "*Social cognitive theory distinguishes among three separable components in the social diffusion of innovation. This triadic*

model includes the determinants and mechanisms governing the acquisition of knowledge and skills concerning the innovation; adoption that innovation in practice; and the social networks through which innovations are promulgated and supported"

According to Bandura (2006), social diffusion processes are altered by how knowledge is acquired, which have been changed by radical advances in information technology.

2.2.2 Combined models of user adoption

After reviewing models of user acceptance, it is delightful to look at the model which was developed aiming at bringing together all elements which are similar or closely related in prior models so that they can be formed as one extensive model. One of the important models for studying individual IT adoption is *Unified Theory of Acceptance and Use of Technology* commonly known as UTAUT, which was formulated by Venkatesh *et al.*, (2003).   UTAUT is based on the consolidation of concepts drawn from eight theoretical models of user behaviour and technology acceptance as presented in *Table 1:* Theory of Reasoned Action, Technology Acceptance Model (TAM, TAM-2 and C-TAM-TPB); Motivational Model; Theory of Planned Behaviour; Model of PC Utilization; Social Cognitive Theory; Decomposed TPB model and Innovation Diffusion Theory. These are theories developed over a long period of time from various fields of research on behavioural psychology, innovation and information systems. (Ibid)

The UTAUT model's main constructs: *performance expectancy, effort expectancy, social influence and facilitating conditions*, were formulated from the combination of other constructs with closer description or highly correlated concepts as shown in *Table 1*. All constructs are empirically validated in organizational settings (e.g. Carlson et al. 2006; Min, Ji & Qu,

2008; Park, Yang, & Lehto 2007; Zhou, Lu, & Wang, 2010) however, according to Venkatesh et al. (2003) three constructs: self-efficacy, attitude toward using technology, and computer anxiety had insignificant path coefficient therefore were dropped from the model. Additionally, it was found that UTAUT was a better predictor of user acceptance than other models surpassing them by 70% of the variance in intention to adopt, when tested. Thus UTAUT is a useful tool for understanding factors behind users' acceptance of technology before implementing further plans of developing the system and users skills. (Ibid)

Table 1: UTAUT Constructs and their origins

Construct	Origins	Similar constructs (from other models)
Performance Expectancy	TAM, TAM2, C-TAM, TPB MM MPCU IDT SCT	Perceived Usefulness Extrinsic Motivation Job-fit Relative Advantage Outcome Expectation
Effort Expectancy	TAM, TAM2 MPCU IDT	Perceived Ease of Use Complexity Ease of Use
Social Influence	TRA, TAM2, C-TAM TPB/DTPB MPCU IDT	Subjective Norm Social factors Image
Facilitating Conditions	TPB/DTPB, C-TAM MPCU IDT	Perceived Behavioural Control Facilitating Conditions Compatibility

Main constructs of UTAUT

As presented in Table 1, main constructs of UTAUT are firstly, performance expectancy which is the belief of a user that the system will enhance his or her working situation. Performance expectancy is found to be the strongest predictor of intention and remained significant in both

voluntary and mandatory settings. Additionally, researchers hypothesize that the influence of performance expectancy on behavioural intention is moderated by gender and age. Secondly, there is an effort expectancy which is how the user found easiness of using system. Effort expectancy and other related constructs such as complexity and ease of use, share the closer meanings as noted in previous researches (e.g. Davis et al. 1989; Thompson et al 1991; Moore and Benbasat 1991; Plouffe at al. 2001). Effort expectancy from a system may possibly moderated by experience, gender, and age (Szajna 1996; Davis et al. 1989). Thirdly, social influence is another main construct which is how other people, that are closer to the user, may influence his decision to use system. Social influence is significant in contexts where the usage of a system is mandatory, however, in voluntary context it becomes insignificant. Lastly, facilitating conditions which is directly determinant of adoption of IT, refers to how an individual user of a system think of available technical infrastructure to support the use of a system. (Venkatesh *et al*, 2003).

In the UTAUT final version (Figure 14) behavioural intention is predicted by performance expectancy, effort expectancy and social influence while behavioural usage is predicted by behavioural intention and facilitating conditions thus facilitating conditions are direct antecedent of usage as what is seen also in TPB/DTPB.
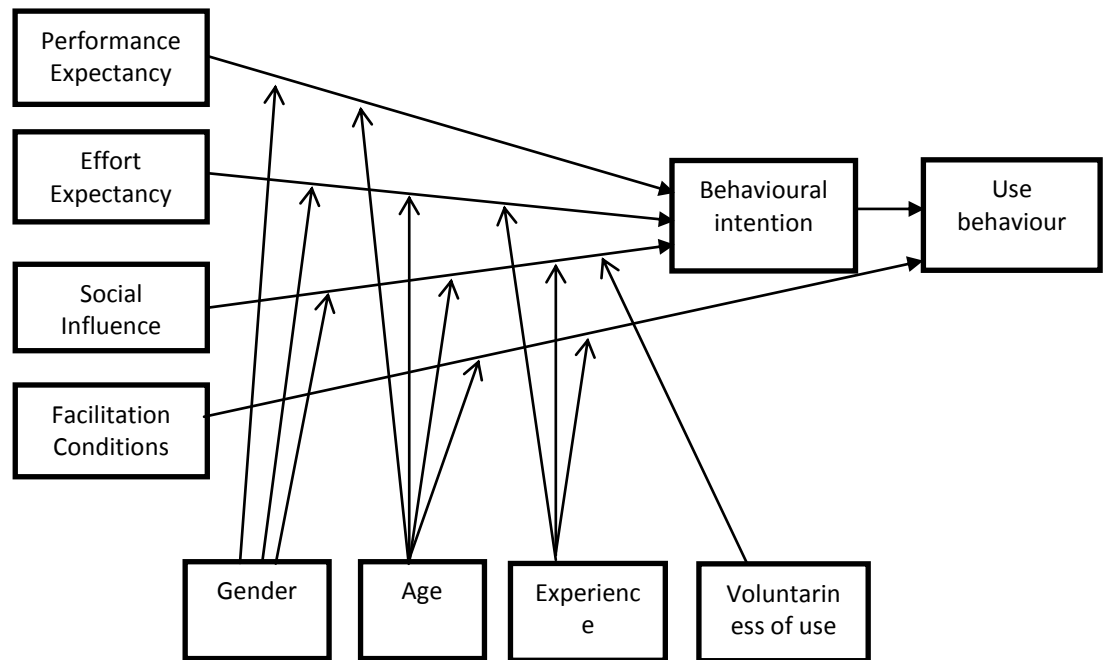
Figure 13: UTAUT model (Venkatesh *et al.*, 2003)

Roles of Moderating Variables

Besides these constructs, there are also four moderators (age, gender, experience with technology and voluntariness to use) that impact the relationships between the predictors and intention or use. Moderating variables enable UTAUT model to comply with different contexts and user groups (Venkatesh *at al.* 2003). These variables will be discussed in the following section sequentially.

Gender

Derived from schema theory (Bem 1991; Bem and Allen 1994) and other technology acceptance models (TAM 2 and TPB), Gender was found to be a moderating variable to all three predictors of behavioural intention in UTAUT. According to Minton and Schneider (1980), who researched on gender differences, presented that men are highly task-oriented much more than women. Venkatesh *et al.*, (2003), suggested that intention to adopt is highly affected by social influence and effort expectancy for

women more than for men, which is consistent with gender role studies (Motowildo 1982; Lynott and McCandless, 2000; Lubinski *et al.* 1983; Wong *et al*, 1985) while for men the effect of performance expectancy on behavioural intention is higher than for women as gender schema theory suggests (Bem 1981; Kirchmeyer 1997; Bem and Allen 1994). The reason for women to experience change more than men which as noted by Barnett and Marshall (1981), were due to their compassion to others' opinions thus becoming more noticeable when forming intention to adopt technology. (Miller, 1976; Venkatesh et al., 2000)

Age

There is a concern about age and its effect on IT acceptance, but studies involving age (e.g. Igbaria & Parashuraman, 1989; Morris and Venkatesh, 2000) has revealed the presence of differences in technology acceptance between young and old adults. Laguna and Babcock (1997) found that it is problematic for older adults to accept new technology compared to young adults. Also some studies have found that young people are more concerned about their privacy in online systems than adults (Livingstone & Bober, 2004; Madden & smith, 2010). Age plays a role in moderating other main constructs such as performance expectancy and effort expectancy, a prior research on job-relating attitudes (e.g., Porter 1963; Hall & Mansfield 1995) reveals that younger workers emphasize extrinsic rewards more than older adults and also found that age differences exists in technology adoption (Dyck & Smither, 1994). Lastly, Venkatesh *et al.*, (2003) found the effect of social influence on intention to use was stronger for older workers than younger ones.

Experience with technology

Venkatesh *et al*. (2003) argued that experience is a moderate of effort expectancy, social influence and facilitating condition. He proposed that an individual with less experience will prefer to use the technology which is easy to use and they will be sensitive to colleagues' opinions. Also, he suggested that individual's increasing experience will lead to user's wider options for help and support, therefore, leading to more usage.

Voluntariness of Use

Voluntariness of use was not included in this study since the usage of Blackboard at LUT is voluntary.

Limitations of UTAUT

UTAUT measures are recommended to be taken as preliminary since combining different items have resulted into pruning of some instruments which may lead to elimination of constructs' facets thus reducing its validity (Ibid).

2.2.3 Summary of user adoption models

Table 2: Summary of user acceptance models and their constructs applicability in this research

Model	Determinants of behaviour/adoption	Applicability in this study
TRA	Attitude towards behaviour, Subjective Norm	Not applicable. Personal characteristics were left out
		Applicable, same as social influence
TAM	Perceived usefulness, Perceived ease of use, Subjective Norm	All applicable as teachers were interviewed about their opinion of Blackboard usefulness, ease of use and social influence.
MM	Extrinsic motivation, Intrinsic motivation	Applicable since its similar to usefulness
		Not applicable. Teachers' personal characteristics were left out
TPB	Attitude toward behaviour, Subjective Norm, Perceived Behavioural Control	Not applicable
		Applicable (same as in TRA)
		Applicable as teachers were asked about their opinion infrastructures and conditions for using Blackboard
DTPB	Similar from TPB and TAM	
MPCU	Job-fit, Complexity, Long-term consequences, Affect towards Use,	Applicable, same as useful
		Applicable, same as usable
		Not applicable.
		Not applicable. As teachers personal taste were avoided
	Social Factors,	Applicable as teachers were asked about influence from colleagues
	Facilitating conditions.	Applicable as teachers were asked their opinion about training and technical support on using Blackboard.
DOI	Relative advantage, Ease of Use, Image, Compatibility, Visibility, Result Demonstrability,	Applicable same as performance expectancy
		Applicable same as effort expectancy
		Not applicable question about status were left out.
		Applicable same as effort expectancy
		Applicable
		Applicable
SCT	Outcome Expectation-Performance, Outcome Expectation-Personal. Self-efficacy, Affect, Anxiety	Applicable under performance expectancy
		Applicable under performance expectancy
		Applicable when discussed user experience
		Applicable
		Not applicable
UTAUT	PE,EE,SI,FC	Applicable. All UTAUT main constructs were adapted in this study
		Applicable but wasn't on the study focus
	Age Gender	Applicable but wasn't on the study focus.
	Experience	Applicable.
	Voluntariness of use	Not applicable since the usage of Blackboard system in LUT is voluntary for teachers.

2.3   Theories adopted for this research

From the literature presented, the themes (see Table 3) are viewed to have an association with teachers' adoption or rejection of learning management system, such as Blackboard. These themes, which are mainly constructs unified from various models, indicate potential impact of individual's decision to adopt or reject a learning system. The analytical framework developed is the modification of Unified Theory of Acceptance and Use of Technology (Venkatesh *et al.*, 2003). Three major categories of factors are identified, consisting of four constructs from UTAUT and moderating variables of experience and gender. Perception of system design as one of the major categories consists of two factors, i.e. usefulness and usability, which are similar with performance expectancy and effort expectancy. Support consists of social influence and facilitating conditions. An additional factor added by the author is trust, which has been applied in other studies of acceptance of information systems and technology (See Egea & Gonzalez 2011; Kaasinen, 2005). Performance expectancy and effort expectancy are seen to approach the factors for adoption from the system design point of view i.e. how users see e-learning system. The better system in terms of being useful and usable is likely to be adopted. On the other hand, the social influence and facilitating conditions focus on the support point of view i.e. available support to a teacher in terms of IT infrastructures, training, and colleagues' inspiration ensures adoption. The proposed theoretical framework suggests system design, support and trust as the major components of users' influence to adopt Blackboard learning management system.

Table 3: Research questions and analytical themes

Main research question	Sub-questions	Theme	Theory (Author)
How teachers are influenced to adopt Blackboard learning management system at Lappeenranta University of technology?	What are teachers' perceptions of Blackboard design on influencing their adoption?	**Usefulness** (Performance Expectancy)	Venkatesh *et al.*,(2003) Thompson *et al.* (1991) Davis *et al.* (1992)
		Ease of use (Effort Expectancy)	Davis *et al.*(1989) Moore and Benbasat (1991)
	What are teachers' opinions of internal and external supports on influencing their adoption?	**Social influence**	Compeau and Higgins (1995) Taylor and Todd (1995) Mathieson (1991)
		Facilitating conditions	
		Trust	McKnight et al. (2002) Cho(2006)
		Experience	Karanhanna *et al.* (1999) Morris and Venkatesh (2000) Taylor and Todd (1995) Igbaria *et al.* (1997)
	What are the barriers for teachers' adoption of Blackboard learning systems?	**(**Discussed from all themes**)**	

2.3.1 Performance expectancy (PE)

University teachers expect considerable compliance from technology before moving away from their traditional teaching (Johnston & McCormack 1996). Technology introduced should rather help the user (in our case a university teacher) to perform in his or her work better than what previous used system does. For instance, the Blackboard user survey conducted by the department of IT in Lappeenranta University of

Technology during spring of 2008 on LUT teaching personnel revealed that teachers perceive features dealing with delivering study materials and enabling group work to be most useful in Blackboard. Also, tools that enable students to acquire information on their own studies were ranked as highly useful. Earlier LMS used before Blackboard in LUT was WebCT thus some features of Blackboard were perceived to be useful for job more than of WebCT's.

Performance expectancy (PE) refers to "*the degree to which an individual believes that using the system will help him of her to attain gains in job performance*" (Venkatesh *at al.* 2003). This construct is similar to perceived usefulness (TAM/TAM2 and C-TAM), extrinsic motivation (MM), job fit (MPCU), relative advantage (IDT) and outcome expectation (SCT). If a teacher believes Blackboard system is useful for teaching activities then he or she will have intention to adopt it, which leads to adoption or actual usage. Among other constructs which leads to intention to adopt, performance expectancy is most stable in both mandatory environment where users are obligated to use the system or voluntary environment where it is the user's decision whether to use the system or not. In LUT, usage of Blackboard for teaching is voluntary, thus teachers can choose to use Blackboard or not in their teaching. Additionally, studies have shown that gender and age have impact on performance expectancy which determines intention to adopt (Ibid.).

Scales of performance expectancy used for acquiring users view are based on all related constructs (*see Table 1*) from reviewed models (see chapter 2.2.1), as presented by Venkatesh *et al.*, (2003). These scales of performance expectancy are grounded in the view that using system will lead a user into the following:-

1. *Increased speed of doing and accomplishing task*
2. *Increase work output(quality and quantity)*
3. *Increase effectiveness*
4. *Ease the job*

2.3.2 Effort expectancy (EE)

The usage of an information system requires certain computer skills, however, some learning management systems are simple to use due to better user interface design (Shee & Wang, 2008) and other technical design factors. The LMS, which is easy to use, allows a teacher to create coherent and organized learning material for teaching (Paetcher *et al*, 2001) thus fulfilling their objectives and for their students. Effort expectancy refers to "*the degree of ease associated with the use of system*" (Venkatesh at al. 2003). Effort expectancy is similar to perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT). From Blackboard user survey of 2008 at LUT, teachers responded that Blackboard is mainly easy to use and they chose ease of use, reliability and flexibility as expected features. Common scales depicted from combined models by Venkatesh et al, (2003) show following effort expectancy from a system:-

1. *Easy to operate*
2. *Clear interaction*
3. *Easy to learn*
4. *Quick to use*
5. *Flexible*

2.3.3 Social influence (SI)

Some of the university's faculties have strong emphasis on the use of e-learning systems thus many teachers within those faculties may be influenced by the peers who have adopted LMS for teaching (Oblinger et

al. 2001). The influence from others is noted as social influence and it refers to "*the degree which an individual perceive that other important people believes he/she should use the new system*" (Venkatesh *et al.*, 2003). This is similar to subjective norm in (TRA, TAM2, TPB/DTPB, and C-TAM-TPB), social factors (MPCU) and image (IDT) (Ibid).

Social influence to use LMS is linked into the following scales:-

1. *Management support*
2. *Colleagues also use the system*
3. *Influence from associates*

2.3.4 Facilitating conditions (FC)

Facilitating conditions refers to "*the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system*" (Ibid). Teachers, as key users of learning management systems, need to be supported with continuous supply of right technical support and training to the success of for e-learning system adoption (Selim, 2007). Technical infrastructure involves sufficient tools for user interface i.e. computers, mobile phones and other hardware, accessible network, network security, and other technical tools which can support learning objectives through LMS (Ibid). Training from the software providers or particular LMS specialist on how to manage a LMS, increase the competency of a teacher on using the software. In UTAUT model, facilitating conditions are presented as a direct influence on IT use (system adoption). The constructs from other models with comparable function, such as facilitating condition includes; perceived behavioural control from TPB, C-TAM/TPB, compatibility from IDT, and facilitating conditions from MPCU. Facilitating conditions of using information system (e.g. Blackboard system) are grounded into the following scales:-

1. *Sufficient training*
2. *Sufficient resources*

3. *Reliable infrastructure*
4. *Compatibility with other systems*
5. *Assistance from system administrator*
6. *System is complying with working style*

2.3.5 Trust

The original definition of trust is relating confidence generated by an individual with his or her inside beliefs about honesty, compassion, reliability and ability of others (McKnight et al., 2002; Morgan & Hunt, 1994). Trust plays a role of a social factor on things which the individual may not be totally sure about or not have total control but rather rely on other party fairness. Trust in web-based systems refers to a social belief connected to safety in online systems (Cho, 2006). Given that learning management systems involves using web-service, users tend to focus on reliability, dependability, confidence in a system and its providers (Fogg & Tseng 1999), The LMS software that can easily leak the users' information to outsiders either due to poor technology or less security, reduces the trust of users. Some IT technologies have faced adoption resistance due to a lack of trust in the Internet security i.e. electronic data interchange (Hart & Saunders, 1997)

Trust in online teaching is still not popular to many university teachers who do not want to abandon their face-to-face teaching aspects. Teachers tend to apprehension about the quality of teaching and learning when using online environment, i.e. they believe online education is good at providing accessibility while traditional teaching improves analytical, verbal and oral skills (Oblinger, et al. 2001). Thus a learning system should consider integrating as much traditional-based features in order to acquire trust from users especially teachers.

2.4   Conceptual framework

Pare (2002) has defended the use of a conceptual framework in case studies as the phenomenon which assist on providing the meaning of incidences, make sure the necessary factors are noticed, set out constructs to be examined, and help to focus and have clear analysis. The conceptual framework in this study (see Figure is 14) is based on existing theoretical constructs from reviewed models. The selection of these concepts and their relations presents the connection of the theoretical assumption of this study (Pare, 2002).
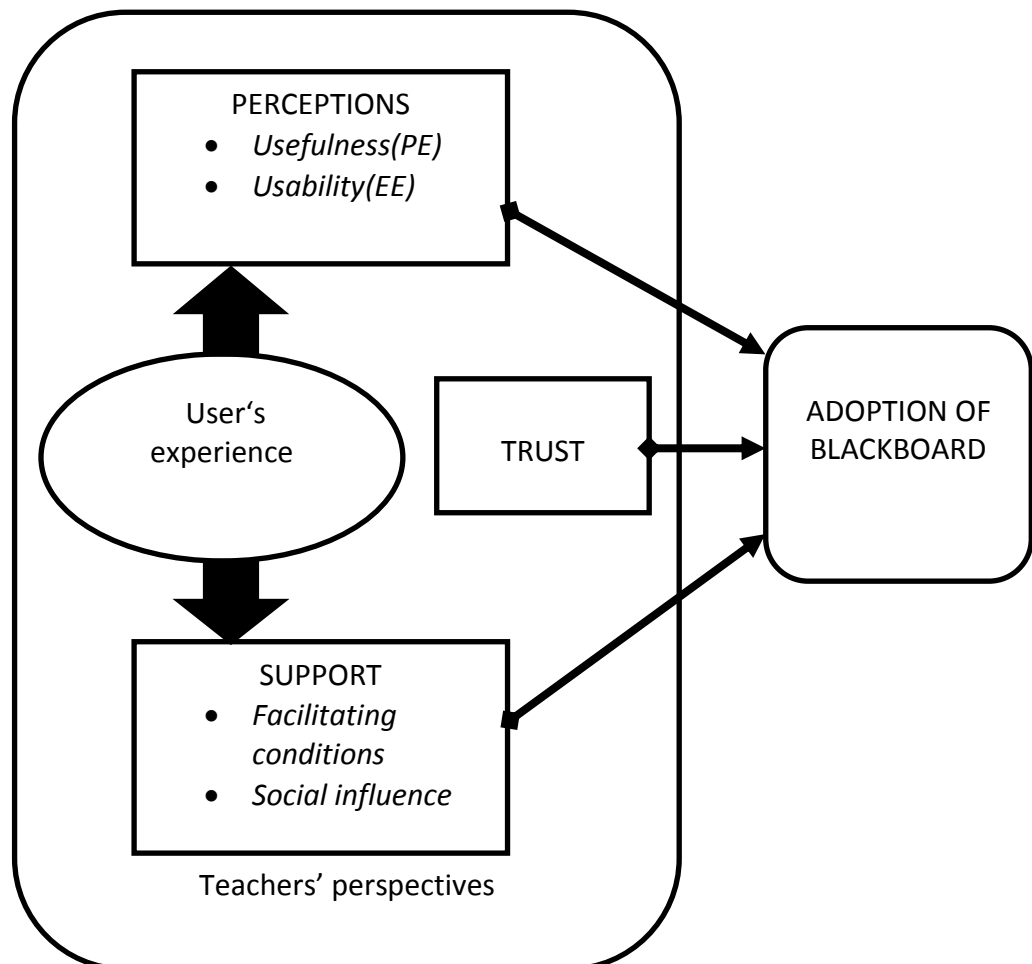
Figure 14: Conceptual framework

3 METHODOLOGY

The focus of this thesis is to pin point the factors that influence teachers' adoption of Blackboard learning system then analyse how the influence occurs. A case study approach was chosen to meet the research intention of understanding participants' perspectives through their experience of particular subject (Snape & Spencer, 2003). The research was conducted through semi-structured interviews with staff of Lappeenranta University of technology.

3.1 Case study approach

Choice of case study method is determined when the phenomenon under study is not clear distinguished from its context (Yin, 2003, p.4). In this case the situation is usage and adoption of learning management system in the university. The nature of research problems lead to the selection of case study approach applied on the university which has been using Blackboard learning systems for three years. In order to find out how teachers at Lappeenranta University of Technology are influenced to adopt Learning management system, case study approach is suitable. Yin (2003, p.20) argued that the research issue which involve "why" and "how" form of question are causal case studies thus they suit with explanatory theories.

Case study approach is the most appropriate method to understand and describe a real-life phenomenon due to its pragmatic and interpretive form. This study investigates the real-life situation by catching the deeper perspectives of participants through the face-to-face interaction i.e. in-depth interviews. Furthermore, the information system studies are recently becoming more examined through single case study approach and it is still considered as useful and relevant. (Pare, 2002)

According to Yin (2003, p.3), relying on theoretical concepts for guiding the design and data collection is the most important strategies for

successful case studies. Theoretical concepts reviewed can be cornerstone of conducting various types of case studies such as exploratory, explanatory or descriptive. In this research, theories from literature reviewed are used as a tool to guide the development of explanation during data collection and analysis. As Yin (2003, p.3) said, a case study should be placed in an appropriate research literature so that the potential candidates as well as relevant variables of interest are identified, selected and screened ready to be used for data collection. Absence of guidance from preliminary theoretical concepts, limit the development of the study in an extreme levels. Therefore, the selection of variables of this study and designing of questionnaire items are based on the constructs adapted from the Unified theory of acceptance and use of technology and other user acceptance theories and new contextualized construct (trust). Thus the literature review in this study supports the importance of the study and help to confirm the eventual findings (Yin, 1994).

This is a single case study where only Blackboard learning is taken as a case from other learning management systems used in LUT. This study is more of "*intrinsic case study*" where the aim is to get a better understanding of the particular case rather than redrawing a generalization because the case itself is of interest. (Stake, 2005, p.443)

3.2   Interviewing method

Researchers obtain the details of life which they are not able to see for themselves by interviewing the people who did see them or by finding their documented information (Stake, 2005, p.445). Due to the fact that the author is not a teacher, interviewing teachers was the best option of acquiring data. Also, the nature of the study is basically a qualitative case study, therefore, it supports the interview method as one of the means of inquiring data in qualitative research. The most used approach in qualitative research is in-depth interview (Marshall & Rossman, 1999),

which is described by Kahn and Cannell (1957) as "a conversation with purpose". In this study the interviews were organized as semi-structured dialogues where the questions were pre-organized before the interview and were same for all interviewees but answers from them were not limited and no alternative answers were provided (Eskola & Juha, 1998). Moreover, semi-structured type of interview were chosen to assist data coding and quantifying since the in-depths interviews tend to produce enormous data which can be difficult to analyse.

3.3 Case selection

The reason for choosing Blackboard as a case was the fact that this learning management system is internationally used with a possibility of being customized into various settings including the language of particular country. Also during this study, Blackboard was one of the learning management systems implemented and used at LUT therefore the author was confident of the easy access to the data since the author is a student at LUT.

3.4 Data collection

Primary data

An interview guiding framework was developed based on constructs adapted from unified theory of acceptance and use of technology. Questions which aimed to explore teachers' perspectives on usage of Blackboard system were formed under the guidance of suggested constructs. The questions were mainly developed from reviewing series of items compiled from user acceptance models mentioned in the literature as well as reflecting the direct observation from the experimental course created in Blackboard. The interview guiding framework was divided into two basic parts with open-ended questions and few demographic questions. The total number of questions in the interviewing tool was 22 (*see Appendix 1*). The interview tool was tested with the first two

participants and then slight modification including adding some few questions were taken.

A total amount of ten teachers from LUT departments were chosen to be interviewed regardless of their levels of adoption of Blackboard system. The interviews to the selected participants were arranged between March 15 and April 15 in 2011 (see Table 4). The open-ended questions provided a room for participants to respond in deeper reflection of their belief and thoughts (Cohen et al. 2000) and thus creating abundant data. The interviewees were also given a chance to comment openly on the overall subject at the end of the interview. This was aiming at grasping the extra suggestions on the subject and also on other matters which may seem to be significant on improving the interviews. (Ibid)

Direct observation

Yin (1989), pointed out that direct observation on case study data collection is another way of gathering evidence. He also emphasized that when a case study involves a new technology, the observation of how technology works adds vital value for a researcher's understanding of the aspects of that technology. To gain broader information of the Blackboard utilities, implementation and usage on teaching and learning, the LUT's Blackboard administrator was consulted. In addition to that, the author was given an access to Blackboard platform as an instructor. In order to make that take place, an experimental course was created with a name of "Derrickin harjoittelukursi". In this sample course the author took part in as an instructor and five volunteered LUT students were enrolled in the course. The roles of volunteered students were to respond to simple tasks in order to give the author a perfect depiction of what an instructor encounters during teaching online. From the teachers standpoint the author was able to investigate all functions of Blackboard as well as trying to design and modify the trial course.

The author was also enrolled in the tutorial course for designers and instructors. This online tutorial course is for providing essential skills needed to operate Blackboard system of version WebCT CE 6.1 to a designer and an instructor. The author was able to familiarize himself with course designing, course development and course management. Also the author accessed all practical user guidance information on other versions of Blackboard learn.

Not only that, but also, the author was given a chance to be in the position of teaching assistant in the course "Writing for Business" which is profoundly designed through Blackboard. This opportunity enabled the author to gain insight of the Blackboard system in use from the teacher's edge. This perspicacity was the strong basis for the author on shaping interview questions and running the interviews.

Table 4: Description of interviewees

Interviewee	Role and Interview date	Faculty
Interviewee 1	English lecturer at Lappeenranta University of Technology. Interviewed on 18th of March 2011.	Language Centre
Interviewee 2	Professor at the department of Management and International Business. Interviewed on 18th of March, 2011.	School of Business
Interviewee 3	English lecturer at Lappeenranta university of technology. Interviewed on 23rd March, 2011	Language Centre
Interviewee 4	Research scientist from the department of Business Economics and Law. Interviewed on 25th March 2011	School of Business
Interviewee 5	Senior Lecturer in Manufacturing at LUT. Interviewed on 28th of March 2011.	Faculty of Technology
Interviewee 6	Professor of Economics and Business Administration at LUT. Interviewed on 29th March 2011.	School of Business
Interviewee 7	Professor of Knowledge Management in the department of Management and International Business at LUT. Interviewed on 29th March 2011.	School of Business
Interviewee 8	Professor of International Marketing in department of Management and International Business at LUT. Interviewed on 12th April 2011	School of Business
Interviewee 9	Research scientist teaching Finance studies at LUT. Interviewed on 15th April 2011	School of Business
Interviewee 10	Associate Professor in Information Technologies in Management Department At LUT. Interviewee 9 teaches at GSOM and LUT. interviewed on 16th April 2011	School of Business

3.5 Procedure

With help from a LUT's Blackboard support technician, the professors and lecturers from various faculties of LUT who are using of Blackboard system were identified. The initial approach was to send an email to request them to participate in the in-depth interview on the subject. The email described in detail what type of interview was to be conducted and it introduced the topic of the study and major areas of the questions. The interviews took place in the offices of the interviewees during the time and date they suggested. Additional participants were identified after being recommended by the interviewed participants.

The majority of interview sessions (*9 interviews*) were taken through face-to-face approach. Participants were asked open-ended questions and their responses were recorded by a special recording device. The confidential issues were also taken into consideration and participants were asked to sign the confidentiality agreement and identify type of information should not be disclosed. The time for interview sessions were varied from 30 to 45 minutes. One interview was conducted through phone because the participant had an emergency and could not be available for a face-to-face interview on the agreed date. According to Fontana and Frey (2005) both face to face and telephone interview are most likely to be included in structured interview category. Telephone interviews lack the contribution of non-verbal communication such as body language of the interviewee and force the information to be provided in a designated location rather than natural field setting (Creswell, 2003), however, the phone interview conducted in this study was successful and the conversations were recorded for analysis.

3.6 Data analysis

The analysis of data in this study is based on the proposed techniques for case study which suggest categorization of data to fit with a developed

framework (see Pare, 2002; Yin 1993, Yin 2003; Denzin & Lincoln, 2005). The data collected are examined under an interpretive analysis (Leedy, 1997) in the sense that framework used with its themes are examined to discover and explain deeper meaning by reflecting on the findings from the interviews. The information gathered and interpreted within a suggested framework that involved patterns of events from literature (Yin 1993, p39) explains the main research question of how teachers are influenced to adopt LMS at LUT.

The tailoring of the data in this study went through steps suggested by Creswell (2003) for various types of qualitative analysis (see Figure 16). Since the data collected through semi-structured interviews were directly sorted, arranged and categorized into themes from a questionnaire framework, first step which is about organizing and prepare data were skipped. The second step was to go through all the data by listening and write down notes to obtain general ideas from participants. Third step involved coding process where text data were organized into categories and labelled. The fourth step was to take the coded categories and fit them in the themes developed which in this case were six themes. These themes are major findings of this study and display multiple perspectives from individual participants with direct quotations supporting their views. The fifth step was to present the findings where narrative passage was used to convey the outcomes into sub-themes, multiple views from individuals, and quotations. The sixth step which is final is set into the separate chapter (*chapter 5*) as discussion. In this step data found were interpreted to obtain the meaning or lesson learned. The interpretation was based on the reviewed theories and models and suggestions for actions were included. (Creswell 2003, 195)

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┌─────────────────────────────────────┐
│   1.   Organize and prepare         │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│   2.   Obtain a general sense       │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│   3.   Coding                       │
└─────────────────────────────────────┘
                  ↓
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│   4.   Description                  │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│   5.   Representation               │
└─────────────────────────────────────┘
                  ↓
┌─────────────────────────────────────┐
│   6.   Interpretation               │
└─────────────────────────────────────┘
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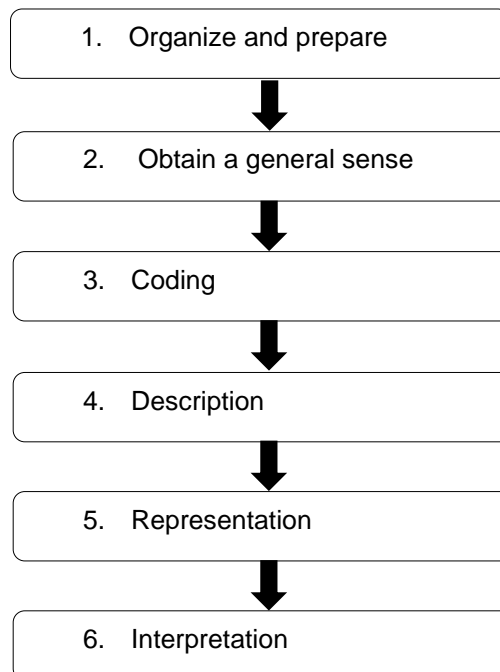
Figure 15: Steps of data analysis and interpretation (Creswell, 2003)

3.7   Validity and reliability

The validation of qualitative research is different from that of quantitative research in a sense that, there are limitations to qualitative researchers to use validity and reliability to check stability or consistency of responses as well as generalizability (Creswell, 2003). However, in qualitative study like this, validity is used to suggest whether the findings are accurate from researcher standpoint, the participant or the reader (Creswell & Miller 2000). The validity of this study is addressed by the analysis of multiple evidences gathered from university database documents, articles, existing literature, online articles, interviews as well as prior dissertations. (Yin, 2003p. 97-99). Evidences collected and reviewed are well documented for readers who are interested to explore further.

Reliability of this study, that is, to be generalized and replicated by applying results to new settings (Yin 2003, p. 37; Creswell, 2003, p.195) is limited due to the fact that this is single case study. Also, the natural environment of the case which is real-life and current, supports Creswell's (2003.9 195) argument that reliability with this type of qualitative study plays minor role.

4 FINDINGS

This chapter presents general empirical details of the findings from qualitative data obtained from a semi-structured interviews conducted with participants from Lappeenranta University of Technology. The goal of the questions used in interviews is to capture the teachers' views on Blackboard perceived usefulness and usability, support from community and environment on using the system and the trust of users to the system. Other themes of the framework such as experience are also involved, however gender and age are not the main focus of this study thus their inclusion is for sample description motives.

Sample demographics

The participants of this study were 50% female and 50% male. The age of participants ranged from 20 to 60 years. One participant was in 20-30 years age category; six participants were in 31-40 years age category, two participants were in 41-50 years age category and one participant on 51-60 age category. All participants interviewed were LUT's host and guest teachers 60% from School of Business faculty, 20% from Language Centre and 20% from Faculty of Technology. The experiences of participants on usage of Blackboard system were ranged from one to eight years. Participants who have used the system for one year (2 interviewees); two years (3 interviewees); three years were (1 interviewee); and more than five years was three (4 interviewees).

4.1   Usefulness of learning management system

Interviewees responded that Blackboard learning system was useful to their teachings and course delivery in various ways as described in subchapters below. Majority of them described how they perceive the usefulness of various features of Blackboard learning system relating with their regular usage. The questions set to find out usefulness of Blackboard were targeted at perceived functions, benefits, impact, instructor integration with students and system weaknesses. Questions under this theme were as follows:

1. What functions (features) of Blackboard are you using?
2. What benefits are you getting by using Blackboard?
3. Can you reflect on the impact of Blackboard usage on your teachings?
4. How useful is Blackboard in integrating with students?
5. What weaknesses do you see in Blackboard system?

Interviewees independently mentioned the speed of getting the task done, increased productivity, making teaching easier, quality of work, quantity of output and effectiveness as the most existing factors from Blackboard. Their response was not depicting the system as whole but the features included in it. Thus the performance of Blackboard system in these findings is observed according to its tools. The sub-chapters below (4.1.1 - 4.1.6) describe those factors in detail.

4.1.1   Speed of accomplishing tasks

Blackboard learning system through its tools is seen as the system which enables the teachers to get their tasks done more quickly than if they would not use it (Moore and Benbasat, 1991). Many interviewees stated that frequently tasks they ought to do are completed much faster when

using Blackboard learning system. Also the gap of waiting between events which otherwise could have been big, is relatively reduced when using the online features. The quickness here is compared to either prior used system or traditional way of teaching which teachers have been already exposed into. For instance teachers see that re-organizing sessions for those students who have not been in classes is time consuming. Whether, it is to reprise shortly what have been done in the prior class or giving the hand-outs, it was seen that Blackboard would enable students to automatically access the documents thus skip that lengthy procedure.

"*The storage method for my reading courses help students who perhaps haven't participate in the class sessions to read the text right after the classes*" (Interviewee 1)

"*The biggest benefit am getting from Blackboard is that I don't have to do lots of paperwork. I use those electronic services and I try to keep papers away. So students send electronic versions of their home assignments, I grade them there and they get their grades electronically.*" (Interviewee 4)

"*The part which helps with grading that is what I need; I have so many students that I need those functions*" (Interviewee 5)

Speed of accomplishing tasks was seen more valuable on classes which were having large number of enrolled students due to the fact that handling that type of classes with only traditional teaching methods would require extra time and energy. Participants realized that even when trying to get advantage of speed on certain tool, other useful factors such as increased productivity were also grasped.

"*Students are put in more strict conditions because deadlines are working more efficiently there.*" (Interviewee 10)

4.1.2 Increased productivity

Interviewees also comprehend Blackboard as an incentive of productivity because some complicated task such as administering the exams can be simply planned into online procedure which is less demanding and more creative on teachers' opinion. Also, teachers can easily follow the whole process of student progress through submitted reports and feedbacks.

> *"In one course, Technology and Innovation Management, I have used Blackboard for the students to return their exams there but the grades and stuffs like that were given in the normal traditional way"* (Interviewee 2)

> *"Well, I think, I have more time to think carefully what students' opinions are. Now I'm following the whole process, I can follow when they work on exercises and give feedback exactly when they need it. Through Blackboard, I can respond immediately when I see the work is not yet complete and students will work on the unfinished part according to my feedback but if they just send me their work on paper copy I will give the final grade and time for discussion and feedback won't be there. That is the big difference and that's how i have change my way to teach"* (Interviewee 5)

Increased productivity through usage of Blackboard is seen on the teachers' strategies of working as one participant mention about increased accuracy and thoroughness in working. Also, it has been seen as the way of doing things differently for those teachers who are innovative. This is evident from following quotations:

> *"Productivity has increased; I am now kind of plan the course much accurately and much more thoroughly"* (Interviewee 4)

"It is more fun… I would that from teachers' point of view that has been my number one motivation; I try to find new ways to do things" (Interviewee 6)

4.1.3 Easiness of teaching

The interviewees mentioned that using Blackboard was making their teaching tasks and plans becoming easier by delegating part of the tasks to the student. Some tasks which would have required a physical presence of the teacher in the classroom or office is simply managed partly by students. Two interviewees described the decreased job task due to Blackboard online tool which allows students to submit their work electronically as follows:

"I have mainly used the drop box meaning that the students can leave their works in the box. In that function the system is great because there is a specific deadline and it is fixed thus I do not have to worry who is late, why and what is going on because the system take care of that." (Interviewee 2)

"Also the drop box assure the teacher that all the returned papers would be in the same place so it is very easy to go and get them so for me that is kind of practical benefit" (Interviewee 2)

"It's also a place to put materials so the students can always find them, they don't need to come and find me personally to get the materials. So Blackboard has given me that type of freedom" (Interviewee 3)

Other participants noticed the difficulties of organizing files, emails, or other submitted materials from students and how easily that can be

automatically organized through Blackboard tools. The communication path can be monitored easily through Blackboard mail function and the review of mail sent even after an extended period of time can still be done easily.

> *"Recently I have recommended students that if they want to contact me, it's better to use Blackboard mail function because then in each course I can kind of segregate all my emails and I don't have to make folders for each of my courses"* (Interviewee 4)

> *"When my students work with exercises, they can send me the first reply to my questions, I check them and send feedback and they have to respond to those feedbacks and so on. So through Blackboard, I can follow the whole path to see what they have done and why and they cannot pass over my feedbacks"* (Interviewee 5)

> *"It is more efficient, It doesn't burden my email all the time and I don't have to take care of copying materials in paper-form to students"* (Interviewee 6)

4.1.4 Quality of job

Blackboard system was also considered as facilitator of the job quality because some of the features available are more advantageous for the aimed teaching goal and cannot be replaced in traditional teaching methods. Many interviewees described the extra packages of interactive tools, audio and video options as features which brings the needed quality which would be either difficult to implicate or time consuming when done on other way. Also, the synchronous environment provided by Blackboard learning systems through its integrated features which allows teacher and

student to meet online at the same time regardless of a distance improves the quality of job. The below comments provide evidence as follows:

"Since I am not using all the features, Blackboard has not impacted my teachings that much but I think that if I would also take the kind of interactive functions more, then it might change the way I teach." (Interviewee 2)

"Well, when you are having access of audio and video type of things, I assume that from the language point of view it is more realistic and actually they can be exposing the students to the various variance of English language such as Australian, British, Canadian, American, South African, Indian and so on therefore its brings that kind of extra-features which otherwise might not be present" (Interviewee 1)

"I mainly use Blackboard for this particular course, and it has been a very successful course I mean the transition to online has been received very well by the students, they appreciate the flexibility of the course because it makes a synchronous environment that they can do things on their own time" (Interviewee 3)

One participant added that although some functions of Blackboard appear to be increasing quality of teaching, the teachers' role on enhancing the usage from students amplifies the particular function utility.

"The advantage of blackboard would be discussion forum but if you don't actively encourage people to use that then it doesn't create that much advantage." (Interviewee 8)

4.1.5 Quantity of output

The findings reveal that teachers perceive that much can be done through using Blackboard learning system because the environment supports production of extra output such as knowledge creation among students when they were using the system actively. Participants mentioned that they witnessed these increased outputs from the usage of the system and became proud of being part of making that happen.

> *"When you have group of students very actively involved in the environment, they write blogs, they comment on blogs written by others, they share materials, they post links to one another, you can actually see knowledge creation there and it is amazing for us [teachers] to see that we have made this happen."* (Interviewee 6)

4.1.6 Effectiveness of teaching

Participants suggested that the effectiveness of teaching various courses as well as responding to their students had become more feasible and more distinct through Blackboard system. Teachers can easily give specific response to a designated student instead of the whole group. Also, the interactive teaching is perceived to be more effective with Blackboard system. This is supported by the following comments:

> *"When a teacher get students homework's through email and the feedback tool is set to be possible, of course the kind of feedback that he will give is more individual or personal compared to the feedback which can be given in the classroom."* (Interviewee 1)

> *"Compared to other systems for information delivery I must say that if you're just sending some material to each other then it is waste of time to use Blackboard, but if you want to work in interactive way, I think the way how the students see the interface, the quality is*

probably quite high, because they see the perfect questions and only the alternatives way to answer" (Interviewee 5)

The accessibility of virtual learning through blackboard was also seen as a new channel for chances of learning and teaching within convenient time for teachers and students. Multiple integration through mails, discussion boards, video, and persistent feedbacks created perfect environment for teachers and students especially adults who are also working and are used to working tools of the same kind in their working environments.

"Some of the students said that they really got hooked on to this virtual group learning diary and I could see that they [students] would go to the Blackboard like in the midnight or whatever time…" (Interviewee 7)

4.2   Ease of using learning management system

Effort expectancy or usability of the system was evaluated by how the users perceive the ease of using the system. Questions asked to the participants were related to effort expectancy construct along with other similar concepts from other models of user acceptance. The findings suggest that majority of interviewed participants claimed that Blackboard is relatively easy to use especially when the user decides to choose particular tools he or she needs during course design. Besides system design, other factors were contributing to the perception of easiness of use such as experience and user exposure to other systems. Below this paragraph, there are questions about usable asked during the interview. As noticed the fourth question is applicable in both usefulness and usability, therefore, it rest on the interviewees' coverage of the question.

1. How comfortable are you feeling when using Blackboard?
2. Are there any difficulties when using Blackboard? (If yes: describe)
3. Are you aware of other features of Blackboard?

4. What weaknesses do you see in Blackboard system?

4.2.1 Easy controlling of the system

Participants described that starting to use the system does not require special computer skills since the system starting tips are much easier, but they mentioned the large quantity of lockers which may lead to difficulties of controlling, especially for starters.

> *"As I said before I do not use all the features but I consider it relatively easy at starting point."* (Interviewee 2)

As a user continues to use the system, more control of the system tools for designing, teaching and manage the course increases, thus the controlling of the system become even much easier as one participant said;

> *"I think I can navigate better than perhaps someone who steps into it right now"* (Interviewee 3)

> *"After several weeks you get used to it"* (Interviewee 10)

4.2.2 Clear system interface

From users opinions especially those who have used or are using other type of LMS, Blackboard user interface is not very encouraging. Users perceive the design of the interface as confusing especially when one is designing a course. Other participant commented that although the system interface is not that sound, the functions especially on interaction is useful.

> *"For me the layout or visual interface is confusing…, to put it simply there are too many layers in Blackboard and I think it is unnecessary bureaucracy"* (Interviewee 3)

"…The layout is not that attractive; therefore you need to think how to use it so that you enhance value because there are also drawbacks there." (Interviewee 6)

"If I had to compare WebCT with Blackboard I think that the worst thing is that in Blackboard you have too many options to change things , somehow it looks beautiful but when you have more option to change something the interface to the teacher is difficult" (Interviewee 5)

4.2.3 Simple to learn

Most of the participants agreed that the initial learning to use Blackboard were not difficult since the early instructions are clear and require simple logic to continue. Some tools within the system had the functions just like their tag term so by reading the tool a user may not require an explanation on what is the function of that tool. Most participants said that they had learnt how to use Blackboard basically by trying and have certain assistance from system administrators.

"For the most part I have learnt things by trying and see if things work out, I know that you can rarely do harm to anybody by just trying." (Interviewee 6)

"I received just basic usage training but now I am aware of almost all features of Blackboard so when am designing a course I don't have much problem to select tools I need." (Interviewee 9)

4.2.4 Quick to use

Participants commented that Blackboard is not quick to use when designing a course. The procedures involved from one step to another are not organized to provide a direct action or result. This is not for every function but at least many participants noticed a length of time taken when designing a course. Also, one participant mentioned the negative feedback received from adult students about slowness of Blackboard system when used on other locations such as their working places.

> *"One of the reason I haven't recently active to use it is I had group of students who were not located here and were part time working, they had really trouble with Blackboard being slow and difficulties in login-in according to their feedbacks"* (Interviewee 8)

> *"I find it very stiff system, for example when am constructing a course and I want to see how it looks like to the student view, clicking the student tab takes me back to the home page, so I have to go through series of clicks to get to what I need to look at and I find that annoying."* (Interviewee 3)

4.2.5 Flexibility

Users of LMS require flexibility of the system which can allow them to work easily, especially when they are working with multiple types of systems and files. In the case of Blackboard, there is less flexibility when it comes to the task of integrating files and folders with different format from other systems. Most participants perceived these complications and describe them in various dimensions.

> *"Working with file is something that I am not happy with because you can only download individual files while in teachers' point of view it could be beneficial to download folders. Sometimes you have an*

entity you would like to take from somewhere and put it on the Blackboard but what you could do at the moment is to take individual files and move them from the desk for example and put them in the folder which you have created in Blackboard and that is a bit time consuming" (Interviewee 1)

4.3   Social Influence within university context

Social influence findings involved inspiration from co-workers, associates, and students on one hand and on the other hand management and faculty support. Interview questions on social influence were designed as follows:

1. How inspiration from fellow teachers/colleagues has contributed to your usage of Blackboard?
2. How do you realize your encouragement to others on using Blackboard?
3. How do you feel about support from management on using Blackboard?

4.3.1   Colleagues' inspiration

Inspiration from colleagues were said to have some kind of contribution to usage of Blackboard and most of participants confirmed this although on the trivial occurrences. In order to attain adequate responses for this issue, questions were designed for interviewee opinion on his or her inspiration to others and others inspiration to him. Most participants said that they were at some point introduced to the system by colleagues who suggested using particular function from Blackboard. Also participants who have been using the system for a longer time presented and recommended some functions to which they think was worthy to use by their associates.

"I am sure inspiration from others has contributed to my usage of Blackboard. I even started using it as drop box after being given advice from a colleague" (Interviewee 2)

"There is kind of unofficial peer pressure in a way that you should be using all kind of advantages of different technologies but I think eventually is what kind of learning objectives in your class would Blackboard support" (Interviewee 8)

"I think that we support each other for example putting the material to the blackboard because it's also the way that teachers could check what others taught last time, and continue to another part." (Interviewee 5)

Some participants commented about how they perceive their inspiration to others on using Blackboard system has contributed to some changes on colleagues' way of online teaching.

"I remember two instances where I was showing a colleague how to utilize a drop box" (Interviewee 2)

"I have been talking about this a lot [Blackboard] ...I have talked about how the video blog (as I call it myself) is easy to use and about the helpful staff we have at the university and I have also send the links to show how it works..." (Interviewee 7)

Students' preferences on the other hand were also seen to influence teachers on intention to adopt Blackboard as one interviewee said;

"And also its seems that students prefer leaving their work in Blackboard so that they don't have to make copies themselves in order to save a bit of money" (Interviewee 2)

Furthermore teachers who have been working in adult education were seen to be inspiration to other teachers due to their experience with variety of tools for distance learning. Even the colleagues from different universities who are using different systems were thought to play part in inspiring Blackboard usage to some participants.

> *"If am getting inspiration from others its perhaps people who have been working in adult education or people from other schools and other systems"* (Interviewee 3)

4.3.2 Management encouragement

There are various opinions of management support on using Blackboard system depending of the levels of management the interviewees were reflecting to. Since LUT is composed of different faculties with various departments, encouragement was seen to be prevailing but it was categorized into separate scopes. From the broader picture, the university has devoted the LMS usage issues to a department which deals with everything involving learning systems at LUT. Also, there is a wide autonomy on choice to use any web tools at LUT and teachers are left to decide what web tool fits with their requirements. The management trust teachers on their decision on suitable tools and methods which will fit into their courses. Thus the findings indicate that the management is neutral on the issue of encouraging teachers on usage of particular learning management system however, there is a supporting team which deals with all teaching technologies and supports teachers technologically and pedagogically. The bellow comments represent many other comments with similar tone:

> *"It is not seen as obligatory platform to use so I don't see that there's that much support and I don't see there is not that much discouragement either"* (Interviewee 8)

"Management never push me to use, I use for my own convenience, and for the students convenience" (Interviewee 9)

"When I joined LUT it was kind of the information package that I received and there was, Noppa, Blackboard and WebOodi listed there and it said you can choose whichever you like to use." (Interviewee 4)

"The university has the support function. They have couple of people who are experts in Blackboard then you can contact them if you have any problem" (Interviewee 2)

4.3.3 Faculty support

LUT has three main faculties known as Faculty of Technology, Faculty of Technology Management and School of Business. There is also Language Centre which deals with teaching various international as well as local languages. The findings shows that there is no formal support from the faculties on using learning management system such as Blackboard but interviewees thought that it could have been a good idea to have formal discussion arranged by the faculties on how to improve usage of systems. The lack of open discussion about teachers usage on online tools within faculties have showed to create the gap where teachers know little about others on preferred system or online teaching and communication tools.

"We haven't talk about usage of Blackboard with other teachers, they use it but we have been so busy with other work routines so this kind of pedagogical talking is lacking but my colleagues are doing interesting things which I would like to see" (Interviewee 1)

"We do not discuss the benefits of using Blackboard system, but I assume many teachers use it" (Interviewee 9)

4.4 Facilitating Conditions

Participants mentioned facilitating conditions which perceived to be influential for their usage of the system in terms of available resources, user IT skills, system compatibility, training, Assistance from system administrators and compatibility with working style. The questions asked during interviews were as follows:

1. What kind of training you have received on using Blackboard?
2. How often there are trainings for improving the skills?
3. How IT infrastructure at LUT supporting your Blackboard usage?

4.4.1 Available resources

Available resources for using Blackboard learning system were perceived as sufficient. The infrastructure including computers, networks, operating systems, and server technology were seemed to be perfect for the Blackboard usage. In spite of minor problems with file format integration with other systems, participants believe that it is more of a technical problem and there was solution for that when consulting the system technicians.

> *"Well I think that we have enough computers, and we have made that port called VPN, you know probably that port for the students that are working outside our university so that they could get in to our files and our work on university systems, so I think that it supported relatively well and we have enough classrooms here and even enough knowledge if somebody needs support"* (Interviewee 5)

4.4.2 Compatibility with other systems

Blackboard system is seen as not much compatible when it comes into presence of other implemented web tools at LUT such as Noppa, WebOodi, and learning management system such as Venla. Some teachers prefer to choose only one favourite system rather than using multiples. Those other users who decide to use multiple systems take into consideration similar functions therefore, they mostly use what is absent from other systems. Participants said that most logistic or information delivery functions available from Blackboard are also available in other LUT web systems in the very similar style. Thus teachers see it may be confusing or too much to both teachers and students when announcing through multiple systems at one.

> *"I have kind of thought that it's a bit complicated for the students if they have to cope with different systems that distribute information and some of the classes I teach here they do already have to deal with online simulation game, then I use Noppa portal as well so I haven't seen that it will be advantageous to add second or third platform for the course"* (Interviewee 8)

> "*There is kind of small conflict of overlapping systems, so since you can do lots of things with Noppa, then you think that well, I will not bother with Blackboard's certain characteristics because you want to minimize your work."* (Interviewee 2)

4.4.3 Training

Although the demand for learning to use Blackboard is relatively high from users, the participants revealed that there is a lack of general and continuous training which will enhance their usage of the system including learning about features they have not used yet. Most of the participants mentioned that there was an initial training when the system was

introduced but the continuous trainings have not been that active. Also, due to their busy work routines participants maintained that attending regular trainings would not be easy. They would rather take individual help than attending the training seminars.

"I remember that there were some trainings in the university when the whole system was implemented but at that time I didn't take it because I was so busy to enter any training but I then took it one and half year ago" (Interviewee 2)

"I received individual support when I started using these tools but unfortunately, I usually don't go much to training seminars, it might be they don't fit with my schedule" (Interviewee 7)

"I am not sure h*ow often there are trainings for improving the skills but I only once attended a training session, but I believe LUT arranges them quite often"* (interviewee 9)

Moreover, the availability of instant help from a help desk tool in Blackboard, informal training and feedback on how to use the system have been incentive of teachers' continuance of using and exploring more features of the system as several participants commented,

"Since I was busy to attend early trainings, I did ask for help from the help desk in Blackboard and I did get an advice. So whenever I needed help I have been able to ask them how to do things" (Interviewee 2)

"If we have new system, I kind of start trying to use it myself and if I run into troubles I call somebody for help" (Interviewee 7)

"I didn't receive training. All I learned was by myself, just reading the help files there and trying to go into each file and see what options that I have." (Interviewee 4)

But even with the support from help desk and feedback the need for formal regular training was still regarded as necessary for the complete and efficient use of the system. The participants suggested that training could be designed in the way that is fitting teachers' schedules in order to avoid colliding with other routines. In some cases teachers did not find enough help from the helpdesk information and the feedback is always not intended to demonstrate the usage of unused features.

Some participants mentioned that some of the terms used to describe the functions in course tools are too technical for course designers considering they are from various faculties thus training would reduce the ambiguity caused by unfamiliar terms.

4.4.4 Assistance from system administrators

The help from the LUT's team which is dealing Blackboard and other learning management is mentioned as a major incentive for teachers' usage of the Blackboard system. The supportive role of LMS department personnel has helped to cover other facilitating conditions such as training since teachers feel they would not need extra training after being supported on their instant need on working with certain tool.

"For example if one has problems with enrolling the students, I had the same problem in the beginning and the administration department was very willing to give information and provide instruction materials so they were helpful as it can be expected." (Interviewee 1)

*"Here at the University we have a good team dealing with Blackboard… they are committed and even have come to my class and give advice to students on how they can use tools" (*Interviewee 7)

"If I were to learn all these tools by myself I probably would never do that but it is important to have these power active and service oriented people who can help you." (Interviewee 7)

4.4.5 Compatible with working style

Almost all participants approved that Blackboard system usage is fitting well with their working styles since Blackboard supports blended teaching thus during course design, teachers are able to select various teaching tools from the system and leave out other which are not suitable for her or his teaching style.

4.5 Trust of online environment

Trust in terms of security of a system and interpersonal trust were seen to have impact on Blackboard adoption. Questions asked to participants under trust theme during interviews were as follows:

1. How do you feel about Blackboard security?
2. How comfortable when uploading personal files?
3. Describe the quality of Blackboard on instructing and course delivery

4.5.1 System security

Blackboard proved to be not having serious threats to instructors who are not uploading or handling files or documents with private information therefore it gained their trust that the system is secure. Some Participants claimed that the information they upload, save or share in Blackboard is

more of non-secret so even if they would be wrongly accessed by a third party there would be little threat. However, the degree of usage contributes to the variations of security opinions since teachers who use basic functions of the system have less to be worried about security in terms of information files and other documents to be put online. Participants also said since they are designers of the course by default that reduces the risk of other people to access their courses because they can manage the course themselves.

> *"Well if I think the kind of things that I do as a language teacher, I can't see or can't imagine anything that could be stolen or there aren't any research material around so the information isn't very sensitive, you can get it everywhere you want."* (Interviewee 1)

> *"It haven't been an issue for me, I think my philosophy for that reflect it as a social media, free and shared mind-set and we do not pass information that would be confidential"* (Interviewee 6)

Other participants have made judgements about type of information which could be safe to share in the system and they showed their concern about personal information when using Blackboard that there is uncertainty of how secure the information will be and they said they would prefer to use other systems in some cases.

> *"When I ask students to write story about their personal experiences, I actually ask them to send those via email I do that because I am not aware if there is function which will allow only me to see these files."* (Interviewee 7)

> *"I think that what I've said to my students is that we have chat rooms for example, be careful what you write there and how you write there because you can't be sure who's reading them and*

when your sending those materials to each other you got to get
prepared that somebody is going to ask could you please show me
the material of your own to prove that you have really made the
exercise" (Interviewee 5)

4.5.2 Interpersonal trust

Trust is also seen on the other hand between the user of the system and
the system administrators. Teachers' willingness to trust themselves i.e.
being vulnerable, accept uncertainty with new technology, and take risk
and try new technology is impacting their adoption of new technology. If
the instructor does not trust himself on his or her personal competence on
IT skills but trust the system administrators that they have required skills
and they are willing to help then that can lead to usage of a system.

"As I don't have much trust on my IT competences but I have trust
for these people [system administrators] they have professional
skills and they are willing to help me." (Interviewee 7)

"Security of Blackboard depends greatly on management [system
administrators] of Blackboard system." (Interviewee10)

4.6 Experience

The findings show that experience gained for continuing using Blackboard,
was perceived to influence the expansion of the usage by a user. This
means when a user realizes the successful of using Blackboard in one
course she or he may intend to introduce the system in another course
which he or she is less or totally not using Blackboard as one participant
say:

"The success of this course actually is pushing me subconsciously to
trying creating other online opportunities for other classes; you know,

how do I get other classes more independent through Blackboard"
(Interviewee 2)

Besides specific experience for Blackboard, usage of other IT systems and tools, and computer experience appear to be contribution to exploration of Blackboard features and stimulus for trying new innovations. Most of the participants mentioned that when they started using Blackboard they didn't have experience from other learning management systems but they did have computer experience or general experience on web tools.

"I have been using computers my whole life therefore I feel fine trying out new systems and I am not afraid to trying new things there."
(Interviewee 6)

"I actually never used any other learning management system except Blackboard, that was my first learning system I used in my previous University but there was also kind of system which were for general purposes sort of web page management system" (Interviewee 4)

4.7   Age and Gender

The concepts of age and gender which were seen as moderators of some main constructs of UTAUT (Venkatesh et al., 2003), were not the main focus of the study, therefore, they may perhaps be studied in other quantitative researches to find out how they affect the adoption of learning management systems in LUT. The concept of age is often correlating with individual acceptance of some technology for example mobile technology (Carlson et al. 2005) and even e-learning technologies. In this study the notion of age was limited by small sample size. Also the fact that majority of the participants (6 interviewees) were found to be of the same age category (i.e. 31-40 years), therefore, the study would not give any significant variation for making a strong inference. However, during

interviews some participants mentioned their perception of age as an incentive to use some tools of Blackboard. They also mentioned that the courses which involve a group of adults, who also happens to be working, inspire their usage of Blackboard since those students prefer distance learning while others relate young age with proactive on using technologies.

> *"Well, from a teacher's point of view, it's a method of storing information and tasks because I've noticed that when I get older I tend to be losing stuff if they were only in paper format…"* (Interviewee 1)

As age, gender issue has been included in various information system adoption researches and shows significant moderating effects on other factors of adoption. Commonly men are linked with comfortable feeling with usage of computers although this depends on specific context. There was a good ratio of gender among participating interviewees although the sample size was not adequate for analysis and the approach of the study was purely qualitative.

Thus there are initial indications on how age and gender can impact other factors of adoption of LMS, so further quantitative research with right sample size would be necessary to understand how age of teachers and their gender may have impact on using learning management system in universities.

4.8 Barriers of Blackboard adoption

The participants also shared their opinions on why they did not feel like using Blackboard on various circumstances. Because of these circumstances teachers decided to either use traditional face-to-face teaching or other alternative system available at LUT on others courses. These are considered as barriers of adoption Blackboard system at LUT

and may restrict the continuance of usage of the system to some extent and might lead to rejection by users. Many participants mentioned that well-organized interactions with students via Blackboard are not efficient with large classes. It was seen as difficult to have efficient interaction since personal discussion with large number of students is time consuming compared with smaller group.

> *"In large classes I have, which is typically fifty to eighty students in class means there are quite many groups. If I have group-works and maybe I want to do lots of interaction with them that will take a lot of time but I do see if I would have smaller group let's say 25 students then I could discuss via Blackboard"* (Interviewee 2)

Also, participants mentioned that the system can permit extra burden to teachers when the limitations of usage are not well set. The easiness and of using the tools can lead to many emails, files and other submitted work from students which may be time consuming on handling them all. One participant said;

> *"It can be extremely burdening when you open up these possibilities that students can send you questions or issues via Blackboard because you might end up facing numbers and numbers of questions"* (Interviewee 6)

Also, course design and objectives were found to limit the adoption of Blackboard system since teachers mostly view Blackboard as a tool for enhancing interaction, therefore, if the course has been designed with a limited interaction activities, it was then considered by teachers not suitable with Blackboard system.

> *"It depends on how much interactions you want between the students and you"* (Interviewee 8)

Other barriers were seen from the technical side of the system itself for instance one participant commented;

"Blackboard has bad design of navigation system, too many un-useful functions." (Interviewee 10)

Moreover, uncertainty of control for users' documents which is related to system security was seen to be the barrier for teachers who wish to have restraint of their uploaded properties on Blackboard.

"Potentially your data is not secured from being distributed and discussed without your permission." (Interviewee 10)

5 DISCUSSION

This chapter matches the findings with information gathered from literature and extant theories of individual-level adoption of technology. The general image is that the findings confirm most of the constructs of user adoption of technology models and call for an addition of trust construct when studying adoption of learning management systems. Also the chapter presents the way research questions have been covered and concludes with further questions to be considered for further studies.

This study focuses on understanding how teachers are influenced to adopt Blackboard learning management system at Lappeenranta University of Technology by analysing teachers perspectives based factors of individual's adoption of technology. Teachers interviewed have been already introduced to Blackboard system and their intention to adopt.

Table 5: Evaluation of qualitative results of teacher's opinions on Blackboard

Theme	Evaluation	Comments
Usefulness of LMS	High influence	▪ The speed of accomplishing task, productivity, quality and quantity of work were high through electronic tools such as storage, grading, interactive tools *"less paperwork", "Accurate course plan"* ▪ Teaching was perceived to more easy and effective through asynchronous learning where time and place were not seem to be a concern.
Ease of using LMS	Moderate influence	▪ Interviewees perceived easy to control and simple to learn using Blackboard *"self-learning", "relatively easy at starting point."* ▪ However, Blackboard were alleged to have dull user interface, slow to use when designing course, and not flexible with some electronic files.
Social Influence	Moderate influence	▪ Participants commented on presence of colleagues inspiration and somehow their own inspiration to others. *"there's kind of unofficial peer pressure"* ▪ Neutral pressure from management and little support from faculty on using Blackboard. (Voluntary settings) *"We haven't talk about it"*
Facilitating conditions	High influence	▪ The response from participants revealed enough resources at LUT, Blackboard harmonious with working style, sufficient assistance, and necessity of trainings as positive aspects in facilitating conditions. ▪ Nevertheless, Blackboard was not seen as considerable well-matched with other systems at LUT. *"There is small conflict of overlapping systems at LUT"*
Gained Experience (self–efficacy)	High influence	▪ Gained experience was seen to build computer self-efficacy. Participants were getting familiar with the system by trying out various Blackboard functions and hence more usage.
Trust	Low influence	▪ The type of information shared or communicated via Blackboard i.e. "non-confidential" was a reason for less significance of system security. ▪ Relational trust between participants and system administrators were found to influence adoption.

5.1 Teachers' perceptions of Blackboard design on influencing their adoption

Perceived usefulness

From e-learning adoption circumstances, the usefulness of learning management system from teachers' point of view is degree to which a teacher believes that using the system will enhance his or her job performance (Venkatesh *et al.*, 2003). Usefulness of Blackboard system has been mentioned by participants through various ways which conveys the impression that teachers are influenced to adopt learning management system by perceiving its benefit on their job performance. The evidence of Blackboard usefulness which have been categorized into sub-themes of speed, productivity, quality, quantity, easiness of teaching and effectiveness endorses *performance expectancy* a concept by Venkatesh *et al.* (2003) similar to perceived usefulness which has been proved on many IS studies (e.g. Wu *et al.* 2007) to influence intention to adopt information systems. Intention to adopt which is the mediate of usefulness is explained by Karahanna et al. (1999) as continuance of usage of IT in post-adoption phase. As Venkatesh *et al.* (2003) hypothesize that performance expectancy influence intention to adopt which is correspondingly influence actual adoption. Accordingly, teachers perspectives on Blackboard usefulness in various ways as indicated on findings presents behaviors developed during their usage of Blackboard which then raise the tendency to continue using.

Moore and Benbasat (1991) found that perceived relative advantage (usefulness) of a system is the most influential variable to continued usage. This study comprises evidences of how perceived usefulness influences teachers to adopt the learning management system at LUT. From the findings participants perceived Blackboard system to have

relative advantages on speed of accomplishing task whereby different online functions of the systems enabled storing, quick grading system, and other online services which confirmed by participants to be faster than prior traditional way they were using. Opinions like "*I don't have to do lots of paper-works*", and *"the part which helps with grading is quite useful to me*" were common from participants indicating the usefulness of the system. Other perceived usefulness of Blackboard system by participants were increased productivity, easiness of teaching, and increased quality of teaching and increased effectiveness which was also suggested by Davis et al., (1989) as some of the elements of perceived usefulness. Participants were quoted describing these sub themes of usefulness as "*Productivity has increased", "it's more fun" and "it's a way of doing things differently"* Teachers' opinions declare that accuracy in course planning, enjoyment and innovativeness is a clear sign of increased productivity and simplified assignments collection through drop box function is the increased easiness of teaching. Enjoyment is also referred as intrinsic value (Ibid) and although this factor was not included in UTAUT model it was raised during the interview. Davis *et al.* (1992) and Triandis (1980) claimed that a feeling of enjoyment when using a system is influencing intention to adopt. Davis *et al.* (1992) argued that when the enjoyment of using a system is increased, it enhances the acceptance of useful system but it does not do accordingly on useless systems. Enjoyment when using e-learning is claimed to influence adoption among Nordic educators. (Sanchez-Franco *et al.*, 2009)

Other participants mentioned impacts such as increased chances of specific response to students, more flexible working time and access to extra teaching tools which indicated effectiveness and increased quality of job which are items showed by Compeau *et al.* (1999) as Outcome expectation elements.

Generally, the findings from this study indicate that perceived usefulness of a system to a teacher influences his or her continuance of adoption. In other researches which have been conducted on educational context, (e.g. Teo 2009; Teo 2008; Liaw, 2008; Lee *et al*. 2009; Sanchez-Franco *et al*. 2009) showed usefulness of a system was seen to be the stronger influence of adoption as suggested by Venkatesh *et al*. (2003) in UTAUT model and this study agree on that.

Perceived ease of use

The theme of usability of Blackboard learning system was significant in this study finding, since it involved contrasting views which in some way deviates the perception of ease of use of teaching tools. The findings disclose that the ease of use was moderate on influencing adoption of Blackboard system at LUT. The main theme of ease of use was built by sub-themes which indicated that users perceive using Blackboard system is free of effort for the user as proposed by Davis et al. (1989) on TAM model and Venkatesh et al. (2003) through UTAUT model. When an individual user perceives that the system is easy to use she or he will be influenced to continue to use (adopt) as many other studies have proved (e.g. Szajna; 1994; Imamoglu, 2007; Igbaria et al., 1997). The findings indicate that participants perceive that Blackboard is easy to control and does not require extensive training to start using. Also participants exposed that learning to use Blackboard was relatively easy and many interviewees said they have mostly learnt by trying how tools work out. These parts of beliefs of ease of use which have grouped in sub-themes supports the prior studies that perceived ease of use influence adoption. Conversely, some comments indicate that participants perceive that Blackboard was somehow complex in terms of low flexibility, slow speed during course designing and tedious system interface. Teachers' opinions like "*There are too many layers*" and "*layout is not that attractive*" endorse the complexity as advocated by Thompson *et al*. (1991).

Research conducted on adoption of digital learning environment (e.g. Pynoo et al. 2011) as well as prior studies effectiveness of Blackboard to students (Abdalla, 2007; Ndubisi, 2004; Marchewka et al. 2007); demonstrate that the ease of use or effort expectancy factor is strong influence of adoption of a system. However, this study finds that ease of use for teachers is necessary to some point but do not determine thorough influence to their adoption if it is not connected to anticipated outcome. On other words, it can be assumed that the learning management system which provides better results is more likely to be adopted by teachers compared to the one which is ease to use but does not provide expected results. From the analysis, it was interesting to find that teachers who did not see the extra value of Blackboard to their performance, did not care about the easiness of using the system as an influence to their usage thus ease of use was seen to be connected with usefulness. Therefore, this study finds that negative perception of usefulness of learning management system affect the perceived ease of use.

5.2 Teachers' opinions of internal and external support on influencing their adoption

Social influence

Social influence is found to be moderate on influencing teachers to adopt Blackboard system. As elaborated in the reviewed literature, social influence is also labeled as *subjective norm* or *social norms* from other models (Venkatesh *et al.* 2003) and it refers to the user's perception that a person or people who are important to him or her think he should use the system. Participants suggested that colleagues' inspiration through socially communication about benefits of Blackboard (Chattopadhay *et al.*, 1999) contributed to introduce functions of Blackboard system to them. This is seen as influence to teachers on adoption although were seen on

early stages. Colleague inspiration noted from participants' comments is referred by Venkatesh *et al.* (2003) as compliance mechanism that is user's change of his or intention in response of social pressure. The quoted comments which disclose social influence on initial phase of usage like *"I even started using it as drop box after being given advice from a colleague"* were common from interviewees. According to Rogers (1995) communication with others is one of the user's intent to interpret their adoption of technology.

Other identified sub-constructs of social influence indicated that pressure from senior management (Thompson *et al.*, 1991) as well as senior associates in faculty was seen as neutral on encouraging usage of Blackboard system, therefore, they are not strong influence of their adoption. Some interviewees put forward that they have not discussed about usage of Blackboard in their faculties and it is based on individual choice. Venkatesh *et al.* (2003) suggested that social influence is more significant in a mandated environment and that is strongly seen from the findings in this study because usage of Blackboard at LUT is voluntary for teachers. Therefore, senior management does not play major part on influencing teachers on Blackboard adoption since LUT usage of Blackboard is not mandatory. Warshaw (1980) suggested that users are likely to respond to social pressure when there is recognition for those who are using and those who are not. Therefore, if the senior management of LUT would be rewarding the usage of Blackboard which is the common in mandatory settings, then social influence would have more impact on adoption influence.

Facilitating conditions

According to Venkatesh et al. (2003), facilitating conditions is set as a direct influence of adoption that is to say it is not mediated by intention like other UTAUT main constructs and is defined as a degree of an individual

belief that organizational and technical infrastructure are available to enhance usage of the system. This study finds that facilitating conditions at LUT which are technical and non-technical support are strong influence to teachers' adoption of Blackboard system. Triandis (1980) suggested that in order for adoption to occur, facilitating conditions should be available to allow it. From the findings the participants' comments showed that available resources, trainings, compatibility with their working style and assistance from system administrators were main contribution to their usage.

Enough available resources which enable efficient use of the system is mentioned by Taylor and Todd (1995) as perceived technology facilitating conditions whereby a user sees available resources and opportunities as an incentive to use the system. All participants said there are enough resources in terms of computers, networks, supporting applications, etc. to allow efficient use of Blackboard system. Training and assistance from specialized personnel as mentioned by Thompson et al. (1991) were also seen as necessary for teachers' adoption. Although the need for training was clearly observed, the traditional arranged trainings as seminars or tutorials did not seem to work effectively due to busy routines and tight schedules of teachers. Most of participants said that they were not able to attend trainings but they would prefer if it fits to their schedules or if it would be provided in a more convenient way.

However, technical support from support department at LUT is found to be one of the high influences to usage as Ngai et al. (2007) found in their study. The interviewees declared that LUT's teachers are able to access the technical help and support any time they want. Thus, teachers perceive the assistance from system administrators as substitute for traditional trainings, therefore, when sufficient support to use the system is available, the needs for traditional seminar training is reduced. Also, Blackboard seems to be compatible with working values of many

participants through its support of blended teaching. Teachers have wider selection of online teaching tools from Blackboard suitable for their styles. Moore and Benbasat (1991) describe the compatibility factor as adopters' perception of innovation being compatible with his or her working needs. Alternatively, findings of compatibility (Taylor and Todd, 1995) of Blackboard with other systems revealed that Blackboard was not that well-matched with other systems thus the choice of using either Blackboard or other LMS were measured by teachers.

Experience

Gained experience by users while continuing use the system were found to be strong influence of adoption of Blackboard. Few of the participants were found to be experienced with ICT tools before starting using Blackboard therefore usage of Blackboard was not influenced by prior experience with computers, the finding that is contrasting with study results of Igbaria et al. (1995). However in this study, experience was seen to be significant when acquired during the usage of Blackboard. Therefore the author labeled this variable as "gained experience". This variable is connected computer self-efficacy which is a user ability to use a system to accomplish a task (Compeau and Higgins 1995). In some IS studies, self-efficacy is not included as a main predictor of adoption since it was assumed to be mediated by perceived ease of use as argued by Venkatesh *et al.* (2003, 455). However Gong et al. (2004) and Chiu & Wang (2008) proved through empirical studies that self-efficacy influence both ease of using web-based system and intention to adopt them. The demographic findings showed that most of the participants are Blackboard users for more than three years and continuous usage is seen to contribute to their commitment and hence total adoption. In UTAUT model Venkatesh *et al.* (2003), set experience as moderator of *effort expectancy, social influence* and *facilitating conditions*, but in this study the findings show user's gained experience which leads to computer self-efficacy can stand as factor that influence teachers adoption of learning management

system in the university. The participants provided the insight that users who are gaining experience by continuing using systems find it easy to explore more functions within Blackboard system and therefore effective usage. In practice, this can only mean that in order to get more teachers to adopt Blackboard it is important to encourage initial usage so that gradually teachers will be become familiar with the system functions and once they start gaining experience, it will lead to system adoption. This infers that developing experience can build teachers' computer self-efficacy and hence adoption.

Trust on web based system and its administrators.

The role of trust on influencing adoption of Blackboard system was found to have low influence to Blackboard adoption after analysis of participants' opinions. Trust was seen from the angles of system security and interpersonal trust. According to Egea and Gonzalez (2011) the role of trust has many relationship connections and has diverged from interpersonal relationship where the trustee is a human to other type of relationship such as "person-to-system" where the trustee is an information system (McKnight, 2005). Participants showed that they do not worry much about the system security since the information they share or post via Blackboard was not seem to be private. However, some participants had concern about students who may end up disclosing their private information via Blackboard and they tend to warn them about that. Moreover participants were comfortable about Blackboard blending tools which they think it increase value of their traditional teaching.

However, few participants exposed interpersonal trust between teachers and system administrators as an influential element on their Blackboard adoption. Hoy and Tshanen-Moran (2003) refers trust as a confidence which individual is placing to another party by believing the other part is reliable and honest. From the findings participants reveal that their developed trust for the personnel or people who provide assistance to use

system is a key to adoption. Many participants frequently commented that they would call the supporting function since they believe those people were expert on that field.

5.3   Barriers for teachers' adoption of Blackboard

These are factors which were raised during the interviews which may be potential barriers of adoption for teachers who have already start using Blackboard as well as those who are not using it. All interviewees were having opinions about weaknesses and difficulties they observe on using the Blackboard system. Furthermore, even teachers who did not take part in interviews for the reason that they do not use Blackboard, they briefly commented why they do not do so, when they replied the invitation email. Therefore their reasons of not using Blackboard can be taken into consideration as barriers of adopting Blackboard at LUT. The emerged barriers as analyzed from users and non-users of Blackboard at LUT were as follows.

- Presence of other learning management systems at LUT such as Venla. Participants referred this as "*overlapping systems*" at LUT. Other learning management systems have tools and functions which are relatively similar to those of Blackboard therefore teachers who have adopted other system before Blackboard do not see the advantage of switching or adding other learning management in their usage.

- Extra work of controlling the system especially if there is large enrolled classes. According to Nanayakkara (2007) and Levine & Sun (2003), online teaching involves labor intensive to teachers in terms of designing the course online, maintaining interactive tools and replying to abundant of emails from students and this can be observed on Blackboard case as a barrier for adoption.

Interviewees mentioned about increased time consuming activities which may rise when you are using Blackboard which could be less in traditional teaching.

- Lack of sufficient training and promotion from system developers. Although this element did not seem as a major barrier for users, the participants mentioned it as barrier to non-users. Training and support for LUT teachers were mainly focused on users who need support therefore for non-users the initial training and promotion from system developers would influence non-users to become new users.

- Technical anomalies and poor design of the system one hand is observed as a barrier of adoption of Blackboard at LUT. For users who have been exposed to other learning management systems were critical about the system design and functions comparing to other systems.

5.4   Back to the main research question

The sub-chapters above (*chapter 5.1-5.3*) have presented the discussions part by responding to the three sub-questions of the research problem. As we stated earlier the sub-questions formed on this study were aimed to help responding to the main research problem which stated:

How teachers are influenced to adopt learning management system at Lappeenranta University of technology?

This problem can be countered by summarizing the responses analyzed in three sub-questions of the main research. From the discussion we draw the conclusion that teachers are predominantly influenced to adopt learning management system at LUT by perceiving usefulness of a system to their work, recognizing the support from facilitating conditions available at LUT, and gaining experience through continuous usage of the system.

5.4.1 Lesson learned

In this study, usefulness and ease of use of a system are appeared to be teacher's interior interpretation about particular technology therefore they are assembled under perceptions. Usefulness is perceived to be superior of ease of use since findings show that teachers are highly influenced to adopt learning management system through perceiving its usefulness on their job rather than its perceived ease of use. What is drawn from discussion is that teachers do not totally seek the easiest system to use, but they do try to find what is good for their teaching objectives and what is proving to work effectively. Therefore, the perceived ease of using a learning management system is necessary influence for teachers' adoption of web-based system like Blackboard however the perceived ease of use has to reflect the expected outcome.

We can also learn that support from external and internal factors which in this study involve facilitating conditions and social influence hold unequal levels of influence to teachers' adoption of LMS. Facilitating conditions rise as major influence of teachers' adoption among supporting factors. Therefore, university infrastructure, trainings and assistance for using the system play the key role on influencing teachers on continuance of adoption. The subject of special trainings was raised from interviews; this is because teachers need training for online system usage but they are too busy to attend formal ones which are conducted as seminars or lectures. System implementers and administrator should think of more convenient trainings for teachers considering their busy schedules.

6   CONCLUSIONS AND RECOMMENDATIONS

The fifth chapter of this report, presented the discussion by outlining research sub-questions of what are the teachers' perceptions of Blackboard design on influencing their adoption? (Chapter 5.1), what are the teachers' opinions of internal and external supports on influencing their

adoption? (Chapter 5.2), and lastly, what are the barriers for teachers' adoption of Blackboard learning systems? (Chapter 5.3). These sub-questions yield the solution of main problem which were answered in Chapter 5.4. This chapter concludes by summarising the findings, indicating the managerial implication and limitations and lastly giving the recommendations on actions to be taken by Lappeenranta University of Technology as well as suggestions for future research.

6.1 Conclusion

This study was aimed to understand how teachers are influenced to adopt learning management system at LUT and what could be the barriers for adoption. This study also aimed to find out if the constructs that explain adoption of information systems generally, which are derived from user acceptance models, could be applied on university context and explain teachers' adoption of Blackboard system. The questionnaire framework was developed based on UTAUT model which is a compilation of eight prominent technology adoption models. Four main constructs were drawn from UTAUT model to investigate how teachers are influenced to adopt Blackboard, which is one of the learning management system used at LUT. In addition, the construct of Trust adapted from other disciplines was added on the framework. The user's experience which is regularly taken from the approach of prior experience in other IS studies were also analysed.

In this study, perceived usefulness, facilitating conditions and user's gained experience were found to be most influential to teachers' adoption of Blackboard learning system at LUT while perceived ease of use, social influence, and trust were ranked as average on influencing teacher's adoption of Blackboard. The gained experience when using the system was found to be different variable from prior experience. While prior experience of using other systems was found to have less impact on teachers adopting Blackboard, experience gained when using the system

was found as high influence of adoption. Therefore, the author proposes for investigation for further understanding of this this variable. Generally, the findings revealed that, factors that found to influence acceptance of technology in other information system contexts, are also able to explain teachers' adoption of learning management systems in university context. However, some adjustments need to be done when applying these constructs on academic settings in order to obtain unbiased results.

Major barriers of adoption and rejection of Blackboard system at LUT were linked with negative perception from non-users and late majority adopters of the system. Also lack of sustenance through internal and external support to use the system contributes to perceived barriers. The author propose that increasing disclosure of usefulness, improving facilitating conditions and enhancing on building experience to non-users and late majority adopters will reduce the barriers and rejection of Blackboard system at LUT. Exposing usefulness of the system will influence late majority adopters who are usually sceptical and uncertain with new ideas. (Rogers 1995).

6.2   Managerial implications

The main goal of the study was on explaining how teachers at LUT are influenced to adopt learning management systems based on individual opinions. Managerial implications which are drawn from this study can be relevant for system developer companies, university's faculty managers and university system administrators.

For system developer companies such as Blackboard Inc., this study provides the opinions of professors and lecturers from very significant technology university in Finland on influential factors of LMS adoption. The study goes further into detail on functions and features of the studied system which are considered useful and easy to use by teachers. These findings can contribute on improving the learning management system by

system developers through incorporating the qualitative information collected.

LUT faculties are in transitions for developing their programs and teaching methodologies. The School of Business is on its first phase of development process and new masters programs have been developed in this progress. Next year the faculty will be closely reviewing the whole programs and implementing new ways of improving them in terms of teaching and course designing. This study provides the better managerial approach on what could be done on the side of distance learning in during this transition. The findings from teachers perspectives towards learning management system currently used in LUT, gives the insight on what actions can be taken by faculty managers for instance, to have unanimous LMS which could be used by all teachers and in all courses. This would lead to effective adoption through social influence and hence efficient distance learning for students. Furthermore the faculty managers can use the specific findings to understand what teachers prefer from learning management systems and therefore implement the knowledge when deciding on what type of LMS can be suitable after the transition.

For system administration department at LUT, the findings from this study can be used on improving the facilitating conditions which influence usage. Through knowledge of the users on LMS which is explicitly analysed in this study, the administrators can arrange effective individual trainings, efficient technical support and have improved decision when planning on LMS implementation strategies.

6.3 Recommendations

The LUT faculties and LMS support function should emphasize on exposing the usefulness of particular learning management system to the teachers in order to encourage adoption. Since usefulness has found to be a strong influence on teachers' adoption of learning management system

such as Blackboard, this aspect can also be used on other online systems which LUT management has implement or is planning to implement and advocate their adoption. For instance LUT management can invite person or people from system's creator company to present the efficient methods of using the system, introduce new or less used features of the system and answer teachers' questions regarding the system usage. This will help to expose the usefulness of the system and open the door to non-users to consider start using and hence adopting.

Also LUT should keep on improving facilitating conditions including system infrastructures, resources and trainings to teachers as the way to influence more teachers into adopting learning management system such as Blackboard. By reflecting the result of this study, the author recommend the trainings for teachers should be more individual-level whereby, teachers will have chance to practice directly, asking more questions and furthermore arrange suitable time which fits to their schedules.

Social influence which was found to be moderate on influencing users at LUT due to voluntary system usage environment could still be a better inducement for late majority adopters. This group of adopters which was seen to perceive more barriers of adopting Blackboard system requires peer pressure as noted by Rogers (1995).

Lastly, UTAUT model proved to be suitable for finding and explaining factors which influence adoption of Blackboard therefore it can be used for understanding adoption of other information systems within universities. Also the model can be applied for other user groups such as students on further studies at LUT.

6.4 Limitations

Although, the results from this study provide very useful information for academic institutions as well as learning management system developers,

it still had various limitations. First, since the study was conducted on a single case of learning management system (Blackboard) the findings are not generalizable. The practicality of other systems may be quite different from Blackboard thus their adoption process may be different. Second, this study was only focused on teachers as one of user groups of learning management systems therefore students, workers or other type of users might have different perceptions. Third, participants of this study were all users of Blackboard system, therefore, non-users would have provided a better insight especially on barriers of adoption. Also, since all participants were current users of Blackboard, the adoption should be considered as post-adoption where users are not in the first phase of adoption. Fourth, the usage of Blackboard at LUT was completely voluntary therefore the factors that influence teachers' adoption or rejection might be beyond what has been suggested from this study.

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APPENDICES

Appendix 1. Interview guiding framework

Main variable	Questions
Performance expectancy (Useful)	1. Do you use Blackboard LS? (If not give the reasons) 2. What functions (features) of Blackboard are you using? 3. What benefits are you getting by using Blackboard? 4. Can you reflect on the impact of Blackboard usage on your teachings? 5. How useful is Blackboard in integrating with students? 6. What weaknesses do you see in Blackboard system?
Effort expectancy (Usable)	1. How comfortable are you feeling when using Blackboard? 2. Are there any difficulties when using Blackboard? (If yes: describe) 3. Are you aware of other features of Blackboard?
Social influence	1. How inspiration from fellow teachers/colleagues has contributed to your usage of Blackboard? 2. How do you realize your encouragement to others on using Blackboard? 3. How do you feel about support from management on using Blackboard?
Facilitating conditions	1. What kind of training you have received on using Blackboard? 2. How often there are trainings for improving the skills? 3. How do you feel about support from management on using Blackboard? 4. How IT infrastructure at LUT supporting your Blackboard usage?
Trust	1. How do you feel about Blackboard security? 2. How comfortable when uploading personal files? 3. Describe the quality of Blackboard on instructing and course delivery
Demographic data	
Experience	1. How long you have use Blackboard? 2. How your previous experience on other LMS has helped you on using Blackboard?
Gender (Observation)	I. Male II. Female
Age	What category fit your age? I. 20-30 II. 31-40 III. 41-50 IV. 51-60 V. above 60

Appendix 2. Invitation for interview

QUALITATIVE INTERVIEW FOR MY MASTERS THESIS

Topic

TOWARDS ADOPTION OF E-LEARNING TECHNOLOGIES:
Understanding Teachers' Perspectives on Adoption of Blackboard Learning
System in Lappeenranta University of Technology.

Dear Professor ……..

My name is Derrick Katunzi. I am a master student from MITIM programme
in LUT. Currently I am doing my final thesis on the topic mentioned above
which will base on finding out what are teachers' opinions on currently used
learning management system (Blackboard). I am requesting your participation
on the short semi-structured interview which will be conducted on any time
you will suggest.

My study will be beneficial for LUT administration on ongoing plans for
improving e-learning systems at LUT. Also this study is very important to me
as part of my final work of the degree program. Your participation will be
much appreciated.

The interview

The interview will mainly base on:-
•   Usage of Blackboard on teaching (benefits, problems, weaknesses etc.)
•   Easiness or difficulty of using Blackboard
•   Role of associates and technical environment on influencing usage of
Blackboard
•   The role of trust in using Blackboard

The interview will be in-depths and will take only 30-40 minutes. The time and
date for interview will only depend on your choice before 1st of April and I
will be able to visit you on your office during your convenient time. I will be
recording the conversation in order to review and arrange the data later on. I
will follow all the confidentiality guidelines and all personal information will
be removed upon your request.

My supervisors are Prof. H-K Ellonen (LUT) and Prof. S. Zhukova (GSOM),
in case of any further concern about this study.

Thank you in advance and I will be waiting for your reply.

BR Derrick Katunzi
LUT School of Business