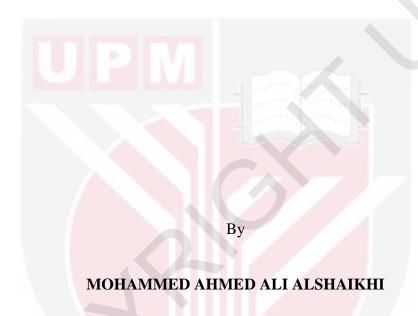# FACTORS INFLUENCING THE UTILIZATION OF LEARNING MANAGEMENT SYSTEM AMONG AVIATION ACADEMY STUDENTS

MOHAMMED AHMED ALI ALSHAIKHI

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FACTORS INFLUENCING THE UTILIZATION OF LEARNING MANAGEMENT SYSTEM AMONG AVIATION ACADEMY STUDENTS

By

MOHAMMED AHMED ALI ALSHAIKHI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Doctor of Philosophy

May 2019

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May 2019

Chairman : **Associate Professor Ahmad Fauzi bin Mohd Ayub, PhD**
Faculty : **Educational Studies**

Recently, in the context of higher education, the use of Learning Management System (LMS) involving the application of Information Communication Technologies (ICT) has become Widespread. The LMS is actually a software based computer program that enables to design, manage and change different learning courses as student can learn quickly and effectively. Despite the advantages of LMS in enhancing the quality of learning, it is not fully utilized by Saudi students. Review of the related studies shows that although there is an enormous amount of research an online tools, only a few of them have investigated how Saudi students use the online tools found within LMS.

The main purpose of the present study is to investigate the influence of external factors and mediators on Learning Management System utilization among the Saudi Academy of Civil Aviation (SACA) based on Unified Theory of Acceptance and Use of Technology (UTAUT) and Motivation Model Attention, Relevance, Confidence, and Satisfaction (ARCS). By reviewing the related literature, the influence of six factors on LMS utilization (performance expectancy, effort expectancy, social influence, facilitating conditions, motivation and behavioural intention to use) were examined.

The present study was entirely quantitative with a descriptive design. The main instrument used was a questionnaire whose content validity was checked by a panel of experts. A pilot study was conducted on 30 students of SACA to assess the reliability of the instruments. The value of Cronbach's alpha was from 0.81 to 0.93. The sampling technique was proportional stratified random sampling and the sample size was 167 SACA students. To analyse the data, descriptive statistics and the Structural Equation Modeling Technique were used.

The finding of this study indicated that there was a high level of utilization of LMS (m = 3.54 with SD = 0.95) among the SACA students. The factors performance expectancy (m = 3.52 with SD = 0.60), effort expectancy (m = 3.49 with SD = 0.92), social influence (m=3.18 with SD=0.93), facilitating conditions (m = 3.36 with SD = 0.77), motivation (m=3.61 with SD= 0.94) and behavioural intention (m = 3.62 with SD = 1.04) were found to be high, whereas social influence was at moderate level (m = 3.18 with SD = 0.93).

The results indicated that the motivation was shown to be the most salient factor influencing the use of LMS (β = .0375, p = .001), followed by facilitating conditions (β =.374, p = .027), effort expectancy (β = .321, p = .032) and social influence (β = .268, p = .044), while performance expectancy has not had any significant influence on LMS usage (β=.021; p =.752). Finally, the influence of motivation, facilitating conditions, effort expectancy and social influence on the use of LMS were found to be mediated by behavioural intention. The study proposes a model which can be utilized as a guide to facilitate future researches in related areas.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

FAKTOR YANG MEMPENGARUHI PENGGUNAAN SISTEM PENGURUSAN PEMBELAJARAN DALAM KALANGAN PELAJAR AKADEMI PENERBANGAN AWAM

Oleh

MOHAMMED AHMED ALI ALSHAIKHI

Mei 2019

Pengerusi : **Profesor Madya Ahmad Fauzi bin Mohd Ayub, PhD**
Fakulti : **Pengajian Pendidikan**

Baru-baru ini, dalam konteks pendidikan tinggi, penggunaan Sistem Pengurusan Pembelajaran (*Learning Management System* (LMS)), yang melibatkan amalan Teknologi Komunikasi Maklumat (Information Communication Technologies (ICT)) telah menjadi meluas.

LMS adalah program komputer yang berlandaskan perisian yang membolehkan reka bentuk, pengurusan dan juga mengubah pelbagai kursus pembelajaran di mana pelajar dapat belajar dengan pantas dan juga berkesan. Walaupun LMS ada kelebihan untuk meningkatkan kualiti pembelajaran, namun, ianya tidak diguna sepenuhnya oleh pelajar Saudi. Sorotan literatur yang berkaitan menunjukkan terdapat banyak penyelidikan tentang alat dalam talian, namun segelintir sahaja yang menyelidiki bagaimana pelajar Saudi mengguna alat dalam talian yang terdapat dalam LMS.

Tujuan utama kajian ini ialah untuk menyelidiki pengaruh faktor luaran dan pengantara ke atas penggunaan Sistem Pengurusan Pembelajaran (LMS) dalam kalangan pelajar Akademi Penerbangan Awam Saudi, berdasarkan Teori Penerimaan dan Penggunaan Teknologi Bersatu (*Unified Theory of Acceptance and Use of Technology* (UTAUT)) dan juga Model Motivasi Perhatian, Kaitan, Keyakinan dan Kepuasan (ARCS). Melalui sorotan literatur yang berkaitan pengaruh enam faktor ke atas penggunaan LMS telah diselidiki (jangkaan prestasi, jangkaan usaha, pengaruh sosial, kondisi yang memudahkan, motivasi dan niat tingkahlaku untuk mengguna).

Kajian ini adalah dalam bentuk kuantitatif dengan reka bentuk deskriptif. Instrumen kajian utama yang telah diguna ialah soal selidik yang mana kesahan kandungannya telah ditentukan oleh satu panel pakar. Satu kajian rintis telah dijalankan ke atas 30 pelajar SACA untuk menilai kebolehkepercayaan instrumen tersebut. Nilai Alpha Cronbach adalah antara 0.81 ke 0.93. Teknik pensampelan adalah pensampelan rawak berstrata berkadar dengan saiz sampel seramai 167 pelajar SACA. Statistik deskriptif dan Teknik Pemodelan Persamaan Struktur (*Structural Equation Modelling* (SEM)) digunakan untuk menganalisis data.

Dapatan kajian ini menunjukkan penggunaan LMS dalam kalangan pelajar SACA berada pada tahap tinggi (M = 3.54, SD = 0.95). Juga berada pada tahap tinggi ialah faktor jangkaan prestasi (M = 3.52, SD = 0.60), jangkaan usaha (M = 3.49, SD = 0.92), kondisi yang memudahkan (M = 3.36, SD = 0.77), motivasi (M = 3.61, SD= 0.94) dan niat tingkah laku untuk mengguna (M = 3.62, SD = 1.04), manakala pengaruh sosial (M = 3.18, SD = 0.93) berada pada tahap sederhana.

Hasil kajian menunjukkan motivasi adalah faktor paling penting mempengaruhi penggunaan LMS (β = .0375, p = .001), diikuti dengan kondisi yang memudahkan (β =.374, p = .027), jangkaan usaha (β = .321, p = .032) dan pengaruh sosial (β = .268, p = .044), manakala jangkaan prestasi tidak ada pengaruh yang signifikan ke atas penggunaan LMS (β=.021; p =.752). Akhir sekali, pengaruh motivasi, kondisi yang memudahkan, jangkaan usaha dan pengaruh sosial ke atas penggunaan LMS didapati dimediasi oleh niat tingkah laku. Kajian ini mencadangkan sebuah model yang boleh digunakan sebagai panduan untuk membantu penyelidikan yang berkaitan pada masa akan datang.

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I would like to extend my thanks to my dissertation committee members Associate Prof. Dr. Ahmad Fauzi bin Mohd Ayub, Dr. Shaffe Mohd Daud and Dr. Ramli for their constructive comments and invaluable feedback throughout the whole project. Their comments and suggestions provided me with good ideas and helped me to improve my work; this contribution has resulted in the good quality of the thesis. You helped me so much and your thoughts were always well thought out and to the point. I truly appreciate everything you did for me over the years. Both of you I say thank you very much.

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family while I was busy. Therefore, I want to say thanks for everything and may Allah give you all the best in return.

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I certify that a Thesis Examination Committee has met on 24 May 2019 to conduct the final examination of Mohammed Ahmed Ali Alshaikhi on his thesis entitled "Factors Influencing the Utilization of Learning Management System Among Aviation Academy Students" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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Declaration by graduate student

I hereby confirm that:
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Declaration by Members of Supervisory Committee

This is to confirm that:
- the research conducted and the writing of this thesis was under our supervision;
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LIST OF ABBREVIATIONS

GACA	General Authority of Civil Aviation
LMS	Learning Management System
CMC	Computer-Mediated Communication
VLE	Virtual Learning Environment
SACA	Saudi Academy of Civil Aviation
MAS	Navigational Equipment Maintenance
ATC	Air Traffic Control
F&R	Fire and Rescue
AOS	Airport Operations and Safety
ICAO	International Civil Aviation Organization
BI	Behavioral Intention
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology
TPB	Theory of Planned Behaviour
TAM	Technology Acceptance Model
MM	Motivational Model
C-TAM-TPB	Hybrid model combining TAM and TPB
MPCU	Model of PC Utilization
IDT	Innovation Diffusion Theory
SCT	Social Cognitive Theory
SEM	Structural Equation Modelling
CFA	Confirmatory Factor Analysis
PE	Performance Expectancy
EE	Effort Expectancy

SI   Social Influence

FC   Facilitating Condition

M   Motivation

LMSU   Learning Management System Utilization

CR   Construct Reliability

MM   Measurements Model Test

SM   Structural Model

MOH   Ministry of Higher Education

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The beginning of desktop computers in the late 1970s and early 1980s revolutionized teaching and learning. This revolution continues to evolve until today in very exciting ways, wherein desktop computers have a significant role in education by supporting and enhancing learning (Song, Wang, Li & Yuan, 2013). However, desktop computers are just one medium among many other recent technologies through which students' learning can be supported both inside and outside of the classroom. Recent advancements enabled schools and universities to overhaul their traditional teaching methods and advanced the educator-learner relationship to better prepare students for the rapidly changing world (Hernandez, Montaner, Sese & Urquizu, 2011).

Driving this revolution in education forward is the growth of Information and Communication Technologies (ICT), which has not only profoundly affected education but also had an instrumental role in other domains (Humburg & Van, 2017). ICT has various definitions ranging from the simple and concise to the more elaborated definition. For example, Hill and Wouters (2010), consider digital services as ICT's brief definition that others have expressed in more details, (Detschew, 2007). The understanding of ICT as the permanent accessibility, availability and efficiency of computers, phones and networks is a useful one, but very general and not comprehensive enough (Adegbenro, Gumbo & Olakanmi, 2017). Blurton (2007) defined ICT as a diverse set of technological tools and resources which can be used at every stage of the teaching and learning process, from designing professional materials and resources, through to delivering them both in a supervised classroom setting and as means through which students can learn independently. In fact, the improvement that ICT has brought to education and the learning process has been so profound and widespread that a significant amount of today's typically technologically perceptive learners are educated through ICT (Bresnahan, & Yin, 2017; Davis, Weigel, & Gardner, 2009).

It is not surprising that young people born in the era of the World Wide Web (WWW), who have been using social media from very young ages broadcasting their interests and talents on social media like YouTube and slide sharing websites, expect, and even demand, that their education is imparted via ICT, or that it at least broadly incorporates it (Young, 2018; Davis et al., 2009). That being the case, even the more traditional educational institutes have had to adjust their methods and invest in and embrace ICT (Folden, 2012).

In this regard, ICT has become the main focus of concern in the field of education (Asiri, Mahmud, Bakar, Mohd-Ayub, 2012). There are many benefits associated with the integration of ICT in education, such as increasing the quality of learning (Stolaki

& Economides, 2018; Chang, 2008), providing learners with technological skills and encouraging learners to be more interactive (Srinivas, Rao, Sridhar, Babu & Rao, 2018; Van-Braak, 2004). It also improves teachers' and students' performance and motivation, removing the limitations of time and space in instructional processes (Vega-Hernández, Patino-Alonso & Galindo-Villardón, 2018; Al-Zaidiyeen, Mei, & Fook, 2008; Alzamil, 2006).

The invention of ICT and its extensive application in education has led to the emergence of new terms in the educational field, such as e-learning, virtual class, digital content, knowledge management, and web-based learning (Asiri et al., 2012). Moreover, e-learning in the 21st century has significantly improved the role of instructors through the Learning Management System (LMS) (Al-Khalifa, 2010; Bates, 2005). There are different networks that have developed as the 4th generation in the field of e-learning.

The three main characteristics that associated with this 4th generation of e-learning are: analyzing large volumes of data, the ability to communicate through Computer-Mediated Communication (CMC) and the processing ability of the Java language (Beetham & Sharpe, 2013). All these features have led to the development of a new era of learning technology, which is referred to as LMS.

LMS could be defined as a web-based technology, which assists in the planning, distribution and evaluation of a specific learning process. (Padilla - Melendez, 2013). The LMS is also explained as a technological solution which allows the delivery and administration of content and resources to the learners and the employees. Mainly this is a software application which has different features that make the learning process and the content more accessible and easily managed. It also helps instructors to share the learning resources and manage of students' registration (García-Peñalvo, Hernández-García, Conde, Fidalgo-Blanco, Sein-Echaluce, Alier-Forment & Iglesias-Pradas, 2017).

LMS is also referred to as a virtual learning environment or a course management system, which provides solutions and benefits for both the learners and the instructors in a more flexible manner (Kevan & Ryan, 2016). This system contains software applications and features which make learning content easily accessible and managed. In addition, it helps instructors to provide their students with learning materials and manage student activities as well. Nowadays, there are several types of LMS over the markets. Some companies charge for proprietary LMS (Dahlstrom & Bichsel, 2014), which may have additional benefits and be less complicated compared to the free open source LMS. LMS is available as software service tools or locally installed LMS (Afshari & Su 2014).

The adoption of e-learning is happening more and more frequently in the Saudi Arabian's tertiary institutions, a phenomenon which is aided by the steady increase of the Saudi Arabian students' population in higher institutions (Ministry of Higher

Education, 2010). In response to the increased demand for e-learning, the use of information technology is generally viewed as the most viable solution to meet the challenges of providing it to the high number of students. However, the pressing need to adopt computer technology and e-learning in higher education also means that Saudi Arabian instructors and students have to integrate information technology into their teaching and learning processes through a LMS (Alebaikan & Troudi, 2010).

In the case of Saudi Arabia, the first LMS was developed by the National Centre for e-Learning and Distance Learning (NCeL) in collaboration with the Meteor group of companies in Malaysia, this LMS was called Jusur LMS (Asiri et al., 2012). The development of Jusur LMS has been completed in accordance with universally accepted standards and is comprised of seven different tools such as "Courseware Controls tool, Course Description tool, Announcements tool, Learning Content Management System tool, Glossary tool, Forum tool, General Chat tool, File Sharing tool, Assignments tool, Tests and Assessment tool, virtual classroom tool, Lecturer Information tool, User Administration tool, Survey Manager tool, Questions Bank tool, Grad Book tool, and Tracking Forum Participation tool" (Garcia - Penalvo et al., 2017).

In the case of Saudi Acadmy of Civil Aviation (SACA), the Blackboard LMS is utilized. This LMS is mainly a virtual learning environment and a course management tool, which has been developed by Blackboard Inc. This tool is mainly a web-based server application that comprises of various features like that of course management, customized open architecture and scalable design which helps the integration of different information related to the learners and also has various protocols for authentication. This tool can be installed on local servers or it could also be hosted by the Blackboard ASP solutions. The main aim of the tool is to provide on-line elements to courses which are traditionally delivered via face-to-face and to develop a completely online course where there is minimal or almost no requirement for face-to-face meetings (Nawilaty, 2018). Thus, it is important to examine the e-learning process through the application of LMS.

There have been numerous studies on e-learning adoption among Saudi Arabian students of higher institutions (Algahtani, 2011; Almalki, 2011; alharbi & Drew, 2014; Asiri, 2012; Al-Judi, 2011; Alenezi, 2018; Alsobahi, 2017; Alshammari, 2015) but there is little or no study on the Saudi Academy of Civil Aviation (SACA) in relation to e-learning through LMS. For this reason, this study will focus on determining the factors influencing LMS utilization among students of the Saudi Academy of Civil Aviation (SACA).

1.2 Saudi Academy of Civil Aviation (SACA)

In Saudi Arabia, civil aviation is considered an important sector as Saudi Arabia is the first destination for Muslims on an annual basis. As a result, the Saudi government has allocated a significant amount of its general budget to this sector through the General

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Authority of Civil Aviation (GACA) (Baghdadi & Kishk, 2015). GACA is the national institution of Saudi Arabia in charge of aviation and related matters.

The main aim of GACA in Saudi Arabia, which plays the role of client representative, is centred on facilitating the development of air travel by applying the strictest standards in the construction, management, and operation of airports, aeronautical navigation infrastructure and the maintenance of such system. The main mission of GACA is to develop the air transport industry by the latest international standards, strengthen the position of the Kingdom as a globally influential player in civil aviation, achieve financial growth and sustainability, and enforce the relevant rules, regulations, and procedures to ensure air transport safety and security. GACA has more than one sector, and the Saudi Academy of Civil Aviation (SACA) is one of them. (El-Sebaii, Al-Hazmi, Al-Ghamdi, & Yaghmour, 2010).

The Saudi Academy of Civil Aviation's (SACA) predecessor, the Jeddah Aeronautical Training Institute (JATI), was established in 1962 by Saudi Arabia's General Authority of Civil Aviation (GACA) to start training programmes in the fields of Navigational Equipment Maintenance (NEM), Meteorology, Air Traffic Control (ATC), Communications, and Fire and Rescue (F&R) (Alshammari et al., 2016). Once established, JATI became GACA's sole supplier of skilled and ready workforce kingdom-wide in those domains of operation. It then expanded its operations to include Airport Operations and Safety (AOS), and Aviation Security (Av. Sec). It also began running on-the-job training in all those disciplines, and until today continues to exclusively provide GACA with graduates of its higher diplomas in AOS, ATC, F&R, MAS and Av. Sec for all the Kingdom's airports (Nwailaty, 2018).

The main aim of SACA is to meet the needs of the General Authority of Civil Aviation (GACA) with regards to the workforce and to provide its employees with the knowledge and the skills required by the international regulations. Moreover, standards of Civil Aviation to maintain the safety and security of civil aviation in the airspace of the Kingdom of Saudi Arabia. SACA's mission is to provide a high standard of training by the latest international methodologies in civil aviation, and its vision is to be the leading academy in civil aviation training (Ansari & Qadri, 2014).

SACA is held responsible for preparing, teaching, training and rehabilitating air traffic controllers, fire and rescue, airport operations and safety staff, aviation security and navigational equipment maintenance technicians. It also plays a role in supporting GACA in performing its responsibilities. In order to achieve this goal, in 2011, GACA-SACA re-commissioned Thales to provide a blueprint to modernize SACA's curricula and facilities, with a particular focus on the technical training programs and learning outcomes (Alshammari et al., 2016). One of Thales' key recommendations was to put ICT at the heart of the changes and to implement LMS (Alshammari et al., 2016). Their programs are designed to be more student-focused and conducted through teaching and learning with the help of the utilization of a new LMS (GACA website)

LMS offers solutions to easily manage training actions like the organization of the training catalogue, the integration of new training courses into the training catalogue. The integration of the training content into a training course; the creation of a new training session in a training course, the enrolment of the instructor and students into a training session. The animation and follow-up of the training session by an instructor, E-mails and messaging service tools for personalized guidance, automatic e-mail notification tool, the content learning progress by the students the assessment of the students and the training session activity through various reports and dashboards (Foreman,2017).

SACA LMS is an online training portal which aims to help students gain access to educational content, communicate with a remote instructor and other remote students and evaluate their knowledge acquisition. The LMS gives students access to training content according to their session, to discussion forums with the instructor and other students, to questionnaires validating their knowledge acquisition and to interface with the instructor. (Nwailaty, 2018).

1.3   Statement of Problem

The growing use of ICT and learning technology has made many higher education institutions invest a huge budget on LMS to support teaching and learning (Islam, 2013; Unnisa, 2014; Alahmari, & Kyei-Blankson, 2018 & McCord, 2018). These investments are often done to meet certain performance expectation for both institutions and their students. The importance of ICT in education is overwhelming, as it goes beyond just using for facilitating teaching and preparing students records to open windows for international outreach and knowledge sharing across culture and disciplines. It is expected that learning efficiency and academic performance of students would be enhanced once ICT is introduced into smart teaching classroom – LMS, e-podium, interactive boards, student's assessment, video conferencing are the needed tools for achieving smart teaching in Saudi Universities.

The adoption of new technologies has become extremely important in teaching and learning in Saudi Arabia. The country's higher education has for a long time adopted the teaching and learning technology, which enjoyed government support by making the needed tools available in most of the universities and colleges (Khan & Adams, 2016). However, the utilization of the provided technology tools is still poor. Despite years of adoption and implementation of LMS in Saudi Universities, the system is still new and under satisfactory level for both the academic staffs and the students (Alshammari, Ali, & Rosli, 2016; AlMegren, 2011). Perhaps only the technology adoption model (TAM) was used in the initial adoption stage and now some of its barriers are playing out. If the poor utilization of the adopted technology in teaching continued in this manner, the Saudi higher education will suffer a setback in student performance. Coupled with the huge investment made on the new technology, the country's aspiration to becoming among the top global universities would be a mere dream, as they cannot compete with rival universities even within the shores of Arabia.

E-Learning in the Kingdom of Saudi Arabia can transform Higher Education effectively in the context of the Arab world, leading to improvements in the learning experience and mapping out pathways to success for everyone committed to blended learning (Al-Khalifa, 2010). It would broaden the reach of education to international allies and facilitate knowledge sharing and collaborations with the global academic environment. However, this could only be achieved when all stakeholders are committed to promoting knowledge of usage, enforced application of the technology in practice and continuously improving and upgrading the system. As a study conducted by Aljuhney and Murray, (2015) on the level of LMS utilization in 46 higher educational institutions in Saudi Arabia showed that 87% of the investigated institutions had been using LMS. However, it was also found that student acceptance of learning management technology has not yet been fully explored in the Saudi context. They argued that there is some reassurance that LMS technology in higher education might play an important part in future students' learning (Aljuhney & Murray, 2015).

In SACA, the situation is not different with what is obtained in Saudi higher education institutes on LMS. However, its peculiarity in the use of technology in teaching makes it more pressing in underpinning the quest for LMS, as aviation education is not like any other institutions of learning. A French University and Thales company were engaged in the development and operation of LMS for SACA in June 2011 and completed in 2012 (Nawailaty, 2018). It is done because training in navigational equipment maintenance, metrology, air traffic control, communication and rescue as opined by Alshammari et al. (2016) would require LMS to be effectively facilitated. The potentials of LMS has not been fully exploited in SACA because neither the students nor the teachers are comfortable with the technology, as teachers only upload course material and assignment but teach in the traditional way. The negative development may not be unconnected with poor technical skills to instruct and motivate the users on how to go about applying it in teaching and learning. If continued would undermine the leading role the SACA is playing the region. It would mean a waste of huge investment made by the Saudi government considering the strategic position of the country as the Muslim Holy Land.

Several studies were done on LMS in Arabia. According to latest studies, almost 97% students in Saudi Arabia are equipped with personal computers with a steady Internet connection but only 54% of them expressed interests to learn courses over the Internet with learners of other universities. Most of the students are good users of application software and tools but they do not have independent learning ability. Almost half of the respondents expressed their discomfort to communicate with other online students from different countries around the world due to weakness in English language and cultural prohibitions. Students also showed a variety of choices for reading materials and learning methods. Hence, many Saudi students (73%) still prefer classroom teaching to independent study at home. (Althobaiti & Mayhew, 2015).

In addition to the advantages of LMS for doing collaborative projects, constructing and managing knowledge, it is often used for delivery of contents and other fewer features (Alvarez et al., 2013; Stantchev, 2014 & Lihitkar et al., 2017). Review of the related studies shows that although there is an enormous amount of research on online tools, only a few of them have investigated how students use online tools found with LMS (West & West, 2009; Wankel, 2011 & Cheng & Yuen 2018 & Moghavvemi & Salarzadeh, 2018).

Investigating the factors that make individuals accept or reject an information system is one of the most important issues regarding an information system (Venkatesh, Thong & Xu, 2012). Performance expectancy is defined as the way users believe a certain technology will perform in helping them to complete required tasks and help them to do so to standards higher than would be possible without it (Venkatech et al., 2003).

Performance expectancy is a predictor of the positive intention of the user to use technology, several other studies validate the significant relationship with the positive intention to adopt an information system (Venkatesh et al., 2003). Empirical evidences were presented in several studies which established that there is a significant positive correlation with the perceived usefulness of a technology and the positive intention to use the technology in the context of e-learning and cloud-based learning (Ong et al., 2004; Mahmod et al., 2005; Cheng, & Yuen, 2018 & Moonsamy, Govender, 2018). Performance expectancy, for instance, was found to be a major determinant of continuance use in conducted studies in Tanzania (Lwoga & Komba, 2015) and in Saudi Arabia (Bellaaj et al., 2015). The studies done in Saudi Arabia were not carried on SACA students, who already have some poor level of exposure to LMS. Students are considered due to the nature of the students and its strategic importance in the region. Their attitude towards LMS was not encouraging, thus the need to explore to determine the underpinning circumstances surrounding the poor utilization by students. If students perceive that the use of LMS will contribute meaningfully in enhancing his or her academic performance, they may be favorably disposed to use it. All the previous studies findings indicated that performance expectancy has a positive and significant relationship with LMS utilization. However, there is the need to investigate the role of performance expectancy in LMS utilization in SACA to fill research because there was never a study of LMS on SACA.

Effort expectancy refers to the users' perception of the ease and effortlessness for a specific purpose (Venkatech et al., 2003). Existing literary sources provide validation of the critical link of effort expectancy in determining the intent of an individual to adopt new learning technology which is easy to use and will not require significant efforts on the behalf of the end users (Raman and Don, 2013). Previous studies displayed that there is a significant positive relationship between effort expectancy and continued intention to use LMS particularly in the early stages of technology adoption in Saudi Arabia (Bellaaj et al., 2015; Lwoga & Komba, 2015). Earlier studies have shown a positive relationship between effort expectancy and LMS application in tertiary education across countries including Saudi. However, these studies were not

conducted on SACA, thus the need investigate the role of effort expectancy in LMS utilization in SACA.

Effort expectancy has a direct link to the use of LMS by students. This is because the use of LMS by students is likely to be influenced by how easy or complex it is to retrieve relevant information with LMS within the shortest time possible. Hence, if students realize that it is very easy to use the LMS, they might not refrain from using them.

Facilitating condition which includes giving services to users has a significant role in technology acceptance (Sanchez & Hueros, 2010). When users did not get help from the assistants while being faced problems, they will get the feeling that working with the system is a waste of time. (Dzego &Pietruskiewicz, 2012). Although the technical support is one of the important factors that may influence LMs utilization, there is a paucity of empirical research that has investigated is an influence on LMS use (Al-Busaidi& Al-shihi, 2012). This is particularly important in the context of Saudi Arabia since a few researchers who have investigated the role of facilitating conditions on LMS use (Adzharuddin & Ling, 2013; Sulaiman, 2013; Baleghi-Zadeh et.al, 2017 & Muries, & Masele, 2017).

Social influence refers to the degree to which the users perceive how others will view them as a result of having used the technology (Venkatech et al., 2003). There are several studies which have revealed that if students are encouraged by lecturers or educational managers of their university, they will feel that LMS is productive and their intention to use LMS will enhance. This has been supported by social influence research which provided empirical evidence that when the social influence is high, for instance, in the form of support and encouragement from professors and another faculty to utilize LMS, its utilization rate is increased (Raman and Don, 2013). Al-Gahtani (2016) came to the same conclusion in this study of the role of social influences in the adoption of LMS in Saudi Arabian universities, whilst corroborating Sánchez-Prieto, Olmos-Migueláñez and García-Peñalvo (2016) observation that increased awareness of how technology fulfills their and the students' needs results in a greater likelihood of both educators and learners incorporating technology system into the learning and teaching process.

Motivation is described as the process of management of resources and procedures in the aim of facilitating positive changes in motivating the adoption of a system (Keller, 1979). Contemporary studies provide empirical evidence of the influence of motivation as established by Keller, 1979 to adopt and use e-learning technologies. For instance, Maldonado et al., (2011) established empirical evidence that e-learning motivation and social influence exhibited a significant positive influence on the behavioral intentions of students to adopt e-learning (Maldonado et al., 2011). According to Abu-Al-Aish and Love (2013) motivation to derive from an LMS being user-friendly and, most importantly, easy for students to benefit from intellectually to achieve their educational goals. It is, therefore, utilization of the LMS in Saudi Arabia

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will depend a lot upon the level of motivation of the students at the academy (Reynolds & Leeder, 2018).

Moreover, there are very few studies that have highlighted the roles of mediators on LMS utilization (Pituch & Lee, 2006; Nagi, et al., 2007 Wang & Wang, 2009). Mediation analysis is a powerful statistics technique for understanding the relationship between variables. The Technology Acceptance Model (TAM) is widely used to explain the acceptance of new technology (Alenezi, & Karim, 2010; Seliaman & Al-Turki, 2012; Guritno, & Siringoringo, 2013; Praveena & Thomas, 2014; Binyamin, Rutter & Smith, 2017; Almukhlifi, Deng & Kam, 2018 & Mokhtar, Katan & Hidayat-ur-Rehman, 2018).

The Technology Acceptance Model (TAM) has become one of the most widely-used models in understanding user acceptance of technologies and has been employed in many empirical studies (Binyamin et al., 2017) Most previous studies were based on TAM (Stantchev, Colomo-Palacios, Soto-Acosta &Misra, 2014; Nanayakkara, 2007; McGill & Klobas, 2009; Tserendorj, Tudevdagva & Heller, 2013), while few studies used Unified Theory of Acceptance and Use of Technology (UTAUT) (De Smet et. Al., 2012; Lin and Anol, 2008; Bawack & Kamdjoug, 2018; Zainab, Kiran, Karim & Sukmawati 2018). Considering the foregoing, it was understood that TAM model was frequently used in previous studies to determine the antecedents of technology use in the context of LMS, these studies focused on factors like usefulness, easiness, facilitating conditions. However, they did not explore the influence of performance expectancy on students, which is the perceived value of the use of LMS with recourse to learning and gaining from LMS. They also fail to consider the behavioral intentions of the students as forming a habit of perpetual use of LMS.

Based on the discussion and knowledge gap, it is found that there is a need to conduct a study on LMS utilization and investigate the factors that influence its utilization based on UTAUT model and Motivation Model. According to this problem state, the research objectives are set out for this study.

1.4 Objective of the Study

The purpose of this study is to investigate the factors that influence the utilization of learning management system among the Saudi Academy of Civil Aviation students. Therefore, the study was conducted to achieve the following objectives:

1. To determine the performance expectancy, effort expectancy, social influence, facilitating conditions, motivation, behavioral intention and LMS utilization among SACA students
2. To determine the direct effect between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation on behavioral intention among SACA students.

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3. To determine the direct effect between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation on utilization of the LMS among SACA students.
4. To determine the direct effect of behavioral intention on utilization of the LMS among SACA students.
5. To investigate whether behavioral intention acts as a mediator between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation and utilization of LMS among SACA students.

1.5   Research Questions

Based on the objective one of this study, the research questions were formulated to guide the study:

1. What is the level of LMS utilization among SACA students?
2. What is the performance expectancy of utilizing LMS among SACA students?
3. What is the effort expectancy of LMS utilization among SACA students?
4. What is the social influence of LMS utilization among SACA students?
5. What are the facilitating conditions for LMS utilization among SACA students?
6. What is the motivation of LMS utilization among the SACA students?
7. What is the behavioral intention of LMS utilization among the SACA students?

1.6   Research Hypotheses

Objective 2

To determine the direct effect between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation on behavioral intention among SACA students, the researcher has made the following hypotheses:

H_1: There is a direct effect of performance expectancy on behavioral intention to LMS utilization among SACA students.

H_2: There is a direct effect of effort expectancy on behavioral intention to LMS utilization among SACA students.

H_3: There is a direct effect of social influence on behavioral intention to LMS utilization among SACA students.

H4:   There is a direct effect of facilitating conditions on behavioral intention to LMS utilization among SACA students.

H5:   There is a direct effect of motivation to use the LMS on behavioral intention to LMS utilization among SACA students.

Objective 3

To determine the direct effect between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation on utilization of the LMS among SACA students, the researcher has made the following hypotheses:

H6:   There is a direct effect of performance expectancy on LMS utilization among SACA students.

H7:   There is a direct effect of effort expectancy on LMS utilization among SACA students.

H8:   There is a direct effect of social influence on LMS utilization among SACA students.

H9:   There is a direct effect of facilitating conditions on LMS utilization among SACA students.

H10: There is a direct effect of motivation on LMS utilization among SACA students.

Objective 4

To determine the direct effect of behavioral intention on usage of the LMS among SACA students, the researcher has made the following hypothesis:

H11: There is a direct effect of behavioral intention on LMS utilization among SACA students.

Objective 5

To investigate whether behavioral intention acts as a mediator between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation and LMS utilization among SACA students:

H$_{12}$: Behavioral intention mediates the LMS utilization among SACA students.

H$_{13}$: Behavioral intention mediates the performance expectancy on LMS utilization among SACA students.

H$_{14}$: Behavioral intention mediates the effort expectancy on LMS utilization among SACA students.

H$_{15}$: Behavioral intention mediates the facilitating conditions on LMS utilization among SACA students

H$_{16}$: Behavioral intention mediates the social influence on LMS utilization among SACA students

H$_{17}$: Behavioral intention mediates the motivation for LMS utilization among SACA students

1.7   Significance of the Study

This study investigates the factors namely, performance expectancy, effort expectancy, facilitating conditions, social influence, motivation and behavioral intention, that influence LMS Utilization. This study described the level of LMS Utilizations based on frequency and volume and the factors influencing its Utilization. This study will serve as a blueprint for Saudi Arabia's GACA for developing a new strategy to encourage adoption of LMS among students of the SACA.

The findings of this study are important to increase the utilization level of using LMS among SACA students. Moreover, the findings will provide useful information for SACA administration on how to encourage their students to utilize LMS and how to solve the problems facing the LMS. The result of this will also enrich the theoretical knowledge of LMS Utilization in Saudi higher education and help educational policymakers in the redevelopment and improvement of stages to attain successful implementation of learning with LMS. It expected to add to the literature concerning the usage of LMS among students. This research also will be providing comprehensive information to the researchers in generating more research concerning the students' Utilization on LMS for learning. Also, the result of this study will be able to assist in developing and supporting strategies for increasing LMS use among students in Saudi aviation and higher education.

Based on the findings of this study, decision-makers can take the necessary steps to remove the obstacles, encourage the positive factors and design training programs to improve LMS use among students. The stakeholders will be made aware and be informed on the status of LMS use and the possible barriers to employing LMS in learning. Therefore, this study is important because it will be supportive in making effective planning decisions regarding the future Utilization on LMS in aviation and higher education by the government.

The findings of this study will benefit the Saudi education system, which may lead and motivate the specific technology implementation not only in aviation and higher education but also in the whole education system. This effort should enable them to meet the goals of Saudi's Vision 2030. This research can be useful for the future development of the education system in Saudi in order to maximize the positive impacts of LMS on the learning environment and to change the way students interact. Finally, the findings of this study will also serve as relevant material for students of ICT, education technology, E-learning and any educational technology institute.

1.8 Scope and Limitation of the Study

The purpose of this study was to investigate the factors namely, performance expectancy, effort expectancy, facilitating conditions, social influence, motivation and behavioral intention, that influence the Utilization LMS among SACA students. The limitations of this study are in term of LMS, research design and population.

This study was limited to the LMS Utilization. There are various types of LMS available, SACA is using Blackboard, which further limits the study's scope and this would also limit the generalization of the findings to other related higher institutions using different LMS tools.

In this study, the data was collected via a set of questionnaires, which relied on the perceptions of the SACA students and the researcher clarified to them that there would be no right or wrong answers. The participants of this study were full-time students who come from different regions of the Kingdom of Saudi Arabia. The selected population was limited only to SACA students from five different departments namely, Air Traffic Controllers, Fire and Rescue, Airport Operation and Safety, Maintenance of Air navigation System and Aviation Security. This population was made up of male students at the Saudi Academy of Civil Aviation. They are predominantly high school graduates aged between 18 to 25 years. The SACA students were also assured that their responses were confidential and they would remain nameless. It was assumed that the SACA students already had taken some classes in the SACA LMS.

Data from this study was obtained only from the SACA students and may not be applicable to students at other academies. The results may also not be generalized to all the student population in Saudi. Therefore, the generalization of this study can be

applied to studies that have similar characteristics. Although there are several limitations, the results of this study will be significant for further research and justification.

1.9   Definitions of Terms

This section in the study is where the operational and conceptual definitions of relevant terms, based on the literature, are presented to give clear comprehension and direction.

1.9.1   Performance Expectancy

Performance expectancy is defined as the way users believe a certain technology will perform in helping them to complete required tasks and help them to do so to standards higher than would be possible without it (Venkatech et al., 2003). Performance expectancy, according to Davis, Bagozzi and Warshow's (1989) is the extent to which users believe a given technology will better increase their job performance.

In the context of this study, performance expectancy refers to the extent to which students at the Saudi Academy of Civil Aviation perceive the use of the LMS as a useful tool to help them better increase their performance when conducting their academic assignments and presentations.

1.9.2   Effort Expectancy

According to Venkatech et al. (2003), effort expectancy refers to the users' perception of the ease and effortlessness for a specific purpose. Garfild (2005) expresses the idea in terms of user freedom from difficulty or great effort.

In this study, effort expectancy refers to the extent that students at the Saudi Academy of Civil Aviation perceive that using the LMS to be easy to use or ease-of-use of the LMS tool.

1.9.3   Social Influence

Social influence refers to the degree to which the users perceive how others will view them as a result of having used the technology (Venkatech et al., 2003; Attiuquayefio & Addo, 2014).

In this study, social influence refers to the extent to which students at the Saudi Academy of Civil Aviation perceive their social norms and values from lecturers and family are able to enhance their decision on using the LMS.

1.9.4   Facilitating Conditions

Venkatech et al. (2003) defined facilitating conditions as factors, which support technology usage in a learning environment and users' perceptions of them. While Balan and Kalavally (2012) defined facilitating conditions as the extent to which these conditions support or encourage the use of technology, through role models such as lecturers, or even family.

In this study, facilitating conditions refer to the degree to which students at the Saudi Academy of Civil Aviation perceived the presence of available conditions that support their learning process. This support could be from the help-desk provided by SACA in the form of technical assistance and workshops to help in solving a problem related to the use of LMS.

1.9.5   Motivation

According to Keller, motivational design is described as the process of management of resources and procedures in the aim of facilitating positive changes in motivating the adoption of a system. As such, the author emphasized the importance of continuously motivating the learner and the significance is intensified in case of LMS Utilization as motivating learners in an online interface is much difficult compared to face to face interactions (Keller, 1979). Berliner & Gage, (1998) & Schunk (1990) indicate that motivation refers to the process whereby goal-directed behaviour is instigated and sustained'. Weiner (1985), Gredler, Broussard and Garrison (2004) defined motivation as the attribute that moves an individual to do or not to do something. Motivation is defined as a reason for acting or behaving in a particular way and a process that initiates, guides and maintains goal-oriented behaviors (Maehr, Martin L; Mayer, Heather, 1997).

In this study, motivation was adopted from the Motivation Model (MM) by John Keller. John Keller is the founder of the ARCS Model of Motivation, which is based upon the idea that there are four key elements in the learning process, which can encourage and sustain learners' motivation. These four elements are Attention, Relevance, Confidence and Satisfaction. These four elements form the acronym ARCS of the model and stand for (ARCS).

Attention refers to the learners' interest to use or perform something. It is critical to get and hold learners' interest and intention (Keller, 2013). In this study, attention refers to what extent the SACA LMS is clear, eye-catching, its variety of reading passages, exercises and style of writing to grab students' attention to use the LMS.

Relevance refers to how the learning process should show the usefulness of the content whereby learners can bridge the gap between content and the real world (Keller, 2013). In this study, relevance refers to what extent that the content, material, explanations, style and introductory of the LMS is relevant to the SACA students.

Confidence refers to the component of developing success expectation among learners, and the success expectation allows learners to control their learning processes (Keller, 2013). In this study, confidence refers to what extent that the material, exercises and organizations provided in the SACA LMS allow students to control their learning processes.

Satisfaction refers to the level where learners are satisfied at what they have achieved throughout the learning process (Keller, 2013). In the context of this study, satisfaction is measured as to what extent the SACA students completing lessons, exercises, studying, and feedback received after the exercise are satisfied.

1.9.6 Behaviour Intention

Behaviour Intention simply refers to the extent to which users intend to make sustained use of technology (Venkatech et al., 2003). Abubakar and Ahmed (2013) refer to it as an individual's conscious intent to perform an activity.

In this study, behaviour intention refers to what extent the SACA students perceive their intentions to use LMS continuously and attend workshops in the near future. In this study, behavioral intention is hypothesized as a mediator between all selected factors (performance expectancy, effort expectancy, facilitating conditions, social influence and motivation) towards LMS utilization.

1.9.7 LMS Utilization

Utilization is defined as the act of using processes and resources for learning (Seels & Richey, 1994). Utilization refers to how often students use LMS for learning purposes (Song & Kang, 2012). Burton-Jones and Hubona (2006), on the other hand, categorized Utilization as the act and its users to the sub-dimensions of frequency and volume. By 'frequency' it is meant, the number of times a user said they used the system over a period, whereas volume refers to how much actual time a user spent making use of a system over the same period.

For the purpose of this study, LMS Utilization is measured in terms of the frequency and volume of LMS usage by students at the Saudi Academy of Civil Aviation for learning purposes, as perceived and stated by them. The frequency indicates the frequency levels of use of these tools (Announcement, discussion board, message, assignment, chat, calendar, contact, LMS email, glossary, blogs, journal, my grade,

multimedia feature and wiki tool). The volume was measured based on the five categories: never browse in LMS, less than 30 minutes per visit, 31-60 minutes per visit, 61 - 90 minutes per visit and more than 90 minutes per visit.

1.10   Summary

This chapter presented the background of the study, which focused on the present literature that supported the Utilization on LMS, which is the focus of this study. The definition of LMS Utilization was discussed conceptually and operationally to give clear comprehension and direction. This chapter also provided a brief introduction of GACA and SACA, which includes its aims, missions and objectives. It also gives a brief introduction of the SACA LMS and its aims. The chapter discussed the factors that influence the Utilization of LMS. Those factors are performance expectancy, effort expectancy, facilitating conditions, social influence, motivation and behavioral intention.

In this study five main objectives were formulated namely to (i) determine the performance expectancy, effort expectancy, social influence, facilitating conditions, motivation, behavioural intention on LMS utilization among SACA students, (ii) determine the direct effect between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation and behavioural intention among SACA students, (iii) determine the direct effect between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation and LMS utilization among SACA students, (iv) determine the direct effect of behavioural intention and LMS utilization among SACA students, and (v) investigate whether behavioral intention acts as a mediator between performance expectancy, effort expectancy, social influence, facilitating conditions, motivation and LMS utilization among SACA students.

From the objectives, seven research questions were formed together with 17 research hypotheses and the possible limitations of the study were also discussed. Finally, the relevant terms used in this study were defined operationally, and conceptually in order to give clear comprehension and direction in conducting this study. In the following chapter, the review of related literature will be discussed.

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