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UNITE DE RECHERCHE ET DE FORMATION DOCTORALE EN SCIENCES EDUCATIVES ET INGENIERIE EDUCATIVE

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CURRICULA ET EVALUATIUON

REPUBLIC OF CAMEROON
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UNIVERSITY OF YAOUNDE I
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POST GRADUATE SCHOOL FOR HUMAN, SOCIAL AND EDUCATIONAL SCIENCES
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DOCTORAL UNIT OF RESEARCH AND TRAINING IN SCIENCE OF EDUCATION AND EDUCATIONAL ENGINEERING.
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CURRICULUM AND EVALUATION

Challenges of Learning Management System implementation in effective management of distance learning in some secondary schools in Yaounde municipality.

Dissertation submitted in partial fulfilment of the requirement for the award of a Master's Degree in Educational Management (MED)

Specialisation: Management of Information System of Schools and Universities (GSISU)

Presented by

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ACADEMIC YEAR 2022-2023

DECLARATION

I, **FOTOH LWANGA MUCHU**, do hereby declare that this dissertation is my original work and that it has not been submitted and will not be submitted for any academic award in any other University for a similar or any other degree award.

…….

Signature

…….

Date

CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by the University of Yaoundé I, a dissertation entitled: **"Challenges of Learning Management System implementation to effective management of distance learning in secondary schools in Yaounde municipality"**, in partial fulfilment of the requirements for the award of a Master's Degree in Educational Management from the University of Yaoundé I

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Dr. NGNOULAYE Janvier

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Head of Department

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Date

DEDICATION

To my aunt Mama Odilia Besin

ACKNOWLEDGEMENT

My fervent gratitude goes to:

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ABSTRACT

This research work aimed at investigating the extent to which challenges of implementing Learning Management System (LMS) affect the effective management of distance learning in secondary schools within the Yaoundé municipality. A mixed research design method was used and a likert scale questionnaire was used to administer research questions to a sample of 345 respondents, who were principals, vice principals, heads of departments and classroom teachers. The research was guided by the Innovation Diffusion Theory and the Technology Acceptance Model. The data collected was analysed using the SPSS version 26 software and the results obtained demonstrates that the difficulties to implementing LMS for distance learning make up 93.11% of the 260 returned questionnaires that were analysed. Most of the challenges were seen to be technological, followed by administrative and then financial. Recommendations have been made to stakeholders towards mitigating the situation in Yaoundé, so that the very much applauded strategy of distance learning by scholars could be improved. The study also suggests areas not covered by this study for further research.

Key words: learning management system, educational management, instructional technology

RESUME

Ces travaux de recherche visaient à déterminer dans quelle mesure les défis de la mise en œuvre du système de gestion de l'apprentissage (SGA) affectent la gestion efficace de l'enseignement à distance dans les écoles secondaires de la municipalité de Yaoundé. Une méthode mixte de conception de la recherche a été utilisée et un questionnaire à l'échelle likert a été utilisé pour administrer des questions de recherche à un échantillon de 345 répondants, qui étaient des proviseurs, des censeurs, des chefs de département et des enseignants titulaires. La recherche a été guidée par la théorie de la diffusion de l'innovation et le modèle d'acceptation de la technologie. Les données recueillies ont été analysées à l'aide du logiciel SPSS version 26 et les résultats obtenus montrent que les difficultés de mise en œuvre du SGA pour l'apprentissage à distance représentent 93,11 % des 260 questionnaires retournés qui ont été analysés. La plupart des défis étaient perçus comme étant technologiques, suivis par les défis administratifs et financiers. Des recommandations ont été faites aux parties prenantes pour atténuer la situation à Yaoundé, de sorte que la stratégie très applaudie de l'enseignement à distance par les chercheurs pourrait être améliorée. L'étude suggère également des domaines qui ne sont pas couverts par cette étude pour d'autres recherches.

Mots clés : système de gestion de l'apprentissage, gestion de l'éducation, technologie pédagogique

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ABBREVIATIONS AND ACRONYMS

ADEA …….Association for the Development of Education in Africa

AICC ……..All India Congress Committee

BEPC ……..……Brevet d`Etudes du Premier Cycle

CSCW ……Computer Supported Cooperative Work

DSSEF …….……Document de Strategie du Secteur de l`Education et de la Formation

GCE ……..General Certificate of Education

HELMS……. Higher Education Learning Management System

HODs …….……Head of Department

ICT ……....Information and Communication Technologies

IEEE ……..……..Institute of Electrical and Electronics Engineers

IMS ……..Intelligence et Management Strategique

IST …….……..Information Systems Technology

LMS ……..Learning Management System

MINESEC …….……Ministry of Secondary Education

MoHE ……Ministry of Higher Education

NDS ……..National Development Strategy

ODL …….open and distance learning

SCORM …….Sharable Content Object Reference Model

SDG ……..Sustainable Development Goal

SPSS ……..Statistical Package for Service Solutions

UNESCO……....United Nations Educational Scientific and Cultural Organisation

USA …….…….…….United States of America

CHAPTER 1: INTRODUCTION

Education is the most fundamental instrument for the development of every community, irrespective of the dimension (Derek, 2019). This explains why a lot of commitment is attached to education by stakeholders at local, national and international levels. At the global level, member states of the United Nations have elaborated the Sustainable Development Goal 4 (SDG 4) Education 2030, having as mission, to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Elaine, 2019). Africa articulates how Africa would look like in the vision 2063 document, now reduced to 41 years. Cameroon`s National Development Strategy (NDS 2030) equally places much importance on innovative education to produce citizens with 21st century skills, to meet the challenges of a new digital society at hand. This is indicated in the desire to increase the human capital index from 0.52 in 2016 to 0.70 by 2030. These visions all seek for accessible quality education for all. To this effect, various strategies and innovations are undertaken to ensure continuity in providing quality education to learners, even in the presence of societal challenges as health pandemic and socio-political crises. To meet with this vision, Cameroon seeks to take advantage of available technology to ensure continuity of equitable quality education to her citizens, who would not only be able to solve Cameroon`s development challenges, but Africa and the world at large (Ngnoulaye & Lepage, 2017).

One of such innovative technology adopted is the implementation of distance learning strategy, which according to many scholars does not only complement and fill the gap created by inadequate traditional practices in teaching and learning, but initiates and builds the learners with the technological skills that characterise the fourth industrial revolution (Nkongho, 2020). This explains why the Government of Cameroon adopts it as a credible alternative to teaching and learning process, especially during when the traditional method becomes threatened by health and socio-political insecurities (*Rapport d`Analyse des donnees du recensement scolaire2019-2020*), Shaibou(2022).

Amidst other modalities, distance learning requires an online teaching and learning system, where the instructor and learner are separated in time and space (Raihanah, 2014). It thus involves computers and internet technology. It requires that the instructor uploads adapted learning content and assignments or conduct live lessons over the network and the students who receive these contents, are able to report back by doing assignments and assessments.

Learners can interact with tutors and their peers, have access to online libraries or other teachers as well as other learning resources (Andrew, 2018) and Shaibou (2020). While referring to distance learning adoption and set up in the *Rapport d`Analyse des donnees du recensement scolaire2019-2020*(2020), the authors do not limit the concept just to network-based teaching and learning as in the use of internet, radio and television, but also mentions the distribution of printed materials containing learning content to learners in areas where access to schools is greatly hindered or almost stopped.

The adoption of distance learning in secondary schools in Cameroon and Yaoundé municipality in particular also implies innovation in the management of this process by school administrators or managers. School management functions according to Nur Irsyadiah (2021) include planning, organizing and monitoring implementation. These are part of a broader spectrum of management functions proposed by proponents of the classical administrative theory as described by Abah (2017). The author presents the contribution of one of the proponents, Max Weber, who stated the functions of a manager to involve planning, organising, staffing, directing, coordinating, reporting and budgeting. In the implementation of these functions with the available resources, the managers ensure quality education and thus meet the set educational goals. Most school managers in Yaoundé attempt these functions fairly well in the traditional face-to-face method of teaching but the new distance learning method presents difficulties.

The use of distance learning approach by schools requires an effective Learning Management System (LMS) (Fathema, David & Margaret, 2015). In order to keep track and coordinate these distance learning activities, the school management must put in place an effective LMS.

A standard school LMS as described by Charles, William, Sunkyong, Patrima, Zengguan and Nathan (2008) and elaborated by Shaibou (2020), consists of a good administrative expertise and leadership commitment, technological installations (platforms, tools and technical support), proper communication in terms of adaptive and creative online content provision, efficient data management and proper reporting. Eden, Christopher and Jacqueline(2014) adds that such a system should integrate other computerised systems and data recording components to allow for monitoring, control and evaluation of learning activities, which are the fundamental functions of learning management. Therefore, with an effective LMS for distance learning, school managers are able to plan the lessons, that is, draw a calendar, monitor the progress of learning process, keep track of assiduity, evaluate the conformity of

the learning content with the program and competencies expected and obtain performance statistics of learners.

Scholars have sought to know the challenges influencing the smooth implementation of LMS, from the more technologically advanced global level, to the less ones in Africa and Cameroon and more particularly in Yaoundé. Some of them include the work done by Paulsen (2003) while investigating the experiences with learning management systems in Europe. The investigation which was conducted on 113 European institutions revealed that 76% of the schools were comfortable with the system, most of whom designed their own systems while a few used systems bought from the USA. The author underscores that few institutions which faced challenges were those who demonstrated resistance to e-learning strategy, found limits of functionalities of the systems to their internal needs or sought to incorporate paid courses with difficulty. Raida (N.D) while investigating the challenges and opportunities for applying e-learning at IAIN Antasari. The author demonstrated that the lack of technological facilities, lack of practice in LMS training, lack of skills by users of the LMS and lack of support from head of facility made up the most difficulties. Abdulah (2018) investigated the Barriers to Participation in Learning Management Systems in Saudi Arabian Universities. Findings from the study revealed that the main barriers to the use of LMSs were inadequate technical support by the universities, negative attitude toward technology, and inadequate training on the LMS platforms. Minor barriers which were identified include poor Internet access and networking, limited infrastructure to support the LMS, lack of hardware and software to run the LMS, and challenges in English language proficiency. Mustafa, Abdul and Mohammad (2021) had similar results while investigating the challenges of using LMS during Covid-19 pandemic in Afghanistan.

In Africa, Rogers, Elia and Marin (N.D) performed a similar investigation in the Open University of Tanzania. While conform to the challenges mentioned above, the authors stressed on the lack of training, lack of adequate facilities, lack of awareness and slow network. Also, Oluwatoyin (2021) researched the use of Moodle for curriculum delivery in higher institutions during the Covid-19 pandemic in South Africa. The author established that whereas the pandemic had little or no effect on learning in the developed countries, it had an adverse effect on developing countries as learning was completely halted. They found that Moodle, an LMS platform could smoothly ensure continuity but points out that the negative attitude of some academic staff towards LMS adoption retarded the evolution of this technology.

In Cameroon, a number of researchers have carried out studies in this domain beginning with the theses of Kibinkiri (2014) titled “The Role Of E-Learning On The Professional Development Of Student-Teachers In Cameroon”. His findings revealed the internet-based problem solving and computer-based direct instruction has unprecedented benefits to the professional development of student-teachers in Cameroon. However, he noted, slow internet lines or access speed constituted a serious hindrance to e-learning in Cameroon.

Another researcher is Nkwenti (2016), who carried out a baseline study on the current state of open and distance learning in Cameroon. His investigation that was based on higher education institutions revealed that the challenges to e-learning involved fully decentralising the learning centres, high cost of distance learning courses with less motivation, regular electricity interruptions and weak and unstable internet bandwidth, and the lack of strategic plans for open distance learning.

A similar study but narrowed down to the city of Yaoundé was carried out by Nkongho (2020), who sought to know the current state and future of e-learning in educational institutions in Cameroon. The author investigated four secondary schools and four tertiary education institutions. Findings from this study revealed that secondary schools lacked the equipment for e-learning. Over 24% of secondary schools lacked computers. Also, barriers such as power, internet connectivity and bandwidth, quality teacher training, respect and better pay for teachers, and the sustainability of implementations constituted the obstacles to effective implementation of e-learning. The author also adds that one of the challenges of implementing e-learning in schools in Cameroon appears to be traceable to the uncooperative attitudes of teachers in the two educational sub-systems.

Other investigations in the domain of educational technologies have been carried out by students in either theses or dissertations. Among the many is Duh (2021) whose dissertation focused on the factors influencing the adoption of mobile phones for distance learning during emergency in secondary schools. Her work covered selected secondary schools in souza of the littoral region and concentrated on the internally displaced learners from the North West and south west regions of Cameroon. Her investigation revealed that relative advantage, attitude, cost, student capability, complexity and government support influenced the adoption of mobile phones for distance learning. The author did not however, measure how distance learning that took place already could be managed. Ako (2022) sought to investigate the contribution of Educational Management Information System (EMIS) on administrative effectiveness in Yaoundé municipality. While observed that most schools had basic

computing devices such as desktop computers, the author noticed that just 51.9% of the schools in Yaoundé had internet connection, with almost no school having a library software. Few schools (43.5%) had email services while less than 1% of them had interactive whiteboards. Though the author was interested in the contribution of EMIS on school management, with little attention to distance learning, it s worth noting that his findings exposed some technical and administrative setbacks by schools in Yaoundé for distance learning exercise. Another student, Melvis (2021), in her investigation to find out the extent to which the information and communication technology competence influence students` use of electronic library resources in the University of Yaoundé 1, found that most students are able to manipulate computing devices such as mobile phones, laptops and online platforms, but find it boring when the internet connection is slow or when there is power cut. She equally established that some students find it challenging to locate resources online and thus tend to be discouraged. Loveline (2018) also noticed similar challenges while investigating the relationship between EMIS and school administration within the Faculty of Education of the University of Yaoundé 1. In addition to the challenges described by Melvis above, she adds that the lack of financial resources, limited skills and the inactiveness of students` registration numbers made the use of EMIS a problem in the faculty.

Though the challenges investigated above appear similar, they are in varied intensities and different social contexts. Most of them either had reduced coverage of the population or just investigated the usage of technology in learning with the accompanying challenges but had little interest in the managerial aspect of the learning strategy. The present context of secondary schools in Yaoundé is not usual. It is characterised by a pandemic imposed measures of reduced classroom sizes, shift system of schooling in most schools with non-the-less, high student density. Findings show that there has been a huge population increase in Yaoundé, leading to a high demand for education (Nkwenti, 2016, NDS 2030, Emmanuel, 2020). This high demand resulting from added population from crises zones has overcrowded the city of Yaoundé whose limited classroom infrastructure and personnel caused a high student to teacher ratio of 80:1 in 2017 (*Rapport d`Analyse des donnees du recensement scolaire2019-2020*). This deploring learning situation together with the outbreak of Covid-19 saw the total suspension of schools on March 17th 2020, leaving the educational stakeholders with no option than reinforcing distance learning strategy, to help the situation (Nkongho, 2020). Lessons were taught over the radio, television, internet platform of MINESEC. In the following academic years of 2020/2021 and 2021/2022, the ministries of education resolved

to a shift system of education while prescribing distance education as a credible alternative to complement reduced traditional face-to-face method of teaching/learning process (order n^{o} 078/B^{1} /1464). With this, the Government sought to help curb the prevailing health insecurity of Covid-19 and high student/ teacher ratio.

The difficulty with the distance education strategy is the management of the process. The process of planning, coordinating , monitoring and control of distance learning is keeping secondary school administrators of Yaoundé perplexed, not being able to put in place, a system that smoothly generates adequate communication and reports. This could be as a result of setbacks ranging from administrative, technological, and financial to environmental hindrances. This research work questions these factors and the extent to which they influence the setup of an effective LMS that troubleshoots managerial problems.

This research work will be presented in five major chapters. The first chapter will be the detailed context surrounding this study, elaboration of the problem, statement of the research questions, objectives and hypotheses, delimitation of the study and relevance of the research to the educational community. The second chapter shall contain review of literature. This section shall embody censoring of concepts of key importance to this work, previous research works performed by scholars and the theoretical framework that guides the study. The third chapter shall be dedicated to research methodology, wherein, the research method, population of the study, sampling method, data collection instruments and data analysis methods will be explained. Chapter four shall contain presentation and interpretation of results, while chapter five shall contain discussion of the results with conclusion and propositions as recommendations.

Background of the study

As indicated in the 1998 law of orientation for secondary education in Cameroon, the educational system of Cameroon at the secondary level is structured into two sub-systems, namely the Anglophone sub-system and the francophone sub-system. The system is also categorized either as secondary general education or secondary technical education (Mfoundi regional delegation for secondary education; Nkwenti, 2016). This setup is characterised by schools established for purely Anglophone sub-system in English speaking regions of the country, purely francophone sub-system in the French speaking regions, and at least a school in each division that has a mix of the two sub-systems called bilingual secondary or high schools. The secondary education comprises two cycles of learning; the first cycle from form one to form five for Anglophone sub-system, and from sixieme to troisieme for francophone sub-system. The certifying qualifications for finishing these cycles are the General Certificate of Education (GCE) O-Level and the BEPC respectively. The second cycle is made up of lower sixth and upper sixth for Anglophone sub-system and second to terminal for francophone sub-system. The certificates obtained at the end of this cycle are GCE A-Level and Baccalaureate respectively. The first two years of secondary learning are dedicated to observation, the next two years for orientation and the remaining years for specialization. Yaoundé, being the administrative capital of the country, is made up of seven (7) sub-divisions, 7 councils and has one of the highest density of bilingual secondary schools in the country amidst numerous classical francophone sub-system institutions.

Nkongho (2020) outlines Government`s policies that are in place towards the strategy of using technology to meet her vision. This began with the official introduction of ICT in secondary and higher education in 2001 by the government of Cameroon (Josue, 2007). The author adds that though private sector started the use of this technology by the 90s, it was done with no guiding methodology and curriculum of how the subject should be taught. This development was only realised in 2007 by a national policy for the development of ICT (IST-Africa, 2012). The policy and by extension, gave rise to e-learning across institutions in the country and as she puts it, e-learning has been therefore in secondary schools for 19 years.

The level of Government`s commitment to this has been felt in the establishment of multimedia centres in all the regions of the country and connection of six state universities with internet (Josue, 2007) to enhance competitiveness, communication, employment opportunities and enhance growth. This confirms the presentation of Ngnoulaye and Fouda (2016), who outlined that the government of Cameroon is progressively creating the

department of information and communication technology in the Higher Teacher Training Colleges (HTTC) in Cameroon, with the objective to train specialists in digital learning systems and the management of education. Today, ICT is largely taught in almost all secondary schools in the country and most especially in urban cities like Yaoundé.

With the accelerated demand for education, technology in education becomes unavoidable alternative to savage the situation. Nkwenti (2016) presents the education demand statistics which shows that by 2011, the youths (18 and below) represented the highest percentage of the country`s population (58%). The study showed that this age group had a growth rate of 2.4%. Nkwenti (2016) while quoting the Cameroon education strategy sector paper, observed that for the decade 2010-2020, the growth rate would be 2.1%. this according to the author was large to push the government to respond by opening more schools and equipping them. This increase is further indicated by the statistics revealed by '*Rapport d'Etat d'un Système Educatif National'* (RESEN, 2013), showing that the enrolment in secondary schools rose from 32% in 2006 to 47% in 2010. According to '*Rapport d`Analyse des donnees du recensement scolaire2019-2020'*(2020), the annual growth rate of school going children stands at 2.3%, unlike 2.1% predicted above, revealing an unproportional increase in demand for education at the secondary level. The report also shows that majority of children going to school are in urban areas among which is Yaoundé. Recent statistics from the MINESEC statistical yearbook 2018/2019 indicates that the demand for education has risen to 466467 students for the centre region, corresponding to a percentage of 55.6%, though Emmanuel (2020) indicates a value of 60.06 %. This regrettably does not match the evolution of the number of schools and classrooms to contain the students.

The high increase in demand for education is not just by the normal population growth rate for the inhabitants of Yaoundé, but also due to the refugees and internally displaced persons from crises zones in Cameroon, notably the far north, North West and South West regions. The National Development Strategy 2030 statistics, referring to *Rapport d`Analyse des donnees du recensement scolaire2019-2020*(2020), shows that Yaoundé alone is host to over 43179 displaced persons, among whom are refugees. This difficulty coupled with the outbreak of Covid-19 which imposed the close down of schools in March 2020, pushed educational decision makers of Cameroon to resort to technological innovations to ensure continuity.

One of such technological innovations adopted by the Cameroonian government is the prescription of distance education, which, as described by Asangha (2021) took 100% central

stage in providing education to students, especially those in examination classes. In the follow up of the measures to curb spread of the pandemic, distance education was prescribed by the Ministries of basic and secondary education in Cameroon (order n^{o} 078/B^{1} /1464), to provide education to pupils and students in areas of poor accessibility and also to blend the lack of full scale coverage in areas where the covid-19 pandemic imposes shift learning and reduced classroom enrolments.

The huge influx of learners from socio-political crises zones into Yaoundé has greatly increased the demand for education at this level (Emmanuel, 2020), and together with the health pandemic has caused most secondary schools in Yaoundé to fall within this category of operating system, that is, shift learning. For learning to occur in such circumstances, the Ministry of secondary education has not limited to prescription of distance learning, but has gone ahead to establishing a distance learning platform where the links to various lessons for different levels are shared to the educational family of MINESEC (Nkongho, 2020). More so, '*Rapport d`Analyse des donnees du recensement scolaire2019-2020'*(2020) reveals that a teaching/learning dispositive that is nationally integrated and multidimensional for distance learning has been put in place and comprises radio, television, internet and distributed support materials. To foster UNESCO`s sustainable Development Goal 4 (SDG4), her Director General visited and held talks with the Head of State for Cameroon on the 6th of February 2022 (CRTV, 2022) on modalities to enhance distance learning in Cameroon. All of these establish the fact that distance learning takes place in Cameroon and in Yaoundé in particular. Given that Yaoundé is one of the most advanced cities in Cameroon in terms of technological development, it is expected that distance learning be better practiced than elsewhere in the country. The effectiveness of this and its management to ensure adequate and quality education, with the development of required 21st century skills are the interest for this research work.

The problem

The implementation and management of distance learning is the pre-occupation of secondary school administrators in Yaoundé. It appears that despite the many benefits and leverage that technology offers in education in general, and particularly the huge gap that is covered by carrying out distance learning (Ngnoulaye & Gervais, 2015; Shaibou, 2020; Oluwatoyin, 2021), most secondary schools in Yaoundé are yet to discover these advantages, which cut across not just the learning process, but equally the smooth running and reporting of the process. For schools which attempt distance learning, the major challenge is the effective

management of the teaching and learning process online. Secondary school administrators in Yaoundé find it difficult to effectively trace distance learning activities, the volume of program covered, the participation of learners, evaluation of competences acquired as well as respect of curricular and academic calendar. All of these can be covered by the implementation of an online learning management system as explained by many scholars, among who are Oluwatoyin (2021) and Shaibou (2020). To mitigate this gap would be to examine the difficulties faced by secondary school administrators in implementing an effective LMS to permit proper management of distance learning. This underlines the objective of this research study, at the end of which would permit us to design concrete recommendations to the educational stakeholders.

Research questions:

In order to proceed in this investigation, we sought to ask the following questions:

Main research question:

To what extent do challenges to LMS implementation influence the proper management of distance learning in secondary schools in Yaoundé?

Specific research questions:

1. To what extend do administrative challenges to LMS implementation affect distance learning management in secondary schools?
2. By how much do technological difficulties inhibit LMS implementation for distance learning environment?
3. What ratio is occupied by financial challenges to LMS implementation for distance learning?

Research objectives:

To obtain answers to the questions above, we have the following objectives:

Main research objective:

To investigate the challenges of school LMS implementation that hinder management of distance learning in secondary schools in Yaoundé.

Specific objectives:

1. To find out the extent to which administrative challenges to LMS implementation relate to distance learning management in secondary schools.
2. To assess the percentage to which technological difficulties inhibit LMS implementation for distance learning.
3. To determine the percentage occupied by financial challenges to LMS implementation for distance learning.

Research hypotheses:

Main hypothesis:

There exist significant relationship between factors affecting proper LMS implementation and management of distance learning in secondary schools in Yaoundé.

Sub-hypotheses:

- **$H0_1$**: Administrative limitations to LMS implementation has no significant relationship with the management of distance learning in secondary schools in Yaoundé.
- **$H0_2$**: Technological difficulties to LMS implementation does not significantly relate to management of distance learning in secondary schools.
- **$H0_3$**: There exist no significant relationship between financial challenges to LMS implementation and management of distance learning in secondary schools in Yaoundé.

Relevance of the Research study

To the policy makers:

The research serves to point out newer training objectives of secondary school personnel, to overcome the challenges presented with carrying out distance learning. It also will permit the decision-makers at this level to redesign priorities of attention in the quest to fully implement distance learning strategy in secondary schools in Yaoundé in particular and the entire country at large.

To secondary school administrators:

This research serves as an eye opener to school managers in the domain of managing distance learning. This is because it brings out the requirements, notably human and technological resources needed to establish a learning management system for distance learning and how

the interacting components should be organised. The research will permit the management board to discover the hidden advantages and so redesign the school budget in favour of the innovation.

To researchers:

This work contributes to literature in the domain of education in general, but more specifically, in educational technologies and educational management. It will provide a base line for further research in the management of distance learning, not just for Yaoundé municipality, but also for the Cameroon and the entire globe.

Scope of the study

Geographical coverage

For proximal reasons, financial as well as time constraints, our research will be limited to the Yaoundé municipality within the Mfoundi Division of Center region of Cameroon. The study shall be based on some selected secondary schools within this circumscription, targeting especially, schools operating the shift system of education. The schools selected shall comprise both public and private secondary schools.

Content coverage

The research work will be limited to investigating challenges linked to the implementation of an effective learning management system for distance learning. Here, only administrative setbacks, technological barriers and financial hindrances shall be of interest.

Definition of key words

Education

The word education comes from the Latin word “educare”, defined as a process of transmitting knowledge and acquiring values, the aim of which is to enable the individual to act more effectively in his natural and social environment as a citizen (DSSEF, 2013).

Secondary education

The middle part of the education sector, secondary education is responsible for the development of general education, technical and vocational education and normal education (DSSEF, 2013).

Distance learning

Distance learning describes the effort of providing access to learning for those who are geographically distant using information and communication technology (Joi,Camille & Krista, 2010). E-learning or online learning is said to be the use of any device with internet access to engage in the learning process from anywhere anytime (Dhawan, 2020).

Educational management

Educational management refers to the application of theory and practice of management to the field of education or educational Institutions. Educational administration is a process of acquiring and allocating resources for the achievement of predetermined educational goals (Ibrahim, 2017).

Instructional technology

Instructional technology is defined as the theory and practice of design, development, utilization, management and evaluation of processes and resources for training or for learning (Suzan, 2022).

Learning management system

Nadire and Muhammed (2014) describe learning management system as software used for delivering, tracking and managing training or education

CHAPTER TWO: LITERATURE REVIEW

This chapter explores previous works done in this area of research and explanations to the research questions. It shall begin by unveiling the key concepts regarding the study. This shall be followed by previous research works by scholars from around the world and Yaoundé in particular. Theories selected to provide the explanations to the research questions shall equally be discussed and the chapter will round off with a synoptic table that clearly operationalize the independent and dependent variables.

Distance Learning concepts

Distance learning describes the effort of providing access to learning for those who are geographically distant (Joi,Camille & Krista, 2010). This author cited the difference made by Keegan (1996) between distance education and distance learning, where he clarified that distance education is an umbrella term that contains in it distance learning. King, Young, Drivere-Richmond and Schrader (2001) cited in Joi et al (2010) opine that distance education is an activity whereas distance learning is an ability. To these authors, distance education is an activity within the ability (distance learning) to provide learning at geographically distant locations using information and communication technology.

What is noted from these definitions is that distance learning can only take place when learner and tutor are geographically separated and over the network.

The Amity online University looks at the terms in another perspective, referring to distance education as traditionally known to be correspondence course. Here, study materials and learning resources are sent to students through the post and in modern times, through email. The materials or resources are nowadays in the form of video tutorials along with PDFs and other documents. This form of learning does not involve interaction between a student and his mentor. This method is one of the ways implemented by the ministry of basic education, to remedy or ensure education in remote areas affected by socio-political crises and Covid-19 pandemic (*Rapport d`Analyse des donnees du recensement scolaire2019-2020*(2020). The Amity University notes that this form of learning requires a lot of self-motivation by the learners, since no one watches over him. On the other hand, online learning is a more interactive way of studying, making use of virtual learning environments such as moodle, collaborate or blackboard to share lectures, have discussions, send student resources and conduct exams. The lectures are pre-recorded or are held live. Thus, the teacher and the student interact or meet on a digital medium. This method is what is employed by the

distance learning center of MINESEC (https:www,minese) and the ministry of basic education on the platform “mon ecole en ligne”. Apart from student-teacher interaction, Amity university also outlines the difference in course curriculum and timelines. For the online learning mode, the course structure is much like on-campus courses with ease in assignment submission timelines. Students need to attend virtual classes, participate in discussions, submit assignments on time and write exams as per the given schedule. Distance education on its part offers a simpler course curriculum with relaxed timelines. Students can submit assignments at their pace. Moreover, unlike distance education where learners must appear at allocated centres for exams, this is done using the digital system with distance learning.

For distance learning to be successful, four critical factors are indispensable (Siti, Nurliani &Norhayati, 2017). The four factors as explained by these authors are; organisational factors, in which are embedded administrative expertise, leadership experience and commitment, and higher management support. The second are technological factors, involving the presence of platforms, tools and technical support. The third are e-learning content related factors and lastly, general factors such as motivation, communication and trust. These employ the concept of instructional technologies.

According to the Watson College of education (N.D.), instructional technology refers to practice design development, its utilisation, management and evaluation of the processes and resources of learning. It is used to improve education and training systems in organizational settings, school systems and universities through the application of research and best practices from instructional technology. The college further proceeds that instructional technology is much more than hardware and computer software development. Instructional technologies also encompass the instructional design process which includes analysis design, development, evaluation and implementation of instructional systems and other learning environments. Related areas of study includes educational psychology, organizational development, communications, message designs, multimedia development, electronic distance education management and consultation, technical writing, information systems designed to name but these few.

According to Lori Beulah (2022) instructional technology is the use of a variety of digital technologies such as the Internet, web based applications, computer devices, online curriculum and more to facilitate and enhance students learning in the classroom. To this author, the key to successful integration of technology in the classroom is the training and

equipping of all teaching staff throughout the school system. The instructional technology list identifies and develops key training and resources to assist teachers in utilizing current and new educational technologies. Lawry's definition highlights some elements of the definition provided by the Watson College of education especially when it has to pick out elements concerned with distance learning like the use of web based applications in enhancing students learning.

While taking an overview of instructional technology Suzan (2022) restated definition of instructional technology provided by the association for education communications and technology to mean the theory and practice of design, development, utilization, management and evaluation of processes and resources for training or for learning.

Educational Management

Ibrahim A. Ali (2017) defines educational management as the application of theory and practice of management to the field of education or educational Institutions. According to him, the term may be used interchangeably with educational administration or the choice of vocabulary depends on the institution or country. This opinion coincides to that of Amadi-Eric (2008), who put forward that Administration is a component part of management. He develops this by stating that administration and management have similar functions of planning, organizing, directing and controlling in order to attain objectives. That is why he defined educational management as the process of planning, organizing, directing and controlling in order to attain educational objectives. Ibrahim (2017) defines educational administration as a process of acquiring and allocating resources for the achievement of predetermined educational goals. The author also makes some distinction between educational management and educational leadership, defining the later as occurring when someone takes the initiative to facilitate the following conditions for implementing change in teaching and learning. They must be making opportunities to allow participants to develop personal understandings and to form social groups to allow for mutual support during the change process. Another term very close to educational management is educational leadership, which according to Ibrahim (2017), could be looked at as occurring when someone takes the initiative to facilitate the following conditions for implementing change in teaching and learning. They must be making opportunities to allow participants to develop personal understandings and to form social groups to allow for mutual support during the change process. They also must have encouragement to reflect on practice. In other words, leader ship is the capability to influence, to lead and convince others to follow your footsteps,

the ability to guide, to display the human side of business as becoming a "teacher". The tables below present the comparison made among educational management, administration and leadership.

Table 1: Comparison between educational management and educational administration.

Basis for comparison	Management	Administration
Meaning	An organized way of managing people and things of a business organization is called the Management.	The process of administering an organization by a group of people is known as the Administration.
Authority	Middle and Lower Level	Top level
Role	Executive	Decisive
Area of operation	It works under administration	It has full control over the activities of the organization.
Applicable to	Profit making organizations, i.e. business organizations	Government offices, military, clubs, business enterprises, hospitals, religious and educational organizations.
Decides	Who will do the work? And How will it be done?	What should be done? And When is should be done?
Work	Putting plans and policies into actions	Formulation of plans, framing policies and setting objectives
Focus on	Managing work	Making best possible allocation of limited resources.
Key person	Manager	Administrator
Represents	Employees, who work for remuneration	Owners, who get a return on the capital invested by them.

Source: Ibrahim (2017).

Table 2: Comparison between educational management and educational leadership

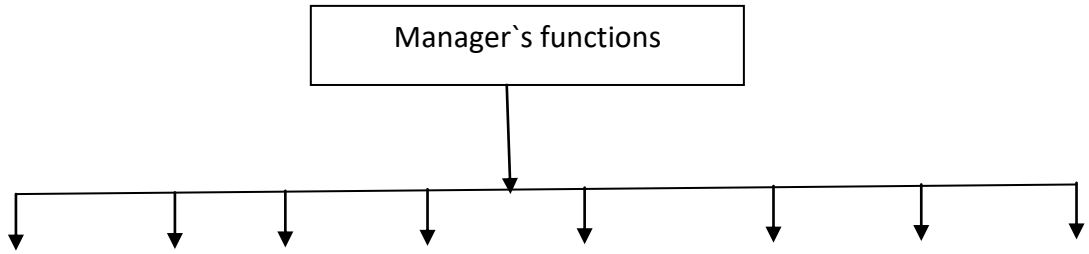
Basis for comparison	Leadership	Management
Definition	Leadership means "the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organizations of which they are members."	Management comprises directing and controlling a group of one or more people or entities for the purpose of coordinating and harmonizing that group towards accomplishing a goal.
Personality styles	Are often called brilliant and mercurial, with great charisma. Yet, they are also often seen as loners and private people. They are comfortable taking risks, sometimes seemingly wild and crazy risks. Almost all leaders have high levels of imagination	Tend to be rational, under control problem solvers. They often focus on goals, structures, personnel, and availability of resources. Managers' personalities lean toward persistence, strong will, analysis, and intelligence.
Orientation	People-oriented	Task-oriented
focus	Leading people	Managing work
Outcomes	Achievements	Results
Approach to tasks	Simply look at problems and devise new, creative solutions. Using their charisma and commitment, they excite, motivate, and focus others to solve problems and excel.	Create strategies, policies, and methods to create teams and ideas that combine to operate smoothly. They empower people by soliciting their views, values, and principles. They believe that this combination reduces inherent risk and generates success
Approach to risk	Risk-taking	Risk-averse

Role in decision making	Facilitative	Involved
Styles	Transformational, Consultative & Participative	Dictatorial, Authoritative, Transactional, Autocratic, Consultative and Democratic
Power through	Charisma & Influence	Formal authority & Position
Organisation	Leaders have followers	Manager have subordinates

Source: Ibrahim (2017).

From the illustration by the above tables and as outlined by Ibrahim (2017), the functions of management include planning, organising, directing, coordinating, controlling and evaluation. These are in agreement with what was put forward by the proponents of the classical administrative management theory (Henri fayol, Weber, Gulick) with regards to the functions of a manager (Fabien, 2015;Abah,2017; Shawn, 2021). Henri Fayol (1841-1925) stipulates that all managers have five basic functions namely; planning, organising, commanding, coordinating and control (POCCC). Gulick (1892-1993) on his part coined the abbreviation POSDCORB, which refers to seven functions of management. These are: planning, organising, staffing, directing, coordinating, reporting and budgeting. From these authors, the functions of a manager can then be summarised in the sketch below:

Figure 1: functions of a school manager



Planning organising staffing directing coordinating reporting budgeting commanding

Source: Adapted from Fabien (2015) , Abah (2017) and Shawn (2021).

Educational planning as defined by Coombs (UNESCO,1970) is the application of rational, systematic analyses to the process of educational development, with the aim of making education more effective and efficient in responding to the needs and goals of its students and society. Coombs1` definition clearly places the student and the society at the centre of

planning. In a society thus plagued by crises and insufficiencies in resources, planners have to plan in such a way to ensure educational continuity. This is the case with managers of secondary schools, who, not only faced with insufficient infrastructure for the huge educational demand are equally set back by the health pandemic, imposing reduced class enrolments and distance learning alternative.

The organising function of educational management as described by Prachi Juneja (2015) is one in which the synchronization and combination of human, physical and financial resources takes place. The author, citing the definition of Chester Barnrd, outlines that organizing is a function by which the concern is able to define the role positions, the jobs related and the co-ordination between authority and responsibility. Prachi thus breaks down the function of organizing into four sub units namely; identification of activities, departmentally allocating the activities, classifying the authority and linking author and responsibility. The author explains that among the benefits of organizing function are increased specialisation, well defined jobs, clarifies authority, effective administration, growth and diversification, sense of security and scope for new changes.

Staffing is the process of hiring eligible candidates in the organisation for a specific position or job (Dinesh, N.D). staffing thus involves the recruitment of employees by evaluating their skills and knowledge. This process also entails the training of individuals to acquire specific skills in order to occupy positions requiring such skills. The importance of staffing according to this author is the efficient performance of other managerial functions, effective use of technology and other resources, optimum utilisation of human resources, development of human capital, the motivation of human resources and the building of higher morale.

According to Child Care Technical Assistance Network (N.D), directing as a management function sets in motion the actions of people, since planning, organisation and staffing are the mere preparations for doing the work. Direction as continued by this community, deals with influencing, guiding, supervising and motivating staff for the achievement of organisational goals. Key elements in directing therefore are:

- Supervision, to oversee the work of staff
- Motivation, to inspire, stimulate and encourage staff
- Leadership, to guide and influence the work of staff in a purposeful direction.

The toppr platform publishes a number of views on the concept of coordination as a managerial function. Dinesh defines it as the function of management which ensures that different departments and groups work in sync, bringing about unity of action among the employees, groups and departments. To Mooney and Reiley, coordination is an orderly arrangement of group efforts to provide unity of action in the pursuit of common goals. Charles Worth defines it as the integration of several parts into an orderly whole to achieve the purpose of understanding. According to Brech, coordination is balancing and keeping together the team by ensuring suitable allocation of tasks to the various members and seeing that the tasks are performed with the harmony among the members themselves. Mary Parker opines that the first test of a business administration should be whether one has a business with all its parts so coordinated, so moving together in their closely knit and adjusting activities, so linking, interlocking, inter-relating, that they make a working unit. In summary from these definitions, coordination would be described as the integration, unification, synchronization of the efforts of the departments to provide unity of action for pursuing common goals.

Hitesh (2019) while defining the function 'control', underscores its importance in management as without which management cannot ensure the desired results. The author defines control as a function of making sure that actions of the employees of an organisation are directed towards the attainment of a common goal and the work is being performed as planned by the management. In the educational sector, the definition will expand to the work of students. The author continues that the process of controlling involves:

- The formation of standards
- Measurement of actual performance
- Comparison of actual performance with the standard performance
- Taking corrective actions if required

Amidst the many benefits of controlling in an organisation are:

- Controlling motivates the employees
- Controlling makes the efficient use of resources
- Controlling creates discipline in the organisation
- Controlling ensures coordination of action
- Controlling helps in deciding the right judgement about the standards

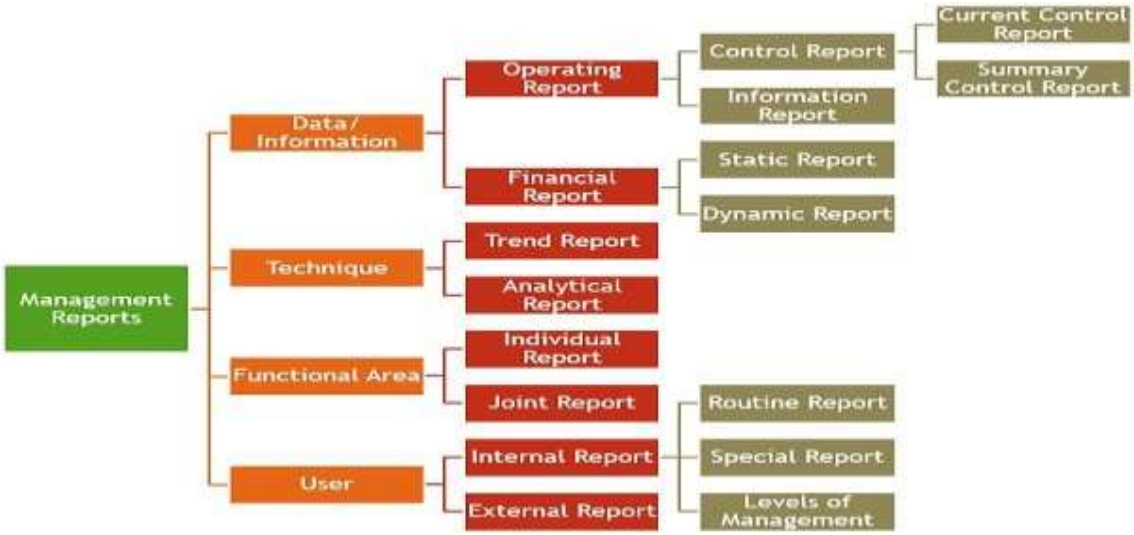
- Controlling aids in the accomplishment of organisational goals

Hitesh highlights some forms or examples of control in management to include; performance management, strategy planning, managing finances, supervising people, controlling risk, improving performance, inventory management and ensuring quality. In secondary schools, it is worth mentioning control actions such as program coverage checks, student assiduity, student performance, teachers` assiduity, lesson schedules and evaluations.

Anjali (2021) defines management report as the means of communicating essential information from high to low levels of management. It consists of facts and significant data presented through written, oral and visual tools (Graphs, Charts and Pie-Charts). It provides an insight into the departmental progress through financial and non-financial data of a specified period. The author explains that reporting is so important because timely reports help in the Planning, organizing, directing, decision making, control and evaluation of the organisation. It highlights the variance between actual and planned/budgeted performance at regular intervals. Thereafter, apply necessary corrective measures to improve performance. Also, it keeps track of the business's Key Performance Indicators (KPIs). Managerial reports could be written, oral or visual reports. Written reports are formal operational statements, tables and ratios. Oral reports are usually presentations at conferences, group discussions and meetings while visual reports are in the form of graphs, pie charts, statistics, bar diagrams and flow charts.

Anjali (2021) categorizes reports into different types depending on the nature, volume and purpose. The stratification is summarised in the diagram below:

Figure 2: Types of management reports



Source: Anjali, 2021.

The relevance of reporting is owing to the fact that:

- It is a good means of maintaining public relations.
- These reports enable the identification of trends which helps in forecasting.
- Helps in achieving the overall objective through timely and continuous evaluation.
- A management report is a tool to perform the controlling function of the management.
- These reports satisfy the internal and external parties related to business.
- It involves the comparison of actual and planned targets.
- Management reports lead to effective and efficient management

A management report is considered good if it meets the qualities of accuracy, contains a suitable title, it is precise and simple, is consistent, has a good reporting relationship, it is timely, cost effective, selective, comprehensive and unbiased.

Many researchers have established that these managerial functions are actually practiced in secondary schools in Cameroon through the traditional face-to-face method of learning and equally found that the use of Educational Management Information System (EMIS) could greatly enhance these functions. What EMIS or technology can then be best suited for distance learning? The response to this question is what follows below.

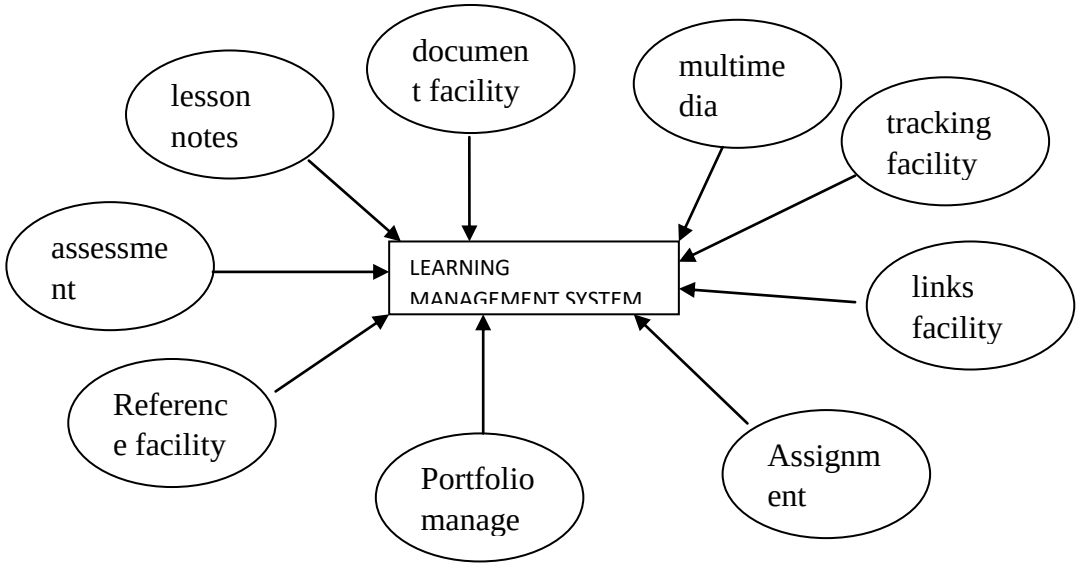
Learning Management System (LMS)

Nadire and Muhammed (2014) put forward that distance learning management is not possible without an effective learning management system (LMS). William and Sunnie (2007) said

the term LMS is used to describe a number of computer applications. Nadire and Muhammed (2014) in their own description of LMS said it is software used for delivering, tracking and managing training or education. The concept had been defined also by Robert (2011), in which he included a web-based interface in the definition of LMS. Luliana (2014) on her part categorises LMSs as proprietary or commercial, open source LMSs, cloud-based LMSs and hybrid LMS (developed in house).

Amidst the features of LMSs are those explained by Shaibou (2020) and Charles, William, Sunkyong, Patrima, Zengguan and Nathan (2008) to include the following; lesson notes facility. This component of an LMS permits the provision to and access of adapted learning content to the learners on the learning platform; document facility allows learners to have access to documents provided for further learning; multimedia facility to enable learners exploit varied forms of delivery in the form of audio, video clips, diagrams etc; learning track facility permits tutors and school managers to trace the learning activity. This involves monitoring assiduity, participation and the evolution of learning activities; the links facility allows learners and tutors to access other sources of knowledge through the internet. Assignment facility is the component dedicated to home work. This is separated from the lesson content to enable learners have a constant reminder of work given to be done and submitted. An assessment facility, which provides the possibility to carry out evaluation, monitor performance and provide automatic statistics on the performance of each learner and the class and or school in general. Reference facility provides the learner and tutors references for more research on a given subject or topic learned. Portfolio management facility helps to trace the development of learners. They explained that with these features, LMS allows one to manage and track learning as well as provide support for distance learning. However, the problem with using LMS will be the cost of installation. The figure below illustrates the features of a standard learning management system.

Figure 3: features of a standard learning management system



Source: extracted from Charles, William, Sunkyong, Patrima, Zengguan and Nathan (2008).

Research works

A number of authors have undertaken similar work, not only to investigate challenges to implementing LMSs, but also explored the concept to recommend amendments to the existing ones. This section shall examine the general appraisal of the thematic area at the global scale, the continental, before being narrowed down to Yaoundé municipality. Among the scholars who have done research on this topic include the work done by Paulsen (2003) while investigating the experiences with learning management systems in Europe. The investigation which was conducted on 113 European institutions in six regions revealed that 76% of the schools were comfortable with the system, most of whom designed their own systems while a few used systems bought from the USA. The author underscores that few institutions which faced challenges were those who demonstrated resistance to e-learning strategy, found limits of functionalities of the systems to their internal needs or sought to incorporate paid courses with difficulty. This was especially observed in countries where their first language isn't English language. Paulsen`s analysis could be well assimilated as decomposed into various themes such as the internet penetration and use of LMS, large scale providers of online education, regional preferences and market leaders, competitive issues, commercial LMS systems, self-developed systems, e-learning standards, course creation tools, administrative and economic issues.

According to Paulsen (2003), internet penetration and use of LMS is not uniform across European countries. His analysis depicts that the Internet users range from 50% of the population in the Nordic countries to 33% in North-western Europe, 30% in Germany, 18% in Southern Europe, and 10% in the Czech Republic. The table below reveals this disparity in the use of internet in Europe.

Table 3: list of countries including internet penetration. Sorted by internet users per 100 inhabitants.

Country	Number of institutions	Internet hosts per 100 inhabitants	Internet users per 100 inhabitants

	interviewed		
Sweden	5	7.0	56.4
Norway	28	11.2	52.7
Finland	4	13.6	44.5
Denmark	5	13	43.0
Great Britain	6		33.5
Northern Ireland	4		33.5
Germany	17	2.3	29.6
Ireland	8	2.3	27.5
Italy	6	2.7	23.3
Switzerland	1	4.4	24
France	4	1.7	16.9
Spain	1	1.4	13.9
Slovakia	4	0.7	12.1
Portugal	8	1.2	10.0
Czech republic	10	1.6	9.7
Greece	1	1.0	9.5
Iceland	1		

Source: Paulsen (2003)

This data demonstrate the difference between the use of internet in north-western and south-eastern Europe. Paulsen correlates that the significant regional differences within Europe with regards to the use of LMS seem to follow the regional statistics for internet users. It follows therefore that the more developed Nordic countries and north-western Europe use LMS systems more than the less developed southern Europe, the Czech republic and Slovakia, who by this time of the analysis, had less than 15 courses online. The author points out that the public opinion about online education in these countries is not always positive.

Large-scale Providers of Online Education

From Paulsen`s analysis, a large-scale provider of online education is characterised by institutions which could provide at least fifty (50) online courses. In this respect, his analysis revealed that the Nordic countries constituted large-scale providers (60%) than the other regions. By this analysis, large-scale providers of online education in Europe are presented in the table below, with their respective percentage provision.

Table 4: Regional list of institutions with more than 50 online courses

Regions	Number of institutions	Percentage of large-scale provision
Nordic countries	12	60
Germany	7	41
Northwestern Europe	6	33
Southern Europe	5	25
Czech republic and Slovakia	0	0

Source: Paulsen (2003)

The data from the table indicates that the Czech Republic and Slovakia are the least in Europe in the provision of online education. It is however indicated that the wave of technological acceptance is on the increase.

Commercial LMS systems

Commercial systems are those bought from other institutions, notably North America or other European institutions. Paulsen notes that about 52 commercial systems were experienced by institutions interviewed. Of the LMS systems censored, the author identifies the following as most recurrent commercial LMS systems:

European systems:

- ClassFronter
- TopClass
- LUVIT
- Tutor2000

North American systems

- WebCT
- BlackBoard
- FirstClass
- Lotus Learning Space

Paulsen notes from his analysis that there seem to be a general satisfaction in the use of commercial LMS systems, though some higher institutions prefer buying the license and adapting functionalities of the systems to suit their needs. It is in the differences of context and needs that there exist regional preferences for LMS systems across Europe.

Self-developed systems

Paulsen`s analysis shows that there are over 35 self-developed LMS systems in Europe, and institutions using self-developed systems have equally expressed satisfaction in their systems. Besides cost reduction and complexity especially in language, there is some prestige, competition and reputation build-up among institutions who want to prove giant over others.

Regional Preferences and Market Leaders of LMS

Paulsen brings out the choice of LMS usage by institutions to be based on the first language used by the country or institution. To this, he points to the fact that countries whose first language is English prefer the American LMS systems, notably WebCT, BlackBoard and TopClass. In countries where English is not their first language, adapted or other LMS systems are preferred, like the Czech TUTOR2000 used in the Czech Republic and Slovakia.

E-learning Standards

E-learning standards intend to make LMS systems and learning content less proprietary. Paulsen`s analyses show that there is an interest for standards and standardizations that can make it easier to exchange content and data between LMS systems and between LMS systems and other systems. His report reveals that interviewees spoke about the importance of standardization in general terms. Many were concerned with the possibility of using, importing, and exporting standardized course content and learning objects. Two German experts talked about the importance of XML and meta-tagging. And many references were made to standards specifications and initiatives such as SCORM, IMS, AICC and IEEE.

Course creation tools

In the analysis, Paulsen reveals that most LMS are mainly for support and information sharing. However, the contents supported by the systems are created with specialised

software tools worth noting. The table below lists some tools used in course creation for online education systems:

Table 5: software tools used for course creation

Software tool	Type of content
Word	Text
Powerpoint	Text
Macromedia Authorware and Director	Multimedia
Flash	Multimedia
Windows SoundRecorder	Audio
Wimba	Audio
FrontPage	HTML-pages
DreamWeaver	HTML-pages
Netscape composer	HTML-pages
Viewlet	Graphics
Coral	Graphics
Photoshop	Graphics
Paintshop	Graphics
Autotest	Tests
Webwinder	Tests
Learner interface	Tests
Questionmark perception	Tests
Hot potatoes	Tests
Toolbook	Tests

Quia	Tests

Source: Paulsen (2003).

Student and Tutor Support Tools

Paulsen admits that a host of student and tutor support tools are included in LMS systems, though in varying qualities and specificities. He found that LMS systems require tools for better communication possibilities and secure communication, tools for teamwork and collaboration, tools for evaluation, e-portfolio, commenting on students` presentation, knowledge management, assessment tools and reports, tracking student progress and monitor performance. The author found that the different institutions studied had difficulties in integrating these tools, though in varying intensities.

Administrative systems

Paulsen`s analysis also showed that LMS systems in Europe needed better administrative systems and tools, as the workload increased. The systems require group management tools, student record system, improved course management, better password management facilities, services for student tracking and reporting functions. It is worth noting that with the introduction of large-scale online education, the need for integration between LMS systems and other educational systems increases. This integration was lacking as revealed by the analysis of Paulsen.

Technology

The analysis explained three kinds of server solutions for LMS hosting; in the first, the institution has access to commercial service provider who host the LMS. In the second category, institutions host the LMS for internal use. In the third, institutions host the LMS for internal use and as service to other institutions. The analysis pointed out that viruses, firewall problems, low speed modems to broadband access constituted technical challenges to using LMS.

Economy issues

Paulsen established that e-learning is not cheap. This is due to the cost involved in not only creating or buying and installing an LMS system, but also the associated cost in purchase of hardware and software required to support the system, the cost in training staff and maintenance of the system, the cost in provision of content, training students and cost on

internet connectivity. Paulsen found that institutions have a vague knowledge about the maintenance and operation costs. The issue is perceived as complex and hard to estimate.

From Paulsen`s analysis, one could point out that the use of LMS in European countries is satisfactory and advanced. Institutions in Europe use either commercial or self-developed LMS systems with differences varying from the more developed Nordic countries to the less developed southern Europe. Major challenges in the use of LMS can be categorised on economic challenges (costs of setting up, running and training), technical challenges (low speed to high speed compatibility, internet connectivity and hosting problems), language barriers especially for countries who buy LMS developed in a different language from theirs as well as sluggishness by some institutions to adopting online education. Institutions also found some functions lacking for the proper management and control of student activities on the available LMS systems.

Another scholar who worked on this topic and found some intersecting results as Paulsen is Raida (N.D) while investigating the challenges and opportunities for applying e-learning at IAIN Antasari. The author demonstrated that the lack of technological facilities, lack of practice in LMS training, limited skills by users of the LMS and lack of support from head of facility made up the most difficulties. Raida undertook a survey research design on a sample of 35 lecturers at IAIN Antasari. The author grouped his finding under three main themes namely, the lecturers` attitudes towards the LMS, the respondents` problems for using the LMS and the opportunities that exist with the use of LMS. Concerning the attitudes of the respondents towards LMS, Raida noticed that of the 35 lecturers, 23of them said it was easy to use LMS. That is, 65.7%, while 22.9% found it very easy and only four of them (11.4%) disagreed with the others. Their opinions with regards to the satisfaction with the information about the LMS scored the highest percentage with 82.9% in agreement. The author`s findings on the usefulness of the LMS for teaching revealed a positive attitude by the lecturers towards the implementation of LMS. In fact, the report reveals that no respondent fell in the category of poor or bad with regards to the usefulness of LMS in teaching. Linking it to the Technology Acceptance Model, the author opines that the application of the LMS would not get many problems if their problems for using the LMS were minimised by the stakeholders at IAIN Antasari. Non-the-less, some lecturers reported a fair attitude when they were asked their opinion of LMS being better than the traditional teaching and evaluation method. This according to the author revealed those resistant to technological changes. It is for this reason he thinks that changing belief from traditional learning into online or blended learning

requires years to convince the lecturers and stakeholders. Raida`s findings about the problems for using the LMS revealed interesting results, summarised in the table:

Table 6: Lecturers` problems for using the LMS in IAIN Antasari

SN	Problem	Percentage	Category
1	Limited skills and experiences for using LMS	59.64	Fairly serious
2	Lack of facilities for using the LMS	60	Fairly serious
3	Lack of practice in the LMS training	61.43	Fairly serious
4	Lack of support from head of faculty	61.43	Fairly serious
5	Lack of time for preparing materials for LMS	63.56	Fairly serious
6	Influence from their colleagues	69.29	Fairly serious

Source: Raida (N.D)

Raida also noted other problems for using LMS, presented in the table below.

Table 7: other problems for using the LMS at IAIN Antasari

SN	Problem	Percentage
1	Lack of internet access/ speed	40
2	Lack of students` skill for using LMS	35
3	Students` lack of facilities	15
4	Was not sure that the students learn the material given in the LMS	5
5	Face-to-face learning	5

Source: Raida (N.D)

From these findings and as observed by the author, the biggest problem was their insufficient skills and knowledge for operating the LMS. Lack of facilities, practice and training cannot be undermined, while negative influence from colleagues seems to have a major impact on

the use of LMS in IAIN Antasari. The study found that the lecturers` hindrance for using the LMS was related to their less proficiency about this technology. To this problem, the author suggests that there must be a good cooperation between the LMS trainers with the lecturers. With regards to facility and low internet speed at IAIN, the author observed that both lecturers and students had this common intersection and that they constitute the kind of problems to be thought by the head of faculty and authorities in charge.

Abdulah (2018) investigated the Barriers to Participation in Learning Management Systems in Saudi Arabian Universities. Findings from the study revealed that the main barriers to the use of LMSs were inadequate technical support by the universities, negative attitude toward technology, and inadequate training on the LMS platforms. Minor barriers included poor Internet access and networking, limited infrastructure to support the LMS, lack of hardware and software to run the LMS, and challenges in English language proficiency. The author administered 150 questionnaires to students in 3 Saudi Arabian universities, in a survey research design. After presenting characteristics of LMS, the author grouped his investigation into eight topics, namely; the level of access and restrictions of LMS resources, internet access and networking, training on LMS, role models, security concerns, availability of hardware and software and English language proficiency since the LMS were designed in English. His findings revealed that 147 out of 150 respondents were above intermediate level in English proficiency and just three were beginners. It can be judged from this that the language is not a major constraint in using LMS. He equally found that 92% of the participants had positive attitude about using the LMS. It was also identified that only 13% of the respondents had free access to LMS resources while the others were restricted either physically or by significant time restrictions. The findings continued to reveal that though most students had access to the internet in the campus, the speed of the internet was low and experienced constant drop of connection. It was also noticed that 100% of the students had adequate hardware to use the LMSs. Despite this positive factor, it was reported that there was inadequate training on how to use the LMS. This added to the absence of a role model for the students to follow with respect to using the LMS. 68% of the students in Saudi Arabia complained of security issues in using LMS. The level of support from the universities was equally noticed to constitute a major barrier, as 99 students reported poor support while just 5 students were satisfied with the level of support received. The researcher gathered that Saudi Arabian universities had no barriers as infrastructure, to implementing LMS. Only three respondents opined that the infrastructural development was poor to support LMS. Finding

that the universities had no barrier in terms of computer availability, the researcher opines that Saudi Arabian universities all had the chance to implement the LMS. He continued that the problems indicated by students could be improved with minimum cost. Mustafa, Abdul and Mohammad (2021) had similar results while investigating the challenges of using LMS during Covid-19 pandemic in Afghanistan. The researchers underscore that with the outbreak of covid-19, resulting to quarantine of students and lecturers, LMS was used countywide for teaching and learning. They however noted that the use of LMS was faced with challenges, especially as no previous research had been conducted on either studying the challenges of using LMS or investigating factors influencing the use of LMS during the Covid-19 pandemic quarantine period in Afghanistan. This observation coincides with that of Cameroon and Yaoundé in particular, where the plunge into distance learning has not been guided by research or previous studies of factors influencing the teaching and learning online. Mustafa et al (2021) undertook a qualitative research and carried out a semi-structured interview with 100 participants among whom were students, lecturers and university management. Their research objectives were to inspect the challenges of using HELMS (Higher Education Learning Management System) during the Covid-19 pandemic from a managerial perspective and to investigate the major factors influencing the use of the HELMS among both students and lecturers. HELMS is a countrywide LMS project developed by the ministry of Higher Education in Afghanistan and prescribed to public universities for use during the Covid-19quarantine period (Mustafa et al, 2021). These authors found that with regards to policy, there exist no written document that contains the required policies, guidelines and procedures for learning and teaching through HELMS. Thus, no roadmap for the implementation and use of HELMS. They added that neither the Ministry of Higher Education nor universities and their programs worked on developing appropriate documents for using LMS. Their findings also showed that no standards were defined to describe the quality of e-content developed by lecturers to be uploaded on the HELMS. The study also indicated lack of mechanisms to define expertise exchange among lecturers and students. The researchers noted from their respondents that implementing and using LMS had not been anticipated as specific objectives or actions in the strategic plans of almost all university bodies including faculties and departments.

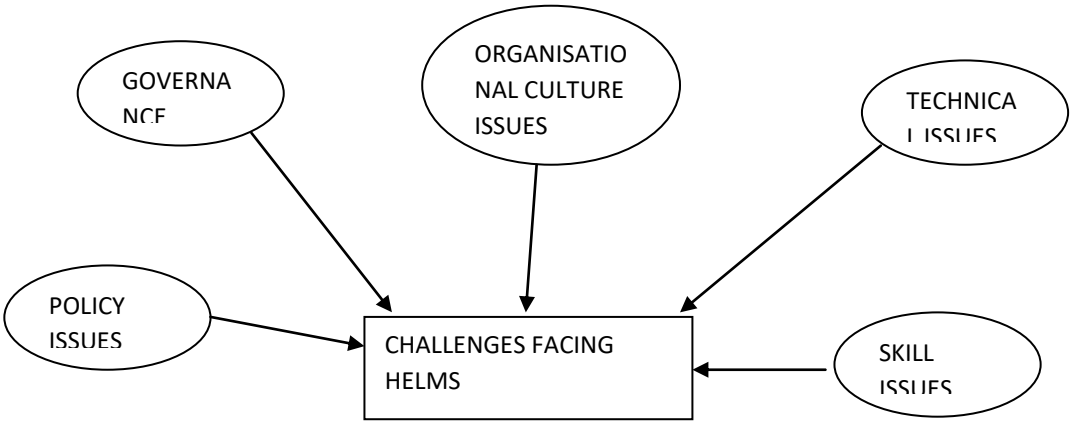
With respect to organisational culture, the authors recorded lack of commitment in the universities at different levels. The resistance to changes (prefer traditional way) and lack of enough knowledge on e-learning were uncovered. The authors equally point out the low level

of willingness in exchanging expertise by lecturers and administrations and the low level of respect to hierarchy.

The result of the study also indicated technical issues with the system, notably, the problem with recovering passwords or accounts. The lack of skills on the part of the staff in creating complete and helpful reports and the lack of skills by students in using the system added to the challenges. To sum up their findings on the challenges, the authors uncovered that the quality of service was also a problem. The findings indicated poor e-content, poor teaching quality and poor usability of the system.

The diagram below summarises the challenges facing the usage of HELMS as described by Mustafa et al (2021).

Figure 4: Challenges facing the usage of HELMS**.**



Source: Adapted from Mustafa et al (2021)

Mustafa et al (2021) also elaborated the factors influencing the use of HELMS by both students and lecturers, summarised in the table below:

Table 8: Factors influencing the use of HELMS

SN	**STUDENT RELATED FACTORS**	**LECTURER RELATED FACTORS**
1	Infrastructure	Skills
2	Economic	Infrastructure
3	University Management	LMS quality
4	ICT literacy	Performance expectancy
5	Performance expectancy	Economic

6	Quality of content	
7	LMS quality	
8	Lecturer`s behaviour	

Source: Mustafa et al (2021).

Other scholars around the globe have also been interested in this domain of research among them are Snoussi (2019), who studied the challenges that universities face regarding the adoption of a learning management system in four private universities in the UAE. Face-to-face and online interviews were held with 54 participants including deans, HoDs (Heads of Departments), and program directors of the universities. She found that lack of students' self-discipline in online systems, the inconsistency of learning management systems with some academic programs, limited use of Arabic language, and technical literacy were the basic challenges that universities face in the use of learning management systems (Snoussi, 2019). Research funded by MoHE (Ministry of Higher Education) of Malaysia investigated the status, trends, opportunities, and challenges of implementing E-learning in Malaysian higher education institutes (Mohamed Amin Embi, 2011). Qualitative approaches including document analysis, interview, and observation were utilized to uncover the hidden challenges toward the use of E-learning. Challenges were investigated in terms of the policy, governance, LMS, training, e-content development, and integration in teaching, quality assurance, and plans. Lack of E-learning policy, low level of E-learning policy awareness, lack of effective governance model, lack of coordination in the management of technical resources in learning management systems, lack of E-learning training policy, and lack of clear policy for the development of e-content and monitoring the quality of e-content were the key challenges identified in Malaysian higher education institutes. Almaiah et al., (2020) studied the challenges facing E-learning systems during the covid-19 in Jordan and Saudi Arabia. Students, faculty members, IT experts, and policymakers were the participants of the study. The results indicated that the lack of financial supports, change management issues, and technical issues associated with learning management systems were the key challenges faced by Saudi Arabian and Jordanian institutes. A study by Almanthari et al. (2020) investigated the teachers' barriers to E-learning from four different aspects of the school, curriculum, student, and teacher-related perspectives. The study found out that lack of teachers' knowledge, lack of confidence, teacher's bad experience with E-learning, and convince of E-learning use were the key personal challenges toward teachers in Indonesia. In

addition, lack of consistent internet connection, lack of technical support, and incompatibility of textbooks with E-learning were top school-related barriers. Based on this research, student's low level of knowledge on E-learning and lack of access to computers were the two top barriers from students' perspective. Dhawan (2020) explored the strength, weaknesses, opportunities, and challenges of online learning during covid-19. The result of the research shows that unequal distribution of ICT infrastructure, quality of education, digital divide, lack of well defined policies, and standards, and technology cost were the key barriers to online learning. Alqahtani and Rajkhan (2020) found that technology knowledge management, high level of awareness between both students and lecturers, demand for a high level of information technology assistance, and support from management officials were the key success factors of E-learning during the covid-19 pandemic. Findings of research in Malaysia indicate that the major factors influencing the use of E-learning among lecturers are course-related (course design, course content, course support), social and cultural factors (instructors' belief, university rules & regulations, new roles of instructors and teachers in e-learning, laws relevant to e-learning), and technological factors (internet access, cost, and software skills) (Aldowah et al., 2019). Research has also found that lecturers face challenges in terms of ICT and e-learning infrastructure, financial, lack of operational e-learning policies, e-content development, and internet connection challenge in the context of Russian universities (Vershitskaya et al., 2019).

In Africa, Rogers, Elia and Marin (N.D) performed a similar investigation in the Open University of Tanzania. While conform to the challenges mentioned above, the authors stressed on the lack of training, lack of adequate facilities, lack of awareness and slow network. Also, Oluwatoyin (2021) researched the use of Moodle for curriculum delivery in higher institutions during the Covid-19 pandemic in South Africa. The author established that whereas the pandemic had little or no effect on learning in the developed countries, it had an adverse effect on developing countries as learning was completely halted. They found that Moodle, an LMS platform could smoothly ensure continuity but points out that the negative attitude of some academic staff towards LMS adoption retarded the evolution of this technology.

Meriem & Youssef (2019) identified major barriers from the teachers' perspective in the context of Abdulmalek Essadi University in Morocco. According to the author, lack of technical support, lack of institutional support, communication issues in spreading the e-learning strategy and policies, resistance to change, lack of regulations, lack of culture in

sharing, lack of E-learning awareness, and low computer skills are major factors that cause reluctance in adoption to E-learning.

Tamas, Olga, Rasmus and Rikke (N.D) studied the barriers to implementing technology-enhanced learning in south African primary schools. The authors found that the flexibility of teacher`s mindset, the administrative workload of teachers coupled with the accessibility of the technology were the major challenges in South African primary schools.

Mussa and Joel (2015) uncovered that LMS deployed to Africa had small and inadequate heuristics that could be used to evaluate LMS. The authors in their research presented comprehensive self-learning features on usability that consolidates interface usability, didactic effectiveness and motivation to learn. The study indicated that an LMS should match between the system and the real world. That is, it should ensure that the LMS uses learner`s language, with words, phrases and concepts familiar to the learner rather than system oriented terms (Nielsen, 1994). The LMS should also ensure control and freedom. The system should ensure consistency and standards. Through this, the learner experiences the user interface as consistent in terms of menus, colour, typography and dialog design (Alsumait & Al-Osaimi, 2010). The authors also indicate that a good LMS should have error prevention features, features for recognition rather than recall, should contain features for flexibility and efficiency of use, authenticity and minimalism in design and should also contain features for recognition, diagnosis and recovery from errors. Finally, the authors indicated that LMS should provide appropriate online help and documentation that is easily accessed, easy to search and related to the learner`s needs.

Didactic effectiveness criteria were also examined. Some of them include:

- Instructional materials: the authors outlined that the LMS should consist of objectives that describe measurable outcomes. The instructional materials should contribute to the achievement of the stated course and module. The instructional material must be current, accurate and have sufficient content required for learners to complete learning process. They equally underscored that instructional materials should be presented in ways appropriate to the learner`s knowledge, skills and abilities and should be presented in various multimedia formats.
- Collaborative learning: Here, the authors found that instructional materials should have learning activities that encourage learner-learner and learner-teacher

interactions. In the same vein, the system should have facilities for both synchronous and asynchronous communication such as e-mail, discussion forums and chat rooms.

- Learner control: this criterion warrants that the system gives the learner some control of the content they learn, how it is learned and the sequence of units. More so, learners should have some freedom to direct their learning, either individually or through collaborative experiences.
- Feedback and assessment: in this module, the authors outline that instructional materials should have self-assessments that advance learners` achievement and provide sufficient and immediate feedback. The system should provide the instructor with learner`s evaluation and tracking reports and that the type of assessments selected should measure the stated learning objectives and content.
- Accessibility: An LMS is described to be used on a variety of equipment such as laptops, PDA and viewed on different platforms and browsers. It should contain equivalent alternatives to auditory and visual content. It should contain current and up-to-date links to the World Wide Web.
- Motivation to learn. The LMS should be enjoyable and interesting to use. Its instructional materials in the system use multimedia such as simulations, audio, video and animations to gain attention and maintain motivation to learners.

After carrying out an evaluation study of the LMS used by the University of Dar es Salam, which was adopted and customised moodle (www.ims.udsm.tz) and the LMS shuledirect (www.shuledirect.co.tz) developed and customised to provide educational learning content for students and teachers in secondary schools in Tanzania, Mussa and Joel (2015) found that 9 and 27 usability problems were found in LMS1 (moodle) and LMS2 (shuledirect) respectively. LMS1 had 4 usability problems related to interface and 5 concerned with didactic effectiveness while LMS2 had 10 interface related problems and 17 didactic effectiveness problems.

Though their study was based on usability of the software, the findings of Mussa and Joel (2015) add to the pertinent reasons for slow adoption of LMS in Africa.

Liezel Ciliers (N.D) undertook a study on barriers to the successful implementation of learning management system in South Africa. The author presented the challenges faced by the mass enrolments into higher education such as the lack of infrastructure to support more students, increased diversity of students and the management of large classes. The author underscored that an LMS is a fitting solution to the challenges faced by higher

education. Amidst the benefits of LMS, the author mentioned increased efficiency of teaching, improved students` learning experiences, improved students` expectations of new technology, staying competitive with other institutions, responding to the massive demand for access to higher education and a culture shift taking place in higher education where teaching can be more controlled and regulated. The author however uncovers the success factors around which lie the challenges to adopting and use of LMS in higher education. These include:

Technology:

- initial cost of LMS;
- vendor lock-in;
- specific technological problems associated with a LMS, and
- institutional readiness for a LMS.

Organization:

- Lecturers pedagogy changes required as technology (LMS) not included in teaching practices;
- LMS is used for management of courses and not to teach content;
- collaborative learning does not happen at present, and
- acceptance of LMS by the user (students).

Environment:

- standardisation of LMS platforms;
- quality of testing achieved with a LMS;
- little research available about impact of LMS in teaching and learning, and
- Educational value of LMS not clear.

Samar,Hosam and Hanan (2018) carried out research work on modelling LMS critical success factors for promoting students` experience and satisfaction in a blended learning environment. Their findings coincide to those earlier mentioned by Mustafa et al (2021) in Afghanistan. The authors present six indicators as success factors to the adoption of blended learning in Malaysia. These include:

- student characteristics, broken down into computer anxiety, technology experiences and computer self-efficacy.

- Instructor characteristics. This characteristic embeds attitude, teaching style, practice and responsiveness.
- System characteristics, involving system quality, information quality and service quality.
- Classmates characteristics, made up of classmates attitudes and classmates interactions.
- Course characteristics, containing course quality and course flexibility.
- Organisation characteristics, which involves management support and training.

In Cameroon, a number of researchers have carried out studies in this domain; beginning with the theses of Kibinkiri (2014) titled "The Role Of E-Learning On The Professional Development Of Student-Teachers In Cameroon". His findings revealed the internet-based problem solving and computer-based direct instruction has unprecedented benefits to the professional development of student-teachers in Cameroon. However, he noted, slow internet lines or access speed constituted a serious hindrance to e-learning in Cameroon. Another researcher is Shaibou (2020) who carried out research work on exploring the frequent use of the learning management systems (LMS) features and learners' interactions in Higher Education in Cameroon. The author found that the frequent use of LMS enhanced interaction between learners and content, and between learners and the tutor. This positive outcome was further confirmed in another research study by the same author in 2022, investigating students' use of online learning platforms to support blended learning at Cameroonian Universities during the Covid-19 obstruction of educational activities in the country. He found that students had high perception of using online learning platforms for blended learning in Cameroonian Universities. The author`s interest pointed towards learners` perception and the efficiency of using online platforms for studies, but did not expose the challenges faced by the universities in the smooth implementation of the innovation. The findings of Shaibou (2020, 2022) agree with what Ngnoulaye (2017) had postulated in terms students` perception of learning with ICT in the University of Yaoundé 1. Nkwenti (2016) carried out a baseline study on the current state of open and distance learning (ODL) in Cameroon. The researcher examined the trends in open and distance learning in sub-saharan Africa and Cameroon in particular and reported that among young people aged 20 or younger, 30 million are qualified to attend universities but there are not enough places for them. This number was projected to increase to 100 million by 2020. "In order to serve the number of youths qualified to enter university in 2020, a major university would need to be

opened every week" (Atkins et al., 2007). This indicates that the demand for education, especially in Sub-Saharan Africa, is greater than the existing and planned academic institutions can accommodate. He also found that with 270,300 students (or 1,318 for 100,000 inhabitants), a 63% rate of secondary-to-university transition and 84.4% of GCE Advanced Level students enrolling in state universities, enrolment in Cameroon's higher education will double in ten years. This is why the report strongly suggested that universities not be monumental but, rather, that policy-makers should devise alternative means to provide tertiary education in ways that maximise fitness for purpose and minimise cost to society. These remarks, in a nutshell, advocate for a new form of education delivery that is cost-effective and open to all and that accommodates huge number of learners at little cost. Nkwenti`s findings outlines barriers to the ODL initiative, beginning with those identified by the association for the development of education in Africa (ADEA) which include; a low level of political support for distance education by political authorities in Africa; the failure of the public service to recognise distance learning in its assessment of employee qualifications; the lack of professionally trained distance learning personnel; the lack of follow-up and support programmes; and the limited budgets and poor domestic infrastructure. Nkwenti (2016) suggests that People engaged in delivering distance education programmes must first understand the conditions (social, economic, political and technological) prevalent in developing countries of Sub-Saharan Africa. Further findings from Nkwenti reveals that ODL has been below expectations in Sub-Saharan Africa in part because of a lack of policy coordination with other efforts, such as the provision of adequate resources, the development of supporting infrastructures and the education and training of ODL users. The report further uncovered that the challenges to e-learning in Cameroon involved fully decentralising the learning centres, high cost of distance learning courses with less motivation, regular electricity interruptions and weak and unstable internet bandwidth, and the lack of strategic plans for open distance learning. He recommends, citing UNESCO (2003) that any ODL system should be characterised by a number of components used to evaluate its competence and credibility. These include the mission, the courses and curricula, teaching strategies and techniques, learning materials and resources, communication, support delivered locally, the students and staff management sub-systems, effective management and administration, housing, equipment and evaluation A similar study but narrowed down to the city of Yaoundé was carried out by Nkongho (2020), who sought to know the current state and future of e-learning in educational institutions in Cameroon. The author investigated four secondary schools and four tertiary education institutions. Findings from this study revealed

that secondary schools lacked the equipment for e-learning. Over 24% of secondary schools lacked computers. Also, barriers such as power, internet connectivity and bandwidth, quality teacher training, respect and better pay for teachers, and the sustainability of implementations constituted the obstacles to effective implementation of e-learning. The author also adds that one of the challenges of implementing e-learning in schools in Cameroon appears to be traceable to the uncooperative attitudes of teachers in the two educational sub-systems. Chaffi (2020) carried out a qualitative study on the perceptions of literature lecturers on the electronic mode of evaluation at the University of Yaoundé 1. His findings revealed that though a plausible innovation to curb the problem of evaluation at the said university due to the exponential access rate of students into the university, the technology faced much resistance of adoption. This according to the author was due to the fact that summative evaluations had to take the form of multiple choices questioning, which favoured restitution of knowledge and not competence. Other investigations in the domain of educational technologies have been carried out by students in either theses or dissertations. Among the many is Duh (2021) whose dissertation focused on the factors influencing the adoption of mobile phones for distance learning during emergency in secondary schools. Her work covered selected secondary schools in souza of the littoral region and concentrated on the internally displaced learners from the North West and South West regions of Cameroon. Her investigation revealed that relative advantage, attitude, cost, student capability, complexity and government support influenced the adoption of mobile phones for distance learning. The author did not however, measure how distance learning that took place already could be managed. Chiny Ngam (2021) investigated the correlation between educational management information system and effective school management in the University of Bamenda. Her findings revealed that there is a positive relationship which could be enhanced by designing education policy, provide infrastructure, motivate personnel, provide data integration and decentralised school net program. Melvis (2020) defended a dissertation on information and communication technology competency and the use of electronic library resources among students in higher institutions of learning. Basing her study at the University of Yaoundé 1, she sought to investigate the factors of ict competency that significantly correlate with students` use of electronic library resources. Her findings showed that providing stable power supply, adequate training in ICT, internet services and high bandwidth could help improve the skills in students` use of electronic resources. Lambou (2018) in her dissertation investigated the relationship between educational management information system and the effectiveness of school administration at the faculty of education of the University of

Yaoundé 1. Her findings confirmed the benefits of EMIS in school administration, but observed that challenges such as poor network, inactiveness of students` registration numbers, limited skills in using the system and limited financial resources inhibited the efficiency of EMIS in school administration at the faculty of education. This battery of challenges coincide with those noted in a participatory observation during my internship in Government Bilingual Practising High School Yaoundé, which was focused mainly on distance learning through the minesc-distance learning platform. The next section seeks to explore explanations to such phenomena by models.

Theoretical framework

This section explores the models who seek to explain the worries put up in our research questions. For this study, five theories are selected to guide the findings: these are the innovation diffusion theory, the technology acceptance model, the classical administrative management theory, the buget and the agency theories.

The innovation diffusion theory.

The main proponent of this theory is Rogers (1995) who Synthesized five decades of diffusion research, and has identified five attributes of innovations that are correlated with the adoption of innovations (Sonnenwald, Maglaughlin & Whitton, 2001). He and others like Tornatzky and Fleischer (1990) cite research validating these attributes in domains such as medicine, engineering, and airline reservation information systems. The five innovation attributes are: relative advantage, compatibility, complexity, trialability and observability. These attributes are used as a theoretical foundation to evaluate collaboration technology. The attribute, relative advantage, is the degree to which a new innovation surpasses current practices. Sonnewald et al (2001) has observed that CSCW applications often require additional work without providing obvious benefits. Relative advantage can be operationalized, or measured, in terms of variables such as usefulness in accomplishing work goals, quality of work outcomes, added convenience and social prestige provided by the innovation. Combining this theory with our focus on distance learning management using LMS, we shall select questions for this scale from instruments measuring perceived system usefulness, credibility and use of information provided by e-learning platforms like minesec-distance learning.

Compatibility is the degree to which an innovation is perceived to be consistent with adopters' existing values, past experiences and needs. It includes individual, group and organizational goals, needs, culture and structure. It is concerned with the agreement/differences between a group's traditional work patterns and the work patterns required by the innovation. CSCW research also stresses the importance of compatibility for CSCW applications. Although specific values, needs and work practices vary with individual preferences and context, collaboration technology should, ideally, be compatible with fundamental or general values, needs and work practices. To measure compatibility, it suffices to determine the satisfaction in the experiences with communication technology and user needs related to general system qualities, such as reliability and response time. Complexity refers to the perceived difficulty of learning to use and understand a new system or technology. When a system is perceived as difficult to understand, learn and use, it will not be adopted. Research in usability engineering (Sonnewald et al, 2001) emphasizes the importance of reducing complexity in human-computer interaction. Trialability refers to the ease of experimenting with an innovation. It includes the level of effort needed and risk involved in observing and participating in small scale demonstrations of the system, including easily recovering from, or "undoing," operations using the systems and the costs involved in reversing the decision to adopt. Experimenting with and exploring system features is also a component of usability engineering.

Observability is the degree to which the results of the innovation are easily seen and understood. Grudin (cited in Sonnewald et al, 2001) cautions that users need to develop a clear understanding of collaboration technology before they will adopt it. Observability has been operationalized as "results demonstrability," that is, the ease of telling others the consequences or results of using information technology. Observability also includes visibility, that is, the degree to which the results of an innovation are visible to others.

Contribution of the theory

The innovation diffusion theory explains the attributes that should be possessed by new technology to permit its adoption. Distance learning method is seemingly new in Cameroon secondary schools and Yaoundé in particular, requiring the use of LMS. The challenges faced in implementing an effective LMS could be linked to the limited or lack of these attributes of innovation in the present systems for distance learning. Our research instrument shall contain questions on the difficulties to implementing LMS related to the presence of or follow-up of the innovation diffusion attributes explained by this theory. Cláudia, Mário and Luis (2020)

matched the link between innovation diffusion theory and e-learning, and found that Technology and LMS are important tools in every domain of the society. In the academic context, they can provide countless advantages to students, mainly faster and easier access to important information, as well as, increased flexibility and affordability (Luis et al. 2020). For students to accept and use the LMS provided by universities, these tools must offer them relative advantages. Use of this type of tool must bring benefits, which will mean an improved or easier learning process for students. According to Luis et al. (2020), the implementation of LMS can improve the learning quality and students' metacognitive skills through lesson study activities. The perception of self-efficacy and learning autonomy are effective strategies to encourage the use of virtual platforms. The use of these educational platforms strengthens the perception of students` self-efficacy, skills and abilities necessary for a proper management of these types of educational technologies. This perception of the relative advantages to be obtained is also defended by the technology acceptance model TAM (Luis et al. 2020). The literature states that compatibility between IT and its users' values is determinant for acceptance and use. Similarly, in the academic context LMS should agree with students' values (Luis et al. 2020). The complexity characteristic of IT has been defended in the literature more specifically by TAM, as determinant for the acceptance of new IT. The fact of users perceiving ease of use, or not needing to expend efforts in using the technology is also fundamental for IT adoption (Teo, 2008). In the academic context, the same situation is found. LMS should be easy to use by students (Luis et al. 2020). According to Toshihiko (2003), LMS should be easy to use as well as planned in terms of layout and navigation, which helps students in learning easily through these platforms. Therefore, these agents will accept and use LMS, according to the literature on this subject. The observability of IT is referred to as positive in the use of new IT. If users have visual contact with IT, this makes them assimilate and consider its use as normal in performing their tasks (Toshihiko, 2003). The same situation occurs in this study with secondary school students. Students' seeing other classmates using LMS determines the acceptance and use of this tool. Observation of, and contact with LMS is seen to be a driver of the use of this IT in the academic context. The last characteristic of IT, trialability, is stated by the literature to be an incentive to use. The possibility of testing IT, even before its implementation is considered definite, so that users can explore its potential, is a determinant of its acceptance (Luis et al. 2020). Summarizing, the characteristics of IT set out by Innovation Diffusion Theory (IDT) were shown to be determinant for its acceptance and use (Tahir & Syed, 2015). Luis et al. (2020) revealed that the characteristics of Moodle LMS have a positive influence on students'

use of them. The empirical evidence obtained agrees with the literature on the subject. According to Tahir and Syed (2015), the use of LMS by university students may shape their personality traits. In this type of learning, students are required to be active, independent, self-reflective, and collaborative. Following the same line, Luis et al. revealed that students with a high degree of Personal Innovativeness are more likely to use LMS, as suggested by the literature

Limitations of the theory

Wayne (2019) outlines the limitations of innovation diffusion theory as follows:

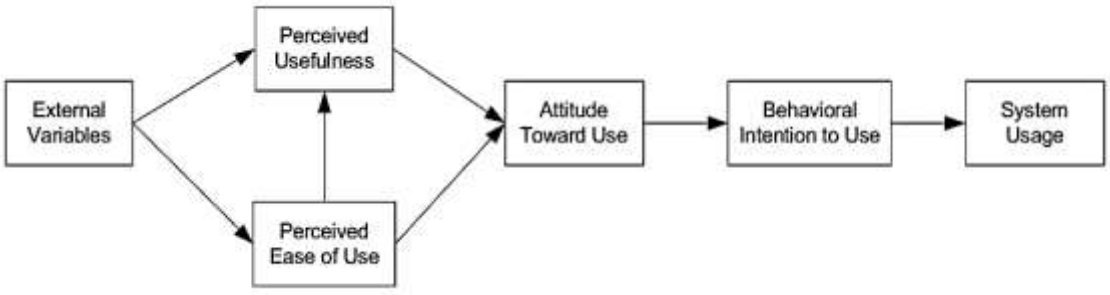
- Much of the evidence for this theory, including the adopter categories, did not originate in public health and it was not developed to explicitly apply to adoption of new behaviours or health innovations.
- It does not foster a participatory approach to adoption of a public health program.
- It works better with adoption of behaviours rather than cessation or prevention of behaviours.
- It does not take into account an individual`s resources or social support to adopt the new behaviour (or innovation).

Technology Acceptance Model (TAM)

The technology acceptance model (TAM) is an information systems theory that models how users come to accept and use a technology. Put in place by Fred Davis (2000).

The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably:

- Perceived usefulness (PU): the degree to which a person believes that using a particular system would enhance his or her job performance.
- Perceived ease-of-use: (PEOU) the degree to which a person believes that using a particular system would be free from effort.
- **Figure 5**: Technology Acceptance Model



Source: Ako, 2022

TAM impacts on educational settings

Acceptance Model in schools, the main aim of the model is to change how students, teachers and administrators collect, processed, analyse, organize and store information.

Also, with the widespread of databases in educational settings, Technology Acceptance Model is used to track individual progress. However, teachers and the staff are encouraged to identify and differentiate the learning objectives and instruction, respectively, based on the student's needs. Also, teachers and the team use TAM to attempt to present education. It makes it easy for them to learn new teaching styles. It also impacts the teachers and administrators since it makes them have a clever use of information which leads to better productivity in the educational setting. Said (2019) carried out research work to explore students` acceptance of e-learning through the development of a comprehensive Technology Acceptance Model. The author`s review to identify the most widely used external factors of the TAM concerning the e-learning acceptance indicated that computer self-efficacy, subjective/social norm, perceived enjoyment, system quality, information quality, content quality, accessibility, and computer playfulness were the most common external factors of TAM. His studies further indicated that system quality, computer self-efficacy, and computer playfulness have significant impact on perceived ease of use of e-learning system. Furthermore, information quality, perceived enjoyment, and accessibility were found to have positive influence on perceived ease of use and perceived usefulness of e-learning system.

Limitations of the theory

Patrick Ajibade (2018) presents a number of considerations or limitations of the Technology Acceptance Model. These he outlines as follows:

- One of the limitations of the TAM concerns the variable which pertains to the behaviour of users, which is inevitably evaluated through subjective means such as behavioural intention like interpersonal influence. Nevertheless, interpersonal influence as the subjective norm is explained to mean when a person is influenced by words of mouth from a colleague, or a friend. While a superior can influence employee by directing a subordinate to perform a specific task with the use of technology, based on their IT policy, but a friend has no directive influence over staff who is a subject to the line manager.

- Another limitation is that, underlines of behaviour cannot be reliably quantified in an empirical investigation, owing to a number of different subjective factors such as the norms and values of societies and personal attributes and personality traits. Hence, the argument that a relative, friends could influence the use of technology through exacting social pressure is highly falsifiable. Although it may be true in theory or for personal use of technology, the conceptualization may not be plausible or accurate in a work environment. Accordingly, Patrick Ajibade (2018) proposed that behavioural expectations should be used to predict the intentions of employees about the use of technology, rather than behavioural intention.
- Furthermore, it is also anticipated that as the information management of organizations attains maturity, information formality is likely to be promoted. Hence, there will be a well-establish process within the company or institutions and rules to use an Information Systems (IS) that is provided by the organisation. Consequently, behavioural expectations could, therefore, be measured in relation to the levels of compliance and not solely on the basis of the perceptions of employees. Accordingly, the guiding principles or frameworks of organizations would serve as mechanisms to control the behaviour of employees and constitute a variable by means of which the extent to which technology is used by employees could be predicted. Therefore, suggesting that attitude toward the use of technology at work is based on the perceived usefulness and ease of use might have presented the TAM as a mere theoretical artefact. Preferably, the author argues that perceive usefulness and ease of use might not influence the attitude of a librarian that must use an LIS system as complying and following the institutional and library system rules is mandatory because of the nature of services rendered. For example, a library adoption and use of Millennium architecture and Sierra Innovative LIS tools is compulsory for library services systems and relatives, friends and media could not change the attitude and intention of the librarian about the use or intention to use the systems.
- Moreover, several writers and researchers have criticised the model. In her thesis of 2015, Bashange suggests that a great deal of the relevant available literature which refers to the TAM tends to regard it as a dependent variable, rather than a means of determining the factors which influence behaviour. The criticism which is advanced by Patrick Ajibade (2018) suggests that the TAM does not consider factors such as age and education as external variables which could influence acceptance of and willingness to use technology. Conversely, it could be contended that it is extremely

problematic to measure behaviour, as hidden personality traits often motivate behaviour. Accordingly, potential users of technology may not necessarily base their acceptance of and willingness to use new technology on their perceptions of the usefulness of IT and how easy it is to use, although the model does suggest that there may be other external factors which could be responsible for their acceptance of the technology.

The Classical Administrative Management Theory.

As presented by Abah (2017), the administrative management theory looks at the administration of the whole organisation unlike focusing on individual worker as postulated by the scientific management theory. Administrative Management theory is used to establish structure, division of labour and proper authority in the most efficient way possible within an organization (Shawn, 2021). Major contributors to this theory are Henri Fayol, luther Gulick, Max Weber and James D. Mooney.

Henri Fayol (1841-1925) stipulates that all managers have five basic functions namely; planning, organising, commanding, coordinating and control (POCCC). Added to these functions, Fayol identified the following management principles: division of labour, authority, discipline, unity of command, unity of direction, subordination of individual interest to general interest, centralisation, scalar chain, order, equity, stability of personnel and initiative. In these, Fayol exposes the specificity of the manager`s role (Fabien, 2015).

The German sociologist, Max Weber (1864-1920) proposed the management practices which became very exposed by Henri Fayol. Weber was interested in what makes an order from one person to others acceptable. In this point of view, he distinguished three sources for the legitimacy of an order. These include:

- Tradition
- Charisma and
- Legal rationality

It is in Weber`s legal rationality that was founded the bureaucratic system, with the vision to enhance effectiveness (Fabien, 2015).

Another contributor to the administrative management theory is Luther H. Gulick (1892-1993). He is often considered as the ‘Dean of public administration’, as he applied management theory principles to government. Gulick coined the term POSDCORB, which

refers to seven functions of management. These are: planning, organising, staffing, directing, coordinating, reporting and budgeting.

James D. Mooney (1884-1957) is one of the contributors to the administrative management theory. In 1931, he wrote the book onward industry which is considered by many scholars as a significant contribution to administrative management theory (Shawn, 2021). Mooney together with Reiley stated the following principles of management:

- Coordinative principle
- Scalar principle
- Functional principle
- Staff/line principle

All these principles or guiding rules are supposed to help managers manage their organisations in the best possible manner and increase efficiency and economy.

Contribution of the theory

The relevance of these principles to my research work is very much aligned to the fact that the educational system of Cameroon secondary school is structured in a hierarchical manner, with managers at the micro level, exercising or expected to exercise the functions as described by Luther Gulick. These functions of POSDCORB are still relevant even in a distance learning setting.

Limitations of the theory

Although the classical administrative management theorists laid the foundation on which still relies many organisations today, they did so in an atmosphere of certainties, where working conditions and environmental influence seemed to be considered stable. Nowadays, a lot of uncertainties have set in with a rapidly changing technology and society, making anticipation difficult (Fabien, 2015). This calls for new strategies and approaches, which is the reason for modern views on management. Given that distance learning approach is one of such unforeseen technological changes that keep managers confused, it is incumbent that we discuss theories which fit in to such conditions, one of such, being the contingency theory.

The Budget Theory

Munge, Kimani and Ngugi (2016) present the budget theory and its implication in the educational sector. These authors incline with the modern proponents of budget theory who

are Bozeman and Straussman (1982). The theory takes two dimensions which are descriptive and normative (Rubin, 2007 cited in Munge et al, 2016). Descriptive dimension focuses on participation in public sector activities. Theorists describe sequences of events, trends, and infer cases. The normative dimension is more interested in value as opposed to observation. The descriptive part of the theory holds that budget planning implies at least, to choosing specific target levels of service by activity and then figuring out beforehand what it would cost in terms of personnel and supplies to accomplish those specific goals. This theory advocates for departments to request for what they needed to accomplish specific tasks. The normative perspective of budget theory states that there should be wide participation of the public in budgeting, and the budgets ought to reflect the average person. In addition, Munge et al (2016) examined the budget theory in the public sector. In their analysis, they opined that it is not absolutely necessary to have a single theory of budgeting; however, there ought to be a set of theories, each specific and unique to the problem budgeting is attempting to address.

In context of public secondary schools, the budgeting process should involve all stakeholders particularly, parents, government representatives, financiers, and the schools' management. More so, the budget should be at the level with ordinary parents and students. In other words, it should not be so ambitious that some parents will find it hard to contribute towards catering for the activities and expenses spelt out in the budget. In the present study, the researcher shall investigate the participation of parents in financing distance learning as well as find out the sufficiency of school budget to meet distance learning targets.

The Agency Theory

The Agency theory was proposed by Jensen and Meckling (1976). The theory states that an agency relation exists when a person (the principal) hires another person (the agent) to performance certain tasks or services on behalf of the principal. According to this theory, conflict arises between the principal and the agent. Thiscomes from conflicting interests between the two parties. The agent strives to maximize reward for their effort, or if the reward is given, minimize the effort. On the other hand, the principal wants to reduce the costs of hiring agent, or to maximize the output of the principal. It is noted that the discrepancy of interests between the two parties leads to agency problems (conflicts). These agency conflicts are often severe and common in public institutions. In the case of financial management in public secondary schools, the government, parents and other financiers are the principals. On the other hand, the principal and bursar are the agents. The government

through the Teachers Service and the parents through the Board of Management (BoM) hire the services of the school principals and bursars respectively. These employees are tasked with prudent management of the funds disbursed to school, and then they are paid salaries and allowances for executing their services. According to Munge et al (2016), conflicts between owners (parents and government) and managers (principals and bursars) result in the formulation of contracts to mediate the agency relationship. This description by Munge et al (2016) leads the present study to check the possibility of financial hindrance to LMS implementation being as a result of the conflict of interest between the owners and managers.

Conceptual frameworks

Definition of variables

A variable is any entity whose values can change and take different forms when we move from one observation to another (Simer, 2013). This section concerns identification and stating of our research variables from the literature explored. Authors distinguish four types of research variables; the independent variable, the dependent variable, the intermediary variable and the stimulus variables (Simer, 2013). Simer Preet (2013) provides the following explanation for the variables mentioned above.

The independent variable corresponds to the phenomenon manipulated by the researcher, and is thought to have an influence on another variable called the dependent variable. The dependent variable is the passive or response variable. It is the variable that measures outcome of research action. The intermediary variable indirectly intervenes without being considered in the research question. It is usually situated between the independent and the dependent variables. The intermediary variable will not be stated in this research work. The stimulus variable is an event or a condition susceptible of producing change of behaviour. It is usually embodied in the independent variable.

From our research topic and from the literature explored, the independent variable for this research will be the challenges affecting LMS implementation while the dependent variable is the effective management of distance learning.

For each of the variables stated, we shall identify the indicators, items and modalities of measurement. An indicator of a variable is a visible concrete manifestation of the variable while an item is a unit measurable entity of an indicator. A modality on its part is a level of appreciation of the measurement taken.

For this research work, the indicators for the independent variable include:

- administrative challenges,
- governance,
- technological difficulties,
- social inertia,
- financial challenges,
- environmental problems,
- influence of colleagues, etc.

For each of these indicators, there are various items to be measured. However, only the items for the selected indicators shall be mentioned in the synoptic table below.

The indicators for the dependent variable include;

- tracking of attendance,
- control of learning content,
- planning of learning activity,
- recording and reporting of learning activities,
- evaluation of performance and program coverage,
- communication between the actors in the learning process, etc.

The synoptic table below presents the definition of the variables, their indicators and their items to be researched in this study.

Table 9: Operationalising the research variables

Research Objectives	**Variables**	**Modalities**	**Indicators**	**Items**
Main objective: To investigate the challenges of school LMS implementation that hinder management of distance learning in secondary schools in Yaoundé.	Independent variable: Challenges of LMS implementation. Dependent variable: Distance learning management	Mild Moderate Intense Poor Good Very good	Administrative Technological Financial Environmental Reports Attendance Evaluation	
Specific objective one: To find out the extent	Independent variable: Administrative	Likert scale grading: Strongly	Administrative challenges	-Sensitization of method -policy/guide

to which administrative challenges to LMS implementation affect distance learning management in secondary schools	challenges to LMS implementation Dependent variable: Distance learning management	Agree Agree Disagree Strongly Disagree	Reports Attendance Evaluation	-ready infrastrucuture Reports Attendance Evaluation
Specific objective two: To assess the percentage to which technological difficulties inhibit LMS implementation for distance learning.	Independent variable: Technological challenges to LMS implementation Dependent variable: Distance learning management	Likert scale grading: Strongly Agree Agree Disagree Strongly Disagree	Technological challenges Reports Attendance Evaluation	-Speed/stability of internet -Mobilisation of technical support -Readiness of platforms Reports Attendance Evaluation
Specific objective three: To determine the percentage occupied by financial challenges to LMS implementation for distance learning.	Independent variable: financial challenges to LMS implementation Dependent variable: Distance learning management	Likert scale grading: Strongly Agree Agree Disagree Strongly Disagree	Financial challenges Reports Attendance Evaluation	parents assistance School budget for distance learning Hire of professionals and technicians Reports, Attendance Evaluation

Source: Source: Research data 2022

Summary mapping of theories with research objectives

The table below relates the theories examined to the research objectives of the study.

Table 10: Mapping of theories with objectives

Research objective	Theory(ies)	Explanatory link
Specific objective one: To find out the extent to which administrative challenges to LMS implementation affect distance learning management in secondary schools	The innovation diffusion theory (Rogers 1995)	The theory explains the usefulness in accomplishing work goals, quality of work outcomes, added convenience and social prestige provided by the innovation. Thus sensitization and leadership mobilisation of actors and support to adopting the innovation
	Classical administration	The theory outlines the

	theory (Henri Fayol, luther Gulick, Max Weber and James D. Mooney.)	functions of managers. The same functions apply to distance learning
Specific objective two: To assess the percentage to which technological difficulties inhibit LMS implementation for distance learning.	The innovation diffusion theory (Rogers 1995)	Explains the stages to be followed in adopting a technological innovation. Challenges could result in the non respect of any of the stages
	Technology Acceptance Model (TAM)	Explains considerations towards accepting new technology.
Specific objective three: To determine the percentage occupied by financial challenges to LMS implementation for distance learning.	**The Budget Theory** Bozeman and Straussman (1982).	The theory explains how a school budget should be planned and the stakeholders involved.
	The Agency Theory Jensen and Meckling (1976).	Explains conflicting interest in spending. Thus can lead to financial bottleneck to spending on distance learning project.

Source: Research data 2022

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter describes procedures applied in carrying out the study. These include; the research design, geographical location, population, sampling technique, Research instrumentation and data representation and analysis plan. It is necessary for generating information that will determine the success of this research in reaching its projected conclusion.

Research design

The mixed or hybrid research method, that is, the qualitative and the quantitative research method shall be used in this research, to have data from principals, vice principals, HODs and classroom teachers. The qualitative research method as explained by Lee (2014) seeks to study a phenomenon or situation in detail, whereas a quantitative method seeks to make standardised and systematic comparisons. The author explains that a qualitative research methodology is exploratory, observational, flexible, contextual portrayal and dynamic. The data collection is semi-structured or unstructured and the nature of data is mainly narrative and descriptive. Yasir (2021) adds that qualitative researches does not test hypotheses, but rather generate them. He continues that qualitative researches explain complex processes such as perceptions, experiences, attitudes and opinions. The data collection in this method can be done by observation, Interviewing, administration of written questionnaires and the method also does a thematic analysis of data. Quantitative researches on their part deal on concrete facts that already exist, testing stipulated hypotheses on them. It manipulates large numerical data, which is usually collected through structured or semi-structured questionnaires. Lee (2014) in the table below summarises or illustrates the features of a qualitative and quantitative analysis**.**

Table 11: Key differences between qualitative and quantitative researches (Lee, 2014).

	Qualitative research	**Quantitative research**
Type of knowledge	Subjective	Objective
Aim	Exploratory and observation	Generalizable and testing
Characteristics	Flexible	Fixed and controlled
	Contextual portrayal	Independent and dependent variables
	Dynamic, continuous view of change	Pre- and post-measurement of change
Sampling	Purposeful	Random
Data collection	Semi-structured or unstructured	Structured
Nature of data	Narratives, quotations, description,	Numbers, statistics
	Value uniqueness, particularity	Replication
Analysis	Thematic	Statistic

Source: **Lee, 2014**

Area of the study

The research work will be conducted within the Yaoundé municipality. The Yaoundé municipality comprises seven local councils corresponding to seven sub-divisions under the Mfoundi Division of the Centre Region of Cameroon. The city covers a surface area of 304 square kilometres (Nkwemoh & Tchindjang, 2018), and contains the largest number of secondary schools in the region. It shares boundaries to the north east with Mefou and Afamba Division, to the north west with Lekie Division and to the South with Mefou and Akono Division. The city lies between latitudes 3^0 45' 50" and 3^0 59' 55" North and longitudes 11^0 22' 40" and 11^0 30' 25" East (Nkwemoh & Tchindjang, 2018). The table below illustrates the schools considered within the seven sub-divisions in Yaoundé.

Table 12: Research coverage area

Sub Division	**School**	**Number of schools**
Yaoundé I	GBHS EMANA	06
	GBHS Nkol-Eton	
	GTHS Nsam	
	Academic College of Excellence	
	College Prive Laic La Victoire	
	Fondation Tsoungui	
Yaoundé II	Lycee de la cite-verte	05
	Lycee de Tsinga	
	Lycee technique de Yaounde II	
	College Elohim	
	College Bilingual Lincoln	
Yaoundé III	Lycee bilingue d'application.	05
	Lycee de Biyem-Assi	
	Lycee de Nsam-Efoulan	
	College Diderot	
	English High School	
Yaoundé IV	Lycee bilingue d'Ekounou	05
	Lycee bilingue de Mimboman	
	Lycee d'Odza	
	College Bilingue Yondo	
	College Frantz Fanon	
Yaoundé V	Lycee bilingue de Yaounde	
	Lycee de Ngousso Ngoulmekong	

	College Foche	04
	College prive du succes	
Yaoundé VI	Lycee bilingue d'Etoug-Ebe	05
	Lycee bilingue de Mendong	
	CETIC Bilingue de Mewoulou	
	College Ebanda	
	City Bilingual Academy	
Yaoundé VII	Lycee bilingue d'Ekorezok	05
	Lycee classique de Nkolbisson	
	Lycee technique de Nkolbisson	
	Complex Scolaire Thecla	
	College Venue	

Source: Research data 2022

Population of the study.

Target population

Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions (Ako, 2022). The target population usually has varying characteristics and it is also known as the theoretical population (Umair, 2018). The target population of this study consist of Principals, Vice Principal, Heads of Departments and teachers of selected private and public secondary schools in Yaoundé Municipality.

Table 13: Population of the study (estimated figures)

Sub Division	**School**	**N° of Principals**	**N° of Vice Principals**	**N° of HODs**	**N° of Teachers**	**Total**
Yaoundé I	GBHS EMANA	1	4	3	120	128
	GBHS Nkol-Eton	1	10	3	182	196
	GTHS Nsam	1	6	3	123	133
	Academic College of Excellence	1	1	3	50	55

	College Prive Laic La Victoire	1	1	3	50	55
	Fondation Tsoungui	1	1	2	50	54
Yaoundé II	Lycee de la cite-verte	1	5	3	70	79
	Lycee de Tsinga	1	5	3	70	79
	Lycee technique de Yaounde II	1	3	3	80	87
	College Elohim	1	1	3	46	51
	College Bilingual Lincoln	1	1	3	55	60
Yaoundé III	Lycee bilingue d'application.	1	21	3	170	195
	Lycee de Biyem-Assi	1	15	3	100	119
	Lycee de Nsam-Efoulan	1	11	3	80	95
	College Diderot	1	1	3	45	50
	English High School	1	1	3	58	63
Yaoundé IV	Lycee bilingue d'Ekounou	1	10	2	185	198
	Lycee bilingue de Mimboman	1	14	3	155	173
	Lycee d'Odza	1	2	2	74	79
	College Bilingue Yondo	1	10	3	60	74
	College Frantz Fanon	1	1	2	58	62
Yaoundé V	Lycee bilingue de Yaounde	1	21	3	180	205
	Lycee de Ngousso Ngoulmekong	1	11	3	73	88
	College Foche	1	1	3	56	61
	College prive du succes	1	1	2	53	57
Yaoundé VI	Lycee bilingue d'Etoug-Ebe	1	16	2	200	219
	Lycee bilingue de Mendong	1	11	2	153	167
	CETIC Bilingue de Mewoulou	1	2	2	80	85
	College Ebanda	1	1	2	59	63
	City Bilingual Academy	1	1	2	52	56
Yaoundé VII	Lycee bilingue d'Ekorezok	1	6	2	86	95
	Lycee classique de Nkolbisson	1	5	2	84	92
	Lycee technique de Nkolbisson	1	3	2	75	81
	Complex Scolaire Thecla	1	1	2	66	70
	College Venue	1	1	2	58	62
TOTAL		**35**	**205**	**90**	**3156**	**3486**

Source: Research data adapted and completed from Ako, 2022

Given the proliferation of schools within the city of Yaoundé, some of which are non recognised, while others hide the true staff strength of their institutions, the total population for this study has been estimated from the findings of Ako (2022) and adapted to include classroom teachers.

Sample Population and sampling technique

A sample population is a portion of the total population that is representative enough to make generalization of the population (Kevin, 2022). Given the very large population for the study (3486) with maximum variability, the sample was calculated using the Cochran formula to obtain 345. The sample size of the population was further determined by using the Krejcie and Morgan Table for confirmation**.** An error margin of 5% using a confidence level of 95% was applied on the total estimated population.

The Cochran formula for sample population determination as explained by Mitul (2022) is given by:

$N_0=(z^2PQ)/E^2$ where

N_0 is the sample size,

Z^2 is the Zscore squared

P is the variability probability

Q is gotten from 1-P

E^2 is the margin of error squared

Mutil (2022) explains that for very large pollution, the maximum variability is considered, where the P value is 50% or 0.5. At 95% confidence level, the Z score is 1.96 (from tables of Z values). With an error margin of 5% and applying the Cochran formula above, the sample size obtained is rounded up to 345

From an estimated total population of 3486, the sample population from the Krejcie and Morgan Table is 346. This confirms the calculated sample size value which was used for this study.

A purposeful and simple random sampling was applied on the field. Purposeful sampling is intended to target mainly schools which used the shift system of teaching/learning. Such schools are more affected with the obligation to practice distance learning in order to meet program coverage. In addition, teachers of computer science and information and

communication technology (ICT) were selected, as they are expected to be versed with technology than other subjects. A simple random sampling was used to select respondents in the order of vice principals and principals as well as teachers of other subjects than computer science and ICT. A purposeful sampling is done when a researcher has specific criteria of selection of the sample population (Mitul, 2022; Kevin, 2022; Yasir, 2021). In this study, the criteria which permitted purposeful sampling are to select schools which practise shift system of education. This will permit for validity of the research instrument, since such schools would be expected to complement face-to-face teaching/learning activities with distance learning. The second criterion for purposeful sampling as mentioned above aimed at prioritizing teachers of computer science and information and communication technology. This was judged so because they are the pivot of technology enhancement in schools concerned with distance learning. A simple random sampling is a probabilistic technique of selecting respondents to a research survey in which no particular criterion for selection is required. All respondents have equal chances of being selected (Kevine, 2022; Mutil, 2022). This sampling technique was used to select other respondents such as principals, vice principals, heads of departments and teachers of other disciplines than computer science and ICT.

Data Collection Method.

Manual collection of primary data by questioning, making use of questionnaires was the data collection method in this study. “A questionnaire is a data collection tool in which written questions are presented and are to be answered by the respondents in written form” (Omar, 2022). The different ways of administering written questionnaires are:

1) Sending questionnaires by mail with clear instructions on how to answer the questions and asking for the mailed responses.
2) Gathering all or part of the respondents in one place at one time, giving oral or written instructions, and letting the respondents fill out the questionnaires
3) Hand-delivery questionnaires to respondents and collecting them later.

As far as the collection instrument is concerned, a structured questionnaire was used to formulate the principal’s, vice principals, HODs and teacher`s questionnaire. The questionnaire contained closed ended questions, geared towards investigating the challenges of LMS implementation for distance learning in secondary schools in the Yaoundé municipality.

Instrument for Data Collection

The instrument for data collection is the Likert scale questionnaire rated Strongly agree (1), Agree (2), Disagree (3) and Strongly disagree (4). Omar (2022) defines and explains the use of a likert scale, tracing its origin from its creator, Rensis Likert. The author explains that the scale is a type of rating scale, that ranks people`s judgements of attitude from high to low. It measures ordinal data and the questions are single-choice, closed-ended questions. The author establishes that a likert scale has odd number levels of agreement from strongly agree to strongly disagree. He equally mentions the type of scale in which the neutral option is removed, which he terms as forced likert scale. This later, is the type adopted for this study.

The instrument for this study was structured into three parts; the preliminary section containing the letter to the respondents, title of the questionnaire and instructions; the second part shall be designed to collect background information and the third part shall be designed to collect data on the independent variable. That is, challenges of LMS implementation in secondary schools broken down into sections A, B and C and the last section D, shall be to gather responses on the effective management of education (the dependent variable).

The respondents shall be required to tick each item in the appropriate column that most likely represents their opinion based on their degree of agreement or disagreement with the statement.

Validity of the Instrument

The instrument was subjected to screening by the researcher's supervisor, experts in educational technology and educational management. The instrument was subjected to face and content validity. Haradhan (2017) defines validity as the extent to which an instrument measures what it asserts to measure. The author proceeds by citing Robson (2011) that Validity of a research instrument assesses the extent to which the instrument measures what it is designed to measure. It is the degree to which the results are truthful. In quantitative research validity is the extent to which any measuring instrument measures what it is intended to measure (Thatcher, 2010). But, in qualitative research it is when a researcher uses certain procedures to check for the accuracy of the research findings (Creswell, 2014). It is not a property of the instrument, but of the instrument's scores and their interpretations. Two main parts of validity are internal (credibility) and external (transferability). Different types of validity exist as elaborated by Haradhan. For this research work, only content validity and face validity were performed. Content validity as described by Haradhan (2017) is the extent to which the questions on the instrument and the scores from these questions represent all

possible questions that could be asked about the content or skill. It ensures that the questionnaire includes adequate set of items that tap the concept. The more the scale items represent the domain of the concept being measured, the greater the content validity. It is interested in assessing current performance rather than predicting future performance. It is related to a type of validity in which different elements, skills and behaviours are adequately and effectively measured. There is no statistical test to determine whether a measure adequately covers a content area, content validity usually depends on the judgment of experts in the field. The unclear and obscure questions can be amended, and the ineffective and non functioning questions can be discarded by the advice of the reviewers.

Face validity refers to the degree to which a test appears to measure what it claims to measure (Leedy & Ormrod, 2004). It is a global answer as a quick assessment of what the test is measuring. It is the simplest and least precise method of determining validity which relies entirely on the expertise and familiarity of the assessor concerning the subject matter. It ascertains that the measure appears to be assessing the intended construct under study. It is usually used to describe the appearance of validity without empirical testing. So, it is normally considered to be the weakest form of validity (Hashim, Murphy & Connor, 2007). During the validation of our instrument, experts were to determine which of the items are suitable and can elicit the intended responses and information. The instrument was applauded to meet the face and content validity.

Reliability of instrument.

Reliability refers to a measurement that supplies consistent results with equal values (Haradhan, 2017). It measures consistency, precision, repeatability, and trustworthiness of a research (Chakrabartty, 2013). It indicates the extent to which it is without bias (error free), and hence insures consistent measurement cross time and across the various items in the instruments (the observed scores). The coefficient of reliability ranges from 0 to 1, with 1 being the strongest reliability and 0 means no reliability. The author also explains that reliability can be classified into two; stability and internal consistency reliability. Explaining the interpretation of the reliability coefficient, the author analyses that if the reliability coefficient r = 0.98, we can suggest that both instruments are relatively free of measurement errors. If the coefficients yield above 0.7, the instrument is considered acceptable, and coefficients yield above 0.8, are considered very good. Coefficient values below 0.7 require review of the instrument. To determine the reliability of the questionnaire for this study, thirty (30) copies were administered to thirty (30) administrators and teachers of secondary schools in Yaoundé. Statistical Product

for Service Solution (SPSS 26) was used to measure the reliability of the instrument, a Cronbach alpha statistics technique was used and a reliability coefficient of 0.980 was obtained, which according to literature, is reliable for the study.

Administration and collection of Data.

The questionnaires will be administered to school principals, vice-principals, HODs and teachers who are major respondents in this study. This shall be done through face-to-face encounters, emails (where applicable) or through whatsApp social medium. Clarifications were also made on respondents' questionnaire where necessary. Effort was also made to collect the questionnaire filled on the same day so as to ensure high return rate.

Data analysis method.

Descriptive and inferential statistics will be used to analyse the data which will be gathered from the principals, vice principals, HODs and teachers questionnaires. Descriptive statistics refers to the organisation and summarising of data using numbers and graphs. Data could be summarised using bar graphs histograms, pie chart, tables etc. data can also be described using measures of central tendency such as mean, mode and median or by using measures of variability such as range, variance and standard deviation. Inferential statistics on its part is using sample data to make inference or draw conclusion of the population. It uses probability to determine how confident we can be that the conclusions we make are correct (Daniel, 2022). Data from the questionnaires shall be analysed using the SPSS software version 26 (The Pell Institute, 2017) and frequencies, percentages, means scores, standard deviation and global mean using the Likert scale shall constitute the descriptive statistics. For generalization about the population, inferential statistics test such as the Pearson's correlation will be used to test the hypothesis of the study. Daniel (2022) explains that when a research design seeks to establish a relationship between variables, a correlation statistical test is used to test the hypothesis. The author adds that when the type of data is continuous and parametric, the Pearson`s correlation is used. He mentions the fact that categorical data collected as ordinal data could also be treated as continuous data, requiring the Pearson's correlation test. This explanation is the basis for choosing the Pearson's correlation test for testing our hypotheses. However, in the event where the data collected is tested and does not satisfy normal distribution, the equivalent non parametric test (Spearman rho) shall be used to test the hypotheses. The Correlation Coefficient was used to test our research hypotheses. The purpose was to measure the degree of association between the independent variables in our research hypotheses and the effective management of distance learning in secondary

schools, symbolized by the correlation coefficient. The correlation coefficient is a simple descriptive statistic that measures the strength of the linear relationship between two variables (Amin, 2005). The value of the correlation coefficient r ranges from -1 for a perfect negative correlation, to +1 for a perfect positive correlation. The degree of association between two variables is described by the coefficient of correlation, which indicates the strength of this association. In order to determine existing relationships between two variables, we used the Pearson's r Correlation Coefficient because the purpose of this study was to verify the relationship strength between the dependent and independent variables (Amin, 2005:379). In so doing, the Pearson Product Moment Correlation coefficient was used because the data in this study were parametric. That is, its interpretation depends on the population fitting a continuous distribution. Also, parametric statistics was used because it enables researchers to make generalization of their results to a larger population.

Interpreting the Pearson's Product Moment Correlation coefficient

The usefulness of the correlation depends on its size and significance (Fonkeng, Chaffi & Bomda, 2014). If r reliably differs from 0.00, then r-value is statistically significant. It does not result or occur by chance. Therefore, if the same variables were measured on another set of similar subjects, a similar r-value would result. If r achieves significance, it is possible to conclude that the relationship between the two variables was not due to chance. According to Muijs (2004), the size or magnitude of any correlation is described as follows:

Table 14: Description of Correlation Values

Correlation value	Interpretation
0.00 to 0.10	Week
0.11 to 0.29	Low
0.30 to 0.59	Modest
0.60 to 0.79	Moderate
0.80 to 0.89	Strong
0.90 to 1.00	Very strong

Source: Fonkeng et al ,2014.

On the other hand, it is important to note that correlation does not imply causation. In this regard, just because one variable relates to another variable does not mean that changes in

one cause changes in the other. Cause-and-effect may be present, but correlation does not prove cause (Frankel and Wallen, 2000). In this study, the researcher was only interested in determining the strength of the relationship between the variables.

Data Representation

Presentation of data refers to the organization of data into tables, graphs or charts, so that logical and statistical conclusions can be derived from the collected data (Angelo, 2022). The author describes data presentation to be in three methods; textual, tabula or graphical.

In textual presentation, the data gathered is represented in paragraph form, made up of a combination of text and numbers.

A tabular presentation is the organization of data gathered using statistical tables. It is a systematic organization of data in rows and columns. Each column starts with a column heading, indicative of the data it contains.

Graphical representation is a chart representing data in pictorial or diagrammatic forms. Different types of charts include; bar graph, linear graph, pie graph, pictograms, statistical maps and ratio chart.

Data for this study shall be presented using the textual, tables, pie graphs and bar graphs.

Ethical Considerations.

The research study was conducted based on professional ethnic as well as principles of research. That is, consent procedures, confidentiality towards participants, protecting their anonymity and privacy of research participants was respected during the filling of the questionnaires for the research. The researcher was also conveying the purpose of the study to the proposed respondents as per standard research requirements. The researcher was avoiding deceptive practices and respected indigenous cultures as well as kept sensitive information undisclosed. The researcher abstained from practices that could affect professional research undertakings.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

This chapter presents the findings of the study. Data collected from the field was analyzed using both descriptive and inferential statistics as already mentioned in the previous chapter. A combined statistical tool was used to analyze data obtained from the survey. For descriptive statistics, percentages, tables, charts and graphs amongst others were used while for inferential statistics; the Pearson`s correlation test Pearson`s correlation test Analysis was applied. The first part of this chapter, presents characteristics of the respondents and their previous knowledge with regards to distance learning, while the second part presents the results with respect to the research objectives. The chapter ends with the testing of our research hypotheses.

345 questionnaires were administered in the different schools mentioned above within the Yaoundé municipality. Most of them were face-to-face administration, while a some were administered through whatsApp social medium. Majority were filled and handed back to the researcher, while others made appointments of questionnaire return. In total, 266 questionnaires were returned to the researcher, obtaining a return rate of 77.1%. Six of the returned questionnaires could not be analysed due to improper handling and so the researcher could only analyse data from 260 respondents.

Demographic Characteristics of Participants

This section presents data about the characteristics and general information of the respondents. Such data includes the gender, working experience, nature of school and administrative position.

Table 15: Demographic data

		A	B	C	D	E	F	G
N	Valid	260	260	260	260	260	260	260
Median		2.00	1.00	4.00	2.00	2.00	2.00	1.00
Mode		2	1	4	1	2	2	1

Source: Field data 2022.

A=Nature of school

B= Gender of Respondent

C= Position held in school

D= Working experience

E= Awareness of Distance Learning

F= Media information of Distance Learning

G= Experience on Distance Learning

The table above reveals that of the 260 respondents analysed, the median and mode had the same value of 1. This indicates that most of the respondents to the findings were males. The mode and median for the nature of school was 2 with. For the position held in school, the mode was 4, referring to teachers, while most of them had not crossed five years of working experience (mode=1). All respondents demonstrated awareness on distance learning (mode, median mean =2), most of whom were informed by media (mode =2). However, majority have no experience on distance learning (mode=1). The detailed breakdown of this result for each item investigated is presented below:

Gender of respondents

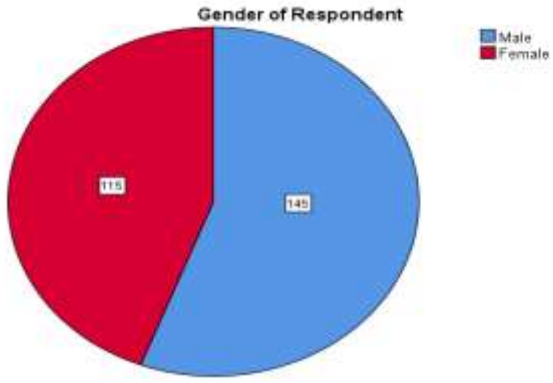
Table 16: Gender of Respondents

		Frequency	Percent
Valid	Male	145	55.8
	Female	115	44.2
	Total	260	100.0

Source: Field data 2022

Form the 260 respondents analysed, 145 of them are males (55.8%) while 115 of them are females (44.2%). This categorisation of respondents according to gender is illustrated in the pie chart below:

Figure 6: Pie chart showing gender distribution of respondents.



Source: Field data 2022

Work experience

This refers to the length of time spent in the teaching profession. The duration was categorised in to ranges as shown below:

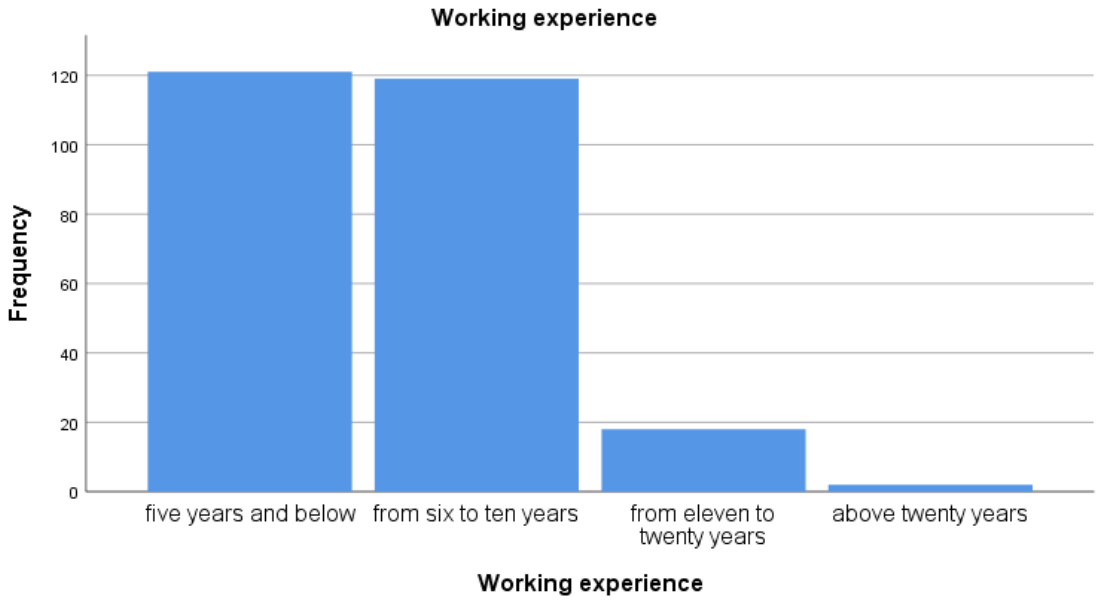
Table 17: Working experience

		Frequency	Percentage
Valid	five years and below	121	46.5
	from six to ten years	119	45.8
	from eleven to twenty years	18	6.9
	above twenty years	2	.8
	Total	260	100.0

Source: Field data 2022

The table shows that of the 260 respondents, 121 of them have just five years or below of working experience, constituting 46.5% of the respondents. Those between five and ten years of experience were 119 (45.8%), those from eleven to twenty years were18 in number (6.9%) and only 2 respondents (0.8%) were above twenty years of experience. On average, it can be deduced that majority of the respondents are still young in the field and have long propects. The bar chart below further presents the distribution of respondents according to working experience.

Figure 7: Bar chart illustration of respondents` working experience



Source: Field data 2022

Nature of Institution of Respondent

The researcher sought to know if the respondents were from public schools (Government schools) or from private schools (lay private and mission schools). The data collected revealed the following about our respondents, with respect to the nature of school:

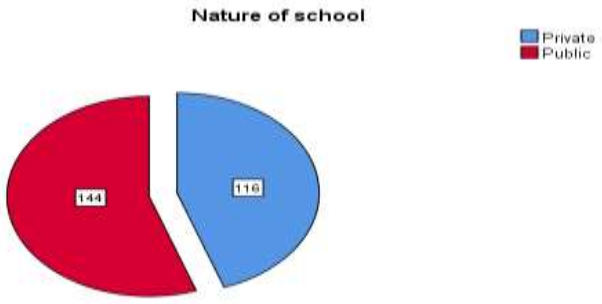
Table 18: **Nature of school**

		Frequency	Percent
Valid	Private	116	44.6
	Public	144	55.4
	Total	260	100.0

Source: Field data 2022

The table shows that of the respondents analysed, 116 of the respondents are working in private schools (44.6%) and 144 of them are in public schools (55.4%). The pie chart below shows the distribution.

Figure 8: Pie chart showing the nature of schools of respondents



Source: Field data 2022

Position in School

The questionnaire was administered to principals, vice principals and teachers. It was necessary to know the percentages of these categories who responded to the findings. The table below shows the figures obtained.

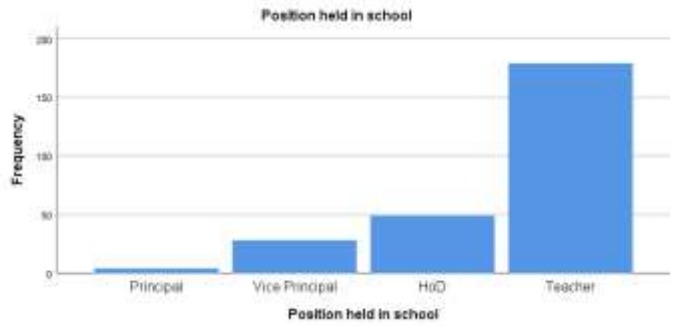
Table 19: Position held in school

		Frequency	Percentage
Valid	Principal	4	1.5
	Vice Principal	28	10.8
	HoD	49	18.8
	Teacher	179	68.8
	Total	260	100.0

Source: Field data 2022

From the table, four principals (1.5%) responded to the findings, 28 vice principals (10.8%), 49 heads of departments (18.8%) and 179 teachers (68.8%). It therefore visibly evident that majority of the respondents were teachers. This is illustrated by the bar chart below:

Figure 9: Bar representation of administrative ranks of respondents



Source: Field data 2022

Awareness of Distance Learning

In this section, the researcher sought to know if the respondents had any previous knowledge on distance learning and whether they carried out this method of teaching/learning activity.

Knowledge on Distance Learning

Table 20: **Awareness of Distance Learning**

		Frequency	Percent
Valid	Yes	260	100.0

Source: Field data 2022

From the data collected, it was found that all the respondents have at least heard of the existence of distance learning. The evidence is shown by the table above.

Experience in Distance Learning

Table 21: Experience on Distance Learning

		Frequency	Percentage
Valid	No	164	63.1
	Yes	96	36.9
	Total	260	100.0

Source: Field data 2022

The table indicates that though the respondents are aware of the existence of distance learning, just few of them had some experience in the activity. From the table above, 164 of

the respondents had no experience (63.1%) and 96 of them had done one or more activities with distance learning (36.9%).

Figure 10: distribution of experience on distance learning

Source: Field data 2022

Presentation of Findings on research objectives

Objective One: Administrative Challenges to LMS Implementation on Distance Learning Management of Secondary Schools.

Three items were selected to investigate the difficulties in implementing LMS linked to administrative weaknesses. The general results are as shown in the table below:

Table 22: general Statistics on Administrative challenges

Item		A	B	C
N	Valid	260	260	260
Median		1.00	2.00	1.00
Mode		1	1	1

Source: Field data 2022

A= Distance learning method is new and unsensitised

B= My school lacks readiness for distance learning infrastructure

C= There is no clear policy or guidelines for dealing with distance learning

From the table above, the first item being that of the new and unsensitized nature of distance learning, the score recorded revealed a mean of 1.36, a median of 1.00, a mode of 1 and a standard deviation of 0.511. The second item referred to the lack of readiness for distance learning infrastructure. This item had a mean score of 1.62, a median of 2.00, a mode of 1 and a standard deviation of 0.679. The third item talked of no clear policy or guides for

carrying out distance learning. The mean score was 1.33, median of 1.00, mode of 1 and a standard deviation of 0.526.

The modal response to all the items (1) indicates that the respondents strongly agree to the administrative challenges proposed by the questionnaire. The detailed figures for each item are presented below:

Table 23: Distance learning method is new and unsensitised

		Frequency	Percent
Valid	Strongly Agree	171	65.8
	Agree	85	32.7
	Disagree	4	1.5
	Total	260	100.0

Source: Field data 2022

From the table above, of the 260 repondents analysed for this item, 171 of them strongly agree to the the point that distance learning is new and there has not been enough sensitisation. This makes up 65.8% of the scores. 85 of them agree to the same point (32.7%) while just 4 repondents seem to disagree (1.5%). In total, 98.5% of all the respondents are of the opinion that the distance learning method is still new and needs sensitisation. The few respondents (4, 1.5%) may be cases of well equiped schools who find less stress with the method of teaching/learning.

Table 24: My school lacks readiness for distance learning infrastructure

		Frequency	Percent
Valid	Strongly Agree	127	48.8
	Agree	108	41.5
	Disagree	23	8.8
	Strongly Disagree	2	.8
	Total	260	100.0

Source: Field data 2022

The next item investigated with regards to administrative limits was the readiness for distance learning infrastructure. The data obtained reveals that of the 260 respondents to the findings, 127 of them strongly agree to the point that their schools lack readiness for distance learning infrastructure (48.8%), 108 of them agree (41.5%), 23 of them disagree (8.8%) and just two of them strongly disagree (0.8%). In total, we find that 90.3% of the respondents are for the opinion that there`s the lack of readiness while 9.6% of them think otherwise.

Table 25: There is no clear policy or guidelines for dealing with distance learning

		Frequency	Percent
Valid	Strongly Agree	165	63.5
	Agree	90	34.6
	Disagree	5	1.9
	Total	260	100.0

Source: Field data 2022

The table above shows data collected on the existence of a policy or guidelines for operating distance learning. 165(63.5%) respondents strongly agree to the point that there`s no clear policy or guidelines for performing distance learning in secondary schools in Yaoundé. Another 90 (34.6%) of the respondents agree to the same opinion while just 5(1.9%) of them disagree. For this item, it is observed that a total of 98.1% of the respondents point to the opinion that the innovative distance learning method has no clear policy or guide to help actors smoothly use it.

The results from the above tables for the first objective present an overall 95.63% vote for the presence of administrative limitations to the implementation of LMS for distance learning method in secondary schools in Yaoundé.

Objective Two: Technological difficulties to LMS implementation affecting distance learning management in secondary schools

To accomplish this objective, three items were investigated regarding the technical requirements for proper implementation of LMS for distance learning. The general outcome is presented in the table below:

Table 26: General Statistics on technical challenges

Item		A	B	C
N	Valid	260	260	259
Median		2.00	2.00	1.00
Mode		2	2	1

Source: Field data 2022

A= The school`s internet connectivity is not fast and stable

B= My school still needs to mobilise adequate technical support for distance learning

C= e-learning infrastructure (eg platforms) lacks readiness.

From the table, it is observed that the first item (The school`s internet connectivity is not fast and stable) had a mean score of 1.61, a median of 2.00, a mode of 2 and a standard deviation of .569. the second item investigating the technical support for distance learning had a mean score of 1.57, a median of 2.00, a mode of 2 and a standard deviation of .554. for the third item which investigated the readiness of e-learning platforms, the mean score was 1.49, the median was 1.00, the mode was 1 and the standard deviation was .501. on average, the respondents agree to the presence of technical deficiencies in schools (median=2,2,1 and mode=2,2,1). The statistical figures for each item are presented below:

Table 27: The school`s internet connectivity is not fast and stable

		Frequency	Percent
Valid	Strongly Agree	111	42.7
	Agree	142	54.6
	Disagree	5	1.9
	Strongly Disagree	2	.8
	Total	260	100.0

Source: Field data 2022

It is observed from the table that 111 (42.7%) of the respondents strongly agree that their school`s internet connectivity is not fast and stable. 142 (54.6%) of them agree to the same opinion, 5 (1.9%) of them disagree while 2 (.8%) of the respondents strongly disagree to the opinion. In total, 253 (97.3) respondents complain of the internet connectivity in their schools while just 7(2.7%) of respondents observe otherwise. It is observed here that a total of 97.3% of the respondents find the school`s internet connectivity slow and unstable.

Table 28: My school still needs to mobilise adequate technical support for distance learning

		Frequency	Percent
Valid	Strongly Agree	119	45.8
	Agree	133	51.2
	Disagree	8	3.1
	Total	260	100.0

Source: Field data 2022

The table above reveals that 119(45.8%) of the respondents strongly agree to the opinion that there`s need to mobilise technical support for LMS implementation. More respondents (133) agree to the same view while only 8 of them (3.1%) feel that the technical support is sufficient. The results show that 96.9% of the schools lack the required technical support for distance learning to be effective.

Table 29: e-learning infrastructure (eg platforms) lacks readiness

		Frequency	Percent
Valid	Strongly Agree	131	50.4
	Agree	128	49.2
	Total	259	99.6
Missing	System	1	.4
Total		260	100.0

Source: Field data 2022

With regards to the need for e-learning platforms, the results above reveal that all the respondents strongly agree (131, 50.4%) or agree (128, 49.2%) to the observation that secondary schools lack readiness for e-learning in terms of platforms. The results also indicate a missing value constituting just 0.4%, where one of the respondents failed to choose an option. We find in this result that 99.6% of the respondents opine that the e-learning platforms lack readiness.

For the second research objective, an average score of 97.93% of our respondents acknowledge the presence of technical difficulties to implementing successful distance learning.

Objective Three: Financial challenges to LMS implementation for distance learning.

Three items were also selected for this objective; parents` capacity to assist the learners in distance learning, school`s budget line for such activities and the need to employ professionals to direct the activity. The table below shows the general outcome:

Table 30: General Statistics on financial challenges

Item		A	B	C
N	Valid	260	260	260
Median		2.00	2.00	2.00
Mode		2	2	2

Source: Field data 2022

A= Parents find it expensive to assist their children for distance learning

B= My school`s annual budget can not sufficiently run distance learning infrastructure

C= there is a need for a human cadre of professionals and technicians in e-learning

The table shows that for the first item for this objective, the mean score was 2.13, the median was 2.00, the mode was 2 and the standard deviation was .677. The item investigating the sufficiency of the school budget had a mean score of 1.98, a median of 2.00, a mode of 2 and a standard deviation of .645. the item investigating the need for professional cadres and

technicians had a mean score of 1.73, a median of 2.00, a mode of 2 and a standard deviation of .511. the same scores of medians and modes indicate a general agreement to the financial challenges to implementing an LMS for distance learning. The results that follow are the figures obtained for each item.

Table 31: Parents find it expensive to assist their children for distance learning

		Frequency	Percent
Valid	Strongly Agree	38	14.6
	Agree	158	60.8
	Disagree	57	21.9
	Strongly Disagree	7	2.7
	Total	260	100.0

Source: Field data 2022

The results obtained for this item show that 38 (14.6%) of the respondents strongly agree to the opinion that parents find it expensive to assist their children in distance learning while 158(60.8%) of them agree to the same opinion. However, a considerable number of them (57, 21.9%) disagree to the question and even 7 of them (2.7%) strongly disagree to the opinion.

Table 32: My school`s annual budget can not sufficiently run distance learning infrastructure

Modality		Frequency	Percentage
Valid	Strongly Agree	51	19.6
	Agree	170	65.4
	Disagree	33	12.7
	Strongly Disagree	6	2.3
	Total	260	100.0

Source: Field data 2022

This result shows that 51 (19.6%) of the respondents strongly agree to the opinion that the school budget is insufficient to run distance learning. 150 (65.4%) agree to the same view, but 33 (12.7%) disagree to the opinion and even 6 (2.3%) of them strongly disagree. In total, 221 (85%) of the respondents are for the view that school budgets are insufficient to run distance learning while 39(15%) have contrary view.

Table 33: There is a need for a human cadre of professionals and technicians in e-learning

Modality		Frequency	Percentage
Valid	Strongly Agree	79	30.4
	Agree	173	66.5
	Disagree	8	3.1
	Total	260	100.0

Source: Field data 2022

The last item for this objective shows from the above table that 79 (30.4%) of the respondents strongly agreed to the opinion that there`s the need for human cadre of professionals and technicians for a smooth run of distance learning. 173 (66.5%) of them agree to the same opinion and 8(3.1%) are against the view. In total 252 (96.9%) of the respondents observe that human professionals and technicians are needed for e-learning in secondary schools.

Results on Distance Learning Management (The dependent variable)

Table 34: General Statistics on the management of distance learning

Item		A	B	C
N	Valid	260	260	254
Median		2.00	1.00	2.00
Mode		1	1	2

Source: Field data 2022

A= Students attendance during online lessons are not easily tracked and controlled

B= Students activities in distance learning face difficulties in recording and reporting.

C= Performance assessment in distance learning is not easy to do

The data above indicates that of the three items selected to investigate the present management of distance learning, the first item, studying the traceability of learners` assiduity had a mean score of 1.57, a median of 2.00, a mode of 1 and a standard deviation of

.602. The second item sought to investigate the challenges with recording and reporting learners` activities in distance learning. This item had a mean score of 1.39, a median of 1.00, a mode of 1 and a standard deviation of .519. The third item investigates the difficulty with evaluating on distance learning. The data collected for this item had a mean score of 1.53, a median of 2.00, a mode of 2 and a standard deviation of .500. it is also noticed that the items had missing values where the respondents failed to tick a response. The detailed figures for each item are presented below:

Table 35: Students attendance during online lessons are not easily tracked and controlled

Modality	Frequency	Percentage
Strongly Agree	126	48.3
Agree	123	47.1
Disagree	9	3.4
Strongly Disagree	2	.8
Total	260	100

Source: Field data 2022

The table reveals that 126 (48.3%) of the respondents strongly agree to the opinion that students` attendance on online lessons is difficult to control. Another 123 (47.1%) agree to the same claim whereas 9 (3.4%) of them disagree and even 2 (.8%) of the respondents strongly disagree to this opinion. From this result, it can be deduced that majority of the respondents, corresponding to majority of the schools find it difficult to track assiduity on distance learning.

Table 36: Students activities in distance learning face difficulties in recording and reporting

Modality		Frequency	Percentage
Valid	Strongly Agree	163	62.5
	Agree	93	35.6
	Disagree	4	1.5
	Total	260	99.6
Missing	System	1	.4
Total		261	100.0

Source: Field data 2022

The data in the table above shows that 163 (62.5%) of the respondents strongly agree to the point that recording and reporting in distance learning face problems. 93(35.6%) of the respondents agreed to the same view, while 4 (1.5%) of them disagreed. Thus, majority of the respondents (256, 98.1%) observe difficulties in recording and reporting distance learning activities.

Table 37: Performance assessment in distance learning is not easy to do

Modality		Frequency	Percentage
Valid	Strongly Agree	119	45.6
	Agree	135	51.7
	Total	254	97.3
Missing	System	7	2.7
Total		261	100.0

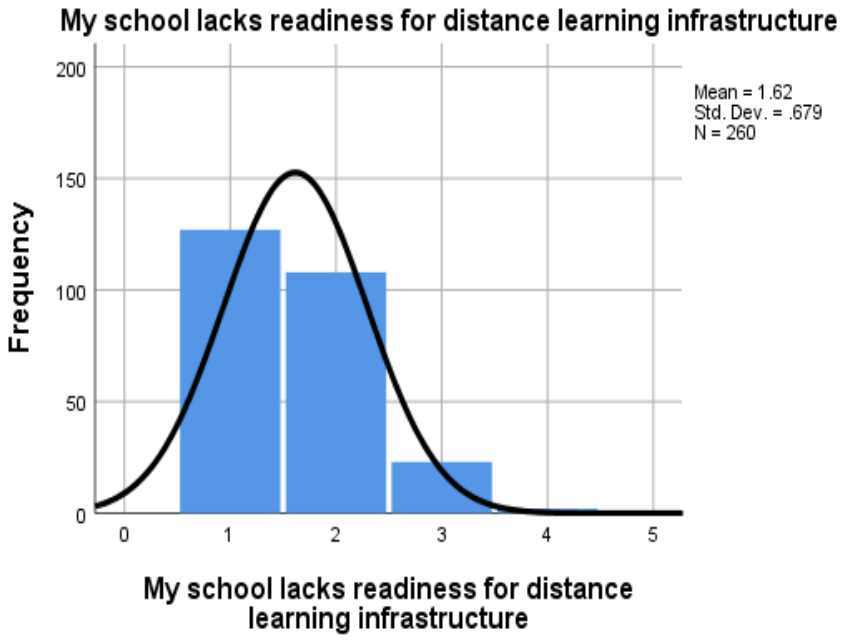
Source: Field data 2022

The table above contains data which indicate that 119 (45.6%) of the respondents strongly agreed to the opinion that assessments in distance learning is presently not easy. Also, 135 (51.7%) of them agreed to the same opinion, with none of the respondents recorded to disagree. However, the item had 7 missing responses to this opinion, where the respondents could not provide an answer.

Research Hypotheses Testing

This section is concerned with the verification of the hypotheses stated in chapter one of this study. The inferential test described for the testing of our hypotheses was the Pearson's correlation. The data collected from the field was analysed using the SPSS 26 software and tested for normal distribution (to make certain the parametric property), to permit the use of Pearson`s correlation test. The test revealed that the distribution is positively skewed, as the tail of the distribution is seen to be on the right (Fonkeng et al., 2014). This is evident in the histogram presented below, in which just one of the items of the independent variable is displayed. However, all the data tested for normal distribution yielded similar results. Accepting therefore that the data is not normally distributed and thus fails the parametric test, the log transformation method for data normalisation was done to normalize the data Fonkeng et al. (2014). The normalized data was then analysed using the Pearson`s correlation test, to test our hypotheses.

Figure 11: Histogram, used for parametric test.



Source: Field data 2022

For formatting reasons, the correlation matrix generated by SPSS is synthesised in the tables shown for each hypothesis.

Hypothesis $H0_1$

This hypothesis claimed that administrative limitations to LMS implementation have no significant relationship with the management of distance learning in secondary schools in Yaoundé. The Pearson`s correlation test for this claim reveals as follows:

Table 38: **Results of Pearson`s correlation test for first hypothesis**

Distance learning method is new and unsensitised		
Dependent variables	Correlation coefficient (r)	Significane (2-tailed), p
Students attendance during online lessons are not easily tracked and controlled	.79	.0435
Performance assessment in distance learning is not easy to do	0.97	.0124
My school lacks readiness for distance learning infrastructure		
Students attendance during online lessons are not easily tracked and controlled	.70	.0422
Students activities in distance learning face difficulties in recording and reporting	.81	.0192
Performance assessment in distance learning is not easy to do	.74	.0247
There is no clear policy or guideline for dealing with distance learning		
Students attendance during online lessons are not easily tracked and controlled	.87	.0151
Performance assessment in distance learning is not easy to do	.81	.0064

Source: Field data 2022

Pearson`s correlation between unsensitised distance learning method and students` attendance during online lesson was found to be modestly positive and statistically significant ($r=.82$, $p<0.05$). H01 was rejected.

Pearson`s correlation between unsensitised distance learning method and the ease of tracking students` attendance during online lessons was found to be positive and statistically significant (r=.79, p<0.05). H01 was rejected.

Pearson`s correlation between unsensitised distance learning method and the ease of assessment on distance learning was found to be modestly positive and statistically significant (r=.68, p<0.05). H01 was rejected.

It can be concluded for the first hypothesis that there is enough support to reject the null hypothesis.

Hypothesis $H0_2$

The hypothesis stated that technological difficulties to LMS implementation does not significantly relate to management of distance learning in secondary schools. The Pearson`s correlation test result from SPSS reveals the following:

Table 39: Results of Pearson`s correlation test for the second hypothesis

Dependent variables	Correlation coefficient (r)	Significance (2-tailed), p
My school still needs to mobilise adequate support for distance learning		
Students attendance during online lessons are not easily tracked and controlled	.76	.023
e-learning infrastructure (eg platforms) lacks readiness		
Students attendance during online lessons are not easily tracked and controlled	.84	.013
Performance assessment in distance learning is not easy to do	.71	.037

Source: Field data 2022

Pearson`s correlation between the insufficient support mobilisation and the ease of tracking students` attendance during online lessons was found to be high, positive and statistically significant (r=.76, p<0.05). H0 was rejected.

Pearson`s correlation between the lack of e-learning platforms and the ease of performance accessment during online lessons was found to be high, positive and statistically significant (r=.78, p<0.05). H02 was rejected.

Hypothesis $H0_3$

This hypothesis claims that there exist no significant relationship between financial challenges to LMS implementation and management of distance learning in secondary schools in Yaoundé. The results obtained SPSS correlation analysis is as follows:

Table 40: **Results of Pearson`s correlation test for the third hypothesis**

Parents find it expensive to assist their children in distance learning		
Dependent variables	Correlation coefficient (r)	Significane (2-tailed), p
Performance assessment in distance learning is not easy to do	.85	.008
My school `s annual budget can sufficiently run distance learning infrastructure		
Performance assessment in distance learning is not easy to do	.79	.014
There is a need for a human cadre of professionals and technicians in e-learning		
Students activities in distance learning face difficulties in recording and reporting	.81	.023
Performance assessment in distance learning is not easy to do	.73	.023

Source: Field data 2022

Spearman`s rho correlation between the need for professionals in e-learning and the ease of tracking students` attendance during online lessons was found to be high, positive and statistically significant (r=.80, p<0.05). H03 was rejected.

Table 41: **Summary of Results per Specific Objective**

Research objective	Theory(ies)	Previous works	Results obtained
Specific objective one: To find out the extent to which administrative challenges to LMS implementation affect distance learning management in secondary schools	The innovation diffusion theory (Rogers 1995) Classical administration theory (Henri Fayol, luther Gulick, Max Weber and James D. Mooney.)	Nkwenti (2016) lack of policy, coordination, resources, supporting infrastructures, training	95.63% administrative difficulties to permit LMS for distance learning in secondary schools
Specific objective two: To assess the percentage to which technological difficulties inhibit LMS implementation for distance learning.	The innovation diffusion theory (Rogers 1995) **Technology Acceptance Model (TAM)**	Raida (N.D) technological facilities, lack of practice in LMS training, limited skills by users of the LMS and lack of support from head of facility made up the most difficulties	97.93% in favour of the presence of technological difficulties to implementing LMS for distance learning
Specific objective three: To determine the percentage occupied by financial challenges to LMS implementation for distance learning.	**The Budget Theory** Bozeman and Straussman (1982). **The Agency Theory** Jensen and Meckling (1976).	low level of political support for distance education by political authorities the lack of follow-up and support programmes; and the limited budgets and poor domestic infrastructure	85.77% in favour of the presence of financial challenges to support distance learning

Source: Field data 2022

CHAPTER FIVE

DISCUSSION OF RESULTS, CONCLUSION AND RECOMMENDATIONS

This final chapter seeks to explain the results obtained and presented in chapter four in relation to previous literature and possible justification for some deviations or anomalies from the expected result. The chapter also reviews the research study in the general conclusion, followed by some propositions in the form of recommendations. The limits of the research work shall equally be outlined and suggestions to areas of further findings shall end the chapter.

Discussion of Results

In this section, the researcher explains the similarities, observed deviations and possible justifications for the outcome of the results.

As mentioned in the results, a total of 260 questionnaires, corresponding to 260 respondents were analysed from a sample of 345 who were administered the research instrument. Thus a return rate of 77.1% was obtained, which is representative enough for analysis (Simer, 2013). it is only by chance that more males responded to the findings (55.8%) than females who made up 44.2%. also, the majority of the respondents were those of eleven years experience and below, who are still in active service and who are the immediate actors of the new distance learning approach. This further strengthens the validity of our research instrument.

Most of our respondents were from public schools (55.4%) as compared to 44.6% from private schools. This is also evident because public schools are more into shift learning system than private schools owing to the mass enrolment in government schools.

Most of our respondents were teachers (68.8%) followed by heads of departments (18.8%). This logically indicates the ease of accessibility. Principals are the least accessible within the sample.

When it comes to the awareness on distance learning, it was not surprising to discover that all respondents have at least heard of the method, given that they are in a high technological potential city, where information flow takes various media quickly. However, only 36.9% of them had experienced the distance learning method, clearly spelling out a hindrance in the innovation.

Discussion of research findings

The first specific objective for this study was to investigate the extent to which administrative limitations to LMS implementation hinder distance learning management. Following the literature gathered, three research items were investigated namely; the level of mobilisation and sensitisation, the readiness of distance learning infrastructure and the provision of a clear operating policy or guide. These items respectively scored 98.5%, 90.3% and 98.1% in favour of the absence of these factors, obtaining an average of 95.63% difficulties to permit for distance learning in secondary schools. The results tie with the explanation provided by Siti, Nurliani & Norhayati (2017) who pointed out that success in distance learning requires administrative components and styles in mobilising the personnel, explaining the vision and providing the enabling environment for the method. The high percentage score in the administrative challenges could also be due to administrators presenting resistance to the strategy as explained by Paulsen (2003). The results are equally similar to what Meriem & Youssef (2019) found at the Abdulmalek Essadi University in Morocco, who expounded that there were communication issues in spreading the e-learning strategy and policies, resistance to change, lack of regulations, lack of culture in sharing, lack of E-learning awareness. The results coincides as well with what Nkwenti (2016) established on the baseline study on the current state of open and distance learning (ODL) in Cameroon, where the author pointed out that ODL has been below expectations in Sub-Saharan Africa in part because of a lack of policy coordination with other efforts, such as the provision of adequate resources, the development of supporting infrastructures and the education and training of ODL users.

The second research objective aimed to assess the percentage to which technological difficulties inhibit LMS implementation for distance learning. For this objective, the researcher selected three indicators namely, the speed and stability of the internet connectivity, the mobilisation of technical support and the readiness of e-earning infrastructure such as the availability of platforms. These indicators respectively scored 97.3%, 96.9% and 99.6% giving an average of 97.93% in favour of the presence of technological difficulties to implementing LMS for distance learning. The same results were obtained by Raida (N.D) while investigating the challenges and opportunities for applying e-learning at IAIN Antasari. The author demonstrated that the lack of technological facilities, lack of practice in LMS training, limited skills by users of the LMS and lack of support from head of facility made up the most difficulties. The results also reflects that of Abdulah (2018) who uncovered that that the main barriers to the use of LMSs were inadequate technical

support by the universities, negative attitude toward technology, and inadequate training on the LMS platforms. the results further confirms the findings of Kibinkiri (2014), Nkwenti (2016) and Nkongho (2020), who in their different researches established difficulties surrounding e-learning activity, to include slow internet connections, lack of facilities, lack of training.

The third research objective was to determine the percentage occupied by financial challenges to LMS implementation for distance learning. The researcher also selected three indicators for this objective. They are; the parents` capacity to assist their children in distance learning, the ability of the school budget to support distance learning and the need to hire professionals and technicians in e-learning. The results obtained for these indicators are respectively 75.4%, 85.0% and 96.9% giving an average of 85.77% in favour of the presence of financial challenges to support distance learning. This result confirms the findings of ADEA cited in Nkwenti (2016) who established that there is a low level of political support for distance education by political authorities in Africa; the failure of the public service to recognise distance learning in its assessment of employee qualifications; the lack of professionally trained distance learning personnel; the lack of follow-up and support programmes; and the limited budgets and poor domestic infrastructure.

The challenges faced above are reflected in the outcome of the dependent variable. Three indicators were selected to confirm the claim posed by the research problem. These were The tracking and control of students` attendance on online lessons, recording and reporting of students activities during online lessons and the performance assessment on distance learning. The results obtained, 95.4%, 98.1% and 97.3% respectively all point to the fact that management of distance learning with respect to these factors is presently very poor in secondary schools in Yaoundé municipality. This confirms the declaration by Nadire and Muhammed (2014) that distance learning management is not possible without an effective learning management system (LMS). The results obtained, go in line with the explanation provided by the proponents of the innovation diffusion theory. It could be understood that there is resistance to the adoption of the distance learning method due to non acceptance of the technology. However, the emergency provided by the Covid-19 and socio-political crises permitted the decision makers to consider the contingency option proposed by the contingency theoreticians, though it has led to with the limits of the theory.

Discussion of hypotheses results

The data collected did not pass the parametric test, since it was rather skewed than normal distribution. So the spearman rho test was used following explanations from literature. The correlation coefficient r, for the first hypothesis was negative, indicating that the increase in one variable leads to the decrease in the other. That is, as administrative challenges to LMS increase, the effective management of distance learning decrease. The test however did not show any significant relationship between the two variables. The second hypothesis showed significant relationship between the variables as expected, though some of the correlation coefficients were surprisingly positive. The third hypothesis also showed statistically significant relationship between the financial challenges to LMS implementation and the effective management of distance learning. From the test results, it is also noticed that some correlation coefficients for this hypothesis were positive, contrary to the expectations and the responses of the respondents.

General Conclusion

This research study originated from the observation made by the researcher on the field, on the practice of distance learning to complement the traditional face-to-face method of teaching and learning. It was observed that due to large class sizes caused by natural increase in the access rate to secondary education within the Yaoundé municipality and the displacement of students from the socio-political crises zones to Yaoundé, coupled with the fact that construction of classrooms is largely slow compared to the school access rate, stakeholders in the management of education in Cameroon took measures to enhance continuity of education. Some of these measures which took dramatic effect during the outbreak and continuity of Covid-19 pandemic were the prescription of shift system of education for those schools which had large enrolments in order to curb the spread of the disease and distance education, to make up for the reduced physical learning activities. Despite the fact that it is a plausible innovation for the continuity of education, the researcher observed the problem of managing the distance learning component by secondary schools in Yaoundé. This observation lead the researcher to question the challenges faced by secondary school managers and to what extent they hinder the effective management of distance learning in Yaoundé municipality.

To investigate the worries posed by the question above, three specific research objectives were designed. The first objective was to find out the extent to which administrative difficulties to implementing an LMS hinder the effective management of distance learning in secondary schools. The second research objective was to investigate the percentage of technological challenges to implementing an LMS in a distance learning setting. The third specific objective was to find out the percentage occupied by financial difficulties to implementing LMS for distance learning. For these objectives the researcher stated three null hypotheses, to test the relationship strength between each independent variable factor in the objective and the management of distance learning. They were labelled $H0_1$, $H0_2$ and $H0_3$.

Literature was gathered from scholars around the globe, whose works guided the researcher on the research items, methodology and instrumentation. The research problem resulting from an innovation, the innovation diffusion theory and the technology acceptance model were chosen to provide explanations to the research questions. It was also important to employ the explanations of school management theories such as the classical administrative management theory and the contingency theory to explain how managers should function in a school organisation and in times of contingency.

A mixed research design was adopted for this study (qualitative and quantitative) and the data was administered on a sample of 345 persons using a likert scale questionnaire. The sample population constituted principals, vice principals, heads of departments and teachers at the secondary school level. The SPSS 26 software was used to analyse the data and the Spearman rho correlation was used to test the hypotheses.

A total of 260 returned questionnaires were analysed using the SPSS 26 software and the results obtained from the findings indicate that more respondents came from public schools (55.4%). Among the respondents, 55.8% were males and 44.2% were females. Most of the respondents were teachers (68.8%) and only 36.9% of all the respondents analysed had some experience in distance learning. Results from the research objectives indicated that for the first objective, 95.63% of the respondents acknowledged the presence of administrative challenges hindering the implementation of LMS for effective distance learning. For the second objective, 97.93% of the respondents confirmed technological difficulties to implementing LMS for distance learning while for the third specific objective, 85.77% of the respondents equally noted financial challenges to a successful LMS implementation for distance learning. The results were compared to be in conformity with previous findings by scholars. It can be concluded that for the general objective which sought to investigate the

extent to which challenges affect implementation of LMS for distance learning management, 93.11% is how far the challenges present in Yaoundé municipality.

Contribution to Knowledge

This research study has gained inputs from scholars worldwide and especially from scholars whose works concerned Cameroon and Yaoundé in particular. The view point of many of these scholars has been to study the level of engagement in e-learning strategy or the use of internet technology for educational purposes, with accent on the challenges of acquiring, accessing, usability, or related factors linked to usage of digital technology. It is honest to mention that almost no previous work has been found yet pointing to the management of distance learning in Yaoundé. This research work therefore contributes as the base knowledge for future works in this domain.

Recommendations

Based on the high percentage scores on the challenges that affect successful usage and management of distance learning, some proposals are made here below, borrowing from what other scholars notably, Nkwenty (2016), Nkongho (2020) and Ako (2022) have already mentioned in their respective works. The fact that distance learning innovation does not only apply during health or socio-political crises, but equally mitigates the ever rising demand for education in an economy where provision of infrastructure is more costly, the more cost effective alternative of distance learning can be made successful, considering the following recommendations:

- Training. Most of the challenges or resistance to adopting the distance learning method of teaching and learning stems from the fact that teachers of secondary education lack the required skills to effectively use the technology. For this dilemma to be overcome, decision makers in the sector should organise recycling training on the first part, while launch a three to five year program of training e-learning professionals at the different teacher training schools. Moreover, the decision makers and stakeholders should introduce e-learning training courses for all disciplines in these schools.
- Decentralisation of distance learning system. The present significant distance learning platform for secondary education is that provided by the MINESEC distance-learning centre. The schedules and programs taught do not usually coincide with the time tables of the different schools and their programs. More so, the internet connectivity is usually not synchronised to all parts of the country. Thus, it is recommended that the

learning platform, which should include the features of management of learning activities, should be decentralised and get closer to the end users. In this way, the actors at the implementation level (school administration, staff and students) get more involved. This requires that the stakeholders mobilise resources for this implementation.

- Stable electricity and internet connection. Distance learning requires that the actors involved are in perfect harmony during learning. Power failures and poor bandwidth discourages both the tutors and learners. It will therefore be incumbent on the policy definers to design an enhanced e-learning internet disposition to schools and ensuring stable and sufficient power supply.

Limitations of the Study

This research work did not cover many of the possible factors or indicators of challenges that can affect the implementation of LMS for effective management of distance learning. three areas were covered notably the administrative challenges, the technological challenges and the financial difficulties. Furthermore, the sample worked on, is believed to be less representative for generalisation on the country`s secondary school system. Thus, further research will be encouraged in this perspective.

Suggested Areas for Further Research

As mentioned above, the areas covered for this study are three. That is, administrative, technological and financial factors which influence the implementation of learning management system. Other factors that influence LMS implementation such as skill, policy issues, the indicators of governance (transparency, equity, culture, etc), social factors, professional motivation and environmental factors are a broad spectrum for further investigation.

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Appendix 1:

QUESTIONNAIRE

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QUESTIONNAIRE

Good day dear Madam/Sir. I am Fotoh Lwanga Muchu, a masters student of the University of Yaoundé 1, faculty of Education in the department of Curricula and Evaluation, specialising in Educational Management. I am currently undertaking a research study on the challenges faced in implementing learning management system (LMS) to effectively manage distance learning in secondary schools.

Dear Sir/Madam, your response to my findings is strictly academic and will be treated confidentially.

Distance learning is carrying out teaching and learning activities, where the teacher and learner(s) are geographically separated in time and space.

A learning management system (LMS) is a computerised system, capable of automatically generating reports on the activities carried out in a distance learning environment. Such reports could include attendance, content coverage, assessment data, etc.

Please tick (√) the option that matches your opinion.

PART 2: DEMOGRAPHIC AND GENERAL INFORMATION

Nature of school: public ☐ private ☐

Gender : male ☐ female ☐

Position: Principal ☐ Vice Principal ☐ HoD ☐ Teacher ☐

Experience : 0-5yrs ☐ 6-10yrs ☐ 11-20yrs ☐ 20yrs ☐

Have you heard of distance learning before? Yes ☐ No ☐

If yes, where did you hear? In my school ☐ over media ☐ other source ☐

Have you experienced or taken part in a distance learning exercise? Yes ☐ No ☐

PART 3: ENQUIRIES ON THE DEPENDENT AND INDEPENDENT VARIABLES

The following propositions have four (4) levels of appreciation. Tick the box most appropriate to your opinion.

1= Strongly Agree; **2** = Agree; **3**= Disagree; **4** = Strongly Disagree

1. Independent variables:

A. Administrative challenges towards LMS implementation for distance learning

No		1	2	3	4
1	I think distance learning method is new and is not sensitised enough				
2	I think my school lacks readiness for distance learning infrastructure				
3	I think there is no clear policy/guideline for dealing with distance learning systems				

B. Technical challenges towards implementing an online learning management system

No		1	2	3	4
1	I think the school`s internet connectivity is not fast and stable				

2	My school still needs to mobilise adequate technical support for distance learning				
3	I think e-learning infrastructure (eg platforms) lacks readiness.				

C. Financial constraints to learning management system implementation

No		1	2	3	4
1	I think parents find it expensive to assist their children for distance learning				
2	I think my school`s annual budget can not sufficiently run distance learning infrastructure				
3	I think there is a need for a human cadre of professionals and technicians in e-learning				

2. DEPENDENT VARIABLE

D. Distance learning management

No		1	2	3	4
1	Students attendance during online lessons are not easily tracked and controlled				
2	Students` activities in distance learning face difficulties in recording and reporting.				
3	Performance assessment in distance learning is not easy to do				

Thank you very much for your collaboration

Appendix 2: **Krejcie and Morgan Table for Sample population**

Required Sample Size†

Population Size	Confidence = 95% Margin of Error				Confidence = 99% Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

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Appendix 3**: Research Authorisation**

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Le Doyen
The Dean

N°....677...../21/UYI/FSE/VDSSE

AUTORISATION DE RECHERCHE

Je soussigné, **Professeur BELA Cyrille Bienvenu**, Doyen de la Faculté des Sciences de l'Education de l'Université de Yaoundé I, certifie que l'étudiant **FOTOH Lwanga Much,** Matricule **20V3447** est inscrit en Master II à la Faculté des Sciences de l'Education, Département : ***CURRICULA ET EVALUATION,*** filière : ***MANAGEMENT DE L'EDUCATION,*** Option : ***GESTION DES SYSTEMES D'INFORMATION EDUCATIF SCOLAIRE ET UNIVERSITAIRE.***

L'intéressé doit effectuer des travaux de recherche en vue de la préparation de son diplôme de Master. Il travaille sous la direction du **Dr. NGNOULAYE Janvier.** Son sujet est intitulé : « ***Challenges of learning management implementation to effective management of distance learning in secondary schools in Yaounde municipality*** ».

Je vous saurai gré de bien vouloir le recevoir et mettre à sa disposition toutes les informations susceptibles de l'aider à conduire ses travaux de recherches.

En foi de quoi, cette attestation de recherche lui est délivrée pour servir et valoir ce que de droit /.

Fait à Yaoundé, le 20 DEC 2021

Pour le Doyen et par ordre

Le Vice-Doyen