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A Smart Learner to Smart Employee: Moodle as a Smart E-learning Platform to Strengthen the Smartness of University Students in a Developing Country.

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HIGHLIGHTS

- Students and Lecturers' positive perception towards Technology use increases the students and lecturers' smartness
- Moodle as well other LMS usage influence positively teaching and learning activities and increase smartness.
- Effective technology use into teaching and learning transforms students/ users into smart employees.

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ABSTRACT

It is said that there is no country which is better than its education system. Education systems define in general the overall targets of countries. In the current study, researchers intended to investigate students and lecturers' perceptions about the attainment of the smartness required at work by the mean of using Learning Management System (Moodle) as well as integrating technology into teaching and learning activities. The study was qualitative, the thematic approach was used to analyze qualitative views collected from a sample of university's lecturers and students. The results revealed that Moodle can strengthen lecturers and students' attitudes to cope with technological use. It was also found that university teaching staff and students have to spend much efforts to acquire new technological skills to serve education systems in developing countries. Students and lecturers' perceptions positively supported that Moodle as well as other Learning Management System when used properly may influence learning and teaching conditions for better attaining the required skills to become smart employees. The study recommended the use of Moodle and the continuation of researching on what could motivate both students and lecturers in their everyday lives.

1. INTRODUCTION

Technological skills are among skills required for 21st century and contribute to overcome different barriers previously encountered by both learners and teachers (Munyengabe et al., 2019). Countries pay much attention on technological development in all education levels to ensure the sustainability of their overall development. It is well noted that Information Communication Technology (ICT) plays an influential role in everyday activities of different organizations (UNESCO, 2015 as cited in Wallet (2015). Human resource development is considered as the corner stone and key factor of countries' survival and overall development (Sylvestre, Munyengabe., He Haiyan., 2018); and it has been noted that teaching and learning activities are developed through different methods and levels of education. The usage of ICT tools and learning as well as teaching platforms in education have influenced and enhanced teaching and learning processes (UNESCO/UIS, 2006). Different Learning Management Systems such as eFront, Blackboard, Sakai, Olat (Switzerland), Ilias, Moodle (Modular Object-Oriented Dynamic Learning Environment) (Australia), Intact, student canvas and many others has been put into place and enhanced online teaching and quick access to education system by transcending time and space (Tarus, 2015). The use of Learning Platforms makes feasible asynchronous pedagogical activities including learning, or learning indicated by a time lag between the delivery of content and its reception by followers/learners (Bornman, (2016); Munyengabe, Yiyi, Haiyan, & Hitimana, (2017)). The influence of ICT in different forms/levels of education is mainly defined by accessible online reading sources and course materials, where for instance , teaching and learning can be reached in all hours of a day without limitations (Tarus, (2015); Vandeyar, (2015)). Samigulina and Shayakhmetova (2016) illustrated two categories of Different Learning Management Systems which include free accessible (Open Source) and commercial. Moodle as one of other many e-learning platforms is used to enhance asynchronous learning activities by both teachers and learners. The researchers' intentions were to assess instructors and students perceptions on Moodle's contributions in teaching and learning to transform students into desired future employees required to serve the society in the developing countries.

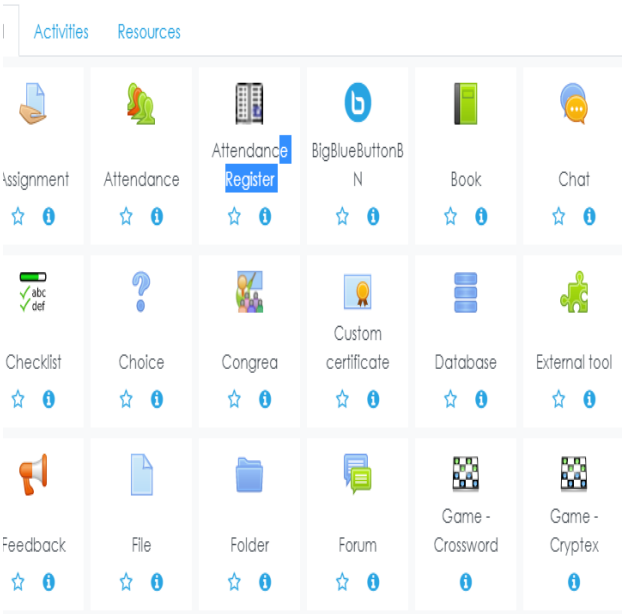
1. Literature review

1.1. The effectiveness of Moodle as E-Learning Platform

Nowadays, with the current situation of Covid-19 pandemic where face to face sessions of all forms of education were negatively affected by lockdown, there is an increasing demand for on-line learning methodologies and technological tools for both learners and instructors. E-learning is simply looked as any form of delivering of learning activities by the

means of digital resources (Al-Ajlan & Zedan, 2008). According to Al-Ajlan & Zedan (2008), E-learning combines efforts from different education stakeholders including educators, experts, users, administrators, and designers to support teaching and learning activities. It is always done through a designed Learning Management System such as Moodle (Modular Object-Oriented Dynamic Learning Environment) which is mainly an Open Source e-learning platform where education institutions operate and serve the communities (Sancar & Cagiltay, 2008). Samigulina and Shayakhmetova (2016) indicated how Distance learning is rapidly increasing globally in different teaching environment; it is also shown that different software were developed to enhance distance learning (DL). Al-Ajlan & Zedan (2008) showed different technological devices such as cellular phones, tables and computers with internet connections to implement teaching and learning activities via different learning platforms. Similarly, Niyigena et al. (2020) mentioned that currently online teaching and face-to-face sessions present almost similar advantages with few differences of learning environments. It is also shown that online teaching develops dialogue, critical thinking, writing in line with constructivism theory where students internally develop themselves via the observed and practiced experiences (Sylvestre, Munyengabe., He Haiyan., 2018). Virtual Learning Environment (VLE) facilitates different live interactions between students and their instructors. Similar to the role of physical technological tools, online platforms play a vital role to enable both learners and teachers to acquire new skills and information to their development. The rapid access to teaching material and instructions to all educational stakeholders makes online platforms key factors in the development of education systems. For instance Moodle provides to learning institutions a range of benefits including access anytime and anywhere, easy communication between followers and instructors, applicability of learnt concepts, self-coaching, improved motivation, removal of fear of damage, utilization of varied process and technological tools, and increased motivation towards new initiatives (Munyengabe et al., 2019).

The figure 1 below indicates different features that users may accomplish through Moodle as One of E-learning Platform



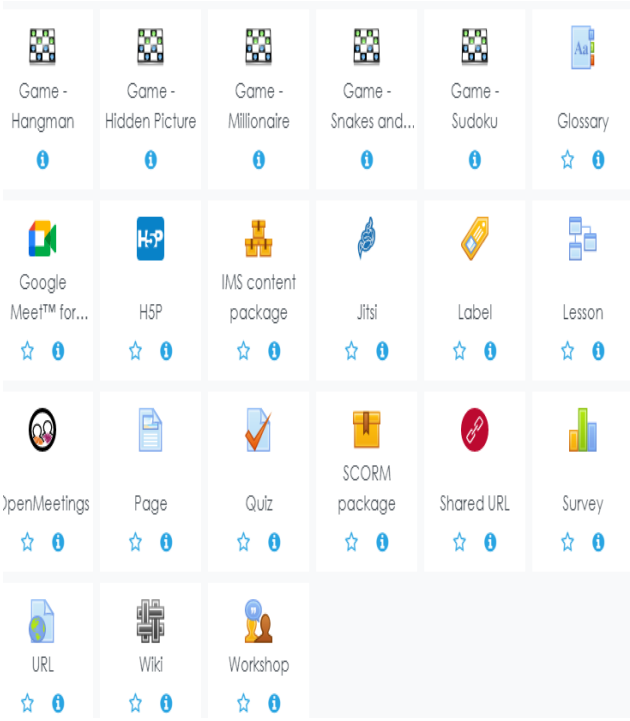


Figure 1: Differentiated features in Moodle.

Assignments, online class attendance, live interactions, chats, survey, workshop, quizzes, lessons and many others as indicated here above are different features that teachers might use to facilitate students. Moodle as a free open e-Learning Platform, seems to be user-friendly due to its flexibility and accessible products availed for educators and students (Al-Ajlan & Zedan, 2008). The role of Moodle to support Computer Sciences Education has been also demonstrated in the study of Rößling together with his co-authors where they showed that many of Learning Management Systems are set by default and not all are able to comply with the specific demand of Computer sciences and related fields (Rößling et al., 2010). Moodle as one of many other LMS system were explored to be updated for adding features that can support different specific needs for computer related education. Moodle has shown a well-organized documentation, well secured, administered, and designed toward the needed Information.

1.2. Influence of Moodle to Teachers and Students Fluency in ICT.

Teachers and students' fluency in Information and Communication Technology (ICT) is mandatory to cope with the needed and required skills to serve in 21st Century (Munyengabe et al., 2019). However, there are many barriers that inhibit students to acquire technological skills to increase of the level of ICT fluency for all technological users (Niyigena et al., 2020). Moodle as user-friendly LMS enables both educators and students to familiarize with ICT. With the constructivism idea, Moodle enables users themselves to interact and handle different barriers which might be encountered while trying to use it. Moodle as a free accessed e-learning platform increases both students and teachers' motivation and construct themselves (Sylvestre, Munyengabe., He Haiyan., 2018). Due to the Moodle characteristics allowing free open access via internet connectivity, it helps in Knowledge distribution among users through interactions, dialogue and forum. The access on learning material uploaded on Moodle serves to teachers and students an easy way to manipulate different technological tools and software necessary to get the needed e-resources. There is a possibility to get uploaded

material while connected and use theme in offline mode which serves as motivating factor to integrate technologies use in students and teachers lives (Hilberg & Meiselwitz, 2008).

1.3. Technology influence in Human Development and Organization Growth

Technology serves as the central part to contribute to the development of human resource needed to serve in 21st-century workplace. Any business or company without smart employees tends or will likely fail (Schmidt et al., 2008). The integration of ICT at workplace changes the business more efficient for the reason that technology enables the employers and employees to yield the good production at the low cost. Nowadays, technology makes life easier as it is used from a word processing program that enables editing to the complex works with use of strong software (Niyigena et al., 2020). With the means of technologies, businessmen are able to manage sales, appointment, and calls from different stakeholders systems (Tarus, (2015); Vandeyar, (2015); Niyigena et al., (2020) & Munyengabe et al., (2019)).

Technology also enables to track time used by employees, and achieve many tedious tasks that could take much time in a short period. Another strong point where technology highly contributes in business includes the computational accuracy through different formulas as developed in spreadsheets like Excel and other programs (software) (Niyigena et al., 2020). For example, the accounting programs such as QuickBooks allow employee to keep inventory and many others like making and recording sales operation, control and payment of bills, and handle payroll list (Rößling et al., 2010). ICT integration into different organizations helps to share information for supporting companies to deal with competitors in the marketplace (Munyengabe et al., 2019). As business competitors use technology, it would be hard for a company to compete with others without using technology. It is also agreed that the use of digital marketing can promote companies' online sales tools to sell everywhere across the globe. Regardless the type of work or profession, there is technology need to facilitate employees and customers do their tasks in an easiest way (Rößling et al., 2010). For example, in health care, there are countless technologies used to save lives, keeping patients records, protection of patient privacy rights and provide quick service relates to patient treatment. It is also very important to note the influence of Technologies in agriculture sector for farmers, engineering marvels and robotics to increase the crops production. A teacher who is looking to impact the next generation of great thinkers won't be able to do it without technology. Technology has tremendously supported the workplace by increasing the way of communication via different social media and other telecommunication means.

1.4. Factors affecting students' adoption to Learning Management Systems (LMS).

Researchers have identified different factor linked to the use of LMS. Among these, researchers classified them into two categories (Internal & External factors). According to Niyigena et al., (2020), the internal factors includes the attitude toward the technological use, students' perceptions toward technologies and the capability to manipulate or handle issue related to technologies. Munyengabe and his co-authors in their studies, confirmed the positive influence of students' attitude toward ICT usage as one of the barrier that influences the ICT integration in education system (Munyengabe et al., 2019). According to the studies conducted by Fungi & Yue (2012), Beauchamp et al. (2008), students, teachers, technologies, resources, pedagogy and curriculum were shown to be the main factors that might affect the use of ICT in Education. Social, political, technological infrastructures, gender, level of training, and organizations were claimed to be among the external barriers that hinder the integration of Technologies into education systems (Tarus, (2015); Beauchamp& Parkinson (2008); Vandeyar, (2015); Niyigena et al., (2020); Munyengabe et al., (2019)).

2. Research aims.

The development of smart manpower is among key factor that may serve countries to achieve or attain their visions. Another major element to consider is how employees are prepared before entering their carriers. The education system is the most influential tool to be successful in Human Resource Development (Munyengabe et al., 2019). The researchers' intention in this study was to investigate teachers and students' perceptions on the influence of LMS such as Moodle in transformation of teaching and learning activities to attain required skills for becoming smart employees to serve countries' needs and purposes. The study mainly focused on answering the followings questions:

1. What are University students and lecturers' perceptions on Moodle usage for facilitating teaching and learning activities in line of attainment required skills to become smart employees?
2. What are students and Lecturers' perceptions on Technologies' role on employees' smartness and profession/career development?
3. What are challenges encountered while incorporating technologies by using Moodle as a university preference Learning Management System?

4. Methodologies

The current study was qualitatively narrative research as it aimed to investigate teachers and students views on LMS usage including Moodle, Technologies' role in improving employees' development and challenges encountered while integrating different technologies in their everyday lives. The selected narrative research design took its basis on the nature of data collected from

participants. The researchers collected views from Lecturers and universities' students through an interview and researchers observations. The Thematic analysis was the preference for researchers where the data were grouped and categorized into their similarities due to its importance indicated while analyzing views from respondents (Sławecki, 2017). The choice of the methods was also based on the nature of data to be reported in this study. Based on this, the qualitative data were the most preference as it helps to access on people life experiences (Guba & Lincoln, 1994 as cited in (Munyengabe, Haiyan, et al., 2017).

5. Research Respondents

The preference of research participants was to give the floor to universities' students and their facilitators. The choice of these participants was in line that students are most preferred employees for future time while lecturers' are good observers who might give the overall views on how ICT use positively affected their everyday lives and see how Technologies influenced their teaching career. To be aware on the extent of universities students' perceptions on the use of ICT tools, and specifically on the role of integrating LMS such as Moodle on their learning activities, researchers preferred to select any five students from Each level of study at Kibogora Polytechnic university. In Total Thirty (30) students participated in the study, these include five (5) students from for level one to level five and Five students from the Post-graduate Diploma in Education PGDE. On lecturers' side, the researchers preferred to interview one interested lecturer from in each of four faculties of Kibogora Polytechnic. In Total Thirty four participants participated into the current study. Details on research participants are given in figure 1 below.

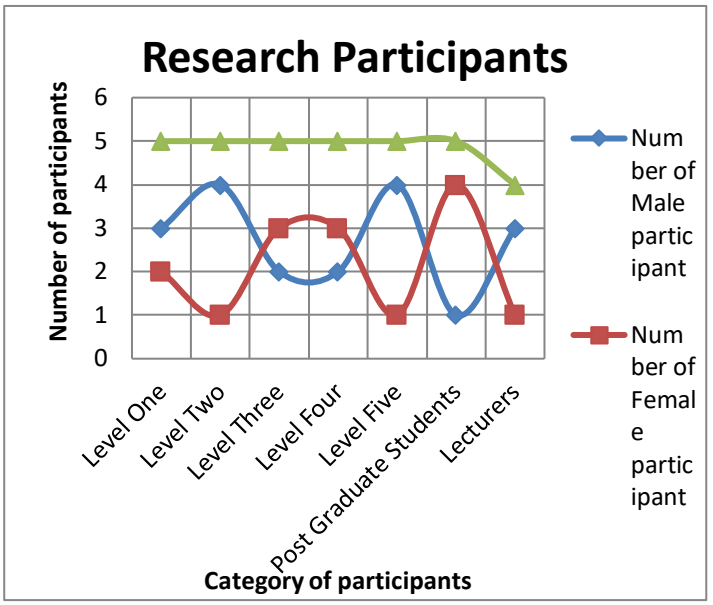


Figure 2: Research Participants.

As indicated here above, participants were grouped into seven clusters, the cluster of Level one's students to level six, then the cluster of educators which forms the seventh group. Both males and females participated into this study as indicated in figure 2 above. In total males were nineteen (56%) while females were fifteen (44%).

5. PROCEDURES

In order to get data, researchers at first preferred to use their own observations, and then shifted to the interview to get the respondents views. In the observation phase, researchers took a period of three months to

observe. The observation focused on students' comments for both physical and online interactions on how Moodle as one of the leading LMSs supports students. This observation phase was added due to the need of having a real background to support the analysis and interpretation phases. During the observational phase, researchers took enough time to observe students' comments in different groups via social media. Physically, researchers also had time to interact in different conversations and discussions via social groups within the classroom or outside classroom.

The interview phase was conducted through discussions from seven clusters, six clusters composed by students and the seventh of lecturers where every cluster was met. The related views were presented together in the form of themes to allow the thematic analysis. Respondents were given time and freedom to express their feelings while answering research questions.

6. ETHICAL CONSIDERATION

For researchers, it is a must to consider ethical issues related to the treatment of respondents data and profiles as well as any other information pertinent to the study. In this concern, the full confidentiality and secrecy were guaranteed to all participants, where the names of respondents were not included in the study, treatment of audio recordings in a professional way where the corresponding views were grouped into their respective themes and analyzed via thematic analysis, and signing the consent form for respondents interested to sign.

7. FINDINGS

Data for the current study were collected in the form of qualitative data as they consist on personal feelings, views and observations of all participants. Data are presented under the consideration of each research question of the study.

7.1. Students and Lecturers' Perceptions on Moodle Usage for Facilitating Teaching and Learning Activities in line of Attainment Required Skills to Become Smart Employees.

Data collected regarding the students and lecturers' perceptions on Moodle usage in the will of strengthening teaching and learning activities for the attainment skills required to become smart employees were presented in the form of views as collected from different clusters of research participants. The clusters used to present collected views are here indicated. The clusters of new beginners (Level one students) was named CL1, Students of Level two were named CL2, Students of Level three were named CL3, Clusters of Level 4 was also named CL4, students of level five were named CL5, and the cluster of students doing postgraduate diploma was named CL6 and that of lecturers named CL7. Views from each cluster were presented under the concerned cluster. The collected views are here below presented in

Table 1:

Table 1: Students and Lecturers' Perceptions on Moodle Usage as well as other LMS.

No	Cluster	Students perceptions/ views	Lecturers' perceptions	Researchers' Observation
1.	CL5	*….Moodle as well as other Learning Management systems in my view seem to be very important because they facilitate both students and lecturers to interact while having online classes*	-	*Students' confidence in dealing with technological means increase with the experiences of LMS usage*
2.	CL1	*……We are new students in the university, but through the use of Moodle we have realized that students can keep learning via synchronous and asynchronous mode for acquiring new information that enhances their teaching and learning activities*	-	*New students develop positive attitudes towards the self-directed learning and problem solving everyday challenges.*
3.	*CL2, CL3, CL4, CL5*	*….Since we joined the university and start use Moodle our level of self-directed and self-coaching has increased a lot, currently Moodle supported us as an important e-learning platform in lockdown crisis where covid-19 sometimes disabled face-to-face sessions*	-	*Students' motivation to persist in learning activities increases with getting familiar with LMS such as Moodle.*

4.	*CL6*	*…since we joined our teaching career, it was difficult for previous times where technologies were not much used, but currently, the teachers smartness goes in hand with the acquired technological skills to deal with many concepts.* *……We have not yet joined teaching career but in our everyday observation it is easier for employees with good technological skills to perform his/her task.*	-	Students in high levels recognize with much intention the importance of integration of technological means into teaching and learning activities.
5.	*CL7*		The integration of Technological means including e-learning platforms has transformed our way of teaching activities. As, it is a part of signed working contracts we adopted and became much smarter compared to the time we joined teaching activities in Higher Learning Institutions	Lecturers' smartness increased with Moodle usage. The university enforcement to use Virtual Learning Environment (VLE) as requested in working contracts helped a lot to adopt to the technologies' use and becoming smart compared to the previous times

7.2. Students and Lecturers' Perceptions on Technology Role on Employees' Smartness and Profession/Career Development

Similarly to the analysis for the first question, respondents' views were plotted and presented in their thematic groups. From the first cluster (CL1) to the last cluster (CL7), respondents' views with similarities are grouped in their respective themes. The collected views are here below presented:

> .....*It is hard for employees without technological skills to perform and compete with others. Nowadays, the level of coping with technological use defines the overall targets in working organizations as well as the belonging employees (CL6).*
>
> ……*In our understanding, it was hard for generation which lived without technological support. Technology use develops human building capacity and supports for both employees and employers to strengthen their working system through quick communication, easy attainment of appropriate solution that could disable the well-functioning of working entities (CL6).*
>
> ……..*There is no hesitation, technology use increases with the smartness of employees not only in their working area but also in handling everyday barriers. For example, nowadays, it is easy for employees to adopt any new technology or skills without waiting the formal training organized by his/her working organization. Today, employees have remarked that their smartness goes in hand with the increase of technology use (CL7).*
>
> ……*Based on transformation gained since we reached at the university, it shows the great importance of technological use. At the secondary schools where the technologies were not much used compared to the university, we were not smart as we feel to be comfortable now where technology use is a part of our everyday life. Nowadays, motivated students in technology usage have a lot of opportunities to transform their lives and become smart employees in their future times. At our side, it would be good if technology is strengthened to all levels of education because the desired employees for human capital development and economic growth will be attained through contribution of smart employees who are able to stand and find required solutions (CL1- CL5)*

……Technology is very good, we can't know at which level we can express the role of technology. Imagine, now students can learn wherever they are! Have access to E-library without travelling! Doing assignment and assessment in different areas! Reading diversified reading materials! Sharing information with colleagues and students from other universities! Quick feedback! Free of tedious task due to technology use (CL1-CL6).

7.3. Challenges Encountered while Incorporating Technologies by Using Moodle as a University Preference Learning Management System

Students as well as lecturers at university level face challenges while getting familiar with technologies incorporation into their everyday lives. While responding to the research question three (RQ3), researchers considered views from respondents in regards to the existing known common barriers and other specific personal barriers. The findings are presented into the table 2 here below:

Table 2: Challenges that hinder the effective use of Moodle as well as other LMS

Factors	Specific personal views and backgrounds on common known barriers.
1.Lack of technological skills	……Learning is a continuous process, however, technological use requires skills necessary to manipulate or deal with many technological tools and software. It is in this essence, both lecturers and students require regular trainings to attain required skills to deal with technologies and its effective use; ……At the time we joined Higher Learning Institutions (HLIs), it was difficult for us to integrate technologies into our everyday teaching and learning activities due to the lack of required skills to deal with a particular situation. While progressing in teaching and learning activities, slowly by slowly we adapted to different approaches requiring technologies integration and by now it seems that none can say he/she has reached at the level where he has enough technological skills required for daily activities for teachers and students; ……Comparing and measuring how technological changes are rapid growing it seems to us that we have only acquired the minimum updates on the technological changes. It is highly needed for both lecturers and students

	to keep working hard so that we can cope with technological integrations into teaching and learning activities (CL1-CL7).
2.Lack of required infrastructure	……It is a common problem for citizens under developing countries to have the barrier of insufficiency of infrastructure required for the citizen's well- being. Similar to education sector, lecturers and students face a challenge of not having sufficient infrastructure required to run smoothly all teaching and learning activities; ……School infrastructure to accommodate/ facilitate technological use requires funds/ financial means to buy the necessary tools/ equipment to facilitate smooth ICT usage. However, it is hard for schools in developing countries to have enough budget to supports all its activities (CL1-CL7).
3.Fear of damage	……Getting familiar with handling/ manipulating technological tools is not an easy task for people who are seeing at first such technological tools without having prerequisite skills to use such tools. In under-developing countries it is common for both students & instructors to face such barrier due to the unfamiliar situation (CL1-CL7); ……This happened to me at the time I went abroad for my studies in developed countries. I really faced this challenge where other students familiar with these tools were not facing any barrier but me it was hard to adapt the system and use of such developed tools (CL7). …….It is also observed during school inspections where inspectors meet with unused tools while they were deployed to facilitate teaching and learning activities. Sometimes, school' principals/ Head- teachers fear to give fully opportunity to explore technological tools to their teachers and learners due to the civic responsibility where any damaged/stolen material without their full control is repaid/paid by the school leader. From this, some School leaders due to this fear decide not fully deliver all technological tools as one way of school protection (CL1-CL6).
	……The use of technology in daily activity has reached to another level compared to the previous decades. However, the lack of enough or adequate technological tools seems to be the prominent barrier for both students and lecturers; …….I really try my best to integrate technology into my everyday activities but I always meet challenges of my social background where my

4.Lack of technological tools	family can't afford/ have all my necessities. Sometimes it requires me to work with my colleagues to have access on computer for doing my daily assignments. This harms my overall achievement due to the lack of necessities required to facilitate my learning activities (CL1-CL7).
5.Lack of motivation	…….many of our colleagues are jobless, I doubt if I am not spending my time for becoming jobless too; …….Many tasks and charges required also discourage me to perform well and avail enough time to learn new technologies that could facilitate my learning activities; ……..Sometimes, it reaches where I feel not being motivated to concentrate into teaching and learning activities due to the necessities required to cover all my needs. It requires me also to avail time to other activities that could support what I do to support my income so that I can try resist and overcome family barriers (CL1-CL6).
6.Student option/Program	……..A quick adoption with ICT as well as LMS use is well observed among students who acquired technological skills before joining their universities studies. ……Students who did option related to computer skills are good to cope with new technological changes compared to other students in other subjects (CL1-CL6).
7. Level of English language	…….Many computers programs as well as the medium of instruction is English, due to this factor of language barrier, it requires students to use much time to familiarize with technical words required to cope with ICT use; ……Sometimes we are challenged with our English level and we are not comfortable as it would be if we could use our mother tongue. It would be much greater to use the language that we are comfortable in speaking, listening, reading and understanding (CL1-CL6).
8.ICT Educational Experiences	……The experience of ICT use increases with our educational level due to the great number of module to be covered. At the time we joined the university we realized that the lack of ICT educational experience is among the leading barriers that hinder students' adoption to new technologies use (CL1-CL7).

9. Social and cultural influences	……Social background plays a vital role on students' interest to the adoption on new changes. The integration of technology requires at first the positive attitude towards technological use; ……..Parents, students and many other stakeholders are crucial for acquiring and integrate changes prior to the concern of maintaining the cultural norms and social needs (CL1-CL7).
10. Political and leadership constraints	……Countries' vision, leadership and political will for nations play an important role to its development. Strategies to reinforce any system within a country or any other type of organization base on the overall set visions/ missions/ targets from the political will governing the country or organization; ……..The influence of politics and leadership is well noticed to the overall achievement of and politicians (CL1-CL7).
11. Behavioral intentions /Targets toward Technologies' use in future	……..It is well noted that students' motivation to use technologies contribute to the quick adaptation to technology use in daily life. Students' intention/ target to use technologies is a key factor to arrange time and find necessities required for technologies' integration in students' daily activities; ……. Nowadays, technologies use seems to be crucial in teaching and learning activities. However, the fully usage of technology into teaching and learning activities is highly linked with individual attention/ zeal or will to cope with it (CL1-CL7).

8. DISCUSSIONS

The use of Learning Management System (LMS) has been found crucial in the transformation of the existing learning from traditional to virtual learning environment (Anuratha 2019). The discussions in the current study base on perceptions of (1) Students and lecturers' perceptions on Moodle usage for facilitating teaching and learning activities in line of attainment required skills to become smart employees; (2) Students and Lecturers' perceptions on Technologies' role on employees' smartness and profession/career development**,** and (3) Challenges encountered while incorporating technologies by using Moodle as a university preference Learning Management System.

The findings revealed the positive perceptions about Moodle usage as well other Learning Management System for both students and academic staff at the university. Similar to the work of González et al. (2009), it was noticed that LMS are important for both internal and external users in different systems as well as organizations. In the work of Sancar & Cagiltay (2008), it was indicated that the use LMS influences positively the teaching and learning activities once the selection of LMS to be used took account on different factors related to all users. The findings of the study in regards to students and lecturers perceptions are aligned with findings of Anaraki & Director (2006) who underlined the importance of LMS and proposed to develop free LMS to facilitate users belonging to under developing countries. The positive perceptions toward Moodle as well as other LMS indicated in current study complements the findings from the work of Rößling et al. (2010) who asserted that the integration of Technology through LMS engages immediately the new adaptability which positively influences users to find quick solutions to any encuntered barriers.

Respondents also indicated that the adaptability of technological use increases the level of students and lecturers smartness in terms of finding quick solutions as well as getting the needed trainings and quality content required for serving in 21st Century. Similar to the work of Munyengabe et al. (2019), the adoption of ICT as well as the use of LMS in teaching and learning activities increases the students smartness to become future smart employees. Basing also on the findings from university's lecturers, it was noticed that the use of LMS as well as ICT tools in general increased their adaptability levels and acquired new skills which enable them to give a prompt feedback and support where it is necessary. In the above said work, it was also noticed that the use of LMS eased the work of lecturers such as giving assignement on time, accessing teaching and reading resources etc. Similarly to the work of Darbhamulla & Lawhead (2004) who confirmed that the learner's centered methodology is emphasized by the use of LMS which create a suitable learning environment that improve students' attendance and develop their cognitive levels. The findings of the current works which highlighted the importance of LMS in teaching and learning activities were also underlined in different works of Anaraki & Director ((2006); Twakyondo & Munaku (2012); Al-sarrayrih, Natho et al, (2010); Daloukas et al. (2008); and Alario et al. (2010) who revealed and encourage the adoption of Moodle as LMS which is associated with low costs and customized to the community need.

The challenges faced while integrating the adoption of Moodle in teaching and learning activities were also highlighted by the respondents. These

include lack of technological skills, fear of damage, Behavioral intentions, political and leadership constraints, Social and cultural influences, lack of experience to ICT tools, issue of language instructions, students options, lack of technological tools and low motivation due to the unemployment barrier (Hitimana et al., 2017). Similar to the works of Niyigena et al. (2020); Munyengabe et al. (2021); Darbhamulla & Lawhead (2004); It is well noted that technological tools as well as students' motivation are key elements that enable both students and lecturers to reach their academic targets. The findings from the study where technological skills, fear of damage and behavioral intentions as well as political and leadership constraints were also remarked as common challenges in the studies of Asiri et al. (2012), Bornman (2016), Coleman & Mtshazi (2017), Kayisire & Wei (2016) and Munyengabe et al. (2017).

9. CONCLUSION

The study emphasized on students and lecturers' perceptions on Moodle use as E-learning Platform to Strengthen the Smartness of University Students in a Developing Country. The study took also account on challenges that hinder the adoption of the use of Moodle as a learning platform that might enable students and lecturers to cope with technological use**.** Both students and lecturers perceptions were found to be positive towards the use of Moodle as well as the use of other LMSs. It was noticed that the adoption of technology is perceived to be positive in transforming employees to become smart, acquire required skills and cope with their everyday activities. The fear of damage, lack of required technological tools as well as the low students' motivation were identified to the major challenges that hinder the adoption of technology use. From above findings, it is well noted that the adoption and use of Moodle as well as other types of technologies are recommended to be integrated in education as they were perceived to be very positive in strengthening both students and lecturers smartness.

10. ACKNOWLEGEMENT

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