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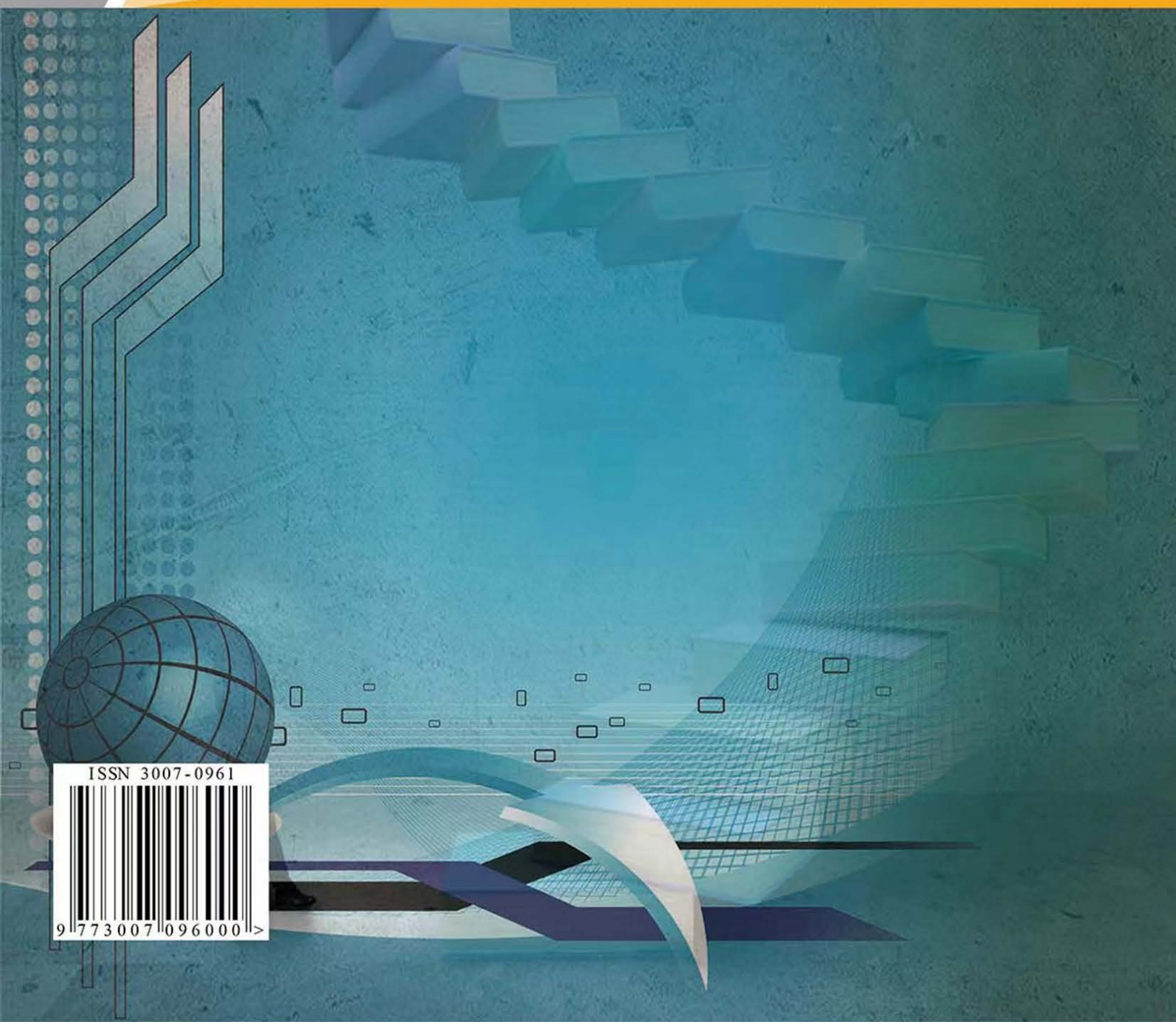

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The Adoption of E-learning by Students in Zimbabwean Universities in the Wake of COVID-19

Gilford T. Hapanyengwi[1] Paul Sambo[2*] Tsitsi Zengeya[2]
1.Zimbabwe Council for Higher Education, Information Communication Technology, Zimbabwe
2.Department of Computer Science, Great Zimbabwe University, Masvingo, Zimbabwe
*Corresponding Author:
Paul Sambo,
Department of Computer Science, Great Zimbabwe University, Masvingo, Zimbabwe Email: psambo@gzu.ac.zw

ABSTRACT

COVID-19 effects have been felt in the education sector worldwide where schools, colleges, and universities were closed as a way to reduce the spread of the deadly pandemic and loss of lives. The Ministry of Higher and Tertiary Education. advocate that no child should be left behind during the COVID-19 era, therefore gave a directive for universities to use other alternative means of teaching and learning to continuously provide teaching and learning to students during the series of lockdown. An efficient eLearning system in universities is very important as an alternative to face-to-face teaching and learning in this COVID-19 era to have continuity in teaching and learning during the induced lockdowns. Success in online learning can be achieved by understanding the level of readiness of online learning environments. The main objective of the study was to evaluate the adoption of online learning by students in Zimbabwean universities. A descriptive online survey employing questionnaires to collect data on the adoption of eLearning by Zimbabwean universities students was used. Results indicated various eLearning platforms have been introduced in Zimbabwean universities though there is a need for eLearning infrastructure to be availed, students to be trained or students to effectively adopt the eLearning.

Keywords: eLearning; COVID-19; Adoption;Lockdown; Pedagogy; Support; implementations

1 Introduction

The Coronavirus-2019 (COVID-19) has disrupted various sectors including health, economy, education, business, religion among others world over [1]. Geographical differences of case severity were witnessed with African countries being reported to suffer the most due to poverty and low testing capacity [2]. Zimbabwe is one of the African countries which were affected by COVID-19, especially the education sector. The policy on "Education for all" [3,4] has paused a challenge to the policymakers in the education sector. In response to the increase in confirmed cases of COVID-19 in Zimbabwe, The President of Zimbabwe ordered colleges and universities to close in March 2020, with an unspecified date of resumption [5]. With the ongoing surge of COVID-19 cases in Zimbabwe, an alternative

to continuing providing education services while minimizing potential infection spread was eLearning.

Literature shows that a lot of developed countries have adopted eLearning systems for university education, for example, Libya since 2005 has adopted eLearning for Higher education Institutions according to [6] though the rate of adoption was very low [7] due to various barriers such as management barriers; technological barriers; cultural barriers, and barriers due to other factors.

Several developing countries have tried to embrace the new eLearning space [8]; however, financial and acceptance factors remain to be a problem that limits its potential use. Drawn on the existing pandemic and potential shift to full eLearning, this study has focused on the assessment of the adoption of eLearning by Zimbabwean university students. This research aims to investigate how Zimbabwean universities can successfully adopt eLearning systems during the pandemics such as COVID-19.

2. Literature Review

The COVID-19 pandemic has accelerated the use of Information Communication Technologies (ICT) in every businesses sector world over, including education [9]. To offer continuous education during the pandemic, eLearning systems had to be adopted as an alternative teaching and learning method [10]. eLearning system is defined as an educational system that delivers information using information technology resources such as internet, intranet, satellite broadcast, and multimedia applications [11]. eLearning systems provide a platform where students can interact with their lecturers and learning materials online. The advantage of adopting eLearning systems is that students can learn from anywhere, at any time, and in a shortened time. [12] identified six elements about eLearning system benefits which include: (1) connectivity, where students will be able to access information anywhere in the world. (2) flexibility, students will be able to access learning materials at any time anywhere. (3) interactivity, is the "dialogue" between students and eLearning tools through which students become engaged and involved in the eLearning process, (4) collaboration or the use of discussion tools can support collaborative learning beyond the classroom, (5) extended opportunities in terms of e-content which can reinforce and extend classroom-based learning, and (6) motivation where multimedia resources can make learning fun.

With eLearning systems, teachers and students can share information virtually and be able to upload and download materials in different formats (Video, audio, presentations, podcasts, documents, etc) [13]. eLearning systems have certain features that facilitate and nurture the learning-teaching process [14]. eLearning is Internet-based and does not require the installation of additional tools to access the system, once the materials are uploaded on the platform, the content can be accessed by students at any time [13]. eLearning includes elements such as technological tools and design, eLearning platforms, content, users and participants [8]. There are a variety of platforms that have been developed such as

Google Classroom, Moodle, Blackboard, Sakai, Microsoft Learning Content Development System (LCDS), etc [8]. Some of the platforms are open access and other subscriptions have to be paid. Before the COVID-19 pandemic, eLearning systems have been used by most universities to complement traditional teaching methods.

The difference between eLearning systems and traditional methods is that eLearning systems do not only focus on instruction but also on learning that can suit individuals or groups. In the traditional setup, the education is more engrossed on the teacher as opposed to the student which is the main thrust of eLearning [15]. Differences between traditional and online learning may also be acknowledged in terms of principal sources of information, assessment, or quality of education. While in traditional education, students are evaluated only by teachers, who also represent their main source of information, and the quality of education is dependent on teacher's knowledge and skills, in online learning, the evaluation may be done with the help of tools and systems, students can acquire information from various documents uploaded on the platform, and the quality of education is influenced by the level of training that teachers have in using technology and also their teaching style [15]. [16] identified and described eight principles that stand at the core of effective online teaching, task time, encouraging students to allocate more time for completing tasks, high expectations, the teacher should communicate their expectations to encourage and motivate students, diversified learning, and technology application.

Researchers about eLearning systems have tried to investigate the reasons for the success or failure of adopting online learning systems [17]. As a result, there exist many factors as being important in determining the success of eLearning. According to [18], the general factors that affect the successful adoption of eLearning are the audience, course structure, page design, content engagement, usability. In this case, the audience is students who are a critical factor in the process of developing eLearning courses. Course structure refers to how a course is intended for eLearning, page design refers to the eLearning page design (navigation, appearance, balance between text and graphics, consistency, and ease of scanning), content management refers to how students interact with the content of the course (content, explanations, graphics, exams) and usability refers to testing eLearning content and applications in the same environment that the student will complete the course. The eLearning success model [18] was adopted for this research.

As shown in Figure 1, the study is premised on the constructs of an eLearning success model based on the system design, service delivery, and system outcome. In the system design, the research focused on how user- friendly and accessible the eLearning system was to students. The students should also be provided with quality timely information which is well organized and useful. The quality of service for eLearning should be prompt and always available [18], With the advent of the COVID-19 pandemic, it meant that universities had to quickly adopt the use of eLearning systems at their workplace.

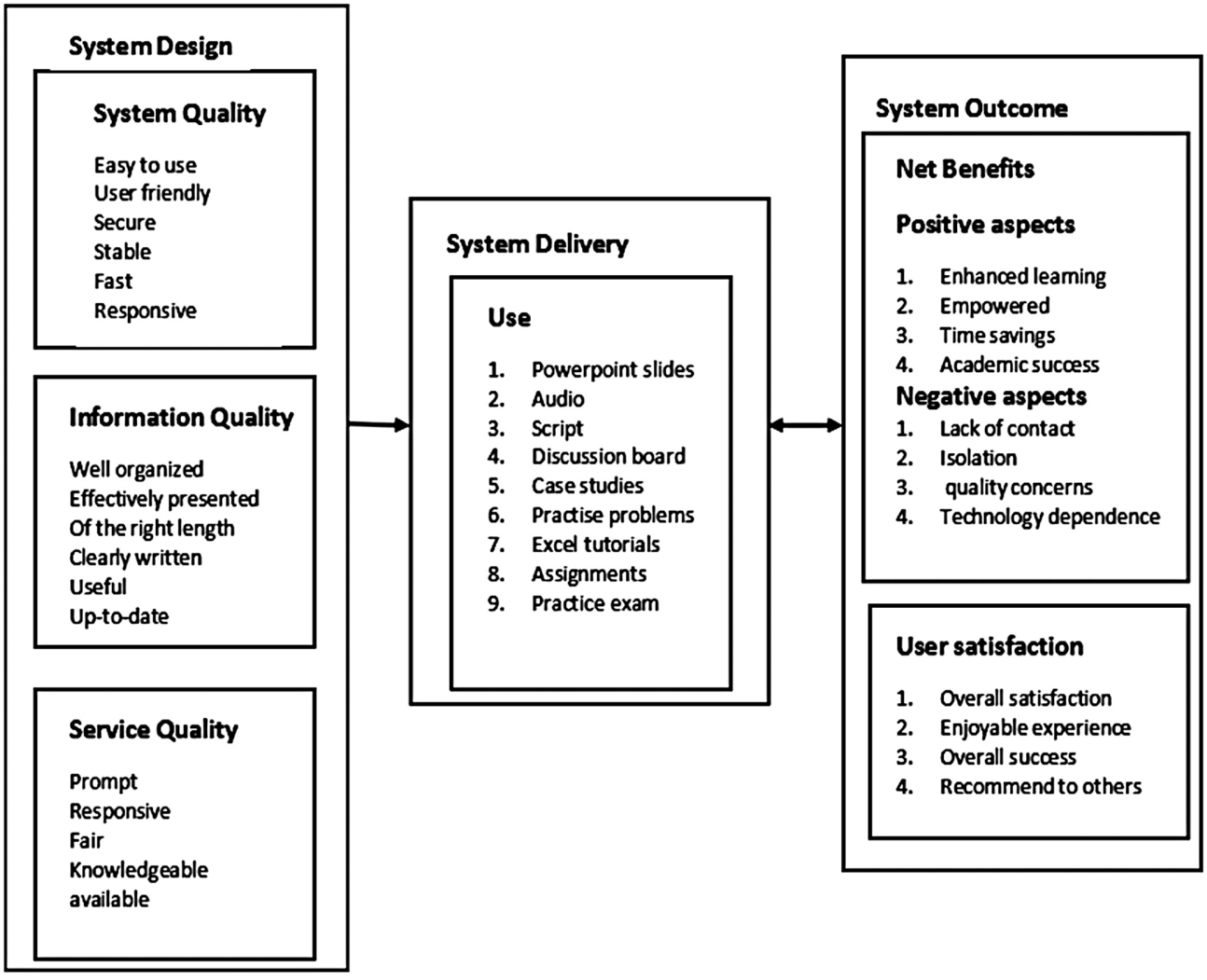

Figure 1. eLearning success model

Higher education institutions are motivated to introduce innovative eLearning programs by expanding their educational boundaries during this COVID-19 era. Most of the universities in developing countries were not prepared for this new eventuality including Zimbabwe [2]. The development and implementation of successful eLearning systems are quite challenging to higher education institutions because of the investment required and the uncertain outcomes. This research aimed to identify the opportunities and challenges faced by university students in the adoption of eLearning systems in Zimbabwe. The study investigated how COVID-19 pandemic affected the adoption of eLearning and the challenges that were faced by students during online learning. Thus this research seeks to contribute to the successful adoption of eLearning systems in Zimbabwe or any other developing country during or post pandemics.

3. Methodology

This research was based on a case study of 20 Zimbabwean universities which include 13 public universities and 7 private universities. The mixed methodology was applied for the study

where purposive sampling was used to collect data from students using an online platform due to COVID-19 restrictions. 1158 students responded to the questionnaire and 30 interviews were conducted with final year students who had been exposed to the traditional face-to-face learning and eLearning methods. The interviews were further used to validate the collected data and fill in the gaps of missing information. The three constructs of the eLearning success model which are system design, system delivery, and system outcomes were used to guide the research. Data were systematically analysed and graphically presented.

4. Findings

The findings revealed that the higher and tertiary education system was disrupted due to the COVID-19 pandemic which forced institutions to switch to eLearning systems. This was important considering that the pandemic will be with us for a long time and there was a need to find continuous alternatives of providing teaching and learning services to students.

4.1. System Design

From Figure 2 above 84% of the students indicated that they own laptops, while 94% own smartphones that they use to access eLearning services. 10% of the students have access to desktops, 17% own tablets/ipads, and 0.04% of the students do not have access to any of the electronic gadgets. Most of the students possess the required devices which allow them to access eLearning services.

Figure 3 above shows that when off the campus, 59% of the students connect to the internet through smartphones mobile data, while 25% connect using home Wifi. 0.05% of students indicated that they use Wifi devices to connect to the internet and 10% of the students had no access to the internet at all when off the campus. The majority of the students have access to the Internet, hence easily be connected to the eLearning system.

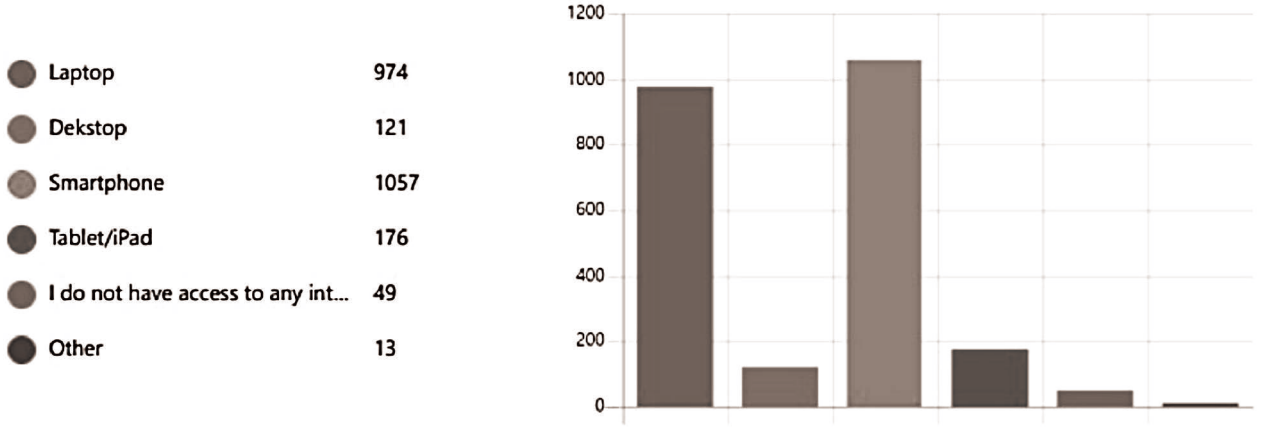

Figure 2. devices used by university students when accessing eLearning services

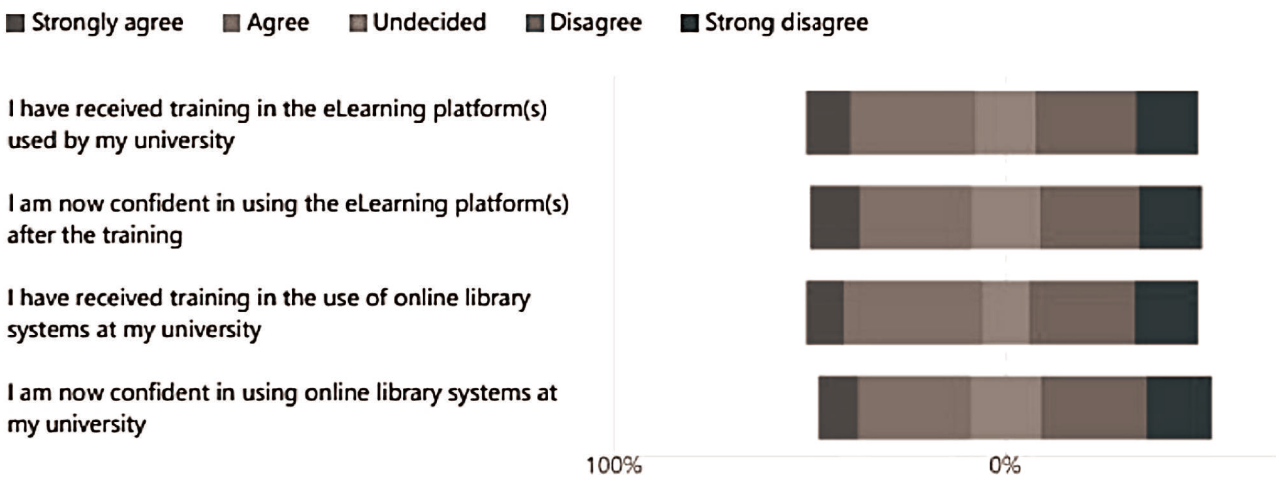

Figure 3. Internet connectivity when off the campus

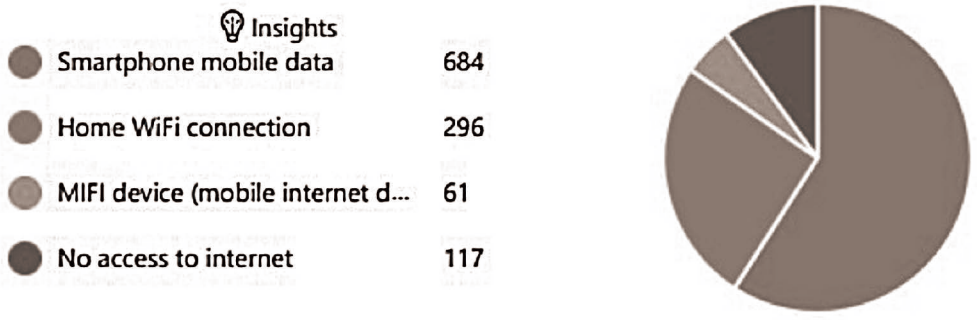

Figure 4. Highlighting eLearning training received by students

From Figure 4 above, the majority of students agreed that they received training on the use of eLearning systems and they indicated that they are now confident in using the platforms. Students also indicated that they received training on how to use online library systems. The training of the majority of students would help them to navigate through the eLearning system whilst away from their campuses.

Figure 5 above shows that the majority of students indicated that the online materials for the modules were inadequate though the materials were easily accessible. This can also reflect that the teachers were also facing challenges designing, developing, and uploading learning materials.

From the above results, the students revealed that they were able to use the eLearning systems since they had the necessary devices, and with minimum training provided they were able to navigate and interact with the system. Although the students were trained and with necessary gadgets but could get enough material from the eLearning system. The finding is important as it clearly shows that the adoption of eLearning is practical if all the necessary resources are provided. The finding would assist policy-makers in decision-making for the

successful adoption of eLearning systems at universities.

4.2. System Delivery

From Figure 6 above, 84% of the students indicated that they use PowerPoint slides as learning materials from eLearning platforms. 51% of students use quizzes/tests. 29% showed that they receive training videos while 38% use podcasts/Audio recorded. 36% use eBooks, 21% use interactive video, 7% use virtual reality/Augmented, 77% use notes as learning materials. 4% indicated that they do not get any materials through eLearning systems. This finding shows that there is a wide variety of teaching methods that are being used across Zimbabwean universities.

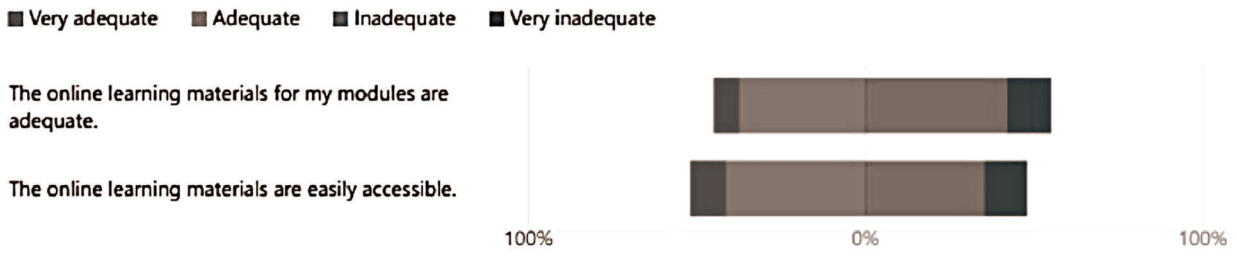

Figure 5. Adequacy of eLearning Materials.

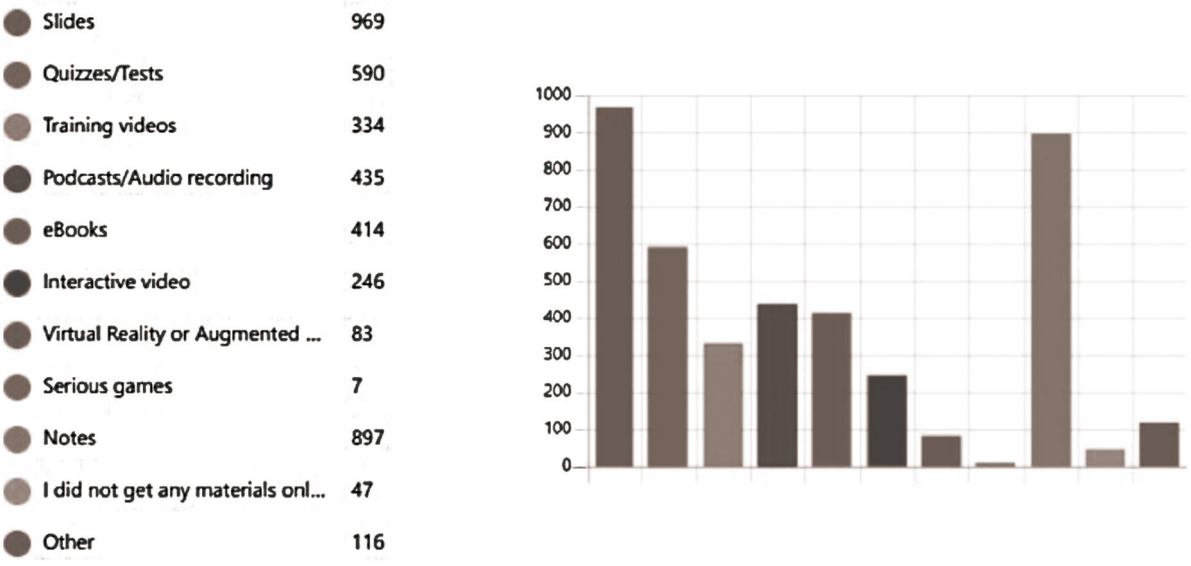

Figure 6. Highlights Learning Materials used by students.

Figure 7. Highlighting online examinations

From the above Figure 7, 74% of the students did not write online examinations while only 16% of the students were able to write the examination. This shows that some of the Zimbabwean universities had examinations written online while the majority could not. This was an advantage to those universities that can write examinations online as they were able to continue with their education system without disruptions.

4.3. System Outcome

Figure 8 highlights the eLearning support services when off campus which shows that the majority of students were strongly dissatisfied with the availability of data, and technical help when trying to access eLearning materials. Lack of data and support services hindered the students from fully adopting eLearning systems.

From Figure 9 above, the majority of the students were strongly dissatisfied with the support they received from the universities in terms of data bundles, securing of eLearning gadgets especially the disadvantaged students. Considering that students from the universities come from different backgrounds, it shows that the disadvantaged students were mostly affected.

The motivation for the use of eLearning was affected by lack of support through the provision of internet access and training on how to use the e-learning systems as well as lack of ICT devices. This finding will help decision-makers in developing strategies to motivate students in the adoption of eLearning systems.

During the interviews, the students indicated that they preferred blended learning which includes the traditional face-to-face method and eLearning systems. This was because some of the students did not have the necessary resources for eLearning services, although they would want to continue learning. The challenges faced were internet connectivity especially for those disadvantaged and those living in the rural communities where there is lack of power and network.

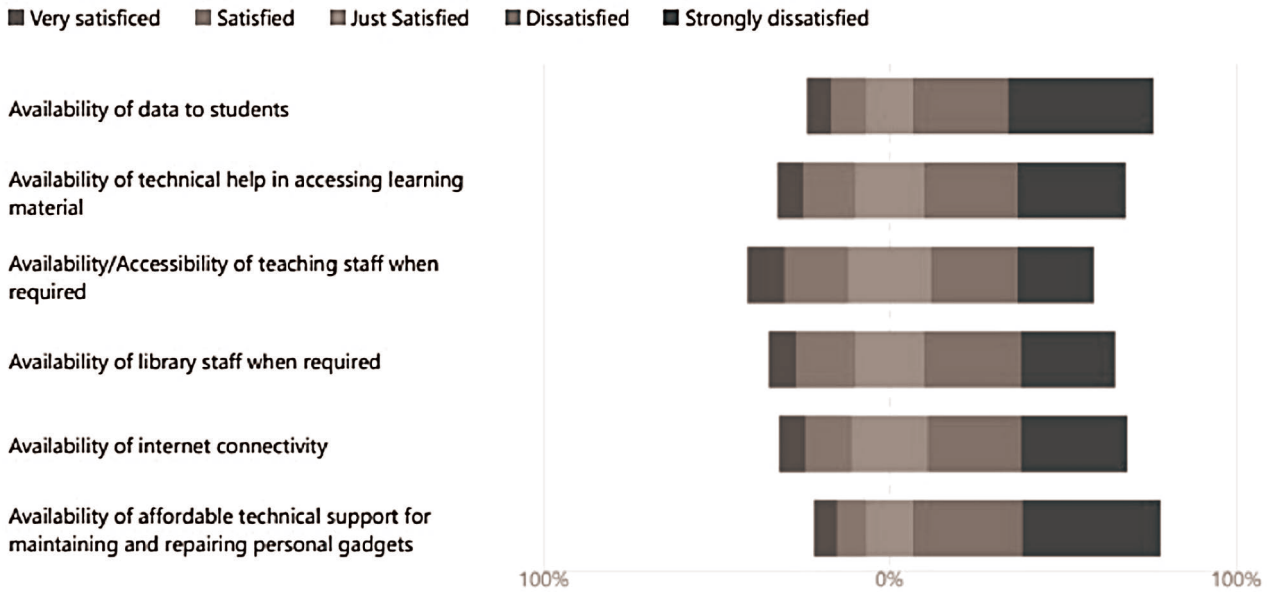

Figure 8. Indicating satisfaction with eLearning support services

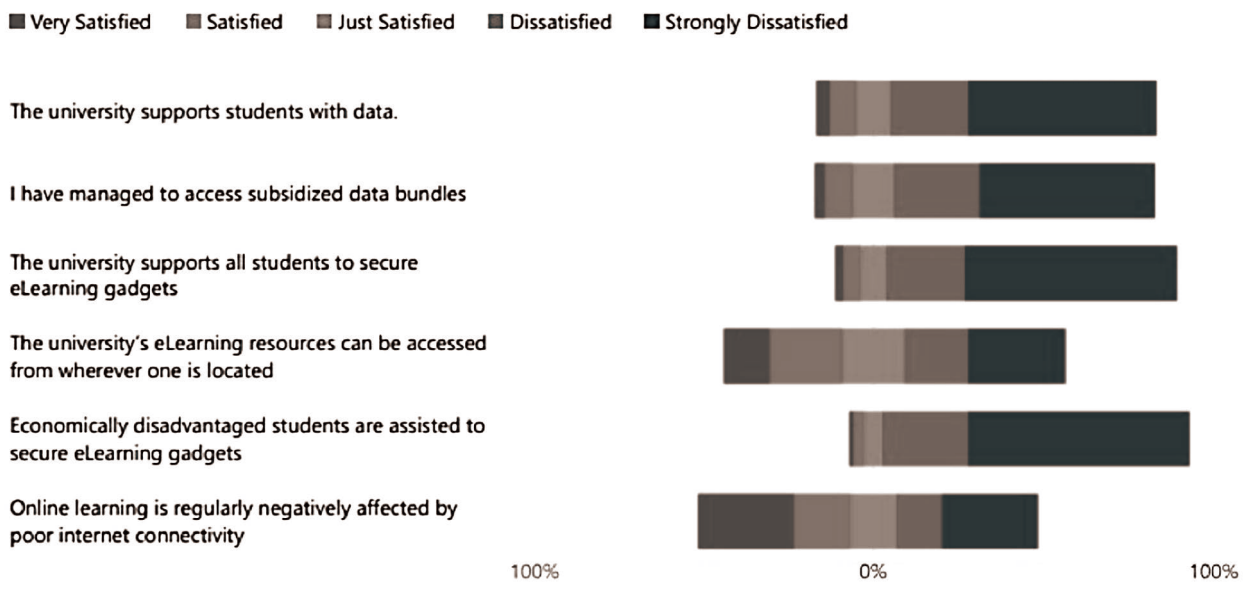

Figure 9. Universities eLearning support to students

5. Discussion

From the findings, it can be deduced that the adoption of e-learning is practical if all the necessary resources are provided. This is supported by [19] who states that successful implementation of eLearning systems require adequate resources such as ICT gadgets, internet access, and availability, and e-learning support services such as learning material and training.

Students indicated that they do not receive any support for purchasing data bundles and securing ICT devices for eLearning which makes it difficult for Higher learning Institutions to implement eLearning systems. This is highlighted in a study in Malaysia that showed that the adoption of eLearning systems for Higher Learning Institutions is greatly hindered by high data costs as a result students will not be able to fully participate in online learning [20]. Another study by [21] in private tertiary institutions amidst COVID-19 lockdown in Nigeria showed that implementation of eLearning was slowed down by the expensive eLearning resources such as data and materials.

Also from the findings of the interviews, students stated that blended learning was more feasible than complete eLearning, due to various challenges which range from poor connectivity, cost of eLearning resources, and lack of training. This is supported by [22] who studied students' perception of online learning during the COVID-19 pandemic discovered that most students preferred blended learning, while less than 5% opted for traditional face-to- face learning.

6. Conclusions

COVID-19 impacted negatively in the education sector and as a solution to provide continuous education, the Ministry of Higher and Tertiary Education switched to eLearning systems. Though Zimbabwean universities adopted eLearning systems as an alternative