Efficacy of Electronic Learning in Achieving Education Delivery for Students Amidst Corona Virus: A Case of Selected Tertiary Education Institutions in Chipata District, Zambia

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Abstract: *The general objective of the study was to establish the efficacy of electronic learning in achieving education delivery for the students by answering the general research question on: How was the efficacy of electronic learning in achieving education delivery for the students? Pragmatism paradigm informed the study and a mixed study was the research method. The mixed method strategy was convergent parallel. The total population was active students that were using electronic learning platforms for education delivery. The sample size was 73 participants, selected by using a non-probability method known as purposive. Data were collected by using a questionnaire that comprised both qualitative and quantitative questions. Qualitative data were analyzed by inductive logic of starting with a specific approach to generalization by collecting raw data; group them to themes, patterns and then, interpretation. Quantitative data were analyzed by deductive logic of starting with the generalization approach to specific by using necessary statistical parameters. The findings of the study were that electronic learning benefited the students by way of extendibility, accessibility and suitability. Further, benefits included devoid of travel costs, time saving, and up-to-date learning materials. Other benefits were better retention of learning material, and flexibility in learning. However, students faced challenges by electronic learning such as learning materials incompatibility, technology-dependency, poor internet, and machine malfunction. Other challenges were unreliability of the content, and ineffectiveness of electronic learning. Overly, the majority of the students scored average in competency to understanding and applying effective electronic learning.*

Keywords: Corona virus, Education delivery, Electronic learning, Students

1. Introduction

The general objective of the study was to establish the efficacy of electronic learning in achieving education delivery for the students by answering the general research question on: How was the efficacy of electronic learning in achieving education delivery for the students? The unexpected occurrence of a fatal sickness called Covid-19 triggered by a Corona Virus, shuddered the whole world and the World Health Organization proclaimed it as a pandemic (Cucinotta & Vanelli, 2020; Dhawan, 2020). The COVID-19 pandemic has generated a huge disruption of the education structures in history, having an effect on approximately 1.8 billion learners in more than 195 countries and all continents (World Bank, 2020a; Martin, 2020; Rajhans *et al.,* 2020; Saxena, 2020). Closures of schools and other learning spaces have had an effect on 95 per cent of the global learner population, equal to 98 per cent in low and lower-middle income countries (World Bank. (2020b; Mailizar *et al.,* 2020; Toquero, 2020).

This state of affairs confronted the education structure globally and compelled educators to change to an online mode of education delivery instantly (Affouneh *et al.,* 2020; Ali, 2020; Liguori & Winkler, 2020). Many tertiary education institutions that were earlier unwilling to transform their conventional pedagogical style had no alternative but to change completely to an online teaching and learning methodology (Allo, 2020; Kassymova *et al.,* 2019; Appanna, 2015; Samsuri et al., 2014; Monika, 2013). It appears that this passage was relatively straightforward for those tertiary education institutions that had invested in the sector and advanced digitalization in a tactical way as a shock absorber in terms of crisis (Adnan, & Anwar, 2020;

Abed, 2019; Sadeghi, 2019; Guragain, 2016). Tertiary education institutions that had not advanced a tactical advance concerning digitalization did not present the support; those that, more broadly, had seen dwindling investment in tertiary education institutions encountered substantial difficulties (Basilaia & Kvavadze, 2020; Tull *et al.,* 2017). Means *et al,* 2016; Arkorful & Abaidoo, 2015). This is further than digitalization in the contracted manner and also relates to matters such as student financing, quality assurance, and the standing of academic staff.

The findings of the study were that electronic learning benefited the students in education delivery in connection with extendibility, accessibility and suitability. Further, there were benefits such devoid of travel costs, time saving, and up-to-date learning materials. Subsequently, students benefited from better retention of learning material and flexible way of learning. However, students faced challenges by electronic learning such as learning materials incompatibility, technology-dependency, poor internet connection and machine malfunction. Other challenges were unreliability of the content, and ineffectiveness of electronic learning. Overly, the majority of the students scored average in competency to understand and apply effective electronic learning,

2. Methodology

Pragmatism paradigm informed the study and a mixed study was the method approach. The mixed method strategy was convergent parallel. The total population was active students that were using electronic learning platforms for education delivery. The sample size was 73 participants, selected by using a non-probability method known as purposive. Data

were collected by using a questionnaire that comprised both qualitative and quantitative questions. Qualitative data was analyzed by an inductive logic of starting with a specific approach to generalization by collecting raw data; group them to themes, patterns and then, interpretation. Quantitative data were analyzed by the deductive logic of starting with the generalization approach to specific by using necessary statistical descriptive parameters.

3. Findings and Discussion

The findings and discussion are drawn by answering the research questions of the study that are segmented in three sections namely: A, B, and C as follow:

3.1 Section A

The first research question is: **How has electronic learning benefited students in achieving education delivery?**

3.1.1 Benefits to the Students of Electronic Learning
The respondents were asked several questions based on the variables of interest. The analysis and answers are provided the following Tables

3.1.1.1 Extendibility, Accessibility, and Suitability
Stakeholders are able to go on throughout a training program at their own time and at their individual place. They can also obtain admission to the training at any time, getting only as much as they need. In other words, "just in time and just enough. Table 1 shows opinion of the students on the extendibility, accessibility, and suitability of electronic learning amidst COVID-19. The study reveals that the majority of the students, 82.2% indicated agreement that electronic learning was extendible, accessible and sustainable. However, a proportion of 5.5% of the students indicated disagreement while 12.3% of the students were undecided. Those who did not agree indicated that it was difficult to access information on time because data bundles were expensive.

Table 1: Extendibility, Accessibility, and Suitability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.4	1.4	1.4
	Disagree	3	4.1	4.1	5.5
	Neutral	9	12.3	12.3	17.8
	Agree	17	23.3	23.3	41.1
	Strongly Agree	43	58.9	58.9	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.1.1.2 Travel Cost and Time Savings
Table 2 presents the opinion of students regarding travel cost and time savings of electronic learning. This entails that with electronic learning, students do not incur cost of travel and time wasting. Results show that the majority of the students, 95.8% indicated agreement that electronic learning reduces costs related to travel and saves on time. A small proportion of the students, 2.7% did not agree while 1.4% was not decided. Those who did not agree narrated that homes were not conducive environment for learning because of disturbances especially for the female learners who were

given house chores at home. Moreover, gadgets for electronic learning were not easy to access because of their related costs. Some students were not able to access electronic devices.

Table 2: Travel Cost and Time Savings -

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	2.7	2.7	2.7
	Neutral	1	1.4	1.4	4.1
	Agree	35	47.9	47.9	52.1
	Strongly Agree	35	47.9	47.9	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.1.1.3 Up-to-date Learning Materials
The syllabi in electronic learning systems are brought up to date more frequently than in the classroom-based dissemination arrangement. Once the syllabi are put in the system, they can be brought up date devoid of amending the entire syllabi and they can be accessible and reused for extended point in time. Table 3 indicates the opinion of the students on electronic learning provision of up-to-date learning materials. The study reveals that the majority of the students, 89.0% indicated agreement that electronic learning provided an up-to-date on learning material. A proportion of 11% of the students were undecided on the subject

Table 3: Up-to-date Learning Materials

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	8	11.0	11.0	11.0
	Agree	29	39.7	39.7	50.7
	Strongly Agree	36	49.3	49.3	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.1.1.4 Flexible way of Learning
Electronic learning is a supple method of learning for many students. Most of the learning information is gathered for the students to retrieve whenever there is need. Table 4 shows the opinion of the students on flexibility of learning of electronic learning. Electronic learning is believed to be flexible for students. Survey results show that the majority of students, 90.4% indicated agreement that electronic learning was flexible. Further, 1.4% of the students strongly disagreed and 8.2% were undecided. Those who indicated disagreement explained that e-learning did not provide an opportunity to interact with lectures.

Table 4: Flexible way of Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.4	1.4	1.4
	Neutral	6	8.2	8.2	9.6
	Agree	31	42.5	42.5	52.1
	Strongly Agree	35	47.9	47.9	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.1.1.5 Better Retention
The video and audio materials employed in electronic learning render the entire learning progression enjoyable. This assists students to keep in mind the things they learn for

a long period of time. Electronic learning resources can also be retrieved whenever needed, thus the recurrence makes withholding simpler. Table 5 presents opinion of students on whether electronic learning provided a better retention of content of the materials. Results indicate that most of the students, 79.5% indicated agreement that e-learning provided better retention of content by students. A proportion of 20.5% of the students were undecided.

Table 5: Better Retention

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	15	20.5	20.5	20.5
	Agree	28	38.4	38.4	58.9
	Strongly Agree	30	41.1	41.1	100.0
	Total	73	100.0	100.0	

Source: Field Data

Summary showing benefits of e-learning by level agreement
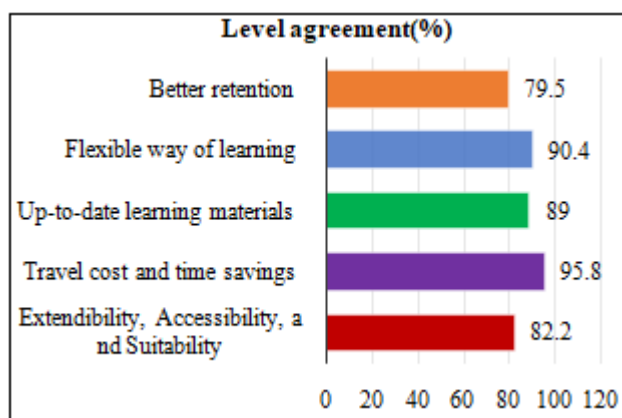

Figure 1
Source: Field Data

3.2 Section B

The second research question is: **What challenges do students face by electronic learning in education delivery?**

3.2.1 Challenges to the Students by Electronic Learning

The respondents were asked several questions based on the variables of interest. The analysis and answers are provided in the following Tables.

3.2.1.1 Compatibility Issues

As there are a number of learning arrangements obtainable, from time to time, the learning resources obtained by application of one arrangement may not be well-matched with another.. Table 6 indicates the opinion of students on the challenge regarding compatibility of electronic learning. Results of the survey show that majority of the students, 79.5% indicated agreement that there were incompatibility issues with electronic learning. A proportion of 2.8% of the students did not agree with the subject while 17.8% were undecided.

Table 6: Compatibility Issues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.4	1.4	1.4
	Disagree	1	1.4	1.4	2.7
	Neutral	13	17.8	17.8	20.5
	Agree	31	42.5	42.5	63.0
	Strongly Agree	27	37.0	37.0	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.2.1.2 Technology-dependency

The learning sources in electronic learning are disseminated using computer products. For instance, learning the use the products might take a long period in time.. It is believed that for some students just to learn how to use those applications might take a long period of time. Table 7 presents the opinion of the students on technological dependence with electronic learning. The study reveals that the majority of the students, 93.2% indicated agreement to challenge of technological dependence which comes with e-learning, as not all students were computer literate. A small proportion of 6.8% of the students did not agree that this challenge existed.

Table 7: Technology-dependency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	6.8	6.8	6.8
	Agree	20	27.4	27.4	34.2
	Strongly Agree	48	65.8	65.8	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.2.1.3 Poor Internet Connection and Machine Malfunction

It renders the learning progression uninteresting and time wasting. Table 8 indicates opinion of the students regarding the challenge of poor interment and machine malfunction of electronic learning Results show that majority of the students, 87.7% indicated agreement that there was a challenge of poor interment connection and malfunctioning of machines associated with electronic learning. A proportion of 12.3% of the students were undecided about the matter.

Table 8: Poor Internet Connection and Machine Malfunction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	9	12.3	12.3	12.3
	Agree	20	27.4	27.4	39.7
	Strongly Agree	44	60.3	60.3	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.2.1.4 Reliability of the Content

The learning resources accessible on the Internet might not all the time be consistent. There are people who manipulate the readers and disseminate false information. So the readers must be alert while looking for the information and ensure the reliability of the learning resource before studying it. Table 9 presents opinion of students, regarding the challenge of reliability of electronic learning. The study reveals that

the majority of the students, 96.3% indicated agreement that there was a challenge of reliability of content associated with e-learning. A proportion of 13.7% of the students were undecided. It was found that students complained that e-learning could not provide an opportunity for learners to ask questions in the event that they did not understand the content of the materials.

Table 9: Reliability of the Content

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	10	13.7	13.7	13.7
	Agree	26	35.6	35.6	49.3
	Strongly Agree	37	50.7	50.7	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.2.1.5 Effectiveness

In some instances one-on-one learning resources might be more effectual than electronic learning as online learning is devoid of two-way communication. Table 10 shows opinion of students regarding the challenge of effectiveness of electronic learning. Results show that the majority of the students, 83.5% indicated agreement regarding the challenge of ineffectiveness associated with electronic learning. A proportion of 1.4% of students was not in agreement with the matter while 15.1% were undecided.

Table 10: Effectiveness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.4	1.4	1.4
	Neutral	11	15.1	15.1	16.4
	Agree	26	35.6	35.6	52.1
	Strongly Agree	35	47.9	47.9	100.0
	Total	73	100.0	100.0	

Source: Field Data

Summary of Challenges Associated with Electronic Learning
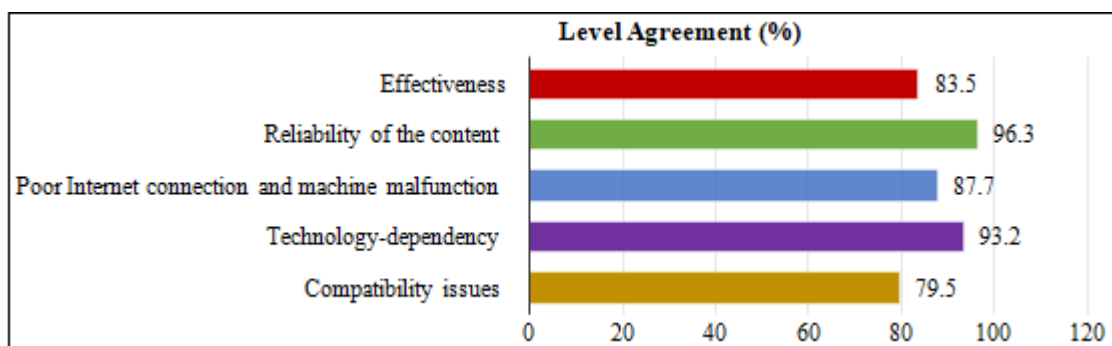

Figure 2
Source: Field Data

Source: Field Data

3.3 Section C

The third research question is: **How is students' competency in understanding the application of electronic learning?**

3.3.1 Students Competency in Understanding the Application of Electronic Learning

The respondents were asked several questions based on the variables of interest. The analysis and answers are provided in the following Tables.

3.3.1.1 Knowledge of Electronic Learning

Table 11 indicates the opinion of student's level of awareness about electronic learning. Results show that the majority of the students, 54.8% rated themselves as average, regarding the level of awareness about electronic learning. A proportion of 34.2% of the students rated themselves as high (above average) while 10.9 % of students rated as low level of awareness.

Table 11: Knowledge of Electronic Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	3	4.1	4.1	4.1
	low	5	6.8	6.8	11.0
	Average	40	54.8	54.8	65.8
	High	10	13.7	13.7	79.5
	Very High	15	20.5	20.5	100.0
	Total	73	100.0	100.0	

3.3.1.2 Understand Learning Process Application of Electronic Learning

Table 12 presents the level of understanding about the learning process application of electronic learning. The study reveals that the majority of the students, 54.8% rated themselves as average in terms of understand learning process application of electronic learning. A proportion of 39.7% of the students were rated as high, regarding understand learning process application of electronic learning while 5.5 of the students rated themselves as low.

Table 12: Understand Learning Process Application of Electronic Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Low	1	1.4	1.4	1.4
	Low	3	4.1	4.1	5.5
	Average	40	54.8	54.8	60.3
	High	12	16.4	16.4	76.7
	Very High	17	23.3	23.3	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.3.1.3 Ability to use Electronic Learning

Table 13 shows the level of ability by students to use electronic learning. Results show that the majority of the students, 63% rated themselves as average regarding their ability to use electronic learning. A proportion of 28.7% of

the students rated themselves as high in terms of ability to use electronic learning while 8.2% rated themselves as low.

Table 13: Ability to use Electronic Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	6	8.2	8.2	8.2
	Average	46	63.0	63.0	71.2
	High	9	12.3	12.3	83.6
	Very High	12	16.4	16.4	100.0
	Total	73	100.0	100.0	

Source: Field Data

3.3.1.4 Appreciate the use of Electronic Learning

Table 14 indicates the opinion of students on appreciating the use of electronic learning. Results show that the majority of the students, 65.8% were undecided. A proportion of 30.2% of the students indicated appreciation on the use of e-learning while 4.1% of the students did not appreciate the use of e-learning during COVID- 19 period.

Table 14: Appreciate the use of Electronic Learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	4.1	4.1	4.1
	Neutral	48	65.8	65.8	69.9
	Agree	11	15.1	15.1	84.9
	Strongly Agree	11	15.1	15.1	100.0
	Total	73	100.0	100.0	

Source: Field Data

Summary of Students Competency in Understanding the Application of Electronic Learning
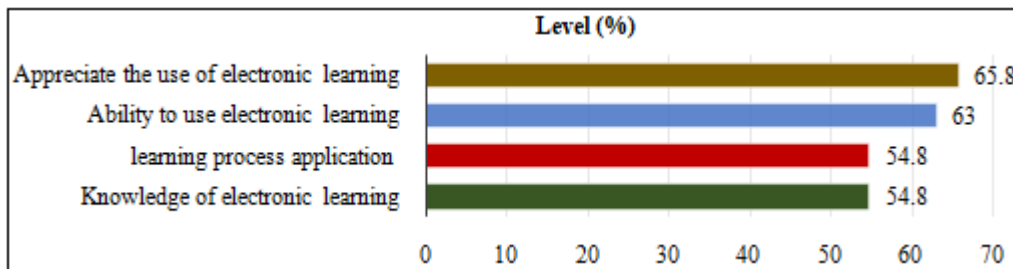

Figure 3
Source: Field Data

4. Conclusion

The findings of the study were that electronic learning benefited the students in education delivery in connection with extendibility, accessibility and suitability. Further, there were benefits in terms of no travel costs, time saving, and up-to-date learning materials. Subsequently, students benefited from better retention of learning material, and a flexible way of learning. However, students faced challenges by electronic learning such as learning materials incompatibility issues, technology-dependency, poor internet connection, and machine malfunction. Other challenges were unreliable content, and ineffectiveness of electronic learning. Overly, the majority of the students scored average in competency to understanding and applying effective electronic learning.

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