

Factors Militating Against E-Learning Platform Effective Utilization during COVID-19 Pandemic

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Abstract - As of Tuesday 2 June 2020 the total numbers of confirmed cases of the COVID-19 pandemic have passed 6.2 Million with over 375,000 deaths globally. Religious and social gatherings and even schools have been closed to limit the spread of the virus and people are advised to practice Social Distancing (SD). This situation has changed the conventional face-to-face and generally recognized medium of learning globally as schools have embraced the e-learning platform. An e-learning platform is an online form of distance learning in which lectures are broadcast and which supports SD. However, the acceptability of the platform by students is considered too low most especially in developing countries. Therefore, this study explores the factors militating against the effective utilization of the e-learning platform during the COVID-19 Pandemic. The study made use of a descriptive survey design where Google form is used to design the questionnaire which was administered to 120 respondents made up of majorly higher institution students based on Simple random technique through social media platforms and email. The study findings revealed that stable electricity supply, subsidized data, fast internet services and parental support are the four critical success factors militating against the e-learning platform effective utilization during COVID-19 pandemic most especially in developing countries. This study argues that in the case of future occurrences, the Government should ensure subsidized/ free data, fast internet services with stable electricity to the general populace most especially in developing countries. Also, parents should be encouraged to pay closer attention to their children's e-learning platform activities.

Keywords: *E-Learning, E-Learning Platform, Learning and Teaching, Coronavirus, COVID-19, Pandemic.*

1. Introduction

The Pandemic is generally referred to as infectious diseases on large-scale which can cause large numbers of sicknesses and deaths within a wide geographic location and results in great losses economically, socially and politically [1]. The world has experienced many pandemics such as Severe Acute Respiratory Syndrome (SARS), AIDS, Smallpox, Plague, Cholera, Dengue, Influenza, Tuberculosis and West Nile disease. Out of these pandemics, the most erratic and fatal is the Influenza because it easily travels via the air and can stay longer on plain surfaces [2]. Influenza is a viral disease that affects the human respiratory system such as the throat, nose and lungs. It's also known as the Flu which is recurring in nature and spreads easily within wide geographic locations.

According to the study by [3], the Influenza pandemic reoccurs three times within a century which is about 25-50 years intervals. For an instant in the 20th Century, there were three Influenza pandemics namely Spanish flu (1918-

1919), Asian flu (1957-1958) and Hong Kong flu (1968-1969). Out of these the Spanish flu (1918-1919) was the worst pandemic in human history because over 20 million deaths were recorded as reported by the World Health Organization [4]. More recently, there are two major Influenza virus incidents namely Ebola and Zika. Ebola was found to kill over 11,000 people [5] whereas Zika affected over 34 countries [6]. More recently in December 2019, the Coronavirus was discovered in Wuhan city within the country of China. The word Corona is derived from the crown-like spikes on the external surface of the virus. The abbreviation COVID-19 was given to indicate the name of the virus and the year. The common symptoms of the virus include fever, dry cough, and difficulties in the breathing of the victim. This can lead to pneumonia, kidney failure, severe acute respiratory syndrome, and death. It spreads via droplets from the victims' respiratory system when coughing or sneezing and it takes between 2 to 14 days (with an average exposure of 5 days) for the victims to develop the symptoms. As such, a total lockdown of all educational, social, religious and economic institutions; airways,

waterways, highways and others was enforced to prevent physical contact and further spread of this pandemic. Also, people were enjoined to interact from the safety of their homes, thus giving rise to Social Distancing (SD).

As of Tuesday 2nd June 2020, the total number of confirmed cases of COVID-19 has passed 6.2 Million with over 375,000 deaths globally. The COVID-19 pandemic necessitated Governments and other organizations and communities to seek innovative ways and methods to make life easier for the populace during these experiences. One of these innovative strategies is the introduction of e-learning to the educational sector. This is appropriate because of school closure to ensure that while at home, students do not miss out on their lectures, and they practice Social Distancing to limit the spread of the virus. This has changed the medium of learning globally.

An e-learning platform is a form of online education or distance learning which makes use of the internet and IT resources for content sharing among teachers and students. The full meaning of e-learning is Electronic or enhanced learning which was introduced in the United States and later adopted in Europe and other parts of the world [7]. Examples of e-learning platforms include Massive Online Open Courses (Google Classroom or EduPage), Video streaming services (Zoom, Google Meet or YouTube), Virtual learning environment (Blackboard or Learn), Virtual instructor-led training (WebEx or webinars), Learning Forum, Discussion boards and Podcasts [8]. Although the e-learning platform is developing rapidly globally as a supplement to the traditional method of learning and it has been found to support Social Distancing in any pandemic, however, the acceptability of the platform by students is considered too low most especially in developing countries.

2. Methodology

Descriptive survey design is implemented in this study using a quantitative approach. Due to the pandemic and closure of schools by Governments across the globe, an online survey approach is adopted to avoid physical contact and promote social distance. This study instrument is a structured questionnaire that is made up of close-ended items for the respondents. The questionnaire is made up of two parts. The first part is the demographic information while the second part contains 18 items using the four Likert-type scales namely Strongly Disagree (SD), Disagree (D), Agree (A) and Strongly Agree (SA). Google Form is used to design the questionnaire and administered through social media platforms and email. Simple random sampling methodology based on Cohen, Manion, and

Morrison (2008) is used to select a total of 120 students from both University and Polytechnics. Each of the respondents was sent an email and they were later contacted on their social media platforms.

This is to ensure that all the respondents are using one e-learning platform or the other. This is done by checking on the institutions where they are registered as students; if the institutions have implemented an e-learning platform during this pandemic, only students from such institutions were considered in this study. A short introduction to the purpose of the study is included in the questionnaire both in the email and on social media. All respondents' confidentiality was assured and this was stated clearly in the introduction statement. The data collected is analyzed and the findings are reported in the next section.

3. Findings

This study makes use of 120 higher institutions students as the study samples and the questionnaire was administered using an online survey approach as the data collection method. After data collection, the data was analyzed. It was discovered that out of the 120 respondents, 82 are Male making 68.3% while 38 are Female making 31.7% as illustrated in Fig 1.

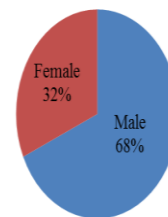


Fig. 1 Respondents' Gender

This indicates that males are more abreast of the e-learning platform than females. This supports the study by [10] that males are more active with technology than females. Out of the 120 respondents, 94 are University Students making 78.3% while 26 are Polytechnic Students making 21.7% as illustrated in Fig 2.

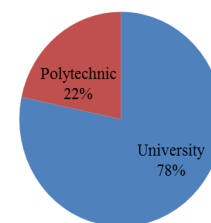


Fig 2. Institution Attending.

This finding indicates that Universities embrace e-learning more than Polytechnics. This might be because Polytechnics focus more on practical skills compared with Universities. This finding agrees with the study by [11] and [12] that it is easier to implement theoretical learning on e-learning platforms compared with practical skills learning. Furthermore, it can be seen that 69 respondents are attending Government-owned Institutions making 57.5% while 51 respondents are attending Private owned Institutions making 42.5% of the total respondents as illustrated in Fig 3.

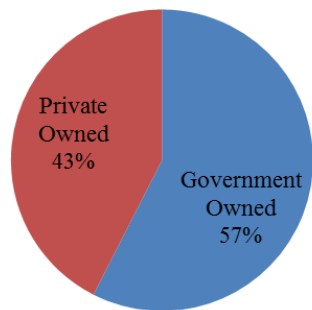


Fig. 3 Institution Ownership.

This indicates there is a slight difference between students using the e-learning platform from Government and Private-Owned Institutions. This might be connected to the majority of students in developing countries preferring to attend Government-Owned institutions due to low tuition fees compared with Private-Owned institutions. This is in agreement with previous studies by [13] and [14].

Likewise, the findings revealed that 32 respondents are in both the 1st and 4th Year of their study while 23 and 33 are in 3rd and 2nd Year respectively as shown in Fig 4.

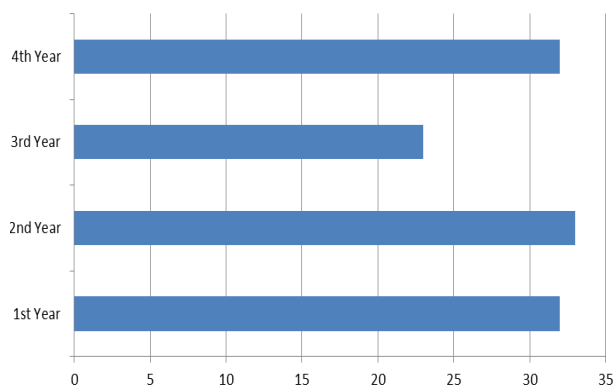


Fig. 4 Respondents' Present Year of Study.

This finding depicts that students within all the levels of study embrace the e-learning platform. This implies that the level or year of study of the students does not influence their usage and the effective utilization of e-learning. Correspondingly, 33 (27.5%) respondents' parents have no form of formal education, 24 (20%) are Primary school leaving certificate, 37 (30.8%) have Secondary school certificates while 26 (21.7%) are University graduates as shown in Fig 5.

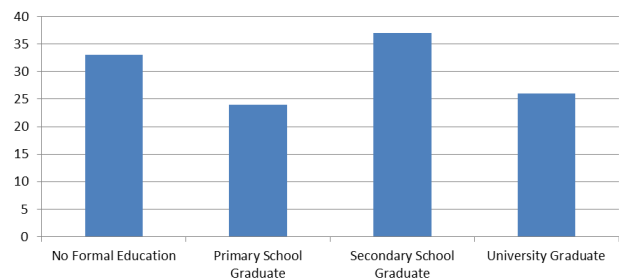


Fig. 5 Parents' Level of Education.

This finding reflects that majority of the respondents' parents are not University graduates (78.3%) because only 21.7% are graduates. Equally, this study discloses that 70 respondents making 58.3% indicated there was "Very Stable" electricity before the COVID-19 where 50 respondents making 41.7% indicated "Not Stable" electricity before the COVID-19. However, during the COVID-19 Pandemic, there is a decrease in the number of "Very Stable" to 30 making 30% where there is an increase in the number of "Not Stable" to 84 making 70% as illustrated in Fig 6.

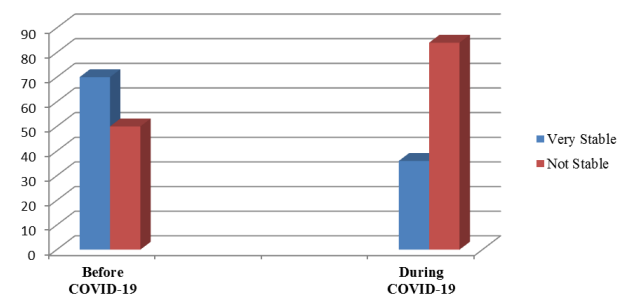


Fig. 6 Electricity Supply.

This finding unveils that respondents experience a poor supply of electricity during the COVID-19 Pandemic. This finding is in-line with the study by Oye, [15] who argues that Governments in developing countries most especially Africa need to do more to ensure stable and constant

electricity supply to support the gains in the IT sector. Additionally, 74 respondents making 61.7% confirmed that before the COVID-19 Pandemic their internet service was very fast while 46 making 38.3% indicated that their internet service was not fast. However, during the COVID-19 Pandemic, there is a decrease in the number of “Very Fast” from 74 (61.7%) to 20 making 16.7% where there is an increase in the number of “Not Fast” from 46 (38.3) to 100 making 83.3% as illustrated in Fig 7

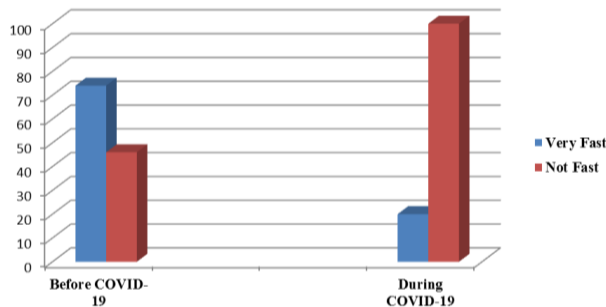


Fig. 7 Internet Service.

This finding implies that students experience poor internet services during the Pandemic whereas previous studies such as [16] [17] have argued that stable and fast internet service is imperative to the successful acceptance of e-learning. This study supports these previous studies that fast and stable internet service is an important ingredient to successful acceptance of e-learning during pandemics. Moreover, findings on the amount spent on monthly data usage before the COVID-19 pandemic reveals that 61 respondents (50.8%) spent ₦2,000 and below. Where, 19 respondents (15.8%) spent ₦3,000, 11 respondents (9.2%) spent ₦4,000 and 29 respondents (24.2%) spent ₦5,000 and above as their monthly data usage before the COVID-19 pandemic. However, there was an increase in respondents' spending during the COVID-19 pandemic because 54 respondents (45%) spent ₦5,000 and above where 26 respondents (21.7%) spent ₦2,000 and below during the COVID-19 pandemic as illustrated in Fig 8.

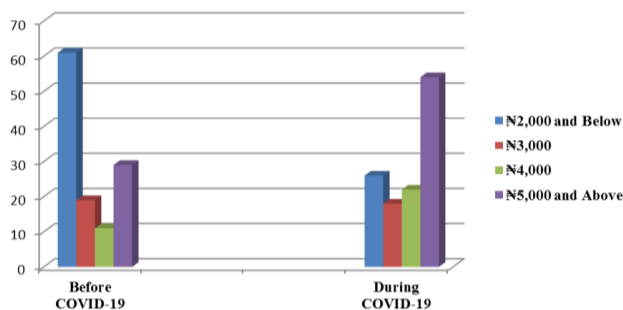


Fig. 8 Amount Spent on Monthly Data Usage.

This finding maintains that there is an increase in spending on data usage during the COVID-19 pandemic. This is consistent with the study by [18] that because people stay at home during the pandemic, their domestic and electronic consumptions such as *Netflix*, *Showmax*, *YouTube*, *Iroko TV* and other online activities will increase which will have a direct influence on their monthly data usage. In the same way, 62 (51.7%) respondents indicated that their parents were not supportive of their e-learning platform activities before the COVID-19 pandemic were 58 (48.3%) indicated that their parents were very supportive before the pandemic. However, during the COVID-19 pandemic, there is an increase from 62 (51.7%) to 72 (60%) respondents that indicated their parents were not supportive of their e-learning platform activities before the COVID-19 pandemic. Whereas, there is a decrease from 58 (48.3%) to 48 (40%) respondents that indicated their parents were supportive of their e-learning platform activities during the COVID-19 pandemic as illustrated in Fig 9.

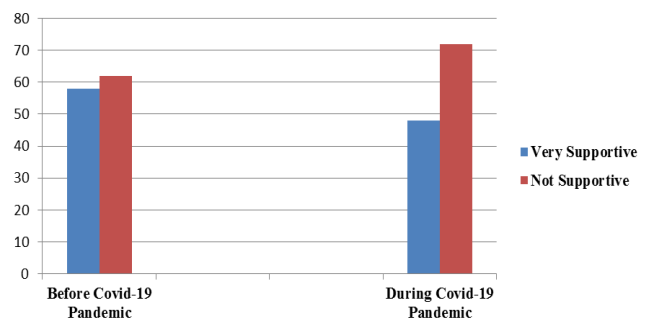


Fig 9. Respondents' Parental Support.

This finding reveals that the majority of the respondents' parents do not provide needed support on e-learning platforms to their children during the COVID-19 pandemic. The rationale for this might be because the majority of the respondents' parents are not University graduates as shown in Fig 5. This finding agrees with the studies by Williams, Wall and Fish [19] and Kong [20] that for successful acceptance of e-learning parental support is imperative because students need all the needed guidance, support and assistance to enable them fully comprehend the e-learning platform.

4. Discussion

Based on the study findings in the previous section, it has been established that stable electricity, subsidized data, fast internet services and parental support are the four critical success factors militating against the effective utilization of the e-learning platform during COVID-19 pandemic

most especially in developing countries. The importance of stable electricity during any pandemic is imperative not only for e-learning platform activities but for the generality of wellness. This is because of the lockdown order by the Government and when people stay at home, their electricity consumption increases as argued in previous studies such as Norouzi and Fani [21] and Qarnain, Muthuvel and Bathrinath [22]. The lockdown increases online and electronic activities which in turn necessitates the need for stable electricity supply. Hence, this study argues that for future pandemics (outbreaks or epidemics) Government most especially in developing countries should ensure that there is free and stable electricity supply for the period of the pandemic for students to be able to carry out their online (e-learning) activities efficaciously.

Besides, internet service is the vehicle to the efficacy of the e-learning platform because without internet service, then e-learning will be impossible. Therefore, the need for free (or subsidized data) and fast internet services during any pandemic which will not only improve students' usage of the e-learning platform but will also make them more active at home during the lockdown period. The internet is not only used for learning activities, it is a platform for information-gathering that is very important during the pandemic period. Hence, this study maintains that Government most especially in developing countries should ensure free (or subsidized data) and fast internet services during any pandemic.

Additionally, parental support has been found in this study to be one of the most critical success factors in the e-learning platform during the COVID-19 pandemic. This is because parents may have to take over the role of teachers due to the lockdown as they are the only teachers available to teach and guide their children during this period. They are to provide not only the resources to achieve successful e-learning platform activities but also a safe and healthy environment for learning. Without this support, students will be demoralized and demotivated to learn using the e-learning platform. Thus, this study argues that parental support is one of the best predictors of students' successful usage of the e-learning platform during any pandemic..

5. Conclusions

The wave of COVID-19 pandemic since December 2019 has affected the world's institutions negatively as people are asked to stay at home because of the lockdown order by Governments globally. This situation affects the method of learning where there is a shift from traditional classroom learning to e-learning platforms. Thus, this

study examined factors militating against the effective utilization of the e-learning platform during the COVID-19 pandemic. The study revealed four critical success factors that are militating against e-learning platform during COVID-19 pandemic most especially in developing countries namely stable electricity supply, subsidized data, fast internet services and parental support. This study argues that for future pandemics, the Government should ensure subsidized/ free data, fast internet services with stable electricity to the general populace most especially in developing countries. Also, parents should be encouraged to pay closer attention to their children's e-learning platform activities. The findings of this study are not only limited to the COVID-19 pandemic but these findings can be applied during any pandemic or epidemic. Further studies can still be done by considering other factors (social and educational factors that can be considered), increase the number of respondents and consideration of psychological reactance on the e-learning platform. Also, a comparative case study can be carried out in two countries (developed and developing) with different cultural and social lifestyles to gain more insight on factors militating against the effective utilization of the e-learning platform during a pandemic.

References

- [1] Madhav N, et al., Pandemics: Risks, Impacts, and Mitigation. In: Jamison DT, Gelband H, Horton S, et al., editors. Disease Control Priorities: Improving Health and Reducing Poverty. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2017 Nov 27. Chapter 17. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK525302/> doi: 10.1596/978-1-4648-0527-1_ch17, 2017.
- [2] Krammer, F., The human antibody response to influenza A virus infection and vaccination. *Nature Reviews Immunology*, 19(6), 2019, 383-397.
- [3] Henry, C, et al., From original antigenic sin to the universal influenza virus vaccine. *Trends in immunology*, 39(1), 2018, 70-79.
- [4] W.H.O., Comparative Analysis of National Pandemic Influenza Preparedness Plan. Geneva-Switzerland: WHO, 2011.
- [5] Brown, Brandon, Melissa Nasiruddin, Alexander Dao, and Monique Halabi. "Responsible use of pop culture and communication in the face of the Ebola virus." *PLoS neglected tropical diseases* 9, no. 8 (2015).
- [6] Soghaier, M. A., Abdelgadir, D. M., Abdelkhalig, S. M., Kafi, H., Zarroug, I. M., Sall, A. A., & Khogali, H., Evidence of pre-existing active Zika virus circulation in Sudan before 2012. *BMC Research Notes*, 11(1), 2018, 906.
- [7] Zhou, L., Wu, S., Zhou, M., and Li, F., 'School's Out, But Class' On', The Largest Online Education in the

- World Today: Taking China's Practical Exploration During The COVID-19 Epidemic Prevention and Control As an Example. But Class' On', The Largest Online Education in the World Today: Taking China's Practical Exploration During The COVID-19 Epidemic Prevention and Control As an Example, 2020.
- [8] Basilaia, G., and Kvavadze, D., Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. *Pedagogical Research*, 5(4), 2020, 1-9.
- [9] Cohen, L., Manion, L., and Morrison, K., *The Methodology of Educational Research*. Athens: Metaichmio, 2008.
- [10] Owusu-Fordjour, C., Koomson, C. K., and Hanson, D., The Impact of Covid-19 on Learning-The Perspective of The Ghanaian Student. *European Journal of Education Studies*, 2020.
- [11] Al-Rahmi, W. M., Alias, N., Othman, M. S., Alzahrani, A. I., Alfarraj, O., Saged, A. A., and Rahman, N. S. A., Use of e-learning by University students in Malaysian higher educational institutions: A case in Universiti Teknologi Malaysia. *IEEE Access*, 6, 2018, 14268-14276.
- [12] Stein, S. J., Shephard, K., and Harris, I. (2011). Conceptions of e - learning and professional development for e - learning held by tertiary educators in New Zealand. *British Journal of Educational Technology*, 42(1), 2011, 145-165.
- [13] Ndinechi, G. I., and Bupo, G. O., Awareness of e-learning among business education students in Anambra State tertiary institutions. *International Journal of Educational Research and Development*, 5(1), 2015, 101-108.
- [14] Stewart-McKoy, M. A., "Digitize Me": Generating E-Learning Profiles for Media and Communication Students in a Jamaican Tertiary-Level Institution. *Journal of Educators Online*, 11(1), 2014.
- [15] Oye, N. D., Salleh, M., and Iahad, N. A., Challenges of e-learning in Nigerian university education based on the experience of developed countries. *International Journal of Managing Information Technology*, 3(2), 2011, 39-48.
- [16] Pham, L., Limbu, Y. B., Bui, T. K., Nguyen, H. T., and Pham, H. T., Does e-learning service quality influence e-learning student satisfaction and loyalty? Evidence from Vietnam. *International Journal of Educational Technology in Higher Education*, 16(1), 2019, 7.
- [17] Ngampornchai, A., and Adams, J., Students' acceptance and readiness for E-learning in Northeastern Thailand. *International Journal of Educational Technology in Higher Education*, 13(1), 2016, 34.
- [18] Baker, S. R., Farrokhnia, R. A., Meyer, S., Pagel, M., and Yannelis, C., How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic (No. w26949). National Bureau of Economic Research, 2020.
- [19] Williams, P. E., Wall, N., and Fish, W., Mid-career adult learners in an online doctoral program and the drivers of their academic self-regulation: The importance of social support and parent education level. *International Review of Research in Open and Distributed Learning*, 20(1), 2019.
- [20] Kong, S. C., Parents' perceptions of e-learning in school education: Implications for the partnership between schools and parents. *Technology, Pedagogy and Education*, 27(1), 2018, 15-31.
- [21] Norouzi, N., and Fani, M., The impacts of the novel coronavirus on the oil and electricity demand in Iran and China. *Journal of Energy Management and Technology*, 4(4), 2020, 36-48.
- [22] Qarnain, S. S., Muthuvel, S., and Bathrinath, S., Review on government action plans to reduce energy consumption in buildings amid COVID-19 pandemic outbreak. *Materials Today: Proceedings*, 2020.

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