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Knowledge and Usage of Video Conferencing Software among Post Graduate Students in Rivers State University of Science and Technology

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Abstract: *The world has advanced technologically and this is attributable to the influence of information and communication technology. The year 2020 brought a lot of changes to the workplace as well as in academics - one of them being a sharp increase in the use of video conferencing. Hence, video conferencing in recent years has become popular in instructional delivery methods, most especially in tertiary institutions in developed countries. The overarching aim of the study was to investigate the knowledge and usage of video conferencing software among post graduate students in Rivers State University of Science and Technology. The study adopted a descriptive cross-sectional study design to assess the knowledge level and usage of video conferencing software among postgraduate students in Rivers State University of Science and Technology. The population of the study consisted of all full-time postgraduate students based on 2019/2020 academic year in Rivers State. . A convenience sampling technique was used to recruit study participants. The study was questionnaire-based; participants were requested to fill the questionnaires online, via Google forms. Data collected were analyzed using descriptive statistical tools involving frequency distribution, percentages and mean score. Results revealed that Zoom and Google Meet are the most commonly used video conferencing software by postgraduate students in Rivers State University of Science and Technology. Furthermore, the respondents have an understanding of what video conferencing entails. Additionally, poor internet connectivity (76.7%) was listed as the major constraints in usage of video conferencing software. In conclusion, the future of higher education continues to be shaped by technology and online learning. It is essential that postgraduate students realize how to best utilize these software as its prominence in higher education is well established.*

Keywords: **Knowledge ;video conferencing; higher education**

1. INTRODUCTION

Technologically, the world has advanced and this is due impact of information and communication technology, especially in higher education. A significant rise in the use of video conferencing was one of the many developments that the year 2020 brought about in both the business and academia. Despite the many challenges and important lessons learned from the COVID-19 epidemic, the importance of information and communication technology (ICT) in fostering innovation and advancing sustainable development is becoming increasingly recognized. This recognition was highlighted by the adoption and broad use of technology like video conferencing software during and after the pandemic. Researchers like [1] and [2] have highlighted how ubiquitously ICT shapes contemporary economies and societies.

In addition, the significant effects of COVID-19 acted as a catalyst for a reassessment of ICT's significance in our globalized world. Video conferencing technology gained prominence as people around the world struggled with the COVID-19 pandemic and video conferencing became a vital tool for information sharing and communication. This allowed for efficient teamwork, coordination, and communication during a time of social distancing and general movement restrictions [3]. Organizations, businesses, and educational institutions swiftly made the switch to remote operations throughout Africa and beyond, depending on tools like video conferencing and other such systems to maintain operations in the face of severe interruption. In the blink of an eye, video and remote conferencing went from being a novelty to a need.

Hence, video conferencing in recent years has become popular in instructional delivery methods, most especially in tertiary institutions in developed countries [3,4]. A video conference is a gathering in which two or more people participate virtually from different locations [5,6]. They connect via audio, video, and a computer connection. Team meetings, webinars, product demonstrations, job interviews, and more can all be conducted via video conferencing. Regardless of geographical location, the primary goal of video conferencing is to facilitate connections between individuals [7]. Its use as a teaching and learning tool in Nigeria needs to be highlighted in accordance with what is attainable in other regions of the world [8].

Beyond its direct use in pandemic management, video conferencing serves as a perfect example of the benefits of information and communication technology. It shows how geographical barriers can be overcome by technology to democratize access to

opportunities and information. Virtual learning platforms can also be facilitated by video conferencing software. Smart phones, laptops, tablet PCs, and related devices are some of the hardware used in video conferences. The video conferencing application's accessibility is one of its many outstanding benefits. In addition to being openly accessible, it also crosses geographical boundaries, allowing people to communicate and work together without the requirement for in-person interactions from anywhere in the globe at any time [3].

In contrast to traditional video conferencing services, web browsers may be used to access video conferencing software, making it easily accessible to anybody requiring remote communication. This adaptability makes it possible for users to participate in direct, in-the-moment video conferencing, which promotes meaningful connections and smooth interaction. This was especially important in rural locations where access to advanced technologies and internet speed were limited [9–11].

As noted by [12], one further significant benefit of video conferencing is its technological capacity to overcome both temporal and spatial limitations. This adaptability supports asynchronous learning, which enables people to interact with knowledge at their own convenience and pace, in addition to accommodating a variety of learning preferences and styles. Furthermore, as [13] emphasizes, video conferencing has been widely used for research purposes. Videos highlight how well it supports full-motion video and real-time audio. Video conferencing apps are easily accessible to participants through web-based interfaces or downloadable versions. Features like participant content sharing and audio/video recording remain under the host's control. In many locations, providing Extension Advisory Services (EAS) through the use of e-extension platforms has gained considerable recognition.

According to [14], two-thirds of advisory services indicate using at least one video conferencing tool in 2022. In 2024, the market share of videoconferencing software was projected to reach approximately 66%. According to research, Zoom, Microsoft Teams, GoToMeeting, WebEx, and Google Meet are the top five video conferencing apps in 2024. Zoom holds a market share of over 55%, making it the top software for video conferences [14].

Studies conducted over time have revealed that Nigerian educational programs have not yet fully embraced the video conferencing technology. The percentage of ICT used in Nigerian universities is less than 5%, according to [15]. In light of this, the study sought to close the knowledge gap in this field. The overarching aim of the study was to investigate the knowledge and usage of video conferencing software among post graduate students in Rivers State University of Science and Technology. The specific objectives included:

1.1 Objectives of the Study

1. To investigate the most used video conferencing software by postgraduate students in Rivers State University of Science and Technology.
2. To assess the level of knowledge of video conferencing software used by postgraduate students in Rivers State University of Science and Technology.
3. To identify the constraints to usage of video conferencing software used by postgraduate students in Rivers State University of Science and Technology.

1.2 Research Questions

1. What are the most common video conferencing software used by postgraduate students in Rivers State University of Science and Technology?
2. What is the knowledge level of video conferencing software used by postgraduate students in Rivers State University of Science and Technology?
3. What are the constraints to usage of video conferencing software used by postgraduate students in Rivers State University of Science and Technology?

2. METHODS

The study used a descriptive cross-sectional study design to assess the knowledge level and usage of video conferencing software among postgraduate students in Rivers State University of Science and Technology. All full-time postgraduate students at Rivers State for the 2019–2020 academic year made up the study's population [16]. The online survey was completed by four hundred and twenty (420) postgraduate students using Google forms. SPSS version 23.0 was used to analyze the data. To find study participants, a convenient sampling strategy was employed. Participants in the questionnaire-based study were asked to complete the forms online using Google Forms. The researcher also made direct contact with students when it was feasible. Email messages and specific WhatsApp platforms (class groups and associations) were used to distribute the link.

Descriptive statistical tools such as frequency distribution, percentages, and mean score were used to analyze the acquired data. Using a 4-point Likert-type scale with the options never (1) never utilize (2) rarely utilize (3) sometime utilize (4) always utilize, research question one was answered using mean score analysis. The discriminating index (4+3+2+1 = 10/4 + 2.5) was calculated by adding the ratings from the Likert type scale, dividing the result by the number of scales, and classifying statements with mean scores greater than or equal to (≥) 2.5 as high utilization and those with mean scores less than (<) 2.5 as low usage. With the use of descriptive statistics like frequency, percentage, and mean, research questions two and three were answered.

Research question two was answered by employing Yes/No responses to knowledge test questions obtained from publications on video conferencing software. According to the decision rule, everyone scoring 50% or higher was considered to have a good knowledge of the video conferencing software, while those scoring lower were considered to have a poor understanding. Previous research [3,17–19] effectively used this design. In place of the previously stated rationale, this design is appropriate for this study.

3. RESULTS

Question 1: What are the most common video conferencing software used by postgraduate students in Rivers State University of Science and Technology?

Table 1: Mean score of respondents according to the most used video conferencing software

VC Software	NU	RU	SU	AU	M	SD	Remark
Zoom	77	7	239	97	2.6	.85	Rejected
Google Meet	70	28	300	22	2.6	.85	Rejected
Microsoft Teams	105	315	0	0	1.7	.75	Rejected
GoToMeeting	126	294	0	0	1.7	.75	Accepted
WebEx	287	133	63	0	1.7	.75	Accepted
Ring Central	266	154	0	0	1.3	.68	Rejected
Others	294	126	0	0	0.7	.49	Rejected
Grand Mean					1.8		

Keys; NU: Not Utilized; RU: Rarely Utilized; SU: Sometimes Utilized; AU: Always Utilized; M: Mean; SD: Standard Deviation; Cut off point 2.5

The result of the distribution of the most used video conferencing software among postgraduate studentst in the study area is displayed in the Table 1. The study adopted discriminating index of ≥ 2.5 for acceptance regarded as high utilization and < 2.5 for rejection regarded as low utilization, with a 4-point Likert type scale of never utilized (1) rarely utilized (2) sometime utilized (3) always utilize (4). The following video conferencing software had low usage; "Others" ($\bar{x}$ =0.7), Ring Central ($\bar{x}$ =1.3), WebEx ($\bar{x}$ =1.7), GoToMeeting ($\bar{x}$ =1.7), Microsoft Teams ($\bar{x}$ =1.7) except for Google Meet ($\bar{x}$ =2.6), Zoom (2.6) that had high usage. The study shows that all under listed items video conferencing software were not fully utilized as they scored below the means score rating of 2.5 ($\bar{x}$ =1.8}. This suggests that the postgraduate students showed low level of video conferencing software utilization. This made it more difficult for them to engage in productive virtual learning activities during this time. The utilization of pertinent, accurate, and current information is necessary to improve productivity, particularly in the educational sector, as stated by [20]. Furthermore, [21] discovered that the integration of information and communication technologies (ICTs) may serve as a notable catalyst for the improvement of education and social welfare, according to sociological research.

Question 2: What is the knowledge level of video conferencing software used by postgraduate students in Rivers State University of Science and Technology?

Table 2: Percentage distribution of respondents on knowledge of video conferencing software among postgraduate students in Rivers State University of Science and Technology

Items	Frequency	Percent	Rank	Remark
Connecting to the internet for video conference	252	60	1st	GU
Buying data while online for video conference	210	50	3rd	GU
Launching video conference for virtual presence	210	50	3rd	GU
Raising hands to indicate when I want to ask questions	252	60	1st	GU
Sharing video conference when online for others to join	196	46.7	4th	PU
Creating video conference link for any meeting to host	196	46.7	4th	PU
Presenting slides/PowerPoint through video conferencing to colleagues	224	53.3	2nd	GU
Making use of headphones to speak during video conference	210	50	3rd	GU
Making use of camera to show virtual presence during meeting	210	50	3rd	GU

Presenting research findings/results using video conferencing	196	46.7	4th	PU
Listening to and understanding presentation using video conferencing	168	40	5th	PU

Multiple Responses Recorded, ≥50%GU<PU (GU: Good understanding; PU: Poor understanding)

The result of the distribution of postgraduates' students according to their understanding of the video conferencing software is displayed in Table 2. The Table reveals that the respondents have an understanding that video conferencing entails the following; connecting to the internet for video conferencing (60%), buying data while online for video conference (50%), launching video conference for virtual presence (50%), raising hands to indicate when one wants to ask questions (60%), sharing video conference meeting when online for others to join (46.7%), creating video conference link for any meeting to be hosted (46.7%), presenting slides/PowerPoint through video conference software (53.3%), making use of headphones to speak during video conference to colleagues (50%), making use of camera to show virtual presence during meeting (50%). Furthermore, as can be seen from the table, the majority (60%) has the opinion of connecting to the internet for video conferencing meeting and raising hands to indicate when to ask questions, followed by PowerPoint presentation amongst others. This suggests that the respondents understand video conferencing well, which will enhance their use of it. The results of [22], which highlight the vital role that knowledge and information availability play in fostering development and stimulating societal and economic transformation, are in line with this.

Question 3: What are the constraints to usage of video conferencing software used by postgraduate students in Rivers State University of Science and Technology?

Table 3: Percentage distribution of respondents according to their constraints in use of video conferencing software

Constraints	**Frequency**	**Percent (%)**	**Rank**
Poor access of video conferencing software due to data subscription cost	308	73.3	2nd
Complexity in usage of video conferencing software	259	61.7	5th
Poor internet connectivity	322	76.7	1st
Unavailability of video conferencing software supported devices	287	68.3	3rd
High cost of internet access	287	68.3	3rd
Poor attitude of postgraduates' students to the use of video conferencing software	280	66.7	4th
Unstable power supply	231	55	7th
High cost of video conferencing software supported devices	245	58.3	6th

The result of the postgraduates' students' distribution based on constraints to use of video conferencing software is displayed in Table 3. The constraints include: indicated poor access of video conferencing software due to data subscription cost (73.3%), the complexity in usage of video conferencing software (61.7%), poor internet connectivity (76.7%), unavailability of video conferencing software support device (68.3%), high cost of internet access (68.3%), poor attitude of postgraduates' students to the use of video conferencing software (66.7%), unstable power supply (55%), high cost of video conferencing supported device (58.3%). As shown in this study, a significant proportion of the participants (76%) identified inadequate internet connectivity as their major constraint. The results are consistent with a study by [23], which found that adoption of ICT is an expensive process. The results are consistent with the study by [24], which concluded that access, connectivity, literacy, and cost remain major obstacles to the usage of ICT facilities.

4. CONCLUSIONS

The study has shown that zoom is the most widely used videoconferencing platform among postgraduate students. Its usage in Nigeria has helped bridge the gap existing in technological virtual space especially when in-person instruction is not practicable, videoconferencing has gained widespread acceptance even in higher education. The future of higher education will continue to be influenced by technology and online learning and postgraduate students must understand how to make the most of this software because it is widely used in higher education. Thus, further research should be conducted to ascertain how videoconferencing affects relationships, businesses, education, and leisure in Nigeria as it is still a widely used communication tool.

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