

Sudanese EFL Ph.D. Students' Attitudes and Perceptions Towards Using Zoom During the COVID-19 Pandemic

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Abstract—This study explores the online learning experience of Sudanese Ph.D. candidates in learning English as a Foreign Language (EFL) when using Zoom during the COVID-19 pandemic at the Sudan University of Science and Technology. The study is to explore the EFL students' attitudes and perceptions towards using Zoom. Data is collected by designing a closed/ended questionnaire and a focused-structured interview of six candidates from the same population. The questionnaire was distributed to the whole population of 40 Ph.D. candidates. Data is analysed using SPSS and Thematic analysis of qualitative data. The analysis reveals that the participants are satisfied with the online lecture delivery and enjoy the opportunity to develop technological skills and knowledge of Internet technology. Results also reveal that Zoom enables the EFL students to build valuable relationships with their advisors and increase their productivity. Finally, candidates perceive some disadvantages with Zoom as a tool for learning. Some candidates find the cost of the internet obstructive. This research is important as it gives university lecturers insights into the challenges and practice of using new models of online learning as an effect of the pandemic on education. It is believed that the success of this experience of online learning determines Sudanese EFL Postgraduate students' satisfaction and readiness to use different models of online tools during and after future crises and pandemics.

Index Terms—EFL students, zoom, perceptions, COVID-19, Sudan

I. INTRODUCTION

E-learning has become increasingly crucial in higher education, with universities increasing provision and more students completing large parts of their studies online. It is changing the way universities teach and the way students learn. According to OECD (The Organisation for Economic Co-Operation and Development) (2005), E-learning is defined as using information and communications technology (ICT) to enforce and support learning at all levels of education. This definition covers a wide range of systems, from students using e-mail and accessing coursework online while following a course on campus to programs provided entirely online. Garrett and Jokivirta (2004), state that there are different types of e-learning. Regardless of the type, e-learning nearly always involves a 'campus-based institution' providing courses that are tied, to some extent, to the internet or other online network. Adopting e-learning in university courses coincided with implementing learning management systems in universities. These systems, such as software programs, enabled them to deal with enrolment data electronically, provide electronic access to all teaching and learning materials, and conduct online assessments and evaluations (OECD, 2005).

Some university programs, especially IT and business or management courses, rely heavily on mixed mode or fully online e-learning (Niess & Gillow-Wiles, 2013). However, most university e-learning often involves short modules or small segments of a larger course that learners must attend in person. To some extent, this reflects that e-learning is a subsidiary or complementary delivery mechanism to on-campus at the undergraduate level. E-learning and online educations generally favor experienced learners who combine work/ family and study. As a result, course programs with significant online components are more common at the postgraduate level (OECD, 2001).

A. Zoom Technology: Benefits and Challenges for Teaching and Learning

Zoom is a cloud-based exclusive video teleconferencing software program developed by Zoom Video Communications. Zoom is the frontrunner in contemporary initiative video communications because it is a user-friendly, reliable cloud platform for video and audio conferencing, collaboration, chat, and webinars across mobile devices,

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desktops, telephones, and room systems. The free design allows up to 100 participants online at once with a 40-minute time limit. During the COVID-19 lockdowns, there was a major increase in the use of Zoom for remote work, distance education, and online social relations. In 2020, Zoom was the fifth most-downloaded mobile app worldwide, with 477 million downloads (Blacker, 2021). In educational contexts, Zoom helps teachers to deliver, discuss and clarify course content to learners remotely. It has other features useful in the education context, such as a virtual whiteboard, a real-time explanation capacity to explain concepts, screen sharing, polls for students’ feedback, and live written chat that can be used without worrying or intersecting the lecturer. Zoom allows the teacher to break down participants into small groups to interact and collaborate. In addition, Zoom lectures and meetings can be recorded and are available for download for future reference. Zoom has security features such as password-protected meetings, user authentication, waiting rooms, locked meetings, etc. which enable teachers to provide lively and real virtual learning environments for the students (Serhan, 2020).

B. Smartphones in Educational Setting

Smartphones are one of the most ubiquitous technologies in human life. They play a crucial role in people’s daily life because of the smartphone’s multi-functional features. It is an important technology for education, work communication, and entertainment. Regardless of their level, EFL learners have enormous access to digital information through smartphones. Smartphones provide learners access to communication channels, video and audio technologies.

Wali and Omaid (2020) state that mobile technology is central to many education applications. However, many universities and institutions do not welcome the use of smartphones by students during class hours; their use is perceived as a disruption to students’ learning. Increasingly, however, the benefits of mobile phones as an educational tool are being recognized by educators and education policymakers: they can help teachers and learners facilitate the teaching and learning process.

Moreover, 21st-century students are eager to utilize and explore the possibilities of new technology. Students are usually the first to experiment with new technology and discover the innovations it offers. Mobile phone use is an integral feature of their lives, used at times of the day and in most situations. University students struggle to detach themselves from their devices. Rather than working against students, educators could utilize the technology and the student’s close relationship to them to deliver teaching content more effectively (Yu & Conway, 2012).

C. Decomposed Theory of Planned Behavior

There are many theories and models to examine and explain how people’s intentions, attitudes, and behaviors influence whether they will accept a new technology in educational settings or reject it. One of the most convincing theories is the decomposed theory of planned behavior (DTPB). The DTPB was developed by Taylor and Todd (1995) and was an extension of the Theory of Planned Behaviour (TPB) developed by Ajzen (1991).

According to the DTPB, as shown in Figure 1, three factors influence a person’s attitude toward a new technology: its perceived usefulness, ease of use, and compatibility. Perceived usefulness means the students think the technology will add value to their learning activities. Ease of use means a new technology or innovation is easy to understand and use. Compatibility means the technology matches the student’s values, experiences, and learning practices (Taylor & Todd, 1995).

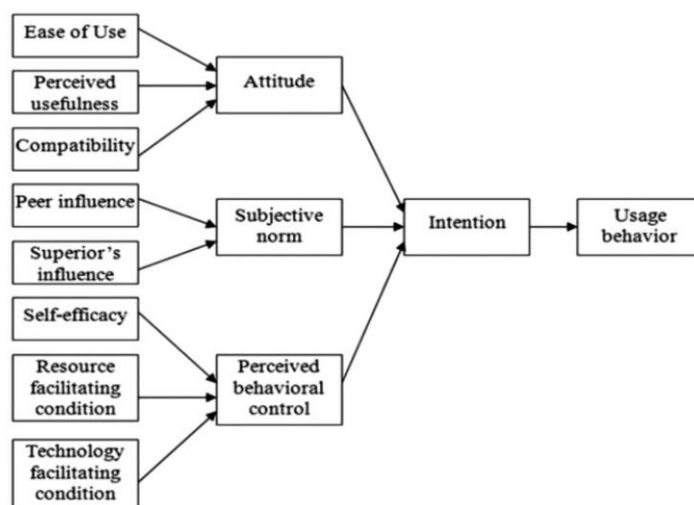


Figure 1. The Decomposed Theory of Planned Behaviour (Taylor & Todd, 1995, p. 163)

Ajzen (1991) refers to subjective norms as the social pressures that make someone perform specific actions. As an example, students might be influenced by fellow students to use new technology in their academic activities. There are three aspects of perceived behavioral control. The first one is self-efficacy, meaning that students are likely to accept a new technology if they are comfortable and capable of using it. The second and third conditions involve resource and

technological facilitating conditions: if the technology has supportive resources or favorable conditions, the students will probably accept using it. Facilitating conditions include the availability of time, money, mobile devices, and robust internet bandwidth (Nyasulu & Winner, 2019).

Subjective norm in the DTPB involves two factors: the influence of other peers and the influence of their teachers and supervisors. Peer influence refers to how colleagues influence them to use new technology. In this context of using Zoom, students might accept using it for academic purposes if their colleagues use it for similar purposes. Moreover, students are likely to use the new technology if their lecturers also use it (Taylor & Todd, 1995).

D. Rationale of the Study

Online learning university teachers help enhance EFL students' optimum use of e-learning, if they understand students' perceptions and attitudes towards using online tools such as Zoom. This research proceeds as follows: In the next section, the researchers review previous studies related to using Zoom as an online tool for teaching and learning in different institutes. Then, this is followed by a theoretical framework that underlines this research (DTPB) on the focus of EFL students' perceptions and attitudes towards using Zoom. Next, is the methodology section with an overview of the data collection method and analysis tools. The fourth section highlights the analysis, findings, and discussion of the study. Finally, a conclusion and implications are presented.

II. LITERATURE REVIEW

A. Online Learning During/After COVID-19

Paudel (2021) investigated Nepalese higher education teachers' and learners' experiences with online learning during and after the COVID-19 pandemic. She examined the benefits, challenges, and best strategies to deliver online learning remotely. The researcher conducted a quantitative inquiry using an online questionnaire to document the perspectives of 280 teachers and students at five different Nepalese universities. The data were collected through three sets of closed-ended and one set of open-ended questionnaires. The study found that over 80% of the participants found the online courses helpful. They believed it helped them with their online research, connected them to international networks, and granted them access to various useful knowledge sources. The study also revealed that participants faced major challenges, including weak time management skills, unreliable internet connections, and adjusting to the greater autonomy and responsibility for their education that online courses require.

Alam (2020) also researched the challenges and possibilities of online education during COVID-19. The study's methodology was qualitative. The researcher collected data from secondary sources and conducted a mini-interview with some students who used mobile phones to study online at private universities in Bangladesh. The study revealed that teachers and students confronted many challenges when adjusting to online education because it was their first time utilizing it. Poor time management skills and weak internet connections were crucial challenges for teachers and students. However, the researcher recommended that universities help students develop time management skills and increase internet speed and reliability for staff and students. If this is done, the researcher believes that online learning will provide a positive pedagogical atmosphere and a beneficial teaching-learning alternative.

Internet access is a significant factor to adopt and use E-Learning in countries such as Saudi Arabia. Therefore he investigated the challenges EFL students at Bisha University faced in learning English when they used E-Learning system. The study also investigated whether the use of E-Learning is beneficial to EFL students in learning English to the extent that it is expected. The researcher summarized the challenges from the findings of this research in three types: Academic challenges, Administrative challenges and technical challenges. Some of the skills such as speaking were also found harder to practice online by the EFL students.

B. Using Zoom During/After COVID-19

Zoom is an effective tool for remotely teaching medical EFL students. He analyzed some of the problems with distance learning and how these can be overcome. He concluded that Zoom is a valuable teaching tool. It enables collaboration and allows learners to post comments, chat with other learners, and ask questions in real time. Teachers can use breakout rooms so learners can study in pairs or groups. Using video conferencing, Zoom makes learners accountable and responsible by encouraging them to engage in the lesson and interact with their colleagues and teachers. It is noticed that Zoom increased engagement, and most EFL learners enjoyed the experience (Guzacheva, 2020).

Sayem et al. (2017) researched whether Zoom helped students achieve better results while enrolled in a distance learning course. The students studied a foundation engineering unit at CQUniversity Australia's School of Engineering and Technology. The research also investigated if Zoom helped the students manage their workload. The data came from students' online interactions with the course's Moodle site. These interactions provided the researchers with information about student learning behavior. The researchers measured student engagement with the course by observing the number and the kinds of posts to the Q&A forum on the Moodle site between 2016 and 2017. Observation also included the number of students who watched lectures or parts of lectures and those who attended Zoom virtual tutorials when Zoom was introduced in 2017. The study found that satisfaction rates with the course increased due to the introduction of Zoom. Student feedback highlighted that students perceived Zoom-based virtual

tutorials were beneficial to their studies and engaging. The students believed that Zoom was a valuable supportive tool that has helped them with their academic studies.

United States university students' attitudes and perceptions were investigated towards Zoom delivery of lectures during the pandemic versus the face-to-face (FTF) traditional mode of delivery and engagement. 31 university students participated in this study. Data were collected using a 5-point Likert-type survey. Results found that students had a negative attitude towards Zoom. The students also perceived Zoom classes adversely affecting their learning experience and motivation. One reason the researcher attributed to this negative response was that the lecturers needed more time to be ready for this sudden change COVID had on teaching and learning. It required using a new platform with new modalities, activities, and methods (Serhan, 2020).

Many studies have been conducted to investigate students' attitudes and perceptions towards using Zoom during the COVID-19 pandemic, and the results have generally been negative (Knipe & Lee, 2002; Candarli & Yuksel, 2012; Wang et al., 2018). Students have expressed that the quality of teaching using Zoom is inferior to face-to-face (FTF) in-class teaching. Additionally, researchers have observed low levels of student participation through Zoom. To ensure successful online sessions using Zoom, researchers have identified several important factors, including effective communication between online students and the instructor, as well as between online students and classroom students. Other factors include the engagement of online students, the redesign of instructional activities, and the quality of audio.

On the other hand, some studies (Sayem et al., 2017; Maul et al., 2018; Archibald et al., 2019; Agarwal & Kaushik, 2020) reported positive results regarding using Zoom. These studies found that using Zoom increased students' approval and reduced teacher workload by approximately 25%. Students also preferred using Zoom as an interviewing method compared to FTF methods. Researchers credited these positive results to the easy use of Zoom, cost-effectiveness, data management structures, and security options. Furthermore, results showed that both faculty and students valued the use of Zoom for thesis chairs to tutor and guide doctoral students. Medical students indicated that Zoom sessions were relevant to their level of learning and suggested that Zoom lectures should be incorporated into their medical curriculum. Therefore, researchers concluded that online teaching should be integrated into postgraduate training in future classes.

C. *Decomposed Theory of Planned Behaviour and Online Learning*

Researchers' interest is increased by the tremendous implementation of technology in learning. Many theories and models have been proposed to be addressed by customers. The DTPB is among them and widely applicable to study behaviours in different contexts such as health, education, m-commerce, e-commerce, etc. The theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), and Technology Acceptance Model (TAM) are the basis for the DTPB that offers superior visions into what lies behind the intention to accept new technology (Gangwal & Veena, 2016).

A study was conducted on the application and adoption of the DTPB for m-commerce in India. Researchers focused on specific factors such as trust, perceived usefulness, perceived ease of use, and perceived enjoyment to govern the attitudes towards m-commerce adoption. Moreover, they examined the relationship between normative influence and subjective norm, and the relationship between self-efficacy and perceived behavioural control. Furthermore, the study surveyed 212 participants with the aim of recognizing factors that motivate Indian customers to accept m-commerce. The results expose that faith; values of using m-commerce, self-efficacy, and normative influence are the most noteworthy factors influencing m-commerce implementation. Finally, the authors recommend further investigation into other factors such as apparent financial risk, among others to increase a deeper understanding of m-commerce implementation (Gangwal & Veena, 2016).

Previous studies on DTPB applications have primarily focused on computing resource centers, internet banking, telemedicine, online trading, mobile data services, e-commerce adoption, web 2.0 technologies, mobile banking, e-textbook adoption, and online tourism adoption. However, there is limited emphasis on the adoption of new technologies like Zoom in mobile services. Therefore, this study aims to test four hypotheses using the DTPB framework. A quantitative focused-structured two questions interview was also drawn from Serhan's (2020) survey to verify hypothesis four of this study and to support results from the questionnaire. The hypotheses are as follow:

H1: EFL Students have negative attitudes while using Zoom.

H2: EFL Students perceive negative behavioral control while using Zoom.

H3: EFL Students perceive negative factors that influence their behavioral intention when using Zoom.

H4: EFL Students' perceived advantages and disadvantages influence their behavioral intention when using Zoom.

D. *The Context of the Study*

Batch one EFL Ph.D. students were forty in this study at the Sudan University of Science and Technology (SUST). In mid-March 2020, the university implemented a lockdown in response to the severe spread of the COVID-19 pandemic in the country. The College of Graduate Studies administration made the decision to continue the teaching/learning process remotely, as traditional face-to-face lectures and meetings were no longer possible. It was recommended that staff members transition to online teaching. However, it was acknowledged by the university that some staff teachers and students may not have had prior experience with e-learning or knowledge of how to navigate web-based platforms. Where feasible, individuals were encouraged to experiment with these online tools in order to become more familiar with them. One of the authors of this study led this transition and delivered lectures via the Zoom

video platform for a duration of 15 weeks. The lectures took place once a week in the evenings, with an average attendance of thirty students.

During the lockdown period, Zoom was chosen as the preferred conferencing platform for certain private schools, government agencies, non-governmental organizations, and private universities. However, at SUST, there were challenges associated with using Zoom technology. As a government university, SUST was unable to provide students with internet access, smartphones, or laptops to facilitate their participation in online lectures. It quickly became apparent that a few students did not possess smartphones capable of accessing online lectures; their mobile devices were limited to making calls only.

Novice Zoom users in this study were heavily reliant on other candidates who had prior experience with the platform and knew how to download the app, join meetings, establish connections, and navigate its features. Another significant challenge was that most candidates had returned to their family homes in various areas of Sudan, rather than being located in Khartoum where the university was situated. In rural parts of Sudan, internet infrastructure is often lacking or unreliable. Even when available, the service is frequently weak and prone to disruptions. Some candidates resorted to using their mobile phones and relied on mobile internet data to connect to Zoom. However, this led to frequent interruptions during their courses due to weak internet signals and disconnections. Moreover, internet connection and data are expensive in Sudan. Internet providers offer different pricing plans based on connection speeds and rates. Since Zoom is a data-heavy application, users are required to purchase more expensive plans in order to utilize it effectively. The cost of internet data and access posed a real challenge for some Ph.D. candidates. To partially address this issue, the lecturer utilized Zoom's recording feature to capture live lectures and shared them immediately after on the students' Telegram group. Limited computer and smartphone literacy also presented technical difficulties for some candidates during online classes.

III. METHODOLOGY

The research hypotheses were tested using a combination of quantitative and qualitative methodologies. A closed-ended questionnaire was developed to collect quantitative data using Google Forms and distributed to a total population of forty EFL Ph.D. candidates. The questionnaire consisted of four sections: demographic information, attitudes towards using Zoom, perceived behavioural control during the use of Zoom, and subjective norm factors influencing the use of Zoom. In total, there were 15 statements distributed across these sections. A five-point 'Likert' scale ranging from 'strongly disagree' to 'strongly agree' was used for sections two to four. The Statistical Package for the Social Sciences (SPSS) was used to analyse the data.

A focused-structured interview was used as a second method of data collection. The questions of the interview targeted the study's fourth hypothesis regarding the perceived advantages and disadvantages of using Zoom during COVID-19. The data obtained from these focused-structured questions were analysed thematically and qualitatively. Interactive model techniques such as data reduction, data presentation, and data verification were employed to organize and analyse the data in order to identify general categories and themes (Miles & Huberman, 1994).

The researchers employed a triangulation technique and member checking to ensure the validity and accuracy of the data collected (Cresswell, 2012). Triangulation was achieved by comparing the data obtained from closed-ended statements and interview questions. To establish the validity of the questionnaire, a preliminary draft was reviewed by three experts in English language teaching. The suggestions provided by these experts were incorporated into the final version of the questionnaire. The distribution of the questionnaire through Google Forms was facilitated by the students' coordinator, who shared it with the students' WhatsApp group. This approach ensured a prompt collection of responses from all participants.

Regarding the interview component, six students were asked a single question about their perceived advantages and disadvantages of using Zoom during their Ph.D. study. The interviews were conducted virtually using Google Meet. Amongst these EFL students, two had prior experience using Zoom for academic purposes, two had limited experience using Zoom for general purposes, and two were unfamiliar with how to use Zoom. The interviews were conducted subsequent to analysing the closed-ended questionnaire and obtaining initial results. Their purpose was to gain further clarification on certain issues and concepts that remained unclear based on the questionnaire responses.

DTPB constructs were utilized in the design of the questionnaire. DTPB was chosen as it assists in measuring the attitudes and perceptions of the EFL students regarding the use of Zoom as an online learning and teaching tool during the COVID-19 pandemic. DTPB aligns with the aims and objectives of this study. Ethical considerations were met, despite the low-risk nature of the research, by introducing a questionnaire that ensured confidentiality, voluntary participation, and anonymity. In summary, this study employed two conceptual models to analyse the data: Taylor and Todd's (1995) model and Serhan's (2020) one category of perceived advantages and disadvantages of using Zoom. Apart from the Demographic section, three sections in this study's questionnaire are consistent with Taylor and Todd's (1995) model. The first section of the questionnaire focuses on 'Attitudes' and examines EFL students' ease in learning course content, development of confidence in the subject matter, improvement in technology skills, ability to interact with lecturers, and increased interaction with classmates.

The second section of the questionnaire focuses on "perceived behavioural control. This section examines EFL students' perceptions of how Zoom impacts their learning in the classroom, whether it helps them understand the class

content, and if it boosts their confidence in the subject. The questionnaire also explores whether students feel comfortable using Zoom, if they can afford internet expenses, if they believe Zoom is a beneficial technology, and if it provides flexibility in their learning schedule.

In this study, the researchers refer to Taylor and Todd's (1995) "Subjective Norm" as "Factors," which include EFL peer influence and supervisor influence. Additionally, Serhan (2020) introduced a category on the perceived advantages of using Zoom, such as flexibility, easier interaction, written communication, and multimedia usage. Conversely, EFL students' perceptions of disadvantages encompass distractions, quality of interaction and feedback, poor education quality, and technical difficulties.

For the sources of items used in the questionnaire:

TABLE 1
SOURCES OF ITEMS USED IN THE QUESTIONNAIRE AND THE INTERVIEW

Sections of the questionnaire	Source
-Attitudes -Behavioral Control -Factors(Subjective Norm)	Taylor and Todd, 1995
-Advantages and Disadvantages	Serhan 2020

IV. DATA ANALYSIS, FINDINGS AND DISCUSSION

A. Data Analysis, Findings and Discussion of the Questionnaire Questions

The responses collected from the 5-point Likert-type survey items were grouped into demographic information, EFL students' attitudes, perceived behavioural control, and factors influencing their use of Zoom. The following sections display the data analysis, including frequency, percentage, mean, and standard deviation details.

(a). Data Analysis of the Demographic Information

TABLE 2
DEMOGRAPHIC INFORMATION

Variable	Frequency	Percentage
Location		
Town	7	17.5
City	31	77.5
Village	2	5.0
Total	40	100.0
Device		
Smartphone	31	77.5
Laptop	7	17.5
Desktop	2	5.0
Total	40	100.00
Internet Quality		
Excellent	3	7.5
Good	29	72.5
Poor	8	20.0
Total	40	100.0
Evaluation of Zoom Learning Experience		
Excellent	9	22.5
Good	28	70.0
Poor	3	7.5
total	40	100.00

Table 2 displays the frequency statistics for the candidates' Demographic Information. First, (95%) of the EFL students exist in cities and towns. Second, 77.5% of the candidates reported using smartphones to access Zoom, while 80% stated that the internet quality in their areas was either good or excellent. Furthermore, these findings indicate that Zoom has occurred as a vital tool for online teaching and learning since the start of the Covid-19 pandemic (Blacker, 2020). Moreover, these statistics support Wali and Omaid's (2020) claim that educators and education policymakers recognize smartphones as a powerful educational tool for students and teachers in facilitating learning. It is also evident from the results that smartphones are the most commonly used electronic devices among EFL learners. Finally, the results prove that EFL students were satisfied with the internet quality and Zoom learning experience. To sum up, this satisfaction enabled them to successfully navigate challenges and continue their learning via Zoom during the COVID-19 pandemic and university lockdown.

(b). Descriptive Statistics of Students' Attitudes Towards Using Zoom

Hypothesis 1: EFL Students have negative attitudes while using Zoom.

TABLE 3
STUDENTS' ATTITUDES TOWARDS USING ZOOM: FREQUENCIES

Variable	Frequency	Percentage	Cumulative Percentage
Strongly Agree	6	15.0	15.0
Agree	25	62.5	77.5
Neutral	7	17.5	95.0
Disagree	2	5.0	100.0
Total	40	100.0	

Note. N=40

Participants on average minimum =1

Maximum=4

Mean=2.10

SD= 0.61

Table 3 presents the frequency statistics regarding EFL students' perceived attitudes towards using Zoom during the COVID-19 pandemic. In accordance with Taylor and Todd's (1995) DTPB Model, the study participants perceived Zoom as useful, easy to use, and compatible with their needs and situations during the university lockdown. The results indicate that Ph.D. candidates believed that the Zoom platform added values to their learning activities. Moreover, they were willing to adapt to Zoom-driven online learning because they found it easy to understand the content of the course and easy to use the platform. Additionally, they felt that Zoom aligned with their values, experiences, learning practices, and they gained new technological skills. Finally, they developed confidence on the subject as well as on themselves, easily interacted with their classmates and with their lecturer.

Furthermore, these results support Ajzen and Madden's (1986) findings. According to these researchers, attitudes are formed through three general information classes: affective, cognitive, and behavioural information. The cognitive component or information processing approach is utilized in attitude formation in both the theories of reasoned action and planned behaviour. Gangwal and Veena (2016) explain that affective information pertains to how a person feels about a subject, while cognitive information refers to what a person thinks about it. Behavioural information stems from past and future behavioural intentions towards the goal.

The mean score for this attitude component is 2.10, with a cumulative percentage of strongly agree and agree responses at 92.5%. These results demonstrate that EFL students hold a positive attitude towards using Zoom technology during the COVID-19 pandemic. Consequently, they were satisfied with its usage.

(c). *Students' Perceived Behavioral Control While Using Zoom*

Hypothesis 2: EFL Students perceive negative behavioral control while using Zoom.

TABLE 4
STUDENTS' PERCEIVED BEHAVIORAL CONTROL WHILE USING ZOOM: FREQUENCIES

Variable	Frequency	Percentage	Cumulative Percent
Strongly agree	4	10.0	10.0
Agree	23	57.5	67.5
Neutral	10	25.0	92.5
Disagree	2	5.0	97.5
Strongly disagree	1	2.5	100.0
total	40	100.0	

Note. N=40

Participants o average minimum =1

Maximum =5

Mean = 2.3

SD = 0.829

Table 4 presents the frequency statistics of EFL students' perceived behavioural control while using Zoom during the university lockdown. In accordance with Taylor and Todd's (1995) DTPB Model, the candidates reported feeling comfortable using Zoom, and they found the necessary resources manageable. They were able to effectively manage their time and other commitments to attend the 15 flexible scheduled lectures. Additionally, they were able to afford internet access and had smartphones readily available. Although low bandwidth posed a challenge during the lectures, they adapted by selecting more suitable internet packages based on their locations and time zones.

These findings are consistent with Nyasulu and Winner's (2019) research, which highlights three aspects of perceived behavioural control. The first aspect is self-efficacy, indicating that students are more likely to embrace a new technology if they feel comfortable using it. The second and third aspects are resource-facilitating conditions and technology-facilitating conditions. Students are more inclined to adopt a new educational tool if these conditions are favourable. In the case of Zoom, facilitating conditions include having enough time, financial resources, mobile devices, and sufficient internet bandwidth.

In contrast, a study conducted by Serhan (2020) investigated the attitudes and perceptions of United States university students towards Zoom delivery of lectures during the pandemic. The findings revealed that students had a negative attitude towards Zoom and perceived Zoom classes as adversely affecting their learning experience and motivation. One possible reason for this negative response, according to the researcher, was that lecturers needed more time to adapt to

the sudden change brought about by COVID-19 in terms of teaching and learning. This involved using a new platform with new modalities, activities, and methods.

On the other hand, Sudanese EFL university students exhibited positive behavioural control when it came to using Zoom. The mean score obtained was 2.3, with a cumulative percentage of strongly agree and agree responses reaching 77.5%.

(d). *Factors Influencing EFL Students' Use of Zoom(Subjective Norm)*

Hypothesis 3: EFL Students perceive negative factors that influence their behavioral intention when using Zoom

TABLE 5
FACTORS INFLUENCING STUDENTS' USE OF ZOOM: FREQUENCIES

Response	Frequency	Percentage	Cumulative Percent
Because My Lecturer Uses It			
Strongly Agree	8	20.0	20.0
Agree	29	72.5	92.5
Total	40	100.0	
Because My Classmates Use It			
Strongly Agree	7	17.5	17.5
Agree	21	52.5	70.0
Neutral	6	15.0	85.0
Disagree	5	12.5	97.5
Strongly Disagree	1	2.5	100.0
Total	40	100.0	

Note. N=40
Participants on average minimum =1
Maximum =4
Mean = 2.33
SD = 0.660

Table 5 presents the frequency statistics for the factors that influence EFL students to use Zoom. The cumulative percentages of the first and second factors support the hypothesis that students use Zoom because their lecturers and classmates use it. This finding aligns with Taylor and Todd's (1995) theoretical approach, which suggests that subjective norm is primarily influenced by peers and superiors. Specifically, 92.5% of the candidates agreed that they used Zoom because their lecturers used it, while peer influence had a slightly lower cumulative percentage of 70.

On the other hand Serhan's (2020) and Wang et al.'s (2018) studies found low student participation while using Zoom. Students infrequently turn off their webcams and do not respond when encouraged. Moreover, Interactions among students during Zoom sessions were also lower compared to FTF settings. Peers did not have a significant influence on students' engagement with the Zoom sessions, which were generally lower than FTF interactions in a classroom setting.

In contrast, the findings of this study are consistent with Maul et al.'s (2018) investigation. Their study examined the perceived value of Zoom sessions provided by dissertation chairs to coach and mentor doctoral students. The results revealed that Zoom facilitated the development of valuable relationships between EFL students and their advisors and colleagues, ultimately leading to increased productivity.

B. *Data Analysis, Findings, and Discussion of the Interview Questions*

Hypothesis 4: EFL Students' perceived advantages and disadvantages influence their behavioural intention when using Zoom.

The focused-structured interview consisted of two questions that were distributed to six respondents from the same sample group. The selection of respondents was based on their varying levels of familiarity with using Zoom. Two EFL respondents were familiar with and confident in using Zoom, two had limited experience with Zoom, and two had no experience at all. The interview was conducted via Google Meet.

(a). *EFL Respondents With Limited Previous Experience With Zoom*

One EFL student with limited previous experience with Zoom stated: "It saved me time and money... I felt relaxed and confident. However, the disadvantage of using Zoom is that the network and electricity are weak".

A second respondent with limited experience using Zoom responded similarly: Zoom is easier to use and saves time and effort ... Some disadvantages can be related to students' situations and environment. These disadvantages include students not having smartphones, poor internet connection in certain areas, and students' lack of engagement with the lecture compared to traditional face-to-face teaching.

The above two EFL students with limited experience in using Zoom highlighted its positive aspects such as saving time, effort and money, its ease of use, and felt relaxed and confident. They also mentioned some disadvantages including unstable electricity, poor network connections, students' lack of smartphones, and a feeling of isolation compared with traditional face-to-face learning.

(b). *EFL Respondents With No Prior Experience With Zoom*

Two other EFL students who had never used Zoom provided their responses on using the platform. One respondent reported the following advantages: "Easy to join, saving time, easy content sharing, a chance for training in an important technical issue, flexibility ... Comfort of learning from home, and cost savings ...".

The respondent also mentioned some disadvantages: "Sometimes gives a sense of isolation, difficulty in managing time, some technological difficulties, and lack of communication".

Another respondent who had only attended Zoom classes during his Ph.D. study, but had not used it before provided his response: "... It saves money and time. The disadvantages of using Zoom include lack of network access, particularly poor internet connection, lack of classroom exposure, and financial difficulties for many students".

The above two EFL students mentioned several advantages such as ease of joining meetings and saving time, easy content sharing and opportunities for training, flexibility, comfort, and cost savings. However, they also highlighted some disadvantages including feelings of isolation and challenges in managing time, difficulties with technology skills and lack of communication between peers and instructors, poor internet network quality, and financial challenges.

(c). EFL Respondents With Good Experience and Who Had Used Zoom in Private Schools and Universities Provided Additional Insights. One Participant Stated:

Easy to download ... Has free hosting for up to 100 participants for 40 minutes ... Reliable for use. Has high video and audio quality. Screen sharing feature allows easy participation with the host... requiring approximately 600MB to 1.70GB of data per hour. The free option automatically ends after 40 minutes ... More engaging than traditional methods. Sessions can be recorded and archived for future reference.

EFL Students can participate from any location. Better time management and flexibility in choosing a suitable location Provides an environment that some students find more comfortable. Helps improve technical skills.

In terms of disadvantages, the respondents mentioned the following:

High cost of internet services... Not suitable for complex topics or practical activities that require a physical environment. Limited feedback may be received from some students. Lack of face-to-face communication compared to traditional methods. Some students may feel unable to work effectively using Zoom.

One participant with significant experience in Zoom-based university teaching has noted both advantages and disadvantages. The advantages of teaching and learning via Zoom are as follows: "It saves time, cost and access to learning resources anytime".

On the other hand, he mentioned several disadvantages associated with using Zoom: "Weak infrastructure... Lacks of technical skills, some students do not have smartphones. Absence of direct interactions compared to face-to-face classroom interactions... These problems impede expected learning outcomes".

The above two experienced EFL students shed light on the advantages and disadvantages of using Zoom during their experience in this study. From their responses, it is clear that they master using Zoom considering all challenges that faced them during this experience. They acknowledged using Zoom regardless of the obstacles that might face them.

The responses of the six EFL participants in this study align with the conclusions drawn by Paudel (2021) regarding online learning in Nepalese higher education during the COVID-19 pandemic. The study revealed that over 80% of Nepalese higher education learners expressed satisfaction with online courses. They believed that it facilitated their online research, connected them to international networks, and provided access to various valuable sources of knowledge. However, the study also highlighted major challenges faced by participants, including weak time management skills, unreliable internet connections, and difficulties in adapting to the increased autonomy and responsibility associated with online courses.

Similar advantages and disadvantages were expressed by Sudanese EFL students in this study. Furthermore, their responses were consistent with the findings of Alam (2020), who conducted a study on students at Bangladeshi private universities. Like their Bangladeshi counterparts, Sudanese EFL Ph.D. students reported that both teachers and students encountered numerous challenges when transitioning to online education due to their lack of prior experience with it. Poor time management skills and weak internet connections were identified as crucial obstacles for both teachers and students. The current researchers support Alam's recommendations that universities should assist students in developing time management skills and improve internet speed and reliability for staff and students.

When comparing the results of this study with Serhan's (2020) categories, it is evident that Sudanese EFL students agree with the section on flexibility in classroom schedule and easier interaction. In terms of multimedia usage in Zoom, the students perceived it as a positive advantage. They noted that "the platform highly encourages the use of multimedia to distribute notes and digital resources. This is a huge step in the right direction for conservation of paper materials" (Serhan, 2020, p. 339). On the other hand, Sudanese EFL respondents perceived using multimedia as one of the obstacles for them while using Zoom. Some lacked technological skills while others did not have smartphones.

To our surprise, none of the Sudanese EFL respondents mentioned 'distractions' as one of the negative aspects of using Zoom. However, in contrast, Serhan's participants reported this issue with a significant percentage of 42.11%. One participant stated, "There are more distractions around in one's home, making it very difficult to stay focused. My attention to anything decreases because I get distracted by my family, phone, or anything outside of a classroom environment. Being outside the class environment can lead to more distractions..." (Serhan, 2020, p. 339). The Sudanese EFL respondents, regardless of their different experiences, confirmed that they understood the content of the lectures and were able to share their screens with their peers and the lecturers without facing any distractions from their

surroundings or family members. However, when it comes to technical difficulties and the quality of interaction and feedback, both students generally agreed on the disadvantages in these areas (as shown in the examples above).

One section from Serhan's study that was not mentioned by the Sudanese EFL respondents in this interview is 'Poor Education Quality'. One participant expressed his dissatisfaction by saying, "The poorer quality of education makes me feel like I'm not learning anything and yet I'm paying a ridiculous amount for tuition. I have lost motivation to study and I don't understand the content as well as I could in person with a professor" (Serhan, 2020, p. 339). On the other hand, the Sudanese respondents consistently confirmed that they had a good quality of education and understood the content of the lectures easily. They also found Zoom to be user-friendly and useful (as mentioned in their previous answers).

Overall, the results of this study highlight that Sudanese EFL PhD students perceive the same advantages and disadvantages as other students, both nationally and internationally, regarding Zoom learning during the COVID-19 pandemic. Learners in developing countries face similar infrastructure limitations and unstable economic, social, and political situations. Additionally, students encounter additional challenges that can impede their access to and engagement with online learning platforms. Despite these challenges, the PhD EFL candidates in this study believed that the benefits of using Zoom during and after the spread of COVID-19 outweighed the drawbacks. They expressed overall satisfaction with this new remote teaching and learning experience.

V. CONCLUSION AND IMPLICATIONS

The spread of the COVID-19 pandemic in mid-March 2020 forced universities worldwide to transfer lectures from traditional face-to-face modes of learning to remote/online modes. Sudanese universities were not an exception. However, Sudan is a unique case study for this transition to digital learning due to limited e-learning use in government universities before the lockdown.

This study investigated the perceptions of Sudanese EFL Ph.D. students about Zoom as a technological tool for teaching and learning. Despite the expected obstacles and challenges, Sudanese learners embraced this unique teaching and learning mode. The challenges include the high cost of internet, poor bandwidth connections, and the need to source reliable and technologically compatible devices for Zoom. The candidates lacked experience in e-learning to such an extent that some experienced classmates delivered online sessions to teach colleagues how to install and use Zoom. They also need to develop skills in time management that remote learning requires.

Toquero (2020) suggests that institutions should adjust their pedagogical practices to meet the current learning needs of their students. The transition to online learning during the COVID-19 pandemic saw this adaptation take place. The insights gained during the remote teaching and learning experience should encourage further adaptations to meet the needs of 21st-century learners. We confirm Serhan's (2020) recommendation that researchers should tap into studies documenting the effect of the pandemic on education systems worldwide. This research will provide educators with valuable insights into requirements and best practice strategies for new modes of teaching and learning moving forward.

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