
Sudanese Teachers' Adoption of Instructional Videos during COVID-19

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Received: 06 January 2023

Accepted: 21 March 2023

Published: 26 April 2023

Abstract: *Due to the COVID-19 pandemic, teachers had to resort to online teaching to continue their students' education. This research aims to investigate the factors that motivate teachers to use instructional videos, using the Technology Acceptance Model (TAM) as a framework. A questionnaire was utilized to gather cross-sectional data, which underwent analysis via factor analysis, correlation, and regression analysis. Out of the 350 questions, only 321 were considered valid. The findings revealed that teachers' intention to use instructional short videos is influenced by Perceived Usefulness, Perceived Ease of Use, and Attitude. Specifically, the perceived usefulness of instructional videos was identified as a crucial factor in determining teachers' willingness to use them in their classrooms.*

Keywords: *Instructional Videos, TAM, Online Learning, Mobile Learning.*

1. INTRODUCTION

Globally, the COVID-19 epidemic has had a significant impact on higher education, as the virus has disrupted human activity around the world, and schools are no exception (Al-Marouf et al., 2020). Covid-19 has prompted higher education institutions to suspend traditional in-person learning. During Covid-19, the world's situation changes due to a pandemic, as a result of an unprecedented extended period of school closures. Governments from all over the world have adopted e-learning as a means to ensure that schooling continues for pupils, despite the fact that it has forced the entire world into quarantine and social distances. At the same time, the absence of professional training and robust infrastructure for online teaching and learning may have harmed the quality of online programmes, and many private schools and institutes are attempting to find a solution for teaching.

Teachers began recording instructional videos lessons from home and sending them to student groups on social media as a result of developments in technology for multimedia, low



manufacturing expenses, and easy access to technological equipment (Nagy, 2018; Ozan & Ozarslan, 2016).

Academic research has recently focused on the integration of instructional video lessons into teaching materials. With the increasing use of the Internet, videos have taken on a key role in teaching in a variety of situations and environments (Arguel & Jamet, 2009). In addition, some prestigious universities, such as Stanford, Cambridge, Oxford, and Harvard, provide video instructions (Giannakos et al., 2016).

Teachers can create instructional video lessons for students to watch on various internet platforms for both official and informal learning objectives. Video lessons are also beneficial because they improve the opportunity for lifelong learning in all socio-economic contexts, remove geographic boundaries, and save time. They also provide a variety of design options for creating a varied and stimulating learning environment, such as entertainment-education (Papa et al., 2000). Digital native students' generational features, attitudes, and motivating drives need the use of innovative instructional methods based on social media and multimedia (Kara, 2018). Since the early twentieth century, audiovisual learning and teaching aids have been employed in the classroom (Koning et al., 2018). Alhassan (2016) states, these innovations might be viewed as a revolution in the future of education. According to Castillo-Manzano et al., (2017), these innovations also enhance learning techniques by inspiring student involvement, permitting the use of adapted apps, integrating students and teachers, and facilitating a greater integration of ICTs into the schoolroom. Thus, within ICTs, the use of multimedia has garnered considerable academic interest, owing to the learning benefits associated with increased student attention and motivation (Berk, 2009).

Experimental research consistently confirms that online instructional films deliver material more attractively and effectively than conventional lectures delivered in person, resulting in increased student engagement and learning capacity (Moghavvemi et al., 2018). Students' attention and memory were increased when they watched online educational films, according to research. Additionally, as Fleck et al. (2014) demonstrate, Media outlets help make educational videos more successful by allowing for student-led flexible learning.

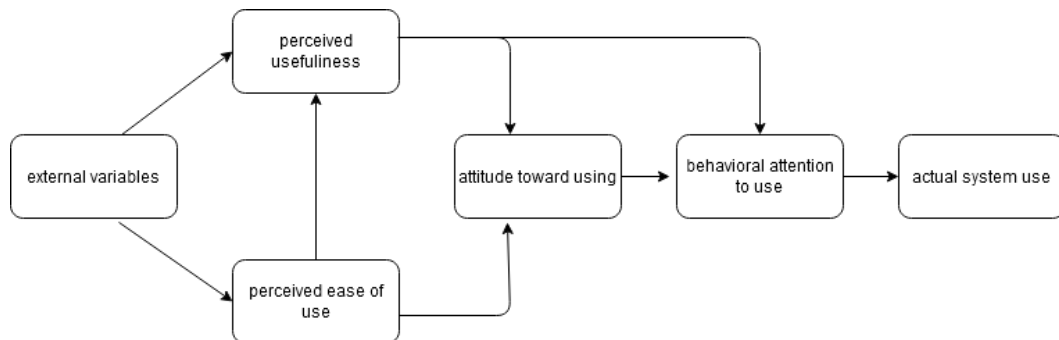
The purpose of this study is to examine the existing literature in order to gain a deeper understanding of how instructional videos are being used in Sudan. There is a substantial paucity of study regarding the potential of mobile learning or instructional videos in Sudan. Furthermore, the research on mobile learning (m-learning) in Sudan is currently at an early stage, with our theoretical knowledge not having progressed far beyond the settings.

Sudanese must be familiar with the appropriate concepts and theories of m-learning uptake. Consequently, this study's objective is to conduct a literature in order to gain a better knowledge of instructional videos in Sudan which can pave the way to m-learning.

Literature review

There is a lack of research on the use of video lessons in high schools, but existing studies suggest that users' perception of how easy a technology is to use can influence their adoption and utilization of that technology (Chatzoglou et al., 2009). The Technology Acceptance Model (TAM) is a useful tool for predicting technology utilization because it identifies factors that influence technology acceptance (Adams et al., 1992; Dishaw & Strong, 1999). TAM is based on a model that combines the theory of reasoned action (TRA) with paradigm connections, and

it includes two key factors: perceived usefulness and perceived ease of use. Perceived ease of use can also affect perceived usefulness (Davis, 1989).



Various studies have implemented the Technology Acceptance Model (TAM) in different areas of technology adoption such as email, word processing, spreadsheets, mobile payments, and video lesson adoption. However, there is a lack of research on the factors influencing teachers' intentions to use instructional video lessons, both in Sudan and globally. None of the studies have specifically focused on this area yet. (Adams et al., 1992; Davis, 1989; Agarwal & Prasad, 1997; Turan & Cetintas, 2020; Sleiman et al., 2021)

This study aims to enhance the Technology Acceptance Model (TAM) by incorporating External Encouragement (EE) as an external factor for the use of instructional video lessons in distance learning. Previous research has suggested that including external factors in TAM can improve its explanatory power. Therefore, this study proposes a theoretically supported model that includes EE to better understand the factors that influence the acceptance of instructional videos for distance learning.

Perceived usefulness (PU):

One of the most crucial aspects influencing users' intentions during the technology acceptance process is perceived usefulness., according to studies in the literature (Alharbi & Drew, 2014; Yang & Wang, 2019). As a result, the benefits of instructional video lessons, such as providing a flexible learning setting and permit for an individual pace of learning, are likely to boost teachers' willingness to employ them. We define PU in this study as the extent to which an individual believes that using instructional video lessons will impact teachers' intentions to use them. As a result, we proposed:

H1. Perceived usefulness will positively influence intention to employ instructional videos for learning.

Perceived Ease of Use (PEOU):

The implementation of new technologies would improve their life and the perceived ease of use is described as painless (Davis, 1989). According to research in the literature, people's beliefs about the ease of use of a technology influence their adoption and application of the technology (Chatzoglou et al., 2009; Teo, 2010). Teachers' plans to use and integrate educational video courses depend on how easy they think they are to use, since they don't need a complicated system or special knowledge. Furthermore, researchers such as Sleiman et al.,



(2021) asserted that perceived ease of use has an impact on intent to use technology. We define ease of use as the degree to which teachers regard their use of instructional video lessons to be simple or effortless.

H2. Perceived usability will have a favorable impact on behavior intention towards instructional video lessons.

External Encouragement (EE):

External encouragement is a motivational element connected with perceived usefulness, according to Martins and Kellermanns (2004). They looked into the elements that influence students' adoption of a web-based course management system and discovered that external support can influence students' perceptions of the system's usefulness. In a similar scenario, there was also evidence of a robust link between perceived ease of use and external encouragement (Williams & Williams, 2010). As a result, we anticipate that external encouragement will have a positive impact on both real usage and perceived usefulness in the context of social network services.

H3. External encouragement has a influential effect on behavior and intention to use instructional video lessons.

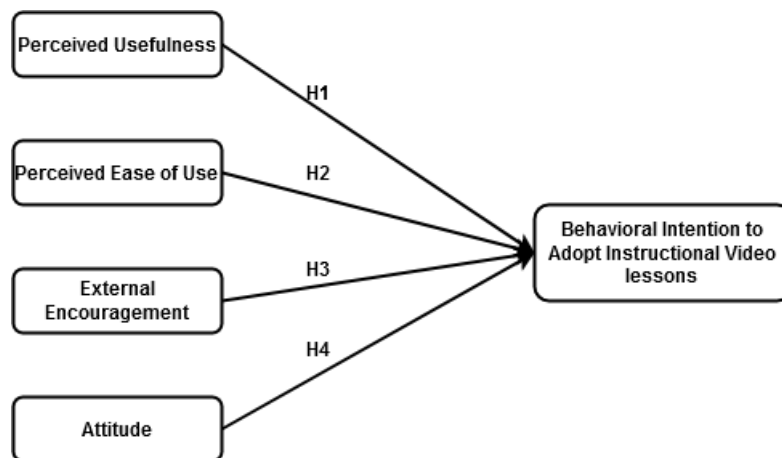
Attitude (ATT):

The evaluation of an individual's preferences regarding a specific conduct is referred to as attitude toward behavior (Ajzen, 1991). Attitude is a critical antecedent characteristic of behavioral intention, according to empirical data (Chen & Wu, 2020; Faham & Asghari, 2019). In Gan et al., (2017) he discovered that attitude is the most critical factor driving behavioral adoption in a study of college students' use of mobile learning libraries. In terms of educational videos, most teachers during the Covid-19 quarantine were likely exposed to them and had a positive opinion regarding them. Intention to use instructional video lessons is characterized as the extent to which a student's attitude is favorable or adversely disposed toward using instructional video lessons.

H4. The intention of using instructional video lessons will be influenced by one's attitude.

Behavior Intention (BI):

the person's readiness to engage in the targeted activity is referred to as intention (Ajzen, 1991). It is also considered a cognitive aspect since it demonstrates how much work people are prepared to put forth in order to carry out actual conduct (Ajzen, 1991; Enkel & Bader, 2016; Ngai et al., 2007). According to a number of studies, there is strong empirical and theoretical support for the relationship between intention to engage in an activity and actual action (Davis, 1989; Sleiman et al., 2021). The researchers assume that a teacher's behavioral purpose is to use instructional video lessons in this study. The following model depicts the study's theoretical framework.



2. METHODOLOGY

The survey had two parts: demographics and opinions on instructional videos using Davis' measurement items. The data was collected cross-sectionally and analyzed using SPSS version 16. Factor analysis was used to confirm the suitability of the study and to identify latent factors. Correlation and regression were used to explore relationships between variables.

3. RESULTS

Profile of Respondents

Participants were 321 out of 350 teachers (150 males, 200 females) enrolled in the teaching of secondary level in Wad-Meani town. All these participants have their own smartphones and are familiar with how to use them. The participant of this study used to record lessons and delivered them through WhatsApp, Telegram, and Facebook. Most of the participants had been teaching for more than 5 years before COVID-19. They were learnt that their involvement in the study was voluntary.

Factors analysis

Perceived Ease of Use

The first component, perceived usability, explains 0.662% of the variation and has an eigenvalue of 3.022. Since the factor loading was more than 0.50, the KMO result for this factor was 0.843, and none of the four statements were deleted from the study. "Item 6" (0.817), "item 7" (0.746), "item8" (0.695), "item 9" (0.640) and "item 10" (0.570) are the five Perceived Ease of Use statements that were rated positively.

Scale items	PU	PEOU	EE	AT	BI
Perceived usefulness					
PU 1	.663				
PU 2	.752				
PU 3	.819				
PU 4	.777				



PU 5	.676				
Perceived ease of use					
PEOU 6		.817			
PEOU 7		.746			
PEOU 8		.695			
PEOU 9		.650			
PEOU 10		.570			
External encouragement					
EE 11			.669		
EE 12			.547		
EE 13			.644		
Attitude					
AT 14				.641	
AT 15				.758	
AT 16				.838	
AT 17				.806	
Behavior Intention					
BI 18	.856				
BI 19	.875				
BI 20	.866				
Average Variance Extracted	0.411	0.662	0.732	0.721	0.669
Eigenvalues	3.240	3.022	2.430	3.490	2.330
Kaiser-Meyer-Olkin Measure (KMO)	0.788	0.843	0.730	0.870	0.666

Perceived of Usefulness

Five statements make up the Perceived Usefulness component, which has a 0.411% percent an eigenvalue of and a variance of (3.240). The KMO for this factor is (0.788), and factor loading was greater than 0.50 in all five assertions. The respondents' claims were "item6" (0.817), "item7" (0.746), "item8" (0.695), "item9" (0.640) and "item 10" (0.570).

External Encouragement

Three statements make up the External Encouragement factor, which has a variance of 0.732% and an eigenvalue of 2.430, All of the statements had a factor loading of more than one 0.50. "Item 11" (0.699), "item 12" (0.547), and "item 13" (0.644). This factor has a KMO of (0.730).

Attitude

With eigenvalues of (3.490) and KMO of (0.870), the fourth factor aggregated dimensions related to the Attitude factors, which accounted for 0.721 % of the variance. According to table 1, these variables were, "item 14" (0.641), "item 15" (0.758), "item 16" (0.838) and "item 17" (0.806).

Behavior Intention

The Behavior Intention factor had three items loaded, all of which related to the intention to use instructional video for teaching, (with the great loading of 0.926) were the most important statement in this component, according to Table 1, followed by "item 18" (0.888), "item 19" (0.875) and "item 20" (0,866) With KMO 0.788, this factor accounted for (0.669) percent of variance and (2.330) of eigenvalue.

Reliability Analysis

Variables	Cronbach's Alpha
Perceived usefulness	0.612
Perceived ease of use	0.827
External Encouragement	0.877
Attitude	0.871
Behavior Intention	0.833

Correlation Analysis

Pearson correlations were used to find correlations between factors and to explain the correlation between the dependent variable and the outcome. Using the correlation test, all of the significant variables were correlated. Because multiple items scored a single construct in the survey, the average score of the multi-items for that construct was computed, and the score was used in recent studies such as correlation and regression (Al-Qadri et al., 2021; Wang & Benbasat, 2007).

According to Wong and Hiew (2005), the correlation coefficient value (R) ranges from 0.10 to 0.29 for weak correlation, 0.30 to 0.49 for medium correlation, and 0.50 to 1.0 for strong correlation. To avoid multicollinearity, Field (2005) recommends that the correlation coefficient not exceed 0.8. There is no multicollinearity problem in this study because the greatest correlation coefficient is 0.524, which is less than 0.8. (Table 3).

	PU	PEOU	EE	AT	BI
Perceived usefulness	0.641				
Perceived ease of use	0.519	0.814			
External Encouragement	0.443	0.743	0.855		
Attitude	0.552	0.797	0.630	0.849	
Behavior Intention	0.660	0.690	0.608	0.774	0.818

Multiple regression analysis

The first component, perceived usability, explained 0.662 percent of variation and had an eigenvalue of 3.022. Table 4 lists the outcomes of the four hypotheses that were proposed. The F-statistics generated (F = 19.175) were significant at the 1% level (Sig. F0.01), validating the model's fitness. As a result, the four characteristics (Perceived Usefulness, External

Encouragement, Perceived Ease of Use, and Attitude) have a statistically significant link with Behavior Intention to use instructional video. R^2 was 44.7 percent for the coefficient of determination. As a result, the four reasons can account for 44.7% of the teacher's willingness to use instructional videos for teaching.

Table 4: Regression Analysis

Variables	b	SEb	Beta (β)	T	p value
Perceived Usefulness	.391	.101	.350	3.871	.000
Perceived Ease of Use	.222	.094	.235	2.372	.020
External Encouragement	.363	.404	.360	1.156	.880
Attitude	.385	.264	.345	3.762	.000

4. DISCUSSION

Perceived usefulness, according to H1, will have a positive impact on behavior intention to use instructional videos. The results were statistically significant ($\beta = 0.350$; $t = 3.871$; $p = 0.000$). As a result, H1 is supported where users find instructional videos be both convenient and efficient. This finding is similar to that of (Dalvi-Esfahani et al., 2020; Islamoglu et al., 2021; Sarrab et al., 2016), Adams et al., (1992) and Davis (1989) who found that perceived usefulness is a significant predictor of usage behavior and intention. People will find it generally good and regard it as something valuable if it is used regularly.

The study's second hypothesis, if Significant correlation exists between perceived ease of usage and behavior intention toward adopting instructional video for teaching, was investigated further. Perceived Ease of Use ($\beta = 0.235$; $t = 2.372$; $p = 0.020$) is substantially connected to Behavior Intention towards instructional video, according to Table 4 (Regression Analysis). As a result, H2 is confirmed.

The positive intent to use instructional videos is attributable to the fact that users quickly learned how to utilize instructional videos and discovered that they are simple to use. It has been proposed that as systems get easier to use and users gain more expertise, the variation in the ease-of-use construct decreases, particularly in today's Environment of the internet and e-commerce. This validates the finding by Sarrab et al., (2016), Islamoglu et al., (2021), Hamidi and Chavoshi, (2018) and Davis (1989).

The statistics support H3 as the p-value is greater than 0.05 and there is a significant relationship between external encouragement and the intention to use educational videos ($\beta = 0.360$; $t = -1.156$). The wide variety of instructional videos can thrill users by giving them more creative space, allowing them to enjoy utilizing instructional videos. The External Encouragement can provide users with a great agitation and hence encourage them to use them. However, the findings support research on web-based course management conducted by (Lai et al., 2012; Martin, 2016), which found that External Encouragement has a substantial impact on the intention to behave in a certain way.



H4 proposed that attitude has a beneficial impact on behavior intention to use instructional videos. Behavior Intention to use instructional videos had a significant connection with attitude ($\beta = -0.345$; $t = -3.762$). With a p-value of less than 0.05, H4 is highly supported. Using instructional videos is a positive attitude and a good idea.

When relating Attitude to Behavioral Intention is examined, it is clear that Attitudes play a substantial influence in forming Behavioral intention. When the coefficients of the Attitude are analyzed, the premise that Attitudes have a strong, positive direct influence on the intention to utilize instructional videos is reaffirmed (refer Table 4).

5. CONCLUSION

The findings showed the relevance of perceived ease of use when it comes to creating educational videos in terms of how simple or easy it is to do so.

Perceived encouragement, the least influential of the four criteria, was found to have an effect on behavioral intention to use instructional videos. Perceived encouragement is a crucial construct, but it may not be enough to motivate teachers to use instructional videos in their classrooms. This is a rare exception to the general rule of technological acceptance, so it is worth considering. Overall, the current findings contribute to a better understanding of user acceptance of instructional videos. This research can be used as a resource for academics interested in the topic of eLearning. The findings imply that users' instructional films require a good connection to provide resources that are both easily available and convenient to utilize. In the future, researchers could add more samples to the study and add to the proposed model to include other factors that affect how people use technology.

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