E-learning using Video Conferencing Applications: How is Google Meet perceived among students?

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Abstract.

During COVID-19 sanitary crisis, teachers have continued classes using video conferencing applications and other digital tools. This has meant that students have confronted another way of learning. Therefore, it is worthwhile revealing students' perceptions regarding this new form of receiving online classes and their performance. Based on the Technological Acceptance Model (TAM) a model was proposed and pre-tested using a sample of students of the Faculty of Commerce and Tourism of the Complutense University of Madrid. This exploratory research reveals that (1) the most significant relationship is between interestingness of content and perceived playfulness; (2) the second most significant linkage is between playfulness and intention to use; and (3) there is no effect between perceived ease of use and usefulness. The discussion based on the findings offers revealing academic and educational contributions.

Keywords: video conferencing, e-learning, Google Meet, TAM model

1. Introduction

During the COVID-19 lockdown it has been crucial for the continuity of students adopt all kind of technological approaches so as to encourage students learning process. This study aims to determine the causal relationships that explain Google Meet performance as an e-leaning video conferencing tool. Partial Least Squares Structural Equation Modelling (PLS-SEM) is used for the pre-test analysis.

2. Literature background and hypotheses

2.1 Technological acceptance

Subjects' disposition to accept and use technological advances have been extensively explained. The most popular theories are the Technological Acceptance Model (TAM)l[1,2], Theory of Planned Behaviour[3] and Unified Theory of Acceptance and Use of Technology

(UTAUT)[4,5]. This study has used TAM as basis of the proposed model because it offers explanations of subjects' attitudes and behaviour[6].

Though prior studies have examined different e-learning topics of Google, no research has been found that deals with Google Meet performance. Thus, the next hypotheses were suggested:

H1: Perceived ease of use of Google Meet positively and significantly influences (a) students' intention to use, (b) perceive usefulness and (c) attitude.

H2: Perceived usefulness of Google Meet positively and significantly influences students' intention to use.

2.2 Perceived enjoyment drivers

Students seem to be influenced to repeat technological experiences when they feel motivated with the interestingness of the content and if they have a playfulness sensation. Thus, it was postulated:

H3: Perceived playfulness of Google Meet positively and significantly influences (a) students' perceived ease of use, (b) perceive usefulness, (c) intention to use and (d) attitude.

H4: Interestingness of content of Google Meet positively and significantly influences students' perceived playfulness.

3. Methodology

3.1 Sample

An online questionnaire was sent to students the Faculty of Commerce and Tourism of the Complutense University of Madrid. A total of 66 usable questionnaires were collected from June 29 to July 9, 2020.

Table 1. Profile of respondents (n=66)

Characteristics	Frequency	Percentage (%)
Gender		
Female	43	65,2
Male	23	34,8
Age		
Less than 20	52	78,8
20-25	8	12,1
26-30	3	4,5
30-35	2	3,0
More than 40	1	1,5
Education		
University degree	13	68,4
Master's	6	31,6

Figure 1: Proposed model.
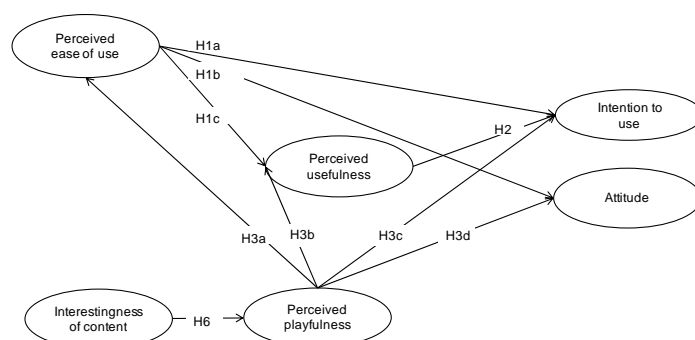
3.2 Measures

All the scales items were adopted from previous studies and rated on a seven-point Likert Scale (Table II). Figure 1 was used in the pre-test analysis.

Table II. Descriptive analysis.

Construct/Associated Items	Mean	Standard Deviation
Perceived usefulness (PU)		
1. Using this tool improves my performance in this course	5.200	1.720
2. Using this tool is useful to me in this course	5.550	1.687
3. Using this tool helps me accomplish my learning effectively	5.450	1.687
4. Using this tool makes my work easier in this course	5.250	1.728
Perceived ease of use (PE)		
1. It is easy to get this tool to do what I need to do	5.500	1.775
2. this tool is easy to use	6.000	0.949
3. My interaction with this tool is clear and understandable	5.850	1.526
4. It is easy to become skillful at using this tool.		

Attitude (AT)	6.450	0.740
1. I believe that using this tool is a good idea.	5.850	1.424
2. I believe that using this tool is advisable.	5.850	1.388
3. I am satisfied in using this tool.	5.700	1.487
Interestingness of content (IC)		
1. I think the content taught throughout this tool is interesting.	5.850	1.424
Playfulness (PL)		
1. I enjoy using this tool to receive my classes.	5.850	1.424
2. I feel this tool use is fun as way to received my classes.	5.600	1.497
Intention to use (IN)		
1. I plan to use this tool very often during next course.	5.250	1.479

1.1 Reliability and validity evaluation

PLS-SEM was employed for the pre-test analysis as it commonly employed using small sample sizes. Table III describes the reliability and convergent validity test. Cronbach's alpha values fulfil the recommended value of 0.60. Average variance extracted (AVE) for each construct was above 0.50. All items were significantly ($p<.01$) related to their hypothesized factors, and standardized loadings were higher than 0.60. Concerning discriminant validity, the shared variance between pairs of constructs was lower than the corresponding AVE (Table IV).

Table III. Reliability and convergent validity of the final measurement model.

Factor	Indicator	Standardized Loading	t-Value (bootstrap)	CA	rho_A	CR	AVE
Attitude	AT1	0.943	37.314	0.951	0.952	0.969	0.912
	AT2	0.975	74.984				
	AT3	0.947	41.860				
Interestingness of content	IC1	1.000		1.000	1.000	1.000	1.000
Intention to use	IN1	1.000		1.000	1.000	1.000	1.000
Perceived ease of use	PE1	0.860	23.603	0.852	0.888	0.901	0.698
	PE2	0.849	9.193				
	PE3	0.933	24.318				
	PE4	0.679	4.844				
Playfulness	PL1	0.969	88.690	0.929	0.932	0.965	0.933
	PL2	0.964	55.910				
Perceived usefulness	PU1	0.947	53.598	0.926	0.929	0.948	0.821
	PU2	0.834	16.335				
	PU3	0.933	40.115				
	PU4	0.906	26.786				

Note: All loadings are significant at p < .01 level. CA = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted.

Table IV. Measurement model discriminant validity for the higher-order construct.

Factor	1	2	3	4	5	6
Attitude	0.955					
Intention to use	0.438	1.000				
Interestingness of content	0.694	0.686	1.000			
Perceived ease of use	0.779	0.418	0.670	0.836		
Perceived usefulness	0.807	0.647	0.796	0.736	0.906	
Playfulness	0.693	0.856	0.782	0.583	0.871	0.966

Note: Diagonal values are AVE square root.

Table V. Evaluation of the estimated models.

Concept

	R^2	Q^2
Attitude	0.683	0.594
Intention to use	0.762	0.733
Perceived ease of use	0.330	0.206
Perceived usefulness	0.832	0.661
Playfulness	0.605	0.559

1.2 Research findings

Findings show that perceived ease of use does not have a meanginful impact on intention to use. However, the rest of relationships examined in the proposed model are meaningful and positive.

Table VI. Hypotheses testing.

Hypothesis	Path	Standardized Path Coefficients	t-value (bootstrap)	
H1a	Perceived ease of use -> Intention to use	0.026	0.277	
H1b	Perceived ease of use -> Perceived usefulness	0.347	3.737	***
H1c	Perceived ease of use -> Attitude	0.568	4.323	***
H2	Perceived usefulness -> Intention to use	-0.429	2.256	**
H3a	Playfulness -> Perceived ease of use	0.583	6.347	***

H3b	Playfulness -> Perceived usefulness	0.668	7.839	***
H3c	Playfulness -> Intention to use	1.214	8.103	***
H3d	Playfulness -> Attitude	0.362	2.505	**
H4	Interestingness of content -> Playfulness	0.782	11.211	***

Note: ***p<0.01; **p<0.05; *p<0.10

4. Discussion

This research advances knowledge related to e-learning as it examines the effect of the employing video conferencing as an e-learning tool. This study contributes to the understanding of the use video conferencing systems as e-learning tools and students' perceptions regarding their playfulness and interestingness of content. In this regard, scholars are encouraged to try to increase the sample of students in future studies and replicate this study in other contexts.

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