

DETERMINANTS OF STUDENTS' BEHAVIOURAL INTENTION TOWARDS GOOGLE CLASSROOM IN THE COVID-19 ERA: EVIDENCE FROM ZIMBABWEAN UNIVERSITIES.

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Abstract

Online learning technologies have dismantled geographical boundaries to higher education. The power of internet technologies has enhanced the accessibility of education around the globe through online platforms. Owing to the advent of Covid 19, online learning has become more popular with many institutions of higher learning migrating to such platforms following the closure of campuses. However, despite the growing popularity of online learning platforms, prior research suggests that there is an inadequate reflection and critical analysis of user interaction and behaviour towards such platforms especially in developing countries such as Zimbabwe. In light of this, the purpose of this study was to analyse the determinants of students' behavioural intention towards Google Classroom as a learning platform. Research data was collected from 250 respondents via the SurveyMonkey platform. Findings revealed that perceived ease of use and perceived convenience had a significant positive impact on the attitude of students towards Google Classroom. No significant relationship was found between perceived usefulness and the attitude towards Google Classroom. Furthermore, no significant relationship existed between the attitude to Google Classroom and the behavioural intention of students. These results have important managerial implications in terms of decision making.

Key Words: *University, Google Classroom, Theory of Planned Behaviour, Online learning, Behavioural Intention*

1.0 Introduction

The Fourth Industrial Revolution and its attendant consequences such as rapid digitalisation have changed the higher education landscape. Geographical boundaries to education have been dismantled by the power of internet technologies. Through online learning platforms, students from across the globe can access education services anytime. Owing to the advent of Covid 19, the usage of online learning platforms has grown exponentially since the beginning of the year 2020. This is because many learning institutions have discontinued the face to face teaching mode. The discontinuation was prompted by the principle that big crowds of people constitute a serious risk to safeguarding public health during a pandemic. For this reason, approximately 220 million post-secondary students have had their studies ended or significantly disrupted due to COVID-19 (World Bank Report, 2020).

Following the closure of campuses, there has been a gradual migration to online learning platforms (UNESCO, 2020). Online platforms such as Google Classroom, Google Meet, Moodle, Blackboard, Edmodo And Schoology have become prominent media of teaching (Kumar & Bervell, 2019). As the usage of online learning technologies is rising, further research in this area is required for education managers to make informed decisions especially in developing countries such as Zimbabwe where the technological infrastructure is underdeveloped. The most popular online learning management system that has been adopted by most Zimbabwean universities is Google Classroom. As a recently adopted online learning management system in the Zimbabwean university landscape, we feel that there is a need to fully explore the Google Classroom as a mode for delivering lectures.

Several authors have suggested the need to undertake more research on learning management technologies such as Google Classroom. Kumar and Bervell, (2019) argued that there is a need for in-depth research into learning management technologies such as Google Classroom because university students who are mostly millennials do not radically adapt to new technologies. Some students exhibit low technology literacy levels. In support of this, Margaryan, Littlejohn and Vojt (2011) highlighted that there are issues relating to low engagement and adaption in the Google Classroom. Furthermore, authors such as Heggart, (2018) have argued that there has been inadequate reflection and critical analysis on the use of learning technologies in teaching. These arguments strengthen the need for further research into online learning management technologies such as Google Classroom.

Authors such as Abazi-bexheti, Kadriu, and Apostolova-trpkovska (2018) argued that as technologies in education improve, there is always the need to explore user interaction and behaviour. This is important to establish whether the novel technologies are achieving the desired objectives. In support of this, Al-marouf and Al-emran, (2018) suggested that there be extensive research on the acceptance and behavioural intentions of learners towards Google Classroom in higher education as the current literature is limited. Furthermore, authors such as Esteban-Millat, Martinez-Lopez, Pujol-Jover, Gazquez-Abad, Alegret (2018) indicated that the process of accepting technologies influences the behaviour of students towards such technologies. As a result, the introduction of technologies in higher education might be done with little understanding of their impact on the behavioural consequences on students.

In light of this background, as practising academics and educators, we are interested in investigating the inclinations of students towards novel technologies in higher education. Drawing upon the Technology Acceptance Model (TAM), this study sought to investigate the determinants of student's behavioural intention towards the use of Google Classroom in the COVID-19 era. Specifically, the study sought to achieve the following:

- Develop a model of the determinants of students' behavioural intention towards Google Classroom in the context of a university.
- To investigate the relative impact of perceived usefulness, perceived convenience and perceived ease of use on the attitude of students towards Google Classroom.
- To ascertain, the relative impact of the attitude of students on their behavioural intention towards Google Classroom.
- To recommend appropriate strategies in support of the findings of this study.

The rest of the paper is organised as follows: Section 2 briefly explains the concept of the Google Classroom; in Section 3 - the theory underpinning this research and hypotheses are developed; Section 4 describes the methodology used for the collection and analysis of data and the results of such analysis. The findings are discussed in Section 5, followed by implications, and limitations.

2.0 Literature Review

Google Classroom

Kumar and Bervell, (2019) defined the Google Classroom as a free web-based learning management platform that allows anyone to create and manage classes online provided that they have a google account. This learning platform has become the most rapidly adopted learning management tool in higher education (Jakkaew and Hemrungrote, 2017). Jordan and Duckett (2018) opined that Google Classroom is more beneficial compared to other learning management tools because it is easily accessible, free, easy to use and very reliable. In support of this Al-marroof and Al-emran, (2018) argued that Google Classroom simplifies student-teacher communication and provides a streamline of workflow from students hence the rising popularity of this platform. Iftakhar, (2016) also indicated that Google Classroom has been widely adopted because it is easy to use, free, flexible and mobile-friendly.

3.0 Theoretical Framework and Hypothesis Development

To comprehend the determinants that influence students intentions towards Google Classroom, many theories have been used. One such theory is the Technology Acceptance Model (TAM). This theory was developed from the Theory of Reasoned Action (Ajzen & Fishbein, 1980) by Davis (1989). This theory posits that perceived usefulness and perceived ease of use determine an individual intention to use a system (Punnoose, 2012). Hsu, Chang, Lou, and Luo, (2013) stated that the TAM was developed specifically for investigating the impact of technology on users behaviour. Hence Punnoose, (2012) argued that this model is capable of explaining user behaviours such as student intentions on a broad range of end-user computing technologies. Other external variables can be used to strengthen the TAM, one such variable is the perceived convenience (Hsu et al., 2013). Based on the TAM model we can develop our hypotheses as explained in the next section.

Perceived Usefulness

Perceived Usefulness is the degree to which a person believes that the use of technology will produce better outcomes (Farahat, 2012). Punnoose (2012) also sees perceived usefulness as the degree to which a particular system would enhance performance. In the context of this study, it implies that if students believe that Google Classroom can facilitate the achievement of stated outcomes then they can have a favourable attitude towards the platform. This is supported by Ifinedo (2018) research study which concluded that Perceived Usefulness had a positive impact on the attitude towards learning technology. We can thus propose the first hypothesis as:

H1: Perceived Usefulness has a positive impact on the Attitude towards Google Classroom.

Perceived Ease of Use

Perceived Ease of Use refers to the belief that applying an actual product would be effortless (Buabeng-andoh, 2020). In support of this view, Punnoose, (2012) defined the perceived ease

of use as how much effort an individual commits to perform a certain behaviour. All this implies that if students believe that Google class is easy to use they can develop a positive attitude towards the usage of the platform. Ifinedo, (2018) concluded that perceived ease of use had a positive effect on attitude. Teo, (2018) opined that if users perceive technology to be easy to use, the attitude towards technology increases. We thus propose the second hypothesis as follows:

H2: Perceived Ease of Use has a positive impact on the Attitude towards Google Classroom.

Perceived Convenience

Perceived Convenience refers to individual preference for convenient products and services(Hsu et al., 2013). In most cases, users of technology would like to spend less time and effort when using a product. In the context of this study, students can develop a positive attitude to Google Classroom if it is effortless to use the system during learning. Previous research has established a positive relationship between perceived convenience and attitude towards online learning (see Chang, Yan & Tseng, 2012; Hsu et al., 2013). We thus propose the third hypothesis as follows:

H3: Perceived Convenience has a positive impact on the Attitude towards Google Classroom

Attitude towards Use

Attitude towards use refers to the extent to which a user experiences positive feelings in using technology (Teo, 2018). Uses of learning technology can either develop negative or positive feelings towards engaging in a certain behaviour towards technology (Ifinedo, 2018). If the user perceives that learning technology is convenient, useful and easy to use a positive attitude can develop. We can thus develop the fourth hypothesis as follows:

H4: Perceived ease of use, Perceived usefulness and Perceived Convenience have a positive relationship with the attitude towards Google Classroom.

Behavioural Intention

This refers to a cognitive representation of a person's readiness to perform a given behaviour (Punnoose, 2012). Students might be ready or not ready to use Google Classroom depending on their attitude. Teo, (2018) stated that the intention to use is influenced by the attitude. This implies that if the attitude towards Google Classroom is positive, this results in positive behavioural intention. We can thus propose the fifth hypothesis as follows:

H5: Attitude towards Google Classroom positively influences the behavioural intention towards its use.

From the analysis above, we developed the research model as indicated below:

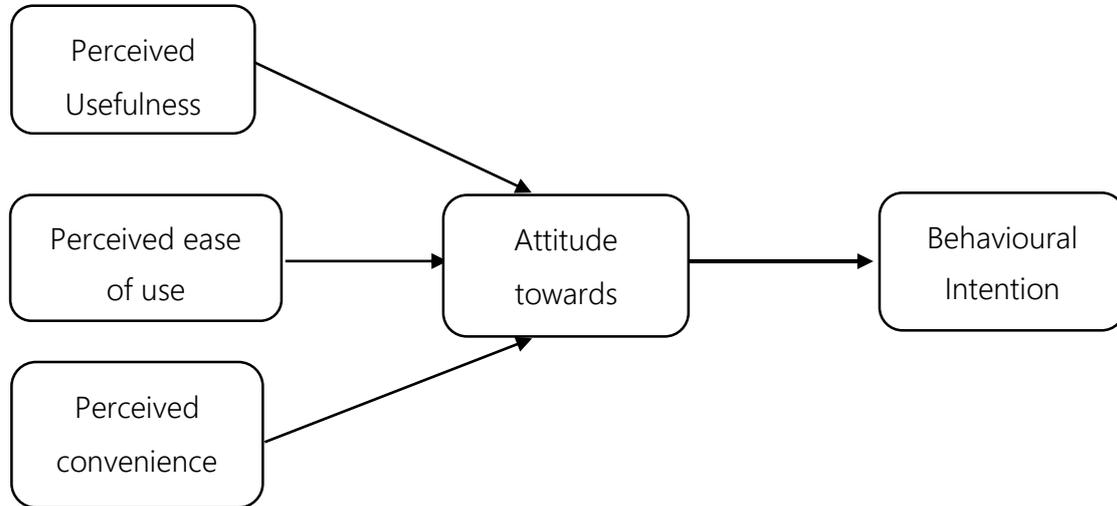


Figure 1: Research Model

Summary of Hypothesised Relationships:

- H1: There is a positive relationship between perceived usefulness and attitude towards Google Classroom
- H2: There is a positive relationship between perceived ease of use and the attitude towards Google Classroom
- H3: There is a positive relationship between perceived convenience and the attitude towards Google Classroom
- H4: There is a positive relationship between the attitude towards Google Classroom and the behavioural intention of students.

4.0 Methodology

Survey Instrument

The questionnaire was adapted from previously used and validated scales. To make sure that the instrument had face validity (Cooper and Schindler, 2014) a pre-test was conducted using students who had been exposed to Google Classroom. After pre-testing the questionnaire a few changes were made to the item statements so that they could be contextualised to reflect the specific study context. The outcome was the construction of a structured questionnaire with a five-point Likert scale that was employed to collect data.

To measure perceived usefulness value, 4-items which were adapted from Al-marroof and Al-emran, (2018) and Ifinedo, (2018) were used. Perceived convenience was operationalized using 4 items that were adapted from Berry, Seiders, and Grewal (2002) and Colwell, Aung, Kanetkar, and Holden (2008). The three items that were employed to measure perceived ease of use were adapted from Al-marroof and Al-emran (2018). The three items for measuring attitude towards Google Classroom were adapted from Ifinedo, (2018). Behavioural Intention was operationalised using four items adapted from Ifinedo, (2018) and Al-marroof and Al-emran, (2018). The questionnaire consisted of two sections that measure demographic data and

the five constructs of the study namely: perceived usefulness, perceived convenience, perceived ease of use and behavioural intention. The questionnaire is depicted in Appendix 1.

Sampling and Data Collection

This study employed a descriptive research design to test the proposed conceptual model. The target participants of this study were Bachelors and Master students enrolled for commercial degrees at five universities namely: Africa University, Great Zimbabwe University, Midlands State University, Reformed Church in Zimbabwe and the University of Zimbabwe. Using email addresses obtained from the respective university administrators, a simple random sampling technique was applied to select the respondents for this study. The sample size for this study was 300 participants. The choice of this size was guided by Yamane (1967) consideration for determining sample size.

As the collection of data was done during the Covid-19 induced shutdown period, the SurveyMonkey platform was used to administer the structured questionnaire. After accounting for questionnaires with errors, 250 questionnaires were used for data analysis. Data analysis was done with the use of SPSS/AMOS software version 26.0.

Data Analysis

Demographic Profile of Respondents

Out of a total of 250 respondents, 52 per cent were females, constituting the majority and 48 per cent were males. The majority of the respondents (41.2%) were aged between 20-25 years, followed by those aged between 26-30 years. Thus, the majority of the respondents were generally young and middle-aged students. These are students who have just graduated from high school and also those employed but attending university classes on the block release programme. Concerning education, the majority of the respondents (60%) had high education and those with a college education (46.6%) were the second-largest group – these were students pursuing Master Programmes. (See statistics in Table 1).

Table 1: Demographic profile of respondents (N = 250)

Variable	Frequency	Percentage
Gender		
Male	120	48
Female	130	52
Age		
20-25	103	41.2
26-30	78	31.2
31+	69	27.6
Education		
High School	150	60
College/university	70	46.6
Other	30	12

Descriptive Statistics, Reliability, and Validity

To evaluate the reliability of the scales used to measure the research constructs, Cronbach's alpha was employed. Nunally (1978) recommended that for a scale to be reliable it should have a value of at least .7. Accordingly, all the reliability index values exceeded the recommended values, thus the scales were reliable. For the examination of construct validity, both convergent and discriminant validity were tested. We employed average variance extracted(AVE) and composite reliability(CR) to test the convergent validity and all the values were above the .5 and .7 as recommended by Fornell and Larcker (1981). However, PU3, PU4 and PEU5 were dropped to improve the AVE and CR. Table 2 depicts the reliability and convergent values.

Table 2: Descriptive Statistics, Reliability and Validity Indices of the Measurement Model

Construct	Item	Mean	Standard deviation	CFA Factor loading	Cronbach's alpha	Average variance explained $\geq .50$	Composite reliability
Perceived usefulness	PU1	3.01	1.418	.810	.846	.65	.72
	PU2	3.18	1.327	.830			
	PU3	2.79	1.189	.780			
Perceived ease of use	PEU1	3.55	1.258	.910	.918	.74	.73
	PEU2	3.31	1.253	.850			
	PEU3	3.32	1.219	.820			
	PEU4	3.31	1.263	.850			
Perceived Convenience	PC1	3.00	1.286	.860	.814	.53	.78
	PC2	3.02	1.323	.870			
	PC3	3.12	1.072	.410			
	PC4	3.20	1.182	.460			
	PC5	3.15	1.354	.780			
Attitude	AT1	2.90	1.125	.690	.883	.66	.79
	AT2	3.20	1.231	.860			
	AT3	3.22	1.229	.860			
	AT4	2.89	1.313	.830			
Behavioural Intention	BI1	2.90		.810	0.870	0.63	0.71
	BI2	3.00		.850			
	BI3	3.12		.790			
	BI4	3.13		.720			

Discriminant Validity

To assess the discriminant validity of the model, the average variance extracted was compared to the squared inter-item correlations. As recommended by Fornell and Larcker (1981), all the values of the average variance extracted were greater than the squared inter-item correlations of the constructs and as shown in Table 3 the model had discriminant validity.

Table 3: Discriminant Validity

Constructs	Perceived usefulness	Perceived ease of use	Perceived convenience	Attitude	Behavioural Intention
Perceived usefulness	.7871				
Perceived ease of use	.335	.7734			
Perceived convenience	.146	.261	.7651		
Attitude	.534	.456	.4380	.7960	
Behavioural Intention	.232	.417	.263	.5801	.8001

The diagonal values in bold represent the average variance extracted and the other values represent inter-item correlations.

Confirmatory Factor Analysis

The suitability of data for factor analysis was assessed using the Kaiser-Meyer Olkin and Bartlett's Test of Sphericity. The KMO value was .90 above the minimum recommended value of .6 and the Bartlett's of Sphericity was significant at $p = .000$, rendering the sample adequate to run factor analysis.

To examine the relationships among the constructs the data analysis followed two steps. First, confirmatory factor analysis was conducted to calculate the goodness-of-fit of the proposed measurement model. Second, structural equation modelling was then performed later. To evaluate the model fit of the model the researchers used CMIN, NFI, IFI, TLI, CFI, and the RMSEA. After running the confirmatory factor analysis for the model, the results indicated that the model was good because it fitted the data (Hair et al., 2010). The model fit indices that were obtained from the confirmatory factor analysis are as follows: CMIN=1.242; $p = .000$; NFI = .927; IFI = .985; TLI = .982; CFI = .985; RMSEA = .033.

Structural Equation Modelling

Structural equation modelling was employed to examine the model fit and assess the path relationships in the model. The relationships among, perceived usefulness, perceived convenience, perceived ease of use, attitude and behavioural intention were estimated. Overall, the model fit indices indicates a good fit (CMIN/DF=1.242, NFI = .925; IFI = .985; TLI = .982; CFI = .984; RMSEA = .033). The path indices of the structural relationships are shown in Figure 2 below.

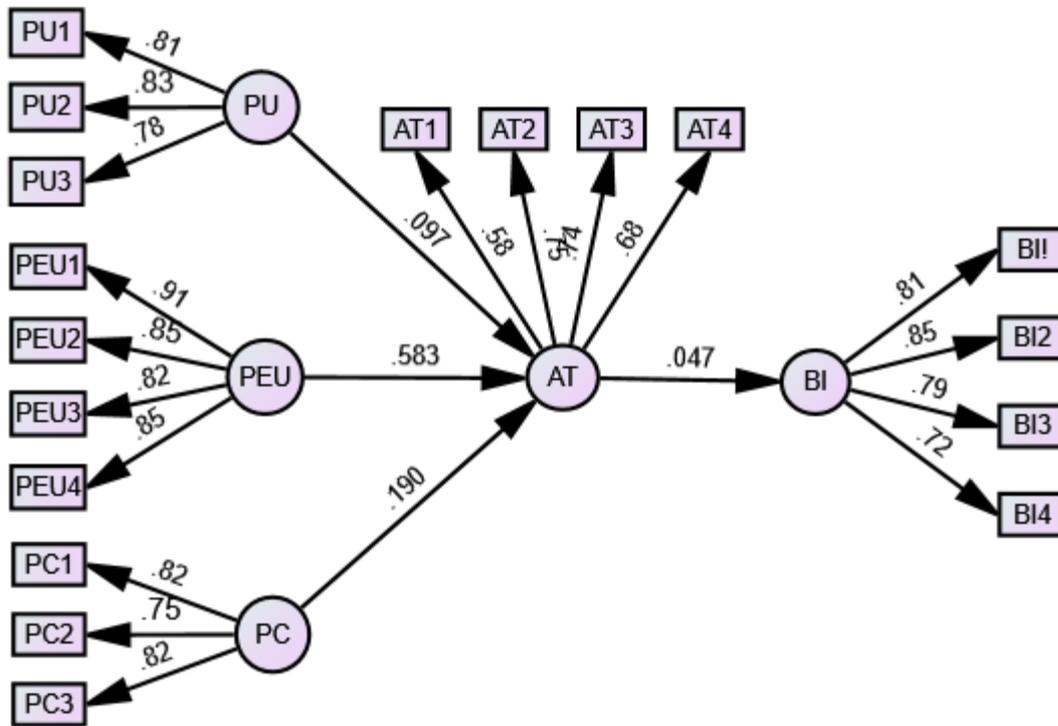


Figure 2: Structural Equation Modelling Results

Table 4 shows the results of the SEM. The results suggest that perceived usefulness did not have a significant influence on the attitude of the student towards using Google Classroom ($\beta = .097$; $p = .253$), thus H1 is rejected. Perceived ease of use had a significant impact on the attitude of students towards Google Classroom use ($\beta = .583$; $p = .000$), thus H2 is accepted. Perceived convenience had a positive impact on the attitude of students towards Google Classroom ($\beta = .190$; $p = .007$), hence H3 is supported. The attitude towards Google Classroom had an insignificant impact on the behavioural intention to use Google Classroom ($\beta = .047$; $p = .444$) thus H4 was rejected. The hypothesis results are shown in Table 4 below:

Table 4: Hypotheses Testing

Hypothesis	Path	Beta value (β)	P-value < .05	Decision
H1	Perceived usefulness >>>>>attitude towards Google Classroom	.097	.253	Reject
H2	Perceived ease of use>>>>>> attitude towards Google Classroom	.583	.000	Accept
H3	Perceived convenience>>>>>attitude towards Google Classroom	.190	.007	Accept
H4	Attitude towards Google Classroom >>>>>behavioural intention	.047	.444	Reject

5.0 Discussion

This study aimed at exploring the determinants that influence university students' intention to use Google Classroom through the integration of the Theory of Reasoned Action and the Technology Acceptance Model. Five constructs were used to build the model tested in this study. These were perceived usefulness, perceived ease of use, perceived convenience, attitude and behavioural intention to use. The work presents four main findings:

First, perceived usefulness did not have a significant influence on the attitude of students towards the use of Google Classroom ($\beta=.097, p>.05$). This is contrary to previous studies (see Ansong-Gyimah, 2020; Farahat, 2012; Hsu et al., 2013; Ifinedo, 2018). One plausible explanation for this result might be due to the participating students in the study experiencing learning challenges with Google Classroom during the conduct of lectures. Some students indicated that, in a google class lecture, it is difficult for students to understand some concepts because in-class participation is highly reduced. Furthermore, poor internet network and the cost of the internet may mean that some students are excluded from the learning process. This may result in some students believing that Google Classroom is not useful hence develop a negative attitude.

Second, perceived ease of use was found to have a significant impact on the attitude towards google class ($\beta=.583, p=.000$). The result in this study is in agreement with observations in previous studies that showed that students' perceptions of the ease of use of Google Classroom learning platform positively influence their attitudes towards such platform (see Ansong-Gyimah, 2020; Buabeng-andoh, 2020; Farahat, 2012; Hsu et al., 2013; Ifinedo, 2018). This may be because Google Classroom is user friendly. Once logged onto the system the steps to use the system are laid out hence students find such a platform easy to use. The uploading of assignments and writing emails to instructors are easy to follow because the steps to carry out such activities are indicated on the platform.

Third, perceived convenience was found to have a significant impact on the attitude towards Google Classroom ($\beta=.190, p<.005$). This is consistent with the findings of authors such as Hsu et al(2013). Google Classroom has become convenient for students because the platform allows them to participate in class whilst they are at home, travelling or in the halls of residence at any time of the day. Hence, there is no time and space limitation to the usage of Google Classroom amongst the students.

Fourth. This study established that attitude had an insignificant relationship with the behavioural intention of students to use Google Classroom ($\beta=.047, p=.447$). This is rather surprising as several studies have confirmed a significant positive relationship between attitude and behavioural intention towards Google Classroom and online learning (see Al-marroof & Al-emran, 2020; Ansong-Gyimah, 2020; Buabeng-andoh, 2020; Farahat, 2012; Hsu et al., 2013; Ifinedo, 2018). As Teo, (2018) observed, the behaviour of students towards Google Classroom is influenced by their attitude. This implies that, in this case, the students do have a favourable attitude towards the platform. Their attitude towards the platform might have been influenced by contextual factors that are peculiar to Zimbabwe such as the high cost of data, internet connectivity issues and the lack of devices to use during Google Classroom lectures.

Theoretical Implications

This study has important theoretical implications in the field of education management. First, previous studies have examined the influence of perceived usefulness, perceived ease of use, perceived convenience on the attitude and behavioural intention of students towards Google Classroom in other contexts, especially developed countries. However, to the researchers' best knowledge, no study has been done in the context of Zimbabwean universities. Hence, this study has helped us understand the perceptual differences of students towards Google Classroom across different contexts. In line with this, the attitude construct was found to have an insignificant impact on the behavioural intention of students to use Google Classroom - a result that is inconsistent with several studies across contexts. This inconsistency in findings may be attributed to the differences in the level of economic development across countries. Zimbabwe, being a developing country, is still building and developing its infrastructures such as information technologies and electrical power institutions. These enablers have a huge impact on the seamless provision of online learning systems. The outcome of this study, therefore, makes an important contribution to the literature Google Classroom in the context of developing countries. The study may form the basis upon which future research on this topic can be undertaken.

Second, the findings of this study confirm that the attitude of students towards Google Classroom is not arbitrary but rather is based on validated theoretical attributes such as perceived ease of use and perceived convenience. This study, therefore, extends prior studies and confirms the importance of perceived ease of use and perceived convenience, albeit in a different context. However, there is a need to test the constructs used in this study on other online learning platforms such as Moodle, google meet and zoom in the same context.

Implications for Practice

The study has practical implications for managers in learning institutions such as universities, colleges and schools. First, because perceived ease of use enhances the attitude of students towards Google Classroom, education managers must undertake training workshops to improve the understanding of Google Classroom amongst users.

Second, the fact that perceived convenience had a significant impact on the attitude of students, may mean that education managers must avail resources to enhance the convenience of the Google Classroom platform. These resources include gadgets such as laptops and tablets. Furthermore, there must be a deliberate effort to provide data to students through collaborative arrangements with internet service providers. This will improve the accessibility of the Google Classroom to students thus improving their attitude.

Third, another finding of potential interest is the insignificant relationship between attitude and the behavioural intention to use Google Classroom. Although this relationship was confirmed in this study, it would be unfortunate for education managers to consider the attitude of students as unimportant in shaping the behaviour of students. Attitude still an important predictor of the behavioural intention of students (see Ifinedo, 2018). Hence education managers must craft and implement strategies that shape positive attitudes amongst students.

Limitations and Future Research

This study has limitations. The first limitation relates to a small sample size that could not be increased because of the restrictions associated with the Covid-19 period. Most students were not available to participate on the SurveyMonkey platform citing high data costs and internet connectivity issues. It is important that future studies may use large samples to make sure that results reflect an improved understanding of the concept under study. Future studies can be extended to investigate the perception of students towards other learning platforms such as Moodle, Google Meet, zoom and Microsoft teams. These students may cover respondents outside the university students such as those in technical colleges and high school.

Conflict of Interest Statement

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Manuscript Data

Manuscript data is available on request

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Appendix 1: Questionnaire

		1	2	3	4	5
Perceived Usefulness						
PU1	Using Google classroom for learning improves my performance					
PU2	Google Classroom enables me to finish my assignments quickly					
PU3	Using Google classroom for my learning helps me understand my modules better					
PU4	Using Google classroom is helpful in exam preparation					
Perceived convenience						
PC1	Google classroom provides solutions to my needs					
PC2	Google classroom is easily accessible					
PC3	Google classroom is convenient for me					
PC4	Google classroom is always available.					
Perceived Ease of Use						
PEU1	Learning using Google classroom is easy for me					
PEU2	Google classroom is user friendly					
PEU3	Overall, I believe it is easy to use Google classroom for learning purposes					
Attitude towards Google classroom						
AT1	I like participating in Google classroom					
AT2	Google classroom is a good idea					
AT3	Google classroom is pleasant					
Behavioural Intention						
BI1	I intend to continue using Google classroom for my learning in future					
BI2	I prefer using Google classroom for my learning in future					
BI3	I will strongly recommend to others for learning					
BI4	I will recommend Google classroom if asked for advice.					

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