

## Understanding the Continuance Intention to Learn Using Google Classroom (GC) in Online Classes: Decomposed Technology Acceptance Model Based

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### Abstract

Coronavirus pandemic has led to changes in the teaching and learning landscape. Both lecturers and students must accommodate the changes from face-to-face teaching and learning to online learning. This results in the various problems faced by both lecturers and students in online learning. Hence, many online platforms have been introduced to the field of education, such as Google Classroom, Edmodo, and Microsoft Teams. By pinning on the 12 factors in the decomposed technology acceptance model (DTAM) (i.e., perceived usefulness, perceived cognitive absorption, perceived ease of use, perceived internet self-efficacy, perceived computer self-efficacy, interpersonal influence, external influence, information quality, service quality, system quality, confirmation, and satisfaction) which are suggested by Roca et al. (2006), this research aims to investigate students' continuance intention to learn with Google Classroom (GC) in online classes through the decomposed technology acceptance model. A 56-item questionnaire which covers the 12 factors of the decomposed technology acceptance model was administered to 242 undergraduate students from Universiti Teknologi MARA (UiTM); Puncak Alam and Shah Alam campuses. The statistical data of this research suggests that students' continuance intention towards Google Classroom among UiTM students is high, which is influenced by the aforementioned factors. From these findings, this research is hoped to provide a new insight on the effectiveness of using GC in providing continuous interest in online learning among students.

**Keywords:** *Google Classroom; online learning; continuance intention; decomposed technology acceptance model (DTAM)*

## **Introduction**

Since the emergence of COVID-19 a year ago, substantial changes in Malaysian education have occurred; requiring educational institutions to adjust the process of teaching and learning to the new online learning context. Online learning, also known as e-learning, is seen as the solution to the current COVID-19 pandemic, which has ceased face-to-face classrooms from being conducted on normal days. Many local universities have embraced online learning to ensure that classes and the learning process remain unaffected, including English as a Second Language (ESL) classes. In adapting to the changes in the educational landscape, higher education providers are encouraged to capitalise on the latest technology in conducting online classes, such as Google Classroom, Skype, Zoom meetings, and Facebook Live. While online learning might be cost effective and easy, it frequently encounters critical impediments such as poor internet connectivity, lack of digital accessibility, and home distractions.

However, Google Classroom (GC) is deemed as an aid for addressing the aforementioned issues with online classes. In Malaysia, Google Classroom is the most frequently used platform since it is regarded as a good medium for online classrooms due to its flexibility in knowledge acquisition (Norazrina, 2020; Wan Zulkifli, 2020). Both educators and students are coping with the online class mechanism by utilising Google Classroom as a tool to deliver any lessons pertaining to English subjects. However, issues have been raised in relation to the effectiveness of using Google Classroom in online classes. If online classes are to remain a viable option, measures need to be taken to ensure students' continuance intention of using Google Classroom in English online classes. Hence, this research is interested in investigating the continuance intention of using Google Classroom among students in English online classes through a decomposed technology acceptance model.

## **Literature Review**

Online learning, also known as e-learning, is defined as education offered through the use of the internet wherein the instructors develop the teaching modules and deliver them to the students interactively in synchronous or asynchronous methods by utilising the internet to enhance the teaching and learning process (Singh & Thurman, 2019). Instructors are positively encouraged to discover numerous applications that are convenient and prioritise the students' welfare by deciding the best platform to disseminate knowledge, be it in the form of lectures, notes, or through forums. Despite all the efforts put forward, there are many challenges faced by both students and instructors in online learning, such as having access and connectivity to the online class (Bibi Noraini & Jihan, 2020; Chung et al., 2020a; Chung et al., 2020b; Norazrina, 2020; Selvanathan et al., 2020; Teh Athira, 2021) and having to face many distractions at home which affect their comprehension and focus on learning (Chung et al., 2020a; Norazrina, 2020). Students voiced their concerns that all the

suggested challenges should be addressed to aggrandise the students' learning experience and achieve the online learning outcomes (Saedah & Yee, 2019).

In essence, these challenges must be addressed because students' incapacity to participate in online classes may result in dropouts or, worse, impact their mental and emotional health. Thus, as one of the prominent online learning platforms, Google Classroom is necessary to facilitate the learning process. The available research conducted both internationally and locally recorded positive feedback on the usefulness of Google Classroom in higher education learning (Muhammad Irfan et al., 2020; Wan Zulkifli, 2020). There are many benefits listed in copious studies upon the use of Google Classroom, such as it offers quick and convenient setting, time-saving, increase in cooperation and communication, centralised data storage and quick sharing of resources (Nur Alim et al., 2019). Norazrina (2020) agreed, as she stated that it allows students to manage and keep track of their learning assignments and activities with ease.

Undeniably, there are continuous debates on the effectiveness of using Google Classroom in online classes. In a study conducted by Wan Zulkifli (2020), he found that Google Classroom is perceived as an easy to use, useful, and worth using system. Yet, there are some technical difficulties to be addressed, such as limited access to gadgets and internet coverage (Nur Alim et al., 2019). However, according to Maheran and Khamisah (2020), students still favour Google Classroom over other applications due to its systematic class management, online communications, facilitation of tasks, and paperless interaction. Chung et al. (2020a) stated that students may refer to the lessons before, during, and after the scheduled class as the instructors may store the lessons in Google Classroom space. On the other hand, in a study by Wan Hassan et al. (2020), some of the respondents stated that they are not confident in operating Google Classroom during their online classes. In order to cater to this issue, it is suggested that instructors assist learners who are lacking the skills to work with the online applications by providing step-by-step lessons, so the online learning is ongoing (Anshu & Ashish, 2017).

Despite the advantages and disadvantages of using Google Classroom, students must be willing to learn using Google Classroom, as due to the COVID-19 pandemic, participating in online learning is no longer an option. Learning achievement is feasible once students are willing to use and embrace the Google Classroom system. This is to ensure that the process is facilitated, allowing students to learn and develop to their maximum potential, just as they would in traditional classrooms. This intention to continue using the platform may contribute to educators' and students' willingness to continue utilising it and achieve learning satisfaction (Almaiah & Al Mulhem, 2018; Wang, 2021). According to Bhattacharjee (2001), users' continuance intention

to use an application is comparable to customers' decision to re-use a certain programme. This is also reinforced by Han et al. (2018), who asserted that users' decisions to continue using a specific product or service that they have previously used are more capable of promoting a product's or service's long-term survival. Attending online classes from home while dealing with several challenges may cause the learning process to stall. Thus, having a continuance intention to utilise and learn through Google Classroom would promote online learning because students are familiar and comfortable with the platform, which provides long-term benefits in ESL online classes.

Students' intention to remain using Google Classroom despite the opposite views on the challenges faced in utilising it in learning, such as in terms of its technical difficulties (Nur Alim et al., 2019) and confidence in operating the Google Classroom system (Wan Hassan et al., 2020), is the main avenue for this current study. In addition, despite the fact that Google Classroom is perceived as one of the most preferred platforms among students and educators in Malaysia (Norazrina, 2020; Wan Zulkifli, 2020), research on learning English courses online during the pandemic is still scarce. Thus, this research aims to fill in the gap by investigating students' continuance intentions in learning English courses using Google Classroom based on the decomposed technology acceptance model (DTAM) which provides 12 factors that further extend the understanding of students' continuance intentions in using Google Classroom specifically in online classes.

### ***Decomposed Technology Acceptance Model (DTAM)***

This research focuses on the decomposed technology acceptance model (DTAM), which was first introduced by Roca et al. (2006), as the logical framework, as it complies with the concept of online classes as compared to other models. This framework is primarily built by using three theoretical backgrounds, which are the theory of planned behaviour (TPB), the technology acceptance model (TAM), and the expectancy disconfirmation theory (EDT).

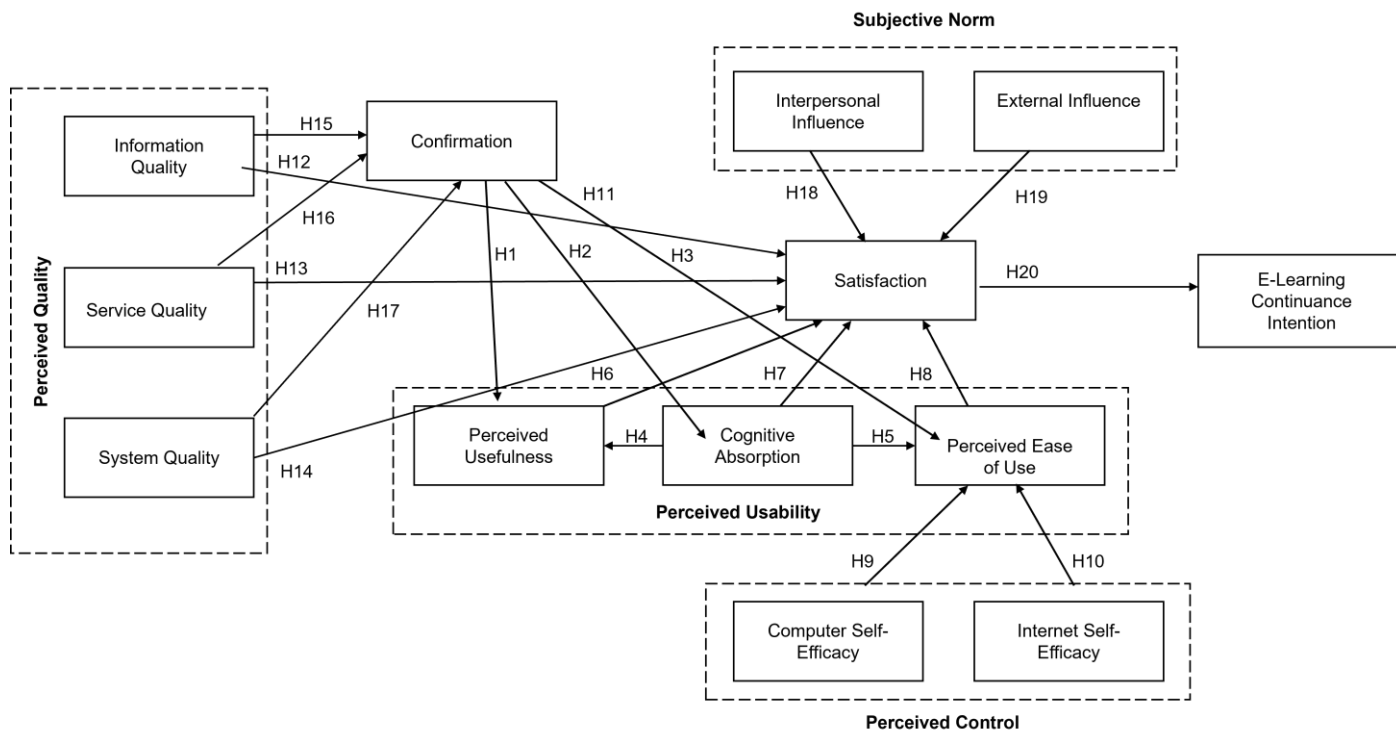
The first theory, TAM, was first introduced by Davis in 1989 as a theoretical extension of the theory of reasoned action (TRA). TRA is a social psychology model that suggests that a person's behaviour is driven by their intention, and this intention is what shapes the attitude towards the behaviour and their subjective norm. By adapting from TRA, TAM proposes two primary factors influencing an individual's intention to use new technology: perceived ease of use and perceived usefulness (Charness & Boot, 2016). Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of physical and mental effort", and perceived usefulness is defined as "the degree to which a person believes that using a

particular system would enhance his/her job performance" (Davis et al., 1989). Both perceived ease of use and perceived usefulness influence an individual's attitude towards using a system, which is consistent with TRA where the attitude towards using a system will mould the behavioural intention that results in "actual system use" (Roca et al., 2006). This means that whenever a user feels a technology is useful for them and will give them a performance benefit, they will accept the technology.

Next, the theory of planned behaviour (TPB), which was proposed by Ajzen (1988, 1991), can also be considered as an extension of TRA as it has the same ground as TRA where one's behaviour is predetermined by attitude and subjective norms. However, as TPB is about planned behaviour, it deals with perceived behaviour control, where the performance of a behaviour depends on one's perception of its level of complexity (Ajzen, 1991). The last basic theory is the expectancy disconfirmation theory (EDT) by Oliver (1980), which is about the motivation of an individual to continue using IT. The idea of EDT is that the relationship between consumers' perceived performance, perceived disconfirmation, satisfaction, and repurchase intention is a causal one, where one affects the other. The three theories managed to capture the vital variables that can affect an individual's continuance intention.

**Figure 1**

*Decomposed Technology Acceptance Model*



(Source: Roca et al., 2006)

**Methodology**

This research applied a quantitative research design through the use of an online self-administered questionnaire in relation to the objective of this study. The questionnaire was divided into two sections: five questions on demographic information and 56 questions about Google Classroom (GC) usage in English as a Second Language (ESL) courses. The questionnaire was developed in accordance with the decomposed technology acceptance model (DTAM) proposed by Roca et al. (2006), which distinguished 12 distinct factors of e-learning continuance intentions. Additionally, the questionnaire used a four-point Likert scale, which included 'strongly disagree', 'disagree', 'agree', and 'strongly agree'. The questionnaire was constructed on a forced scale without a midpoint or 'neutral' option to avoid midpoint abuse and social desirability bias, in which respondents choose the midpoint as the more socially acceptable or desirable option (Chyung et al., 2017). Bürkner et al., (2019) echoed this sentiment, stating that using forced choice items may help avoid response biases such as desirability, acquiescence, extremity, and fake responses.

Cronbach's alpha, which is commonly expressed as a decimal value in the range of .00 to 1.0, was used to determine the internal consistency or dependability of a variety of items, measurements, or ratings (Chua, 2020). A value of .00 indicates a lack of measurement consistency, whereas a value of 1.0 indicates excellent

measurement consistency; thus, a range of 0.70 to 0.90 or higher is considered ideal (Farahiyah Akmal et al., 2020; Olaniyi, 2019). Thus, the Cronbach's coefficient of 0.964 for all online learning criteria and the students' intention to continue learning English using Google Classroom is considered excellent.

**Table 1**

*Reliability Statistics*

<b>Cronbach's Alpha</b>	<b>N of Items</b>
.964	56

Prior to the collection of data, the Universiti Teknologi MARA Research Ethics Committee granted approval (REC/12/2020 (MR/402) for this research to be conducted. Participation was entirely voluntary, and all responses were treated in the strictest confidence. The data from the online questionnaire was converted into Google Sheets and analysed using IBM SPSS for Windows version 26. The data were reported using standard descriptive statistics, including the use of frequency (n) and percentages (%) as appropriate. The percentages of students' responses were explained in two ways, which are: 1) the mean percentage for all items in a category, which is described in this research's conceptual framework, and 2) the percentages of each DTAM subcategory item. By presenting the percentages, this research is able to understand the 12 factors contributing to the students' continuance intention in using Google Classroom in online classrooms.

## **Findings and Discussion**

The findings and discussion of this research are discussed in three parts, which are: 1) Demographic Findings, 2) Conceptual Framework for Google Classroom Decomposed Technology Continuance Intention Model, and 3) Descriptive Analysis for DTAM Subcategory Items.

### ***Demographic Findings***

242 undergraduate students from the Universiti Teknologi MARA Shah Alam Campus and the Universiti Teknologi MARA Puncak Alam Campus took part in this research (henceforth, UiTM Shah Alam and UiTM Puncak Alam). To address the continuance intention of studying English using Google Classroom, participants must be enrolled in English language courses (ELC) for the current semester. Table 2 shows the number of

participants who took part in this research based on the seven courses: English for Critical Academic Reading (ELC501), English for Academic Writing (ELC550), English for Executive Summary Writing (ELC560), English for Oral Presentations (ELC590), Literary Appreciation (ELC600), English for Job Application (ELC640), and English for Professional Interaction (ELC640).

**Table 2**

*Participants Registered ELC Codes*

<b>Factor n</b>	<b>Frequency 242</b>	<b>Percent 100</b>
ELC501	56	23.1
ELC550	18	7.4
ELC560	4	1.7
ELC590	33	13.6
ELC600	1	.4
ELC640	9	3.7
ELC650	121	50.0

### *Conceptual Framework for Google Classroom Decomposed Technology Acceptance Model*

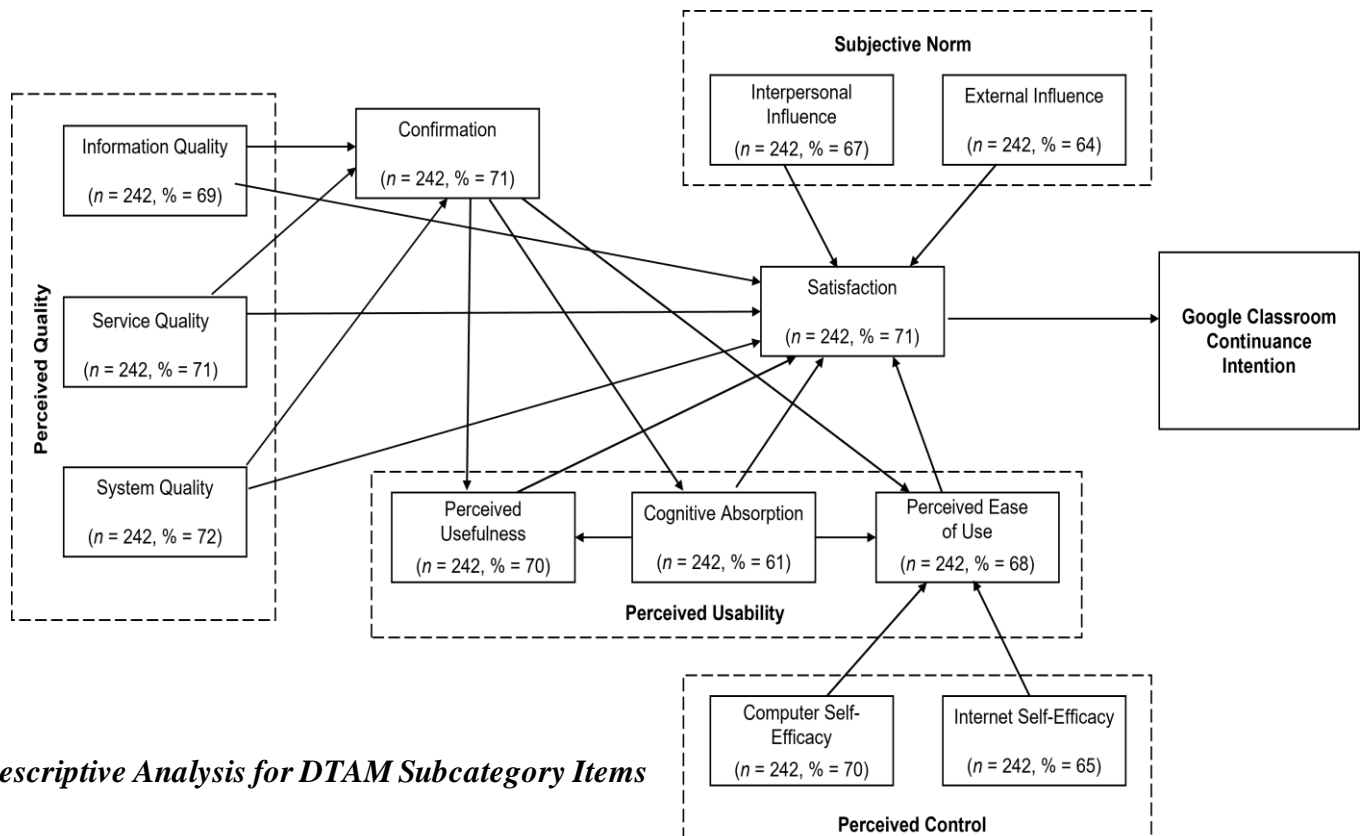
A conceptual framework was derived to define the variables (i.e., 12 factors of continuance intention) used in this study. This conceptual framework depicts that all 12 factors of continuance intention have a positive mutual interdependence with each other in enhancing the continuance intention of using Google Classroom.

Notably, out of these 12 factors, six factors, namely system quality (72%), service quality (71%), confirmation (71%), satisfaction (70%), perceived usefulness (70%), and computer self-efficacy (70%) have significantly affected the students' satisfaction in using Google Classroom. However, despite the consequential effects of these six factors, the remaining factors should also be treated equally important in determining students' continuance intention to use Google Classroom. That is why, the 12 factors in DTAM are included in the conceptual framework of this research, as shown in Figure 2 below.



**Figure 2**

*Conceptual Framework for Google Classroom Decomposed Technology Acceptance Model*



**Descriptive Analysis for DTAM Subcategory Items**

The findings of this research, as discussed in Table 3 below, are outlined based on the 12 factors in relation to the students’ continuance intention in using Google Classroom, specifically in English online classes. Generally, there are 50 positive items and six reverse items (i.e., Item 30, 31, 35, 42, 44, 45). The frequencies and percentages data were obtained from ‘strongly agree’ and ‘agree’ options.

**Table 3**  
*Summary of DTAM Subcategory Items*

Subcategory items		Frequency (n)	Percentage (%)
<b>Perceived usefulness</b>			
1.	Using the Google Classroom can improve my learning performance.	181	74.8
2.	Using the Google Classroom can increase my learning effectiveness	173	71.5
3.	I find the Google Classroom to be useful to me.	151	62.4

**Perceived cognitive absorption**

4.	Time flies when I am using the Google Classroom.	138	57.0
5.	Most times when I get on to the Google Classroom, I end up spending more time than I had planned.	120	49.6
6.	When I am using the Google Classroom, I am able to block out most other distractions.	134	55.4
7.	While using the Google Classroom, I am absorbed in what I am doing.	159	65.7
8.	I have fun interacting with Google Classroom.	165	68.2
9.	I enjoy using Google Classroom.	163	67.4

**Perceived ease of use**

10.	Learning to operate the Google Classroom is easy for me.	161	66.5
11.	It is easy for me to become skilful at using the Google Classroom.	166	68.6
12.	My interaction with the Google Classroom is clear and understandable.	167	69.0

**Perceived internet self-efficacy**

13.	I feel confident in navigating the Google Classroom by following hyper-links.	165	68.2
14.	I feel confident in the Google Classroom in getting notes from the lecturers.	148	61.2
15.	I feel confident in the Google Classroom receiving e-mail messages in regard to things posted in Google Classroom.	163	67.4
16.	I feel confident in the Google Classroom sending e-mail messages to alert my lecturers about my work.	148	61.2
17.	I feel confident in the Google Classroom posting messages on a bulletin board.	161	66.5
18.	I feel confident in the Google Classroom exchanging messages with lecturers about my work.	162	66.9
19.	I feel confident in the Google Classroom downloading notes and tasks from my lecturers.	150	62.0

**Perceived computer self-efficacy**

20.	I could complete my learning activities using the Google Classroom if I had never used a system like it before.	182	75.2
21.	I could complete my learning activities using the Google Classroom if I had only the system manuals for reference.	161	66.5

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22.	I could complete my learning activities using the Google Classroom if I had seen someone else using it before trying it myself.	165	68.2
23.	I could complete my learning activities using the Google Classroom if I had just the built-in-help facility for assistance.	174	71.9

**Interpersonal influence**

24.	My family thought I should use the Google Classroom.	156	64.5
25.	My friends thought I should use the Google Classroom.	168	69.4

**External influence**

26.	I read/saw news reports that using the Google Classroom was a good way of learning.	146	60.3
27.	Expert opinions suggested a positive sentiment for using the Google Classroom.	171	70.7
28.	Mass media reports convinced me to use the Google Classroom.	151	62.4

**Information quality**

29.	The Google Classroom provides relevant information for my work/assignment.	160	66.1
30.	The Google Classroom does not provide easy-to-understand information.	70	28.9
31.	The output information from the Google Classroom is not clear.	69	28.5
32.	The Google Classroom presents the information in an appropriate format.	161	66.5
33.	The information content in the Google Classroom is very good.	183	75.6
34.	The information from the Google Classroom is up-to-date enough for my purposes.	169	69.8
35.	The completeness of output information that the Google Classroom delivers is not sufficient for my purposes.	107	44.2
36.	The reliability of output information from Google Classroom is high.	167	69.0
37.	The Google Classroom provides the information I need in time.	173	71.5

**Service quality**

38.	The Google Classroom has a modern looking interface.	173	71.5
39.	The Google Classroom has visually appealing materials.	183	75.6
40.	The Google Classroom provides the right solution to my request.	181	74.8
41.	The Google Classroom gives me prompt service.	180	74.4

42.	The Google Classroom does not give me individual attention.	99	40.9
43.	The Google Classroom has a good interface to communicate my needs.	184	76.0
44.	The Google Classroom does not have convenient operating hours.	86	35.5
<b>System quality</b>			
45.	Number of steps per task in the Google Classroom are too many.	83	34.3
46.	Steps to complete a task in the Google Classroom follow a logic sequence.	176	72.7
47.	Performing an operation in the Google Classroom always leads to a predicted result.	183	75.6
48.	The organisation of information on the Google Classroom screens is clear.	179	74.0
49.	The Google Classroom has natural and predictable screen changes.	175	72.3
50.	The Google Classroom responds quickly during the busiest hours of the day.	170	70.2
<b>Confirmation</b>			
51.	My experience with using the Google Classroom was better than I expected.	164	67.8
52.	The service level provided by the Google Classroom was better than I expected.	171	70.7
53.	Overall, most of my expectations from using the Google Classroom were confirmed.	178	73.6
<b>Satisfaction</b>			
54.	I am satisfied with the performance of the Google Classroom	171	70.7
55.	I am pleased with the experience of using the Google Classroom	171	70.7
56.	My decision to use the Google Classroom was a wise one	170	70.2

Based on Table 3, the majority of the respondents (> 50%) agreed with the 50 positive items. As the questions reflect positive statements about Google Classroom, this demonstrates that the respondents have positive perceptions towards the use of Google Classroom in online English classes. Yet, Item 5 shows that less than 50% of the respondents (49.6%) agreed that Google Classroom made them spend more time than they had planned, while 50.4% of the respondents agreed otherwise. However, the difference between the percentages for this item is not distinct, which suggests that the respondents perceived the time spent in Google Classroom does not affect their continuance intention in using the medium.

The highest percentage (76%) was recorded in the service quality subcategory, where the students agreed that Google Classroom has a good interface to communicate their needs. On the other hand, for another six reverse

items (i.e., Item 30, 31, 35, 42, 44, 45), minority of the respondents (28.9%, 28.5%, 44.2%, 40.9%, 35.5%, 34.3% respectively) agreed that Google Classroom has negative aspects in relation to continuance intention in using Google Classroom. Accordingly, this data suggests that majority of the respondents agreed that Google Classroom portrays good information, service, and system quality to be used as a medium in online English classes.

Conclusively, this proves that the 12 DTAM factors contribute to the students' continuance intention. Thus, the findings of this research are in line with the decomposed technology acceptance model (DTAM) proposed by Roca et al. (2006), that users will continue using the platform if they find it useful and beneficial to them. Moreover, it is also supported by Almaiah and Al Mulhem, (2018) and Wang, (2021) that the willingness to continue using Google Classroom and reach satisfaction from it can be achieved through the intention to continue using the platform. Furthermore, the findings also proved that users' intentions to continue using an application are equivalent to customers' decisions to re-use a specific programme, in this case, Google Classroom (Bhattacharjee, 2001). Lastly, based on the findings, it is proven that users' decisions to continue using Google Classroom that they have previously utilised will encourage the long-term survival of the platform in online learning (Han et al., 2018).

## **Conclusion**

To conclude, the findings from this study show that all of the 12 factors in the decomposed technology acceptance model are important to be considered in relation to the usage of Google Classroom. In line with the need for online classes due to the COVID-19 pandemic, the results suggest that educators and educational personnel should continuously highlight the 12 factors in ensuring Malaysian students' continuance intention in using Google Classroom, especially in this current predicament. Notably, six main factors, which are system quality, service quality, confirmation, satisfaction, perceived usefulness, and computer self-efficacy, as shown by the findings in this study, are deemed among the most important factors in increasing the students' satisfaction. Accordingly, as suggested by the conceptual framework of this study, when there is an increment in the students' satisfaction, it would result in the students' continuance intention to use Google Classroom as the medium for English language online classes. However, as this study did not specifically investigate the relationship between each factor and Google Classroom continuance intention or other online platforms, further research is needed in order to investigate the relationship between continuance intention in using other online platforms and the effectiveness of online classes through a decomposed technology acceptance model.

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