# Exploring the Usefulness of Google Classroom in Learning Business Mathematics

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**Abstract**
This study examines how students learn business mathematics using Google Classroom (GC). The data came from open-ended Likert Scale questionnaires given to 88 undergraduate students, 62 of whom were female and 26 of whom were male. The information was gathered through an online survey based on the Technology Acceptance Model (TAM). This study aimed to explore the usefulness of GC in learning Business Mathematics with two research objectives, which are (1) to describe how undergraduate students studying business mathematics responded to questions on their behavior intentions and how well they used Google Classroom, and (2) to investigate the relationship between behavior intention and effective use of Google Classroom among undergraduate students learning Business Mathematics.
**Keywords:** Technology Acceptance, Google Classroom, Business Mathematics.

**Introduction**
        As we know, the global COVID-19 pandemic has largely disrupted our health and medical sectors, besides also affecting the education system. Due to this situation, the traditional method of education has seen drastic changes, whereby technology has played an essential role in today's education system. Many online platforms have been introduced, such as Google Classroom, Microsoft Teams, Zoom, and so forth. Several studies have summarised the benefits of digital technologies in supporting student learning activities (Martono & Salam, 2017). Digital technologies enable students to not only access the information and communication they require, but also to experience learning through inquiry, critical analysis, creativity, and participation in rich learning settings (Bond, 2020; Lin et al., 2020).

        Google Classroom has become one of the most popular teaching platforms used today by most academicians. It is believed that Google Classroom has successfully hosted more than 30 million assignments uploaded by teachers and students. This shows that the application is an interesting medium for the teaching-learning process that can be incorporated into our

education system (Iftakhar, 2016). Therefore, there are many attempts to study the effectiveness of Google Classroom. In our study, we will explore the usefulness of Google Classroom in learning Business Mathematics.

Business Mathematics is one of the courses offered by Universiti Teknologi MARA. This course is taken by many students from different faculties and is primarily designed to develop the mathematical knowledge needed by the students to meet the demands of business operations. It also provides solid coverage of the most basic and frequently occurring business situations.

## Literature Review
## Technology Acceptance Model (TAM)

Davis (1993) developed the Technology Adoption Model (TAM) to assess user acceptability of information technology and how system parameters influence user acceptance. The model is based on Fishbein and Ajzen's psychological attitude paradigm, which concentrates on how to assess attitude components related to behaviors, differences between beliefs and attitudes, and how external influences affect beliefs, attitudes, and behavior. (Davis, 1993). Figure 1 below shows the proposed model by (Davis, 1993).
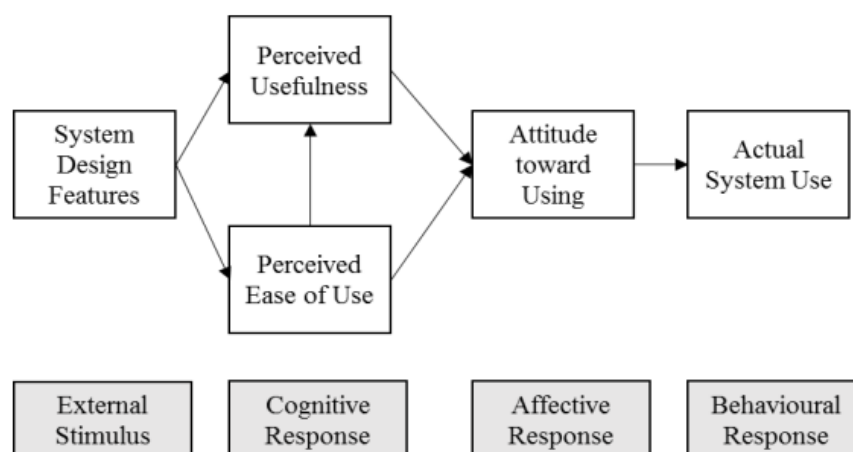


Figure 1. Technology Acceptance Model (TAM)

## Google Classroom (GC)

Google created the free web tool, Google Classroom, in 2014 (Shaharanee et al., 2016) with 40 million users, including teachers and students (BGR, 2019). The main feature of GC is to help teachers and students in the classroom be more effective and interactive. The teachers can give online assignments, promote constant communication with the students, and boost collaboration among themselves, other teachers, and their students using GC. Teachers are able to organize virtual courses, assign homework, send feedback, and view everything in one medium. As mentioned by Puarungroj (2015), GC is regarded as a useful tool to assist educational activities due to its adaptability and wealth of features. The use of technology like GC can increase students' openness to the course materials.

Shaharanee et al (2016) contended that GC is an appropriate tool for teaching data mining since, in view of her study on the adoption of GC based on TAM, it is extremely useful in terms of utility and pedagogy. The participants in her study were students registered on the topic of data mining. The questionnaire used a TAM with a nominal five-point scale, where

5 is strongly agree and 1 is strongly disagree. The mean scores for accessibility, equal to perceived helpfulness, interaction and discussion, perception of delivery of commands, and student satisfaction were all above 4, meaning that students completely agreed that GC has a positive impact on their learning.

In addition, Ahmad et al (2020) indicated that students enthusiastically accepted the use of GC in preparation for the English Exit Test coded as EET699. The research also shows that students find GC convenient and helpful, which greatly influences their attitude towards GC usage and their actual GC usage. It is critical to ensure that students have a positive attitude toward the use of technology. of GC to ensure that they are actually using the GC for purposeful and independent learning of EET699.

## Methodology

This preliminary study focuses on two objectives, which are (1) to describe how undergraduate students studying business mathematics responded to questions on their behavior intentions and how well they used Google Classroom, and (2) to investigate the relationship between behavior intention and effective use of Google Classroom among undergraduate students learning Business Mathematics. In order to do so, this segment will describe the technique implemented in terms of the research instrument, respondents of the study, statistics series, and statistical analysis.

## Research Instrument

This study used a quantitative method with an online survey using Google Forms. A total of 24 items were developed for the online survey, whereby these items were categorized into Part A – demographics, Part B – the usefulness of Google Classroom in learning Mathematics, and Part C – the behavior intention towards the use of Google Classroom in learning Business Mathematics. This study also used a 5-point Likert scale ranging from "strongly disagree" to "strongly agree".

## Respondents of the Study

The respondents of this study consisted of 88 undergraduate students. The survey was made available online through Google Forms to undergraduate students taking Business Mathematics as one of the courses offered by a local university in Malaysia. The students had gone into 14 weeks of learning Business Mathematics through Google Classroom, where all teaching and learning activities were carried out in a totally digitalized space.

## Results and Discussion
## Demographics

Table 1 below represents the descriptive statistics of the respondents' demographic information. The total number of respondents in this study was 88, comprising 26 (29.5%) male students and 62 (70.5%) female students.

Table 1
*Demographics of the respondents*

| Gender | Frequency | Percent (%) |
|--------|-----------|-------------|
| Female | 62 | 70.5 |
| Male | 26 | 29.5 |
| Total | 88 | 100.0 |

**Reliability Analysis**
Table 2
*Reliability Analysis*

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 0.946 | 21 |

Cronbach's alpha is the most common measure of internal consistency in order to determine if a scale is reliable. The reliability of the questionnaire was verified through Cronbach's alpha ($\alpha$) using SPSS. The reliability of the questionnaire was 0.94 for 21 questions, as shown in Table 2. For this test, the Cronbach's alpha obtained for all variables in this test was greater than 0.9. As the test of the reliability analysis was high, this questionnaire was reliable to be run.

**Normality Test**
Table 3
*Shapiro-Wilk*

| | Statistic | df | p-value |
|---|-----------|-----|---------|
| Perceived Used | 0.964 | 88 | 0.016 |
| Perceived Ease of Use | 0.867 | 88 | 0.000 |
| Behavior Intention | 0.871 | 88 | 0.000 |

The Shapiro-Wilk normality test was used to determine whether the study variables were distributed normally in the study population. As seen in Table 3, the p-value for all the variables in the study is less than 0.05, proving that the variables weren't normally distributed, which is necessary for parametric testing applying Pearson's Product Moment Correlation. Therefore, the non-parametric test of Spearman's rank-order correlation is used to see the relationship between variables.
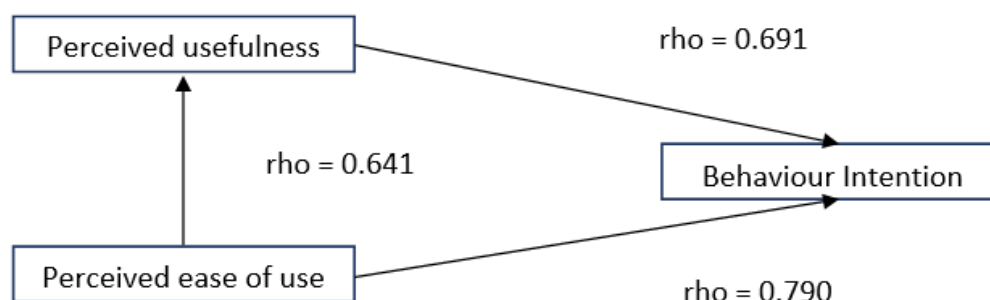
## Correlation Analysis



Figure 2. Spearman's Rank-Order Correlation

Figure 2 shows Spearman's rank-order correlation was used in the correlation analysis. In summary, all of the variables have a positive relationship. In particular, there is a positive relationship between perceived ease of use and perceived usefulness (rho = 0.647, p-value = 0.000). Furthermore, there is also a positive relationship between perceived usefulness and behavior intention towards the use of Google Classroom in learning Business Mathematics (rho = 0.691, p-value = 0.000). The strong positive relationship between the perceived ease of use and behavior intention was also obtained through the correlation analysis (rho = 0.790, p-value = 0.000).

## Conclusion

This study explored the applicability of TAM towards the usefulness of using Google Classroom in learning Business Mathematics. The result from the study shows that there is a positive relation between all the variables, which include perceived usefulness, perceived ease of use, and behavior intention. This means Google Classroom is a good choice as a fully digitalized platform to learn Business Mathematics. The study also shows that there is a nearly strong positive relationship between the perceived ease of use and behavior intention in using Google Classroom in learning Mathematics. Therefore, it can be concluded from the study that the ease of use of Google Classroom has led to the students' behavior intention of using Google Classroom in learning Business Mathematics. In addition, it can be said that Google Classroom is one of the suitable platforms that can be used as a learning tool.

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