

Article Type (Research article)**Unlocking Digital Learning: E-book Acceptance among Business Analytics Students**

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Abstract: This study investigates the acceptance of e-books among Business Analytics students at Universiti Teknologi MARA Cawangan Terengganu using the Technology Acceptance Model (TAM). It specifically examines four key constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention to Use (BIU). A descriptive research design was adopted, and data were collected from 102 second-year students through an online questionnaire. Descriptive statistics and Mann–Whitney U tests were employed for analysis. Findings revealed generally positive perceptions across all TAM variables, with mean scores above neutral. However, some items showed moderate variability, suggesting areas for improvement. Hypothesis testing indicated no significant differences in positive attitude in using the e-book and the intention to use e-books for future study between Operations Management and Customer Service students. The study emphasizes the importance of evaluating specific item responses to provide ground input on e-book acceptance. These insights support faculty and publishers in fostering sustainable e-learning adoption among students.

Keywords: Acceptance, E-book, Business Analytics, TAM

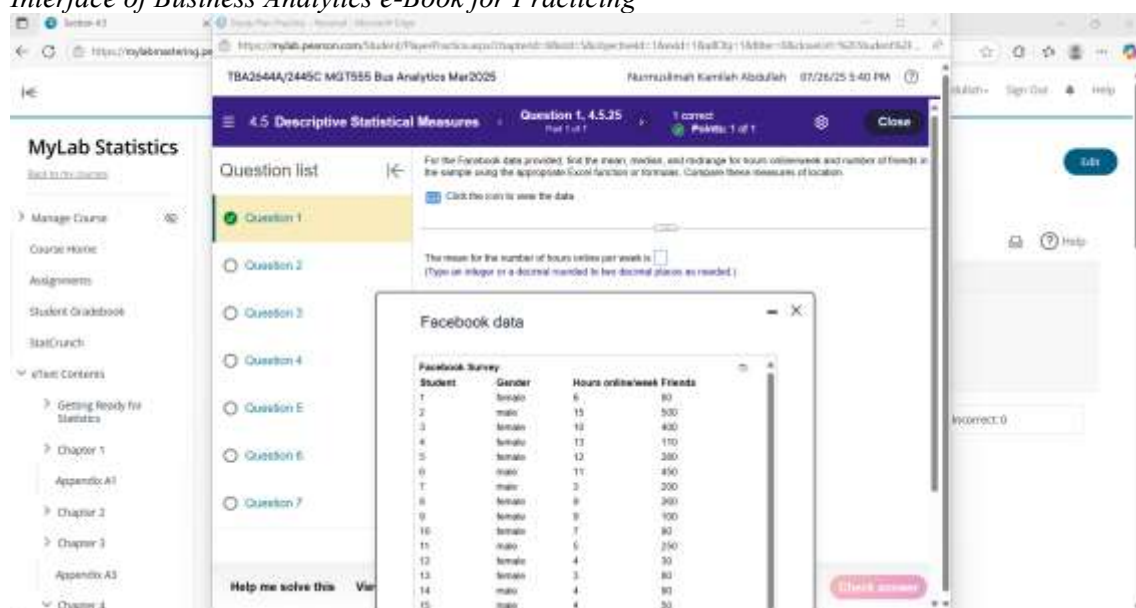
INTRODUCTION

The innovation in teaching and learning is inevitable. Some innovations become a trade-off for another aspect in the same context or otherwise. In tertiary education, some courses are taught using e-books, such as Business Analytics, Entrepreneurship, International Business, Management, and many more. One of the reasons for introducing the e-book is that the physical book is more expensive. On the other hand, the value added and interactive features that come with the e-book package can benefit students and lecturers if they are effectively used. Lecturers as well as publishers are aware that the nature of the course may vary the content of the e-book. An interactive e-book may be suitable for one course, but the other course may be suitable with the traditional e-book. Too much

interaction, such as overuse of animation, is also not good because it may distract students' attention.

This study focuses on the e-book used by the Business Analytics students (Figure 1) at UiTM Cawangan Terengganu (UiTMCT). On top of reading the text, the reason for focusing on one course only is that the nature of the Business Analytics course requires students to perform hands-on exercises based on scenarios given. The scenarios given to the students during lab sessions would be different from one student to another, but in the same context. Such exercises really help and encourage students to focus and perform correct analysis, such as descriptive analysis, hypothesis testing, or forecasting. Assignments, tests, and revisions can also be conducted via the e-book. Self-learning can also be performed with three attempts before the answers given by the students are considered incorrect. According to research by Ericson et al. (2015) and Ericson (2019), interactive e-books with features like simulations, quizzes, and multimedia components can enhance learning outcomes. For example, providing interactive practice problems with instant feedback aids students in recognizing and resolving misconceptions, improving their comprehension of the subject matter. Thus, the students must proactively explore the content of the e-book on top of what is taught in the computer lab.

Figure 1
Interface of Business Analytics e-Book for Practicing



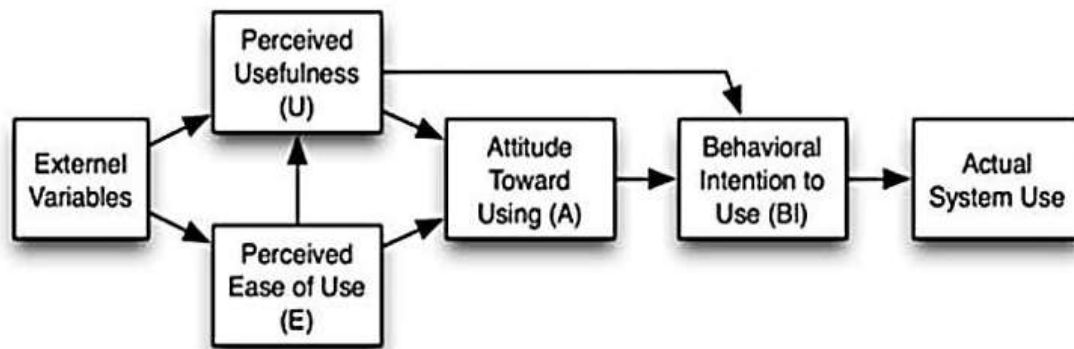
Besides advantages, the pitfalls of the e-book are also obvious. The 1-year access, study-to-screen features are some pitfalls highlighted by the students and lecturers. Therefore, it is vital to assess the acceptance of the e-book among Business Analytics students, so that short-term and long-term strategies can be suggested to the faculty towards sustainable education.

The basis of the study lies in the Technology Acceptance Model (TAM). Besides the expansion of the original TAM (Figure 2), the use of TAM to assess the acceptance of technology is still relevant. Ala'a and Ramayah (2023) state that "the TAM is a well-

established model used to interpret and explain technology acceptance by users. TAM has been expanded to include various external factors. However, some studies have used TAM in isolation without integrating other theories. Since the usage of these factors varies across countries, it is essential to adapt them to the specific context of each country.” P. 16. Meaning that it is still valid to apply the original model of TAM. Thus, this descriptive study aims to focus on variables in TAM, which are perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using (ATU), and behavioral intention to use (BIU) to understand the acceptance of the Business Analytics e-Book among students.

Figure 2

Original Technology Acceptance Model (TAM), (Davis et al., 1989)



The objectives of the study are:

- To describe the level of perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using (ATU), and behavioral intention to use (BIU) among the Business Analytics students.
- To identify the difference between Operations Management Students and Customer Service Students regarding “positive attitude towards using e-book”.
- To identify the difference between Operations Management Students and Customer Service Students concerning “intend to use e-books for my studies in the future”.

LITERATURE REVIEW

Perceived Usefulness (PU) and Attitude Toward Using (ATU)

Perceived Usefulness (PU) is a core construct in the Technology Acceptance Model (TAM), representing the degree to which a user believes that using a particular system will enhance their performance. PU has been consistently found to positively influence Attitude Toward Using (ATU), as users are more likely to adopt technologies they perceive as beneficial. Similarly, Almaiah et al. (2022) found that university students using mobile learning platforms showed more positive attitudes when they believed the system improved their academic performance. These findings reinforce the idea that perceived functional value is a strong motivator for technology acceptance. Nahotko and Deja (2024) examined e-book acceptance among first-year undergraduate students in the information management program and found that although e-books were perceived as easy to use, this aspect did not strongly influence students' attitudes and intentions to use them as much as their perceived usefulness did.

Perceived Ease of Use (PEOU) and Attitude Toward Using (ATU)

Perceived Ease of Use (PEOU) refers to the extent to which a user believes that using a system will be free of effort. It is a significant antecedent of ATU because ease of use reduces the cognitive and physical burden of interacting with technology. Abd Rahman et al. (2022) found that students using video-based learning platforms developed more favorable attitudes when the platforms were intuitive and easy to navigate. Almaiah et al. (2020) further supported this by showing that students' attitudes toward mobile learning systems improved when the systems were user-friendly. These studies suggest that reducing complexity in system design can enhance user receptivity and satisfaction.

Attitude Toward Using (ATU) and Behavioral Intention to Use (BIU)

Attitude Toward Using (ATU) is a key predictor of Behavioral Intention to Use (BIU), which reflects a user's readiness to adopt a technology. A positive attitude often leads to a stronger intention to use the system. Wu & Chen (2017) indicate that attitude and perceived usefulness variables exhibit a statistically significant and favourable influence on the desire to continue using a certain product or service. Similarly, Rahi et al. (2019) observed that in the context of mobile banking, users with positive attitudes were significantly more inclined to adopt the service. These findings highlight the importance of fostering positive user experiences to drive technology adoption. Davis et al. (1989) defined BIU as the willingness to act (or not), which is determined by ATU, which leads to actual information system use.

Differences in Positive Attitude Toward Using E-books Between Operations Management and Customer Service Students

Students' academic backgrounds can influence their attitudes toward digital learning tools such as e-books. Raju et al. (2021) found that students from technical and non-technical disciplines exhibited positive attitudes toward digital tools. On the other hand, the non-technical students' perception of PU has a higher impact on their attitude toward using digital tools. This may be due to differences in learning preferences, valuing the flexibility and accessibility of digital tools. Lim et al. (2020) also noted that students in business-related programs were receptive to e-books, possibly because these resources align better with their coursework and study habits.

Hypothesis 1

Ho: There is no difference in positive attitudes toward using the E-book between Operations Management and Customer Service Students

H1: There is a difference in positive attitudes toward using the E-book between Operations Management and Customer Service Students

Differences in Intention to Use E-books for Future Studies Between Operations Management and Customer Service Students

Intention to use e-books in the future may vary by academic discipline. Lim et al. (2020) found that students in a first-year undergraduate business program at a private university in Malaysia who learn statistics through an interactive e-book produced higher scores in academic achievement than students who learn through a traditional e-book. The results are likely due to their convenience and alignment with communication-heavy curricula. A study by Nahotko and Deja (2024) reveals that "students, particularly in social sciences, have long viewed e-books as a vital technology for exploratory knowledge acquisition.

While they perceive e-books as easy to use, this perception likely stems from their habitual use for managing learning activities, rather than from recognizing any added value of the technology itself.” In this study, both Operations Management and Customer Service Students are from the Faculty of Business and Management. However, the nature of their disciplines of study would be slightly technical for Operations Management students. The generic assumption is that the intention to use e-books for future study is not the same among operations management and customer service students.

Hypothesis 2

Ho: There is no difference between the intention to use E-books for future studies between Operations Management and Customer Service Students

H1: There is a difference between the intention to use E-books for future studies between Operations Management and Customer Service Students

METHOD

The descriptive in nature study was conducted on UiTM Cawangan Terengganu (UiTMCT) students enrolled in the Business Analytics course in the year 2025. The questionnaire was adapted from the Technology Acceptance Model (TAM) items for PU, PEOU, ATU, and BIU. The population frame of the study was 119 students, which reflects that the unit of analysis of the study is individual. Using the convenience sampling method, the online set of questionnaires (Google Form) was shared with the elements of the population. It is expected to end up with census results; however, only 102 students participated in the study, with an 85.71% response rate.

IBM SPSS Statistics software was used to analyze the data. The descriptive statistics, reliability test, and Mann–Whitney U test were conducted to achieve the objectives. The non-parametric test was used because the assumptions of the independent samples t-test (random, less than 30 students per group, and normality) are not met.

RESULTS

Table 1 shows the demographic profile of the 102 respondents of the study by frequency. Two items reflect the respondents' perception, also included at the end of the table.

Table 1
Demographic Profile

		Frequency
Gender	Female	78
	Male	24
Age	21-year-old	5
	22-year-old	74
	23-year-old	21
	24-year-old	1
	25-year-old	1

State	Johor	7
	Kedah	5
	Kelantan	22
	Negeri Sembilan	1
	Pahang	21
	Perak	2
	Sarawak	1
	Selangor	13
	Terengganu	30
Bachelor Program	BA264 (Customer Service)	24
	BA274(Operations Management)	78
I like the Business Analytics Course	Neutral	23
	Agree	45
	Strongly Agree	34
I want to extend my studies in the Business Analytics Course in the future	Strongly Disagree	4
	Disagree	4
	Neutral	42
	Agree	36
	Strongly Agree	16

Note. N=102

The original TAM consists of four (4) variables as stated in Table 2. All adapted items measuring the variables are reliable, with Cronbach's alpha ranging from 0.940 to 0.957.

Table 2
Reliability Test

Variable	No of Items	Cronbach's Alpha	
Perceived Usefulness (PU)	4	0.941	The
Perceived Ease of Use (PEOU)	4	0.940	
Attitude toward Using (ATU)	4	0.946	
Behavioral intention to use (BIU)	4	0.957	

results in Table 3 aim to achieve the first objective of the study. Items measuring the four variables of the study are described in terms of mean, standard deviation, minimum, and maximum scale elicited by the respondents.

Table 3
Level of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude toward Using (ATU), and Behavioral Intention to Use (BIU)

	Mean	Std. Dev	Min	Max	CV
PU1 (Using the e-book enhances my learning performance)	4.03	.895	1	5	22.21
PU2 (The E-book is useful for my studies)	3.99	.873	1	5	21.88
PU3 (Using the e-book increases my productivity in studying)	3.98	.796	1	5	20.00

PU4 (The E-book makes it easier to complete my assignments)	4.06	.830	1	5	20.44
PEOU1 (Learning to use the e-book is easy for me)	3.98	.832	1	5	20.90
PEOU2 (I find the e-book easy to use)	3.95	.825	2	5	20.89
PEOU3 (It is easy to become skillful at using the e-book)	3.92	.754	2	5	19.23
PEOU4 (I find it easy to get the e-book to do what I want it to do)	3.89	.795	2	5	20.44
ATU1 (I like the idea of using the e-book for my studies)	3.99	.790	2	5	19.80
ATU2 (Using the e-book is a good idea)	4.03	.789	2	5	19.58
ATU3 (I have a positive attitude towards using the e-book)	3.97	.737	2	5	18.56
ATU4 (Using the e-book is a pleasant experience)	4.05	.788	2	5	19.46
BIU1 (I intend to use e-books for my studies in the future)	3.93	.859	1	5	21.86
BIU2 (I will frequently use e-books for my coursework)	3.93	.799	1	5	20.33
BIU3 (I plan to use e-books whenever possible)	3.83	.809	2	5	21.12
BIU4 (I will recommend using e-books to my peers)	4.01	.826	1	5	20.60

Note. All mode and median values = 4. Coefficient of Variation (CV) in %.

Table 4 is the extension of Table 3. It indicates the reasons for the dispersion of the data and where the “disagree” responses lie.

Table 4
Segregation of Items by Scale

	SD	D	N	A	SA
PU1 (Using the e-book enhances my learning performance)	2	4	15	49	32
PU2 (The E-book is useful for my studies)	2	3	18	50	29
PU3 (Using the e-book increases my productivity in studying)	1	2	21	52	26
PU4 (The E-book makes it easier to complete my assignments)	1	4	14	52	31
PEOU1 (Learning to use the e-book is easy for me)	1	5	15	55	26
PEOU2 (I find the e-book easy to use)	-	5	22	48	27
PEOU3 (It is easy to become skillful at using the e-book)	-	3	24	53	22
PEOU4 (I find it easy to get the e-book to do what I want it to do)	-	6	20	55	21
ATU1 (I like the idea of using the e-book for my studies)	-	6	14	57	25
ATU2 (Using the e-book is a good idea)	-	6	12	57	27

ATU3 (I have a positive attitude towards using the e-book)	-	4	17	59	22
ATU4 (Using the e-book is a pleasant experience)	-	5	14	54	29
BIU1 (I intend to use e-books for my studies in the future)	1	6	17	53	25
BIU2 (I will frequently use e-books for my coursework)	1	4	18	57	22
BIU3 (I plan to use e-books whenever possible)	-	7	22	54	19
BIU4 (I will recommend using e-books to my peers)	1	5	13	56	27

Note. Scale: Strongly Disagree (SD-1); Disagree (D-2); Neutral (N-3); Agree (A-4); Strongly Agree (SA-5)

To achieve the second objective and test Hypothesis 1, Table 5 is to be referred to. The p-value of the test is 0.433 ($p > 0.05$); therefore, we fail to reject the null hypothesis since there is no evidence to support H1.

Table 5

Difference in Positive Attitudes toward Using E-books between Operations Management and Customer Service Students

	ATU3
Mann-Whitney U	847.5
Wilcoxon W	1147.5
Z	-0.785
Asymp. Sig. (2-tailed)	0.433

The results of achieving the last objective can be found in Table 6. The p-value is less than 0.05, indicating the failure to reject the null hypothesis for Hypothesis 2.

Table 6

The Difference between the Intention to Use E-books for Future Studies between Operations Management and Customer Service Students

	ATU3
Mann-Whitney U	843.0
Wilcoxon W	1143.0
Z	-0.800
Asymp. Sig. (2-tailed)	0.423

DISCUSSION

The outline of this paper is aligned with the three objectives, which identify the level of PU, PEOU, ATU, and BIU; the differences between the two groups of students regarding positive attitude towards using e-books and intention to use e-books for future study.

The 102 respondents were dominated by females (78 students). In terms of the program, there are 78 students from the operations management program and 24 customer service students. All the respondents elicited “neutral” to “strongly agree” with regards to “I like the Business Analytics Course”. Therefore, we ensure that none of the respondents are not interested in the Business Analytics course. On top of that, 8 out of 102 respondents don’t want to pursue a Business Analytics course in the future.

There are four variables rendered to 4 items each. Assessing the Cronbach’s Alpha, the values are from 0.940 to 0.957. Cronbach’s Alpha larger than 0.60 indicates that the items measure the intended concepts.

To achieve objective 1, the descriptive analysis was conducted. Descriptive statistics is not second to inferential statistics. This is the reason for detailing the mean, standard deviation (SD), minimum, maximum, coefficient of variation (CV), and frequency for each scale. Lecturer and publisher can scrutinize each important item to know the ground input. Overall, all items' mean values range from 3.83 to 4.06. These values indicate, on average, respondents answered the items more than neutral and up to agree responses. Besides that, we need to pair the mean values with the SD as well, because the SD marks how far the values spread from the average. The range of the standard deviation of the items is 0.737 to 0.895. The CV indicates how big the SD is relative to the mean. If the CV is between 10% to 30%, it indicates moderate variability.

For good managerial decisions, scrutinising each scale will help in pointing out items that can convey more information. For example, the CV for PU1 is 22.21% (the highest CV compared to other items), and we can see the answers of the respondents spread among scale 1 (strongly disagree) to 5 (strongly agree) – 6 respondents disagree that the e-book enhances their performance, while 15 are undecided. Even though the total number of “disagree” answer is not big, since the use of the e-book become compulsory for Business Analytics course, attention should be given to such “disagree” responses not limited to; plan to use e-book whenever possible – 7 disagree, 22 undecided (28.43%); easy to get the e-book to do what I want it to do – 6 disagree, 20 undecided (25.49%); like the idea of using the e-book for my studies – 6 disagree, 24 undecided (29.41%); Using the e-book is a good idea – 6 disagree, 12 undecided (17.65%); intend to use e-books for my studies in the future - 6 disagree, 17 undecided (22.55%).

The last two analyses conducted were hypothesis testing. Objectives 3 and 4 were focusing on the comparison of two programs, which are Operations Management and Customer Service disciplines. To achieve objectives 3 and 4, the Mann-Whitney U non-parametric test was executed in testing Hypothesis 1 and Hypothesis 2. The results for both hypothesis testing failed to reject H_0 , meaning that the conclusion for hypothesis testing are: There is no difference in positive attitudes toward using the E-book between Operations Management and Customer Service Students (Hypothesis 1) and there is no

difference between the intention to use E-books for future studies between Operations Management and Customer Service Students (Hypothesis 2). Hence, the respondents' attitudes from both disciplines are the same in terms of positive attitudes toward using the E-book and intention to use E-books for future studies.

Even though the nature of discipline for Operations Management is somewhat technical compared to Customer Service, both are from the same faculty, which is the Faculty of Business and Management. The students possessed the same positive attitude in using the e-book and the intention to use e-books for future study. The findings are consistent with Raju et al. (2021) and Lim et al. (2020).

Therefore, the lecturers can plan their method of teaching in the computer lab, designing the assignments, group projects, and tests, by enhancing the use of the e-book, without compromising the minority “disagree”/ “undecided” issues found in the descriptive analysis results for both disciplines of study. Since the respondents are from the second year, they might be more self-motivated and self-disciplined to use e-books for other courses in the following semesters. The publisher may get another insightful view of business and management students who accept the e-books and are more likely to use the e-book for future studies. On top of that, it is good for the publisher to pay attention to the minority “disagree”/ “undecided” items, such as “easy to use”, “easy to become skillful”, “easy to get the e-book to do what I want to do”. Students are more likely to view e-books favorably if they find them simple to use and navigate (Lin & Yu, 2023).

CONCLUSION

On average, all items measuring PU, PEOU, ATU, and BIU scored more than neutral or elicited agree answers. However, scrutinizing the items individually, some attention needs to be given to specific items for ground understanding. Both hypotheses result in no difference between groups, which are Operations Management and Customer Service students, towards a positive attitude in using the e-book and the intention to use e-books for future study.

Implication

The descriptive statistics performed can be seen as a trivial analysis, but it's significant. Analysts should not underestimate the value of information that can be gathered from such analysis. In this study, we can assess the level of PU, PEOU, ATU, and BIU, as well as scrutinize the descriptive items measuring each variable in TAM. The use of the e-books is pricewise, but for one-year access only, whereas the physical books experienced a trade-off, even though the possession is in a better state. Looking at the descriptive feedback of the e-book, maybe we cannot rely too much on the e-book. UiTM lecturers once published a good textbook for the Business Analytics course. A good cross-functional team initiated by the faculty and supported with tangible and intangible aspects from the university may trigger warmer scholarly practices of a book-writing environment, ultimately, can sustain the publication of books at an affordable competitive price.

Limitation and Future Direction

The study only focuses on second-year students who took the Business Analytics course at UiTMCT in 2025. The Operations Management students already received the results of the course when answering the questionnaire, while the Customer Service students received all the assessment marks and sat for the final test. There was no pressure for the students to answer the questionnaire, and they were informed to answer the questions sincerely without any judgment from the lecturer. The non-parametric test conducted on the samples of the study can be concluded for the participating respondents only.

For future study, it is recommended to compare the acceptance of the e-books from more than one course and across the disciplines of social versus pure sciences. This may lead to a holistic view that benefits students, lecturers, and the publishers.

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