Using the UTAUT Model to Understand the Behavioral Intention to Use Mendeley Among Undergraduate Students of the Second Semester: Mixed Research Method

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Abstract: Using the UTAUT Model to Understand the Behavioral Intention to Use Mendeley Among Undergraduate Students of the Second Semester: Mixed Research Method. Objective: This study aims to uncover the factors that influence behavioral intention to use Mendeley among second-semester students at Tanjungpura University using the Unified Theory of Acceptance and Use of Technology (UTAUT). Furthermore, this study deepens the findings of the UTAUT factors with qualitative research. **Methods**: This study utilised a mixed research method: quantitative-qualitative. Sixty students using the Mendeley application who were studying in the second semester at the Faculty of Engineering, Tanjungpura University, in 2023 became respondents in this study. Quantitatively, data were collected through a survey with the help of Google Form which was then analysed using the Partial Least Square Structural Equation Modeling (PLS-SEM) statistical testing method. Qualitatively, this study utilised open-ended interviews with selected students to explain the findings of the quantitative research. **Findings**: Based on SEM analysis, the factor that has a high influence on Behavioural Intention (BI) is Social Influence (SI) followed by Performance Expectancy (PE), and finally Effort Expectancy (EE). These findings are confirmed in qualitative research which reveals that the biggest influence of Mendeley adoption is environmental influence, namely encouragement from lecturers and from peers and the influence of the performance of the Mendeley application which helps citation and bibliography. **Conclusion**: This study concludes that students responded positively to the Mendeley application, perceived it as an application that can help write academic texts, easy to learn, and recognized that the factors of support from lecturers and peer influence as the main factors of the reasons for adoption. The low EE factor was caused by several usage problems experienced by students when connecting Mendeley and Microsoft Word which often caused errors.

Keywords: RMS, mendeley, behavioral intention, UTAUT, mixed method.

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■ INTRODUCTION

Utilisation of Reference Management Software (RMS) early in an academic career will increase the quality of research results in the future (Kaur, 2017). The improvement is mainly in the quality of reference citations to facilitate the achievement of scientific credibility, respect for original ideas, and plagiarism-free work (Sungur, 2013). RMS has proven to help prevent plagiarism (Andi Anto Patak & Tahir, 2019) and

can be utilised as a file backup, citation style change, personal library, and social networking tool for fellow academics (Salija, 2016).

Several RMS can be used, both free and paid, such as Mendeley, Zotero, EndNote, and RefWorks (Ivey & Crum, 2018). The reasons for adopting some of these RMS are that they are highly functional, easy to use, available to library users, and famous in the academic environment, with the caveat that each has its strengths and weaknesses so that none outperforms the other (Y. Zhang, 2012). Mendeley is believed to help users in terms of time efficiency, reducing research duplication, and improving information literacy skills (MacMillan, 2012). Mendeley can also help students present literature reviews, especially when working on final assignments (Reis, 2022). Universities should be more proactive in encouraging students to master Mendeley and other RMS in specific ways, such as training, seminars, etc. (Rangaswamy, 2021).

One of the recommended RMS in plagiarism prevention is Mendeley (Andi Anto Patak & Tahir, 2019). Several universities around the world have used Mendeley at the graduate level (Nitsos, 2022; Yangui, 2020), Which also recently provided training to undergraduate students at Universidade do Contestado, Brazil (Reis, 2022). In Indonesia, Mendeley has been used as a plagiarism control tool in graduate thesis writing (A.A. Patak, 2022), which is also known to be used by senior high school (SMA) students, diploma students, and undergraduate students through the Mendeley Indonesia user forum (Basri, 2016). Some Mendeley training has also been conducted for students in Indonesia (Maleha & Satria, 2021) and has also been done at Tanjungpura University (Muzammil, Mariyadi, & Imansyah, 2023)

Adopting Mendeley as a reference managerial has challenges, such as academics' lack of knowledge of RMS utilisation (including Mendeley), ignorance of citation styles, and the absence of support from librarians (Rangaswamy, 2021). In addition, instead of using Mendeley as a social network for fellow researchers, potential users prefer social platforms such as Facebook or ResearchGate. (Hicks, 2015). For this reason, this study investigates the primary factors that influence Mendeley users, especially in early semester students. Investigation of these factors is crucial to provide references for the design and adoption of Mendeley at the beginning of the semester to build a quality academic environment, especially in improving student information literacy (Rangaswamy, 2021).

Several theories can be used to investigate the basic factors of technology adoption, such as TAM (Davis, 1993) or UTAUT (Venkatesh, Morris, Davis, & Davis, 2003). This research chooses the theory of Unified Theory of Acceptance and Use of The Technology (UTAUT) (Venkatesh dkk., 2003) based on its ability to explain the technology use factor, which is 70% (Ayaz & Yanartaº, 2020; Venkatesh dkk., 2003) which comes very close to explaining individual acceptance and usage decisions. UTAUT is a valuable tool for university administrators to understand better the factors that can encourage and prepare for RMS utilisation (Abbad, 2021). In addition, this theory is also believed to provide an overview of the successful utilisation of a new technology used in the university environment and as an evaluation of its application so that organisers can act effectively in taking proactive measures (Ayaz & Yanartaº, 2020; Venkatesh dkk., 2003). Therefore, the selection of UTAUT in this theory is based on its complex nature by combining elements from various previously established acceptance models including TAM.(Graniæ, 2023; Venkatesh et al., 2003).

There are four UTAUT factors that, if fulfilled by potential technology users, will build their positive attitude and readiness. The

technology is expected to perform well for their work, facilitate their conditions, and get support from an extraordinary environment (Ayaz & Yanartaº, 2020). The four UTAUT factors are (Venkatesh dkk., 2003): Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). With further explanation, PE, EE, and SI directly affect Behavioral Intention (BI), while FC directly affects Use Behavior (UB). UTAUT also provides variation variables, including Gender, Age, Experience, and Voluntariness of use, which give an overview of the relationship between the main factors and behavioural intention of use, as seen in Figure 1. (Venkatesh dkk., 2003).

There have been many studies that use the UTAUT theory in determining technology adoption factors, especially in the field of education. Such as the disclosure of E-Moodle adoption at Hashemite University, Jordan, shows that PE and EE influence BI to use Moodle, while SI has no significant effect (Abbad, 2021). This can also be seen in the research on utilising E-Learning in banking (Abdou, 2020). Other research results reveal that PE, EE, and SI factors significantly affect BI in utilising E-Learning in the UAE (Alblooshi, 2021). Research conducted at the State University of Semarang (Nurkhin, 2019) reveals that the EE, PE, and SI factors significantly influence the BI use of RMS. This study offers a modified UTAUT model adopted from previous studies (Ayaz & Yanartaº, 2020). It focuses on PE, EE, and SI factors tested for their effect on BI, as shown in Figure 2. The exception to the FC factor in this study is based on the fact that the factor is not a determinant of BI but a determinant of Use Behavior (UB), as seen in Figure 1.
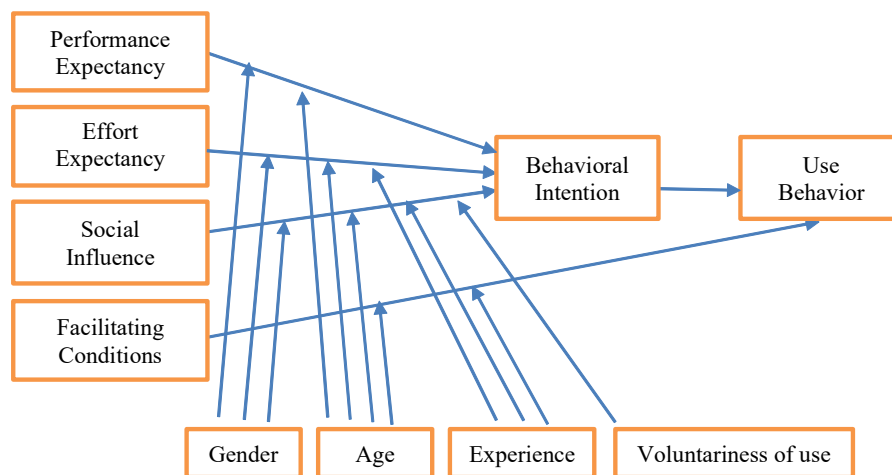

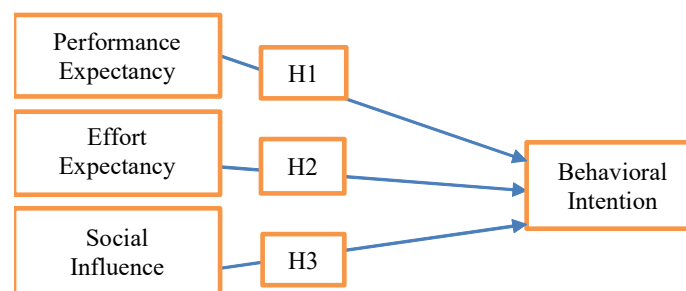**Figure 1.** Unified theory of acceptance and use of the technology (UTAUT)

Figure 2. Proposed research model and hypothesis

Performance Expectancy (PE) can be understood as a measure of an individual's confidence in the usefulness of a particular system in helping to improve his job performance (Venkatesh dkk., 2003). With that, PE can also be defined as the direct benefits users obtain in using technology (Mussa, 2021). Several studies reveal that PE factors affect BI, such as the disclosure of UTAUT factors in E-Learning (Abbad, 2021; Ayaz & Yanartaº, 2020; Wijaya, 2022; Zulherman, 2021; Mujalli, 2022; Ismail, 2020; Alghamdi, 2022; Ahmed, 2021; Alblooshi, 2021). With that said, the first hypothesis (H1) in this study is:

H1: Performance Expectancy positively affects Behavioral Intention.

Effort Expectancy (EE) can be understood as a measure of ease of use of a system (Venkatesh dkk., 2003). In some studies, EE is used as a tool to represent the subjective response to a technology, whether the use of a particular technology is easy or difficult in terms of understanding, using, and mastering it (Zulherman, 2021). Several studies reveal that EE has a significant effect on Behavioral Intention, as in e-learning research (Abbad, 2021; Hunde, 2023; Zulherman, 2021; Mujalli, 2022; Ismail, 2020; Alghamdi, 2022; Ahmed, 2021; Wijaya, 2022; Alblooshi, 2021). Therefore, the second hypothesis (H2) in this study is:

H2: Effort Expectancy has a positive effect on Behavioral Intention.

Social Influence (SI) is a factor that describes the situation of individuals who think they must use a new system based on the beliefs of others that they consider essential (Venkatesh dkk., 2003). SI has similarities to previous models, such as subjective norms, social factors, and imagery that are based on the assumption that humans are social creatures and are strongly influenced by their behavior by perceptions of technology use by others who first use it (Noble, 2020; Venkatesh dkk., 2003). UTAUT argues that SI influences BI because it can change the point of view of potential users (Nguyen, 2021). Research revealed that SI can have a significant effect on BI, such as the use of technology in education (Zulherman, 2021; Mujalli, 2022; Ismail, 2020; Alghamdi, 2022; Ahmed, 2021; Wijaya, 2022; Alblooshi, 2021; Ayaz & Yanartaº, 2020) or on e-payments (Alduais & Al-Smadi, 2022). Therefore, the third hypothesis (H3) in this study is:

H3: Social Influence has a positive effect on Behavioral Intention.

As mentioned above, UTAUT theory has been used in research in the field of education, namely the disclosure of E-Learning / LMS acceptance factors (Abbad, 2021; Abdou, 2020; Ahmed, 2021; Alblooshi, 2021; Alghamdi, 2022; Al-Mamary, 2022; Alotumi, 2022; Butt, 2022; Hunde, 2023; Ikhsan, 2021), utilisation of Cellular Phones in Learning (Alghazi, 2021), adoption of Artificial Intelligent in the Learning Process (Lin, 2022), and the use of WhatsApp in the teaching process (Maphosa, 2020). A study on the disclosure of acceptance using UTAUT focuses on the selection of RMS in general (Nurkhin, 2019) and does not focus on Mendeley and early-year students. Research related to the disclosure of perceptions of Mendeley has been conducted (Basri, 2016), (Castillo, 2022), (Chen, 2018; Hudriati, 2019), (Rangaswamy, 2021), which uses different methods and objects than the research conducted in this study. Based on some previous studies, an investigation of Mendeley's admission factors at universities focusing on entry-level students using UTAUT theory has never been carried out.

Based on the abovementioned reasons, this study investigates the driving factors that influence the intention to use Mendeley in early-level Tanjungpura University students (semester 2) with

UTAUT admission theory. This research is helpful for universities to find out the factors of Mendeley acceptance and as a form of evaluation so that in the future, it can determine more effective handling in creating a student environment with high levels of information literacy and good citation skills.

■ METHOD

Pariticipants

The respondents in this study were all students who attended lectures in the second semester, in the Informatics Engineering Study program, Faculty of Engineering, Tanjungpura University, Pontianak, academic year 2022-

2023. Students who were not present at data collection and did not use Mendeley were not included, resulting in sixty students as research respondents.

The demographics of the study respondents are shown in Table 1, with details of 36 male respondents (60%) and 24 female respondents (40%). In addition, one respondent (1.7%) was 17 years old; 21 respondents (35%) were 18 years old; 29 respondents (48.3%) were 19 years old; 8 respondents (13.3%) were 20 years old; and one respondent (1.7%) was 21 years old. All students (100%) in this study have used Mendeley for four months or in 1 semester.

Table 1. Respondent demographics

Variable		1	2			Total
Gender		Man	Woman			
	N	36	24			60
	%	60%	40%			100%
Variable		1				Total
Experience		Four month				
	N	60				60
	%	100%				100%
Variable		1	2	3	4	5	Total
Age		17	18	19	20	21	
	N	1	21	29	8	1	60
	%	1.7	35	48.3	13.3	1.7	100%

Research Design and Procedures

This study utilizes quantitative-qualitative mixed research. The steps in this research are following The Explanatory Sequential Design guidelines(Creswell & Clark, 2018)by prioritizing quantitative research as the first research. These steps(Creswell & Clark, 2018)namely; (1) design and carry out a series of quantitative research; (2) use of strategies to link from quantitative research; (3) design and conduct a series of qualitative studies; and (4) interpret connected results.

The first stage of this research is that after all ethics have been carried out properly, such as

permission from the institution, lecturer approval, and student consent to become research respondents, an online survey in the form of Google Form is distributed to students via the Informatics Engineering Study Program student WhatsApp group for one week. On Google Forms, the survey begins with information about the purpose of the research and how the data collected will be used. Respondents were also provided with information regarding the confidential and anonymous nature of this research to maintain their security and privacy. Data is collected automatically via the Google Drive link and then downloaded for analysis using

Partial Least Square Structural Equation Modeling (PLSSEM). After the statistical analysis was completed, qualitative research was carried out to provide a more in-depth explanation of the quantitative findings(Creswell & Clark, 2018). Two weeks after the survey was completed and statistical analysis was carried out, the researcher contacted several research respondents to be interviewed face-to-face with semi-structured questions and then analyzed using thematic data analysis techniques.

Instruments

The research instrument in this study used a non-test instrument divided into two parts, namely quantitative instruments and qualitative instruments. The quantitative instrument in this research is a survey with the help of a Google Form, which was distributed to research respondents and was adapted from previous research (Ayaz & Yanartaº, 2020). This survey consists of two parts, the first contains personal questions regarding age and gender while the second part consists of survey items related to UTAUT which specifically explores modified UTAUT factors consisting of questions PE (4 items), EE (5 items), SI (3 items), and BI (3 items) (see table 2) with a total of 15 items. Each item is measured using a Likert scale of 1 to 5 with details of statements (1) "strongly disagree" to (5) "strongly agree". The adapted qualitative instrument has received expert validation and was then restructured so that it is suitable for respondents and in harmony with the research context. In addition, the reliability of the four subdomains is high (Cronbach's á > 0.80).

The qualitative research instrument is in the form of semi-structured questions regarding perceptions of the use of Mendeley. The aim is to clarify statistical results from quantitative research findings (Creswell & Clark, 2018). After analyzing the survey results, the researcher deliberately selected participants from the research respondents to conduct face-to-face semi-structured interviews. The questions were focused on uncovering a deeper explanation of the UTAUT factors tested in this research. All respondents were asked to express their answers in Indonesian and express their opinions honestly.

Table 2. Survey items

Performance Expectancy
PE1. I find that Mendeley is useful in my academic activities.
PE2. Using Mendeley increases my chances of accomplishing the things that matter to me.
PE3. Using Mendeley helps me get things done faster.
PE4. Using Mendeley increased my productivity.
Effort Expectancy
EE1. Learning how to use Mendeley was easy for me.
EE2. My interaction with Mendeley was clear and understandable.
EE3. I find Mendeley easy to use.
EE4. It was easy for me to use Mendeley skillfully.
EE5. Easy for me to install Mendeley
Social Influence
SI1. Important people think that I should use Mendeley.
SI2. People who influence my behavior think that I should use Mendeley.
SI3. People whose opinions I appreciate prefer me to use Mendeley.
Behavioral Intention
BI1. I intend to continue using Mendeley in the future.
BI2. I will always try to use Mendeley in my academic process.
BI3. I plan to continue using Mendeley frequently.

Data Analysis

Quantitative research data in this study was analyzed using Partial Least Square Structural Equation Modeling (PLS-SEM) with the help of the SmartPLS4 tool. PLS-SEM is considered suitable for measuring small and non-normally distributed sample sizes (JF Hair, Risher, Sarstedt, & Ringle, 2019). There are two parts of PLS-SEM analysis applied in this research, namely Reflective Measurement Models and Structural Models.

Reflective Measurement Models assessment aims to ensure the reliability and validity of construct measures. This measurement contains several checks, namely convergent validity in Outer Loading (Alotumi, 2022)which should show a value of more than 0.7 (J. Hair, Hollingsworth, Randolph, & Chong, 2017), Composite Reliability that does not exceed the maximum threshold of 0.95 (JF Hair et al., 2019), Average Variance Extracted (AVE) which is higher than the minimum value of 0.50, and Discriminant Validity which is indicated by the Heterotrait-Monotrait Ratio (HTMT) value which is lower than the threshold value of 0.90(Henseler, Ringle, & Sarstedt, 2015; JF Hair et al., 2019). Apart from that, the Variance Inflation Factor (VIF) value was also measured which should show a value higher than 5 to prove that there are no collinearity problems in the model.

In the Structural Models assessment, several measurements are measuredv (JF Hair et al., 2019; J. Hair et al., 2017), measurement of the coefficient of determination (R2) (minimum R2 = 0.50, p = 0.05), Confidence Interval, Effect Size (F2), and Predictive Relevance (Q2). Analysis using SmartPLS4 with bootstrapping 5000 samples and with the Confident Interval Method, Bias-Corrected and Accelerated (BCa) (J. Hair et al., 2017). This research also uses a measure of model suitability using SEM-PLS

Predict which is a proposed new evaluation procedure specifically designed for the prediction-oriented nature of PLS-SEM (Shmueli, Ray, Velasquez Estrada, & Chatla, 2016; JF Hair et al., 2019). The values measured in PLS-SEM Predict are PLS-SEM values (RMSE and MAE) which should not be higher than LM values (RMSE and MAE) so that they show high predictive power.

Qualitative research data obtained through semi-structured interviews with the help of voice recording were then transcribed into written form. The data that has been transcribed is then analyzed using thematic data analysis techniques Braun & Clarke (2021). The thematic data analysis steps in this research refer to opinions (Nowell, Norris, White, & Moules, 2017)namely: 1) reading to familiarize yourself with the research data, 2) producing initial codes, 3) finding themes, 4) reviewing themes, 5) providing definitions and naming themes, 6) and reporting. The results of qualitative research analysis are then used in discussions together with quantitative research.

■ **RESULT AND DISCUSSION**

Quantitative Result and Discussion

Quantitative research data was analysed using PLS-SEM method, which consists of two parts: reflective Measurement Models and Structural Model testing (J. F. Hair dkk., 2019). These measurements are further displayed as follows:

Reflective Measurement Models

Assessment Reflective Measurement Models contain several checks, namely convergent validity in outer loading (Alotumi, 2022), Composite reliability, Average variance extracted (AVE), and discriminant validity (J. F. Hair dkk., 2019). Table 3 and Figure 3 show the lowest loading factor of 0.707. The figure is still acceptable because it exceeds the value of

0.7 (J. Hair dkk., 2017), although it does not exceed the recommended number (J. F. Hair dkk., 2019), i.e. 0.708. Table 3 and Figure 3 also show the highest Composite reliability number of 0.916, which does not exceed the maximum threshold of 0.95 (J. F. Hair dkk., 2019). In addition, the AVE value shows an acceptable value; namely, the lowest value is at 0.644, which is higher than the minimum value of 0.50.

Table 4. Internal consistency measures

| Factor	Variables	Outer Loading	Cronbach's alpha	rho_a	Composite reliability	Average variance extracted (AVE)
Performance Expectancy	PE1	0.842	0.825	0.828	0.883	0.655
	PE2	0.807				
	PE3	0.775				
	PE4	0.811				
Effort Expectancy	EE1	0.858	0.861	0.864	0.900	0.644
	EE2	0.814				
	EE3	0.829				
	EE4	0.797				
	EE5	0.707				
Social Influence	SI1	0.930	0.863	0.889	0.916	0.784
	SI2	0.861				
	SI3	0.865				
Behavioral Intention	BI1	0.865	0.855	0.856	0.912	0.776
	BI2	0.910				
	BI3	0.867				
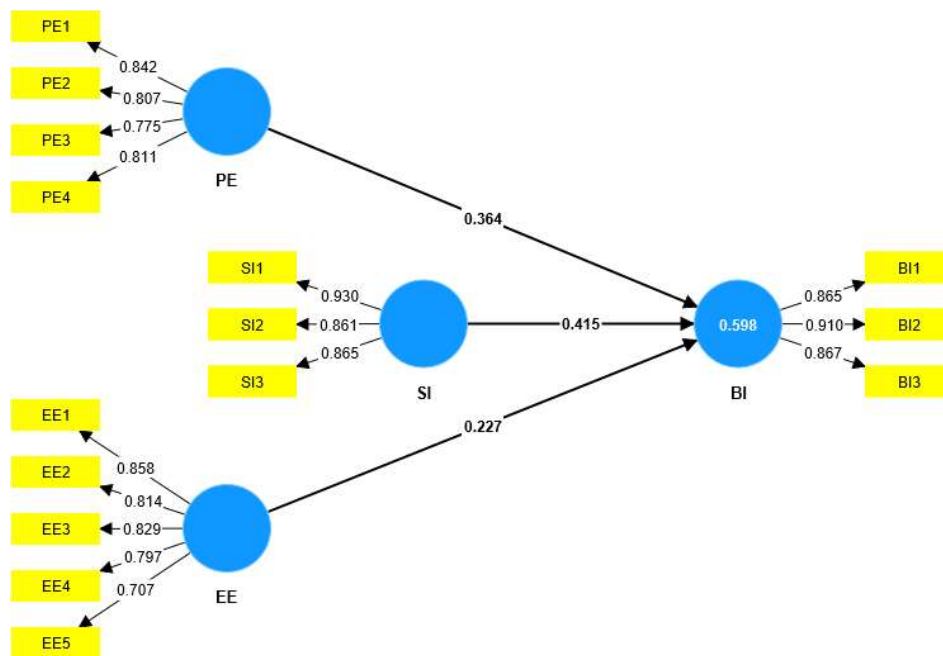
Figure 2. PLS algoritma for CFA

According to (J. Hair et al., 2017) Discriminant validity measures the degree to which each construct in the model differs from other variables based on its measurement. The subsequent measurement is the measurement of discriminant validity, as shown in Table 4. The HTMT value in Table 4 shows a number ranging from 0.258 to 0.750, which is lower than the

Table 4. HTMT criterion values

	BI	EE	PE	SI
BI				
EE	0.515			
PE	0.750	0.401		
SI	0.729	0.258	0.540	

threshold value of 0.90 (Henseler et al., 2015; J. F. Hair et al., 2019). Therefore, the value of HTMT in this study is acceptable.

Next is the analysis of the collinearity of indicators (J. Hair et al., 2017; J. F. Hair et al., 2019). Table 5 shows the results of measuring the Variance Inflation Factor (VIF) to evaluate collinearity. The data shows that the VIF value is not higher than 5, indicating no collinearity problem in the model.

Table 5. VIF values for multicollinearity diagnosis

	BI	EE	PE	SI
BI				
EE	1.148			
PE	1.391			
SI	1.286			

Structural Models

Based on SEM analysis recommendations (J. F. Hair dkk., 2019; J. Hair dkk., 2017), several steps can be taken in conducting structural model analysis, namely by measuring the coefficient of determination (R2), confidence intervals, and effect size (F2), predictive relevance (Q2), and measuring PLSPredict. The measurements of these items are further displayed as follows.

Table 6. Model path results

	Path Coefficient (β)	Sample mean (M)	SD	T	P	f2	Confidence Interval 2.5%	97.5%
EE -> BI	0.227	0.234	0.104	2.171	0.030	0.111	0.027	0.428
PE -> BI	0.364	0.367	0.117	3.109	0.002	0.237	0.133	0.589
SI -> BI	0.415	0.411	0.103	4.034	0.000	0.334	0.199	0.601

In Table 6 and Figure 4, the results of Path Analysis and several indicators were successfully verified by bootstrapping 5000 samples and with the Confident Interval Method, Bias-Corrected and Accelerated (BCa) (J. Hair dkk., 2017). The table shows the effect of Effort Expectancy (EE)

on Behavioral Intention (BI) with a Path Coefficient value (â = 0.227), P value of 0.003 (smaller than 0.05), and F2 value of 0.111. In addition, Performance Expectancy (PE) on Behavioral Intention (BI) was also displayed with a Path Coefficient value (â = 0.364), a P value of 0.002 (smaller than 0.05), and an F2 value of 0.237. The table also displays the influence of Social Influence (SI) on Behavioral Intention (BI) with a Path Coefficient value (â = 0.415), P value of 0.000 (smaller than 0.05), and F2 value of 0.334. Furthermore, the Coefficient of Determination (R2) analysis results are also displayed as a reinforcement of the certainty of prediction of exogenous variables from endogenous variables, which are displayed as follows.

Table 7. Variance explained by the model

	R-square	R-square adjusted
BI	0.598	0.577

The R2 value has 0.25 as a weak criterion, 0.50 as moderate, and 0.75 as substantial. Table 7 shows the R-Squere (R) and R-Squere adjusted (R2) values, showing that the R2 value is 0.577, indicating that the described variance is of medium value. In the following analysis, the predicted values of Q2, PLS-SME (SMSE and MAE), and LM (RMSE and MAE) for the analysis of prediction strength are displayed as follows.

Table 8 shows that the predictive relevance value of the model used (Q2) with its endogenous
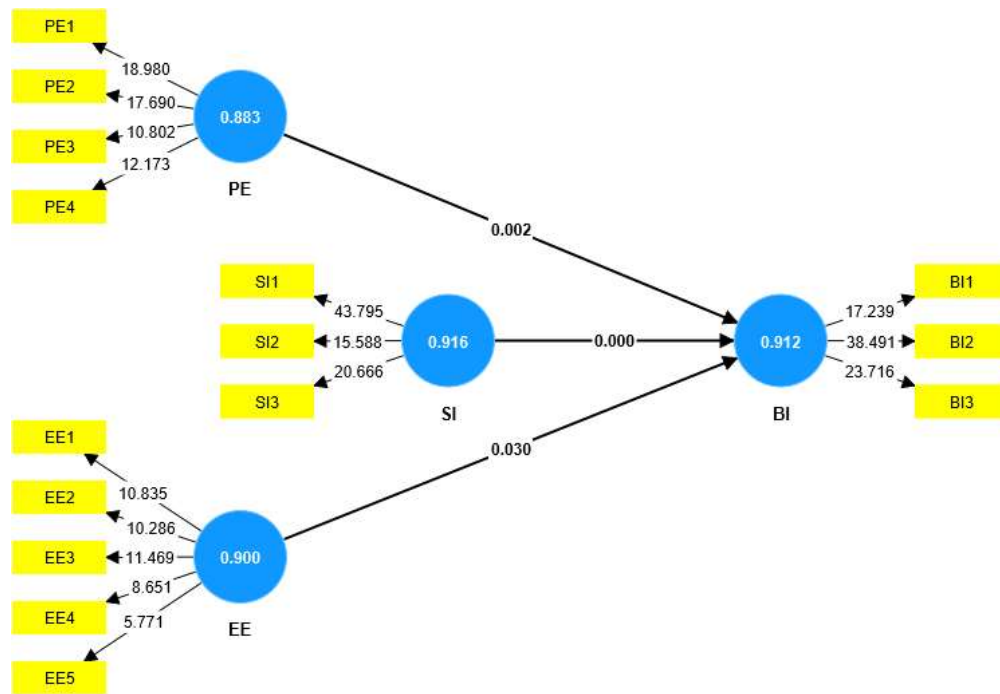

Figure 4. Bootstrap image for path analysis

Table 8. PLS predict

	Q²predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
BI1	0.366	0.712	0.561	0.791	0.615
BI2	0.394	0.696	0.540	0.761	0.628
BI3	0.430	0.673	0.547	0.838	0.644

Table 8 shows that the predictive relevance value of the model used (Q2) with its endogenous construct value (BI, B2, B3) has a higher value than 0.1, which also shows that the model used has good predictive relevance with a medium value (value above 0.25) (J. F. Hair dkk., 2019; J. Hair dkk., 2017). In addition, table 8 also displays data on PLS-SEM values (RMSE and MAE) with sizes that are not higher than LM values (RMSE and MAE), which show that the model used in this study is high in terms of predictive power (J. F. Hair dkk., 2019; J. Hair dkk., 2017).

Tabel 9. IPMA result for BI

	Importance	**Performance**
EE	0.227	72.005
PE	0.364	75.991
SI	0.415	66.351

Table 9 shows the results of the Important-Performance Map Analysis (IPMA) analysis for behavioral intent towards using Mendeley, represented graphically in Figure 5. Based on the results of IPMA, the most crucial performance interaction factor in determining student behavior intentions towards Mendeley is SI with an Importence-Performance value (0.415-66.351) in second place, namely PE with an Importence-Performance value (0.364-75.991) and finally third place, EE with an Importence-Ferformance value (0.227-72.005).

This study aims to investigate the influencing factors of UTAUT adoption of Mendeley in second-semester undergraduate students at the university. The use of UTAUT in this research was proven to be able to explain the factors that influence student behavior in using Mendeley which consists of three factors, namely SI, EE, and PE which significantly influence Behavioral
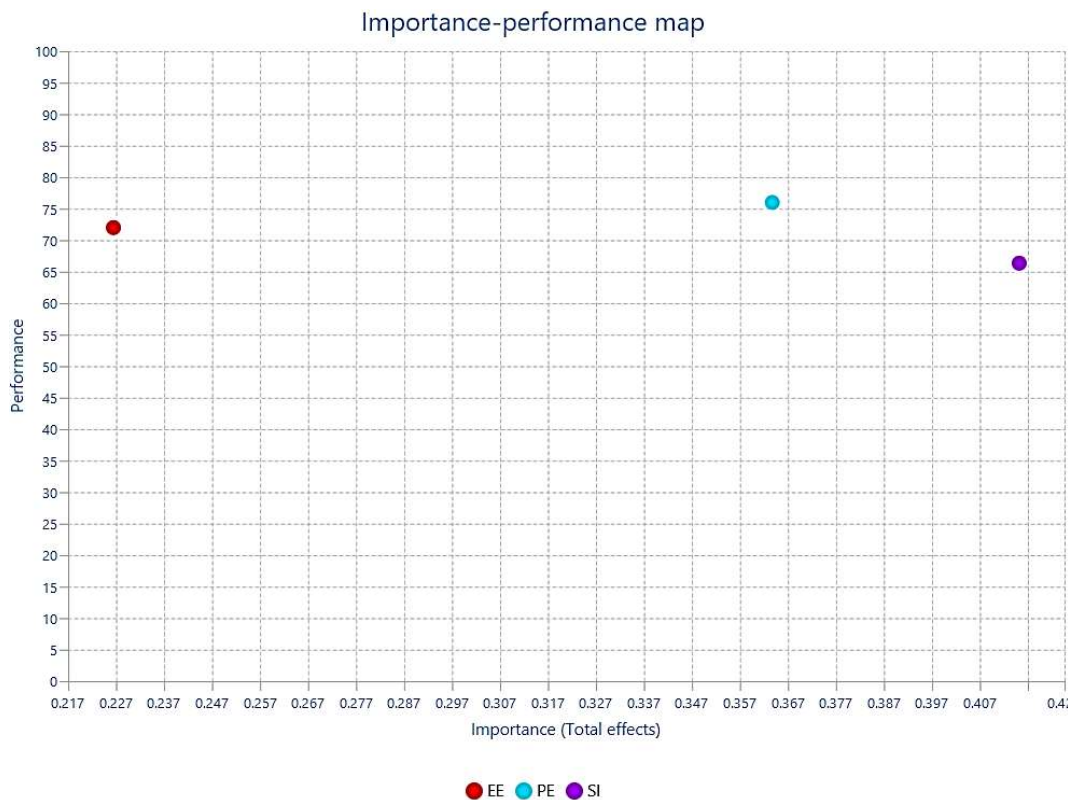

Figure 5. IPMA for mendeley behavioral intention

Table 10. Summary of quantitative findings on research hypothesis test results

Hypothesis	Statement	Supported
H1	PE Positive Influence on BI	Yes
H2	EE Positive Influence on BI	Yes
H3	SI Positive Influence on BI	Yes

Intention (BI). These findings are consistent with several UTAUT studies on RMS in general (Nurkhin, 2019) as well as in the acceptance of E-Learning technology (Zulherman, 2021; Mujalli, 2022; Ismail, 2020; Alghamdi, 2022; Ahmed, 2021; Wijaya, 2022; Alblooshi, 2021).

The SI factor is the most significant in BI. These findings are consistent with research on RMS utilization in general which reveals that IS factors have an important influence on BI (Basri, 2016; Nurkhin, 2019). In other technological research contexts, it is revealed that there is a social influence of important people in the use of E-Learning technology (Zulherman, 2021; Mujalli, 2022; Ismail, 2020; Alghamdi, 2022; Ahmed, 2021; Wijaya, 2022; Alblooshi, 2021; Ayaz & Yanartaº, 2020) or on e-payments (Alduais & Al-Smadi, 2022) which implies that the influence of the viewpoint of important people influences behavioral intentions in using Mendeley. The influence of course instructors, peers, and in-group members on SI is consistent with previous research on E-Learning adoption (Ismail, 2020). In this case, SI will become an important factor if there is direction from the instructor to consistently utilize a technology and will begin to fade during pre-implementation (Venkatesh, 2000).

Several previous studies did not show the significance of the influence of IS factors on BI, namely on the use of E-Learning technology (Hunde, 2023; Alotumi, 2022; Abbad, 2021; K. Zhang, 2022). The insignificance of SI in several E-Learning studies is caused by the tendency of students who are accustomed to using an E-Learning platform such as Google Classroom (Alotumi, 2022; Brandford Bervell, Kumar, Arkorful, Agyapong, & Osman, 2021). In another context, pressure from peers makes users feel anxious so the influence of SI on BI is negative which is found in the use of game vocabulary (K. Zhang, 2022).

Under these findings, it is recommended that universities build an environment for using Mendeley through instructions to instructors, students, staff, and librarians to encourage the use of Mendeley (Rangaswamy, 2021). Of course, this direction needs to be carried out when students are still in their first semester so that in the future it can help produce quality research results (Kaur, 2017). Apart from that, universities also need to utilize learning models that help students gain extensive experience in using Mendeley, such as a writing project-based model or by involving students in writing projects organized by lecturers.

This research also succeeded in revealing that EE has an effect on BI after SI. These findings are consistent with previous research on RMS in general which revealed that EE factors have a significant influence on BI because this application is easy to use by students.(Nurkhin, 2019). In the context of other technology research such as E-Lerning technology which reveals that, the more users find the platform easy, the more positive their behavioral intention to use it (Abbad, 2021; Hunde, 2023; Zulherman, 2021; Mujalli, 2022; Ismail, 2020; Alghamdi, 2022; Ahmed, 2021; Wijaya, 2022; Alblooshi, 2021).

Several studies reveal that EE is not as significant for BI as the use of E-Learning technology (Alotumi, 2022), on the university's

electronic management system (Ayaz & Yanartaº, 2020), and the use of Vocabulary Games in language learning (K. Zhang, 2022) which revealed that respondents in this case considered that e-learning was easy to use so there was no need for training or guidance of any kind. In the context of using other learning applications, current users are more willing to explore new applications related to strengthening vocabulary (K. Zhang, 2022).

In this case, it is recommended that universities provide initial knowledge through training to students in various forms so that students at the initial level can easily understand and operate Mendeley (Rangaswamy, 2021). Apart from that, universities must also consider the use of other RMS which allows them to overcome the level of difficulty experienced by students and to explore new RMS applications.

The PE factor is the third most influential factor on BI. These findings are consistent with several previous studies (Abbad, 2021; Ayaz & Yanartaº, 2020; Wijaya, 2022; Zulherman, 2021; Mujalli, 2022; Ismail, 2020; Alghamdi, 2022; Ahmed, 2021; Alblooshi, 2021) about the use of E-Learning. This indicates that the PE factor is one of the factors that must be considered in adopting RMS, namely regarding its usefulness in students' academic processes. In previous research regarding RMS, namely at the upper student level, PE was the most significant factor (Nurkhin, 2019) because students need RMS to complete their final assignments.

However, research findings show that the PE factor is lower than SI and EE. This fact was further confirmed in interviews with research respondents who revealed that they had not utilized Mendeley optimally at the initial semester level. Their use is limited to fulfilling course assignments and following the advice given by the instructor. This is of course in line with research on RMS among final-year students which has revealed that Mendeley is useful for them in completing their final assignments (Nurkhin, 2019; Basri, 2016) and not very well used by beginning-level students. Therefore, it is recommended that universities introduce Mendeley not only to help with the final assignment writing process but also for reference management in order to increase students' information literacy in the first semester. This recommendation can be continued by carrying out a program to optimize the use of project-based learning for students in the first semester or by involving students in writing projects to provide their experience in using Mendeley.

There is little agreement between the results of this study and several studies regarding research on RMS which revealed that some students had difficulty using RMS and thought that RMS was not always needed in a university environment (Castillo, 2022). The negative relationship between PE and BI also occurs in e-learning research (Alotumi, 2022; Hunde, 2023) caused by students' assumption that an E-Learning platform is only a medium or delivery tool so that the strong link is teacher competence (Alotumi, 2022).

A good understanding of the factors that influence students' behavioral intentions on the use of Mendeley can provide a reference for decision-makers at universities to encourage students to improve their academic quality. This is considered very important because at the beginning of the semester students need to get sufficient equipment to improve their academic abilities, one of which can be achieved by using Mendeley.

Qualitative Result and Discussion
Semi-structured interviews in this study follow-up research used to confirm the main research findings, namely quantitative research that has been described previously (table 10) by referring to the Explanatory Sequential Design (Creswell & Clark, 2018).

Table 11. Themes and sample interview results

Theme	Sample Interview Results
Use of Mendeley	*"I have been using Mendeley since February 2023 until now."* *"I knew Mendeley from my Indonesian course lecturer. My lecturer asked me to work on a proposal writing project and research article by requiring Mendeley to use."*
Performance Expectancy	*Mendeley makes writing activities more efficient and effective. There is a feature to manage references used by authors. In Mendeley, we can save files and group them according to the writing topic, making it easy to find a list of references. Mendeley makes it easy to cite and create a bibliography.* *With Mendeley, we can share references. As a student who is often involved in writing as a team, this makes it easier for me and my friends to do literature reviews.*
Effort Expectancy	*"I had difficulties in the installation process, especially creating an account. The steps are very complicated."* *"It only took me a short time to learn how Mendeley works entirely, probably because the UI is similar to software like a file manager, and I can operate it smoothly."* *Some of the obstacles experienced are the lack of insight into the version of Microsoft Word used on each laptop because each particular version of Microsoft Word has a different Mendeley install tutorial, so it takes several tries to be used. I did not find any difficulties in using it myself, but my friend was unable to use Mendeley due to differences in the operating system he used.*
Social Influence	*"The lecturer of Indonesian course recommended me. Beyond that, my friends on campus recommended me to use Mendeley and came from other faculties or universities."* *"I know Mendeley from my Indonesian course lecturer; the reason for using Mendeley is to facilitate the learning process when the course is Indonesian at that time."*

Table 11 displays themes and interview samples which indicate that respondents have used Mendeley in Indonesian language courses. This shows that respondents only use Mendeley for lectures and project assignments from course lecturers.

In terms of PE, several respondents expressed that they felt Mendeley was important in supporting their academics, especially in terms of citations and bibliography. Research respondents also revealed that Mendeley helps writers to be more effective and efficient with their time and energy. Apart from that, respondents also stated that Mendeley made it easier for them to share references, making work easier with group work schemes. This fact is by quantitative research findings which reveal that the PE factor has a positive effect on BI. This is to previous researchers' statements which revealed that Mendeley is believed to be able to help users in

terms of time efficiency, reducing duplication of research, and increasing information literacy skills (MacMillan, 2012).

Regarding EE, all respondents revealed that it was easy for them to master Mendeley, including how to operate it and to master the application according to the instructions given by the course lecturer. This is by quantitative research findings which reveal that there is an influence of EE on BI and is by previous research (Y. Zhang, 2012) which reveals that Mendeley is an easy application to use. However, several respondents revealed that they had difficulty creating a Mendeley account. However, the EE factor has a low value compared to SI and PE which is due to the difficulty of research respondents in connecting Ms. Word with the Mendeley application. Several installation problems made it difficult for some respondents to use Mendeley and had to get guidance from the lecturer to be able to install it properly.

Regarding SI, all respondents revealed that they were familiar with the Mendeley application from lecturers in Indonesian language courses. Respondents in this case received instructions from the course lecturer to use Mendeley for 1 semester of study, namely to prepare project-based assignments for writing academic texts. Research respondents also revealed that they received some teaching from other university students regarding the use of Mendeley. The influence of their peers also seems to have an influence, namely by sending references using Mendeley during group work. This is in line with the finding that SI has a big influence on BI and is in line with previous research regarding RMS Mendeley which also revealed that the more knowledge from instruction using Mendeley, the higher the student's intention to use the application (Hudriati, 2019). The interview results also revealed that research respondents were influenced by using Mendeley from study groups and other friends at other universities.

■ **CONCLUSION**

This study aims to reveal the factors that influence the behavioural intentions of undergraduate students in the second semester towards the use of Mendeley in higher education. Based on the results of the study, it can be seen that the SI factor has a major effect on BI in the intention to use Mendeley. The results also show that EE and then followed by EE factors are significant in influencing the intention to adopt Mendeley. This study also reveals that UTAUT has usefulness in predicting behavioural intentions, which in the context of this study are behavioural intentions towards Mendeley.

This study successfully formulated several recommendations that need to be done by universities that intend to utilise Mendeley in order to improve students' academic capacity. First, universities need to encourage instructors, students, and librarians to use Mendeley in order to create a good learning environment for students. Universities are also encouraged to conduct training efforts in various forms so that students, instructors, and librarians can master the use of Mendeley. In addition, universities are also recommended to utilise learning methods that can train students at the beginning of the semester such as Project Based Learning or by including students in the lecturer's research project program to provide experience in using Mendeley, especially in writing research reports.

This study has several limitations that need to be considered. First, the UTAUT factors investigated in this study did not include several other factors such as facilitating conditions. Different results are possible in the utilisation of these factors. Secondly, this study only focused on Tanjungpura University students so there is a possibility of different results if several other universities are included in the focus of the study. Third, potential moderators (age, gender, experience, and voluntariness) that should strengthen predictions not included in this study.

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