

Is the use of reference managers driven by necessity or policy pressure?

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Abstract

The use of a reference manager (RefWorks, Mendeley, EndNote, Zotero) has become very important in the writing of scientific papers for students and lecturers. The Faculty of Economics of Semarang State University (FE UNNES) has called on students to use a reference manager when composing a thesis. This study aims to analyze factors that influence the utilization of reference managers by FE UNNES students. The theories used are the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Theory of Planned Behavior (TPB). The research population was students working on their theses at FE UNNES. The data collection method used is a questionnaire distributed online to respondents through the Google platform. The data analysis method used is path analysis. The results show that performance expectancy and social influence have positive and significant effects on a student's intention to use a reference manager. Meanwhile, effort expectancy is not proven to have a significant effect on a student's intention to use a reference manager. Effort expectancy, performance expectancy, and social influence have a significant effect on the use of reference managers. Other results show that behavioral intention, lecturer guidance, and policy pressure do not significantly influence the use of reference managers. The results of this study demonstrate that the use of reference managers by students is more influenced by perceptions of their usefulness. That is, students assume that the use of a reference manager is a necessity.

Key words : actual use, behavioral intention, needs, policy pressure, UTAUT

1. Introduction

The number of citation management tools available has increased in recent years. Previously, researchers used their own personal systems to store citation information (Emanuel, 2013). The use of citation management tools has developed into the use of reference managers such as RefWorks, Mendeley, EndNote, Zotero and others. This is an

important thing in the administration of the references used when writing a paper or thesis. This is done to minimize the occurrence of citation errors and acts of plagiarism. In addition, the use of a reference manager will make it easier for the author to check citations and quotes that have been used.

Sarrafzadeh & Hazeri (2014) argue that the use of reference management software is already common in Iran. MacMillan (2017) states that the use of a reference manager can help researchers manage the information available in the references being cited. Meanwhile, Bhardwaj (2017) states that Mendeley and Zotero can also function as academic social networking sites. Shrivastava & Mahajan (2015) argue that a reference management tool can be used as a research evaluation tool, especially in the citation index. The use of Mendeley facilitates the calculation of an index of citations of papers that have been published.

The use of a reference manager has become one of the things demanded by students in thesis writing or lecture assignments. Lecturers are also required to use a reference manager. Many activities have been carried out by universities to introduce the use of reference managers, both for lecturers and students. The findings of Sarrafzadeh & Hazeri (2014) also show that students still need such activities to help them take up the use reference management software.

One can see that there are still many acts of plagiarism committed by lecturers and students. They still have difficulty in applying the reference manager to the writing of scientific papers. Some lecturers and students assume that the use of reference managers is very troublesome and impractical. In addition, some reference manager software cannot be obtained for free. Many national and international scientific journals require the use of reference managers. Emanuel (2013) shows that students have used citation management tools such as RefWorks and EndNote, but are still not familiar with Zotero and Mendeley.

The use of reference managers has received close attention from the academic leadership of UNNES, including the Faculty of Economics (FE). Lecturers and students are encouraged to use a reference manager. FE UNNES has enacted a policy about the use of a reference manager for thesis writing for students. Nevertheless, there are still many students who do not yet use one. Mendeley is the reference management application which is considered the easiest to use. Meanwhile, students are still writing citations and compiling bibliographies manually.

Most students still consider using a reference manager to be not important and not something they need to do. However, if they are writing a scientific work, they should already be using a reference manager. Some students use reference managers because they are required to do so by thesis supervisors and also due to faculty regulations.

This study aims to investigate the factors that influence the use of reference managers by students. The theories used are the Unified Theory of Acceptance and Use of Technology (UTAUT) and Theory of Planned Behavior (TPB). Both of these theories can cover the factors that influence students to accept and use technology and can analyze factors that influence a person's intention and behavior in carrying out an action.

2. Literature Review

2.1. The Unified Theory Of Acceptance And Use Of Technology (UTAUT)

The UTAUT concept is the development of several theories regarding the acceptance and use of technology such as the Technology Acceptance Model (TAM), motivation theory, and others (Venkatesh, 2003). The UTAUT concept consists of several constructs as predictors of behavioral intention and actual use, namely effort expectancy, performance expectancy, social influence, and facilitating conditions. In addition, there are moderating variables such as gender, age, experience, and whether or not the actual use is voluntary.

2.2. Theory of Planned Behavior (TPB)

The concept of TPB is already a very common element in the understanding of a person's motivation in taking action. It is a development of the Theory of Reason Action (TRA) and was developed by Azjen (1991). TPB is suitable for explaining any behavior that requires planning. The constructs in TPB are attitude, subjective norms, and perceived behavioral control as antecedent variables with regard to the intention variable and the behavior variable.

2.3. Conceptual Framework

Behavior, in terms of acceptance and use of technology, can be understood through several theories such as UTAUT, TAM, TPB, TRA, and MM (Motivational Model). The latest concept to better explain a person's motivation in accepting and using technology is UTAUT. Reference managers or reference management tools are applications that can be used to assist researchers in managing citations in their writing. Using Mendeley, EndNote, and Zotero is increasingly common among lecturers and students.

Arif et al. (2017) demonstrate the concept of UTAUT and find that performance expectancy, effort expectancy, and social influence significantly influence behavioral intention to use AIOU (Allama Iqbal Open University) web-based services. They also find that facilitating conditions and intention to use are predictors of actual use. However, they fail to demonstrate any moderating influence on age, gender, and experience. Yusof et al. (2017) have managed to find positive and significant influences of performance expectancy, effort expectancy, and social influence on usability expectancy. Thongsri et al. (2018) find performance expectancy to have a significant effect on intention to use m-learning. Meanwhile, Isaias et al. (2017) find a significant influence on students' behavioral intention to use emphatic forums to come only from social influence.

Previous research indicates that findings have been quite diverse. It is interesting to keep using the UTAUT concept in order to understand the behavior of using reference managers by UNNES students. Other variables developed from the TPB concept are then added to the test. The variables in question are lecturer guidance and policy pressure. Lecturer guidance will greatly influence students to use reference management applications. That is to say, students will be more motivated to use Mendeley if their supervisors want to help and provide technical guidance. Policy pressure factors can also influence students to use reference managers. Students will be considered to be behaving incorrectly if they do not use a reference manager. Therefore, students will try to use the reference manager and do so properly.

This study seeks to demonstrate what the main factors that influence students to use a reference manager are. It also seeks to ask whether the use of a reference manager is more influenced by necessity or by policy pressure. The research framework can be seen in Figure 1 below.

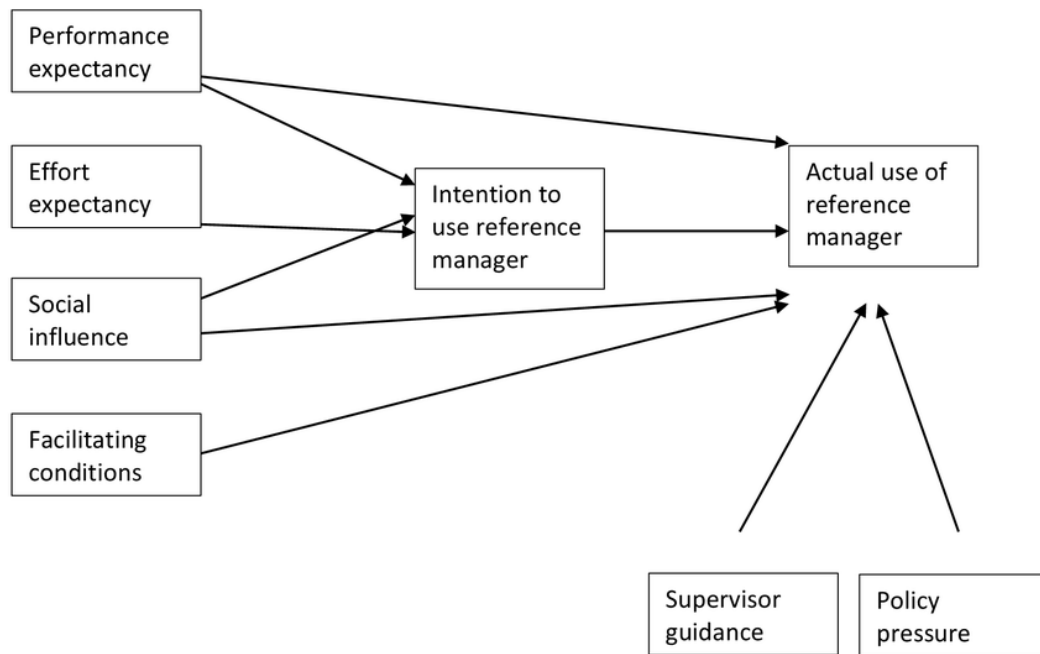


Figure 1. Conceptual Framework

3. Method

The population in this study is students at FE UNNES who are preparing their theses. The sampling technique used is simple random sampling. There are 78 sampled in the study. The research variables consist of performance expectancy, effort expectancy, social influence, facilitating conditions, lecture guidance, policy pressure, intention to use a reference manager, and actual use of a reference manager. Intention to use a reference manager will be tested as a mediating variable.

The data collection method used is a questionnaire. This questionnaire has been developed using a 5-point Likert scale and presented using the Google platform. The online questionnaire was distributed to respondents through the instant messaging application (WhatsApp). The data analysis method used is path analysis. The UTAUT and TPB theories are used to develop the research model. WarpPLS software version 6.0 is used as the tool to analyze statistically the data.

4. Result

Evaluation of the measurement model (outer model) has been carried out by observing the results of convergent validity testing, discriminant validity testing, and composite reliability testing. These three measurements have met the requirements. So, the structural evaluation (inner model) is conducted. The model fit test has been done by looking at 3 test indices, namely average path coefficient (APC), average R - squared (ARS), and average variances factor (AVIF). The P value of APC and ARS must be less than 0.001 to meet the model fit. AFVIF testing requirements are ≤ 5 , or ideally ≤ 3.3 .

The results of data analysis show that the average path coefficient (APC) value = 0.195, $P = 0.018$ while Average R-squared (ARS) = 0.4999, $P < 0.001$. Both test indicators have a P value of less than 0.001, which means the model is a fit (fulfills the requirements). Average full collinearity VIF (AFVIF) = 2.151 which means less than or equal to 3.3. This means that the model is a fit (fulfills the requirements) and is approaching the ideal model. The average value of block VIF (AVIF) = 1.914, acceptable if ≤ 5 , ideal ≤ 3.3 . thus the research model meets the requirements.

Figure 2 shows the results of the path analysis and testing of the research hypothesis. The relationship between performance expectancy and behavioral intention variables shows a probability value of < 0.01 with a coefficient of 0.38 which means that the performance expectancy variable has a positive and significant effect on the behavioral intention to use a reference manager. The social influence variable has a probability value of < 0.01 and a coefficient of 0.30, which means that the social influence variable has a positive and significant effect on the behavioral intention to use a reference manager. Meanwhile, the effort expectancy variable has a probability value of 0.40 with a coefficient of 0.03 which means that effort expectancy variable has not been demonstrated as having a significant effect on behavioral intention. Thus, the factors that influence the behavioral intention to use a reference manager are only performance expectancy and social influence.

The next results of this research are those pertaining to the relationship between these eight variables: performance expectancy, effort expectancy, social influence, facilitating conditions, supervisor guidance, policy pressure, and behavioral intention, and actual use. Figure 2 shows that the probability value for a relationship between performance expectancy and effort expectancy is less than 0.05 with coefficients of 0.19 and 0.50. This means that only performance expectancy and effort expectancy are demonstrated to have a positive and significant effect on actual use. Meanwhile, other variables have not been

demonstrated to have a significant effect on actual use. Thus, the determining factor for the use of reference managers by students is performance expectancy and effort expectancy. These results show that the use of a reference manager is more due to the positive perception of students regarding the benefits of using one. It can be concluded that the use of a reference manager is due to the needs of students and not because of lecturer guidance or the pressure of faculty policies.

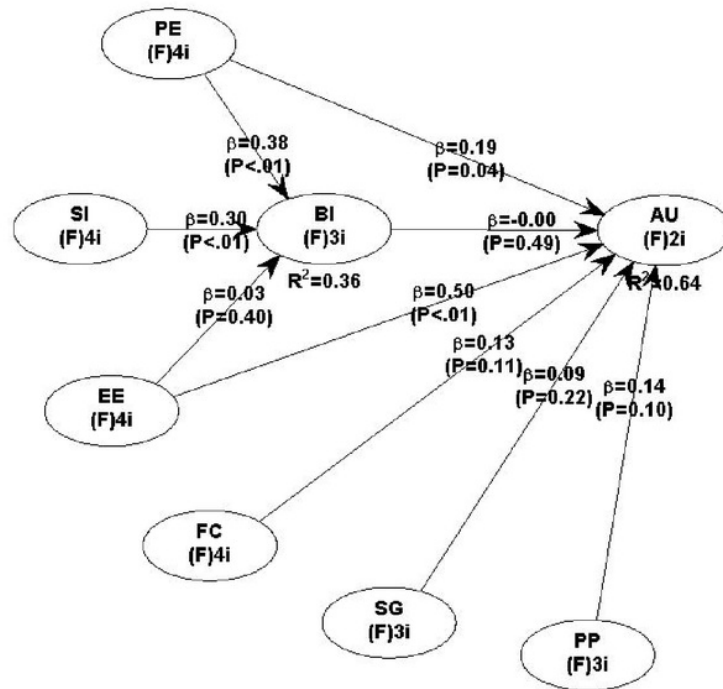


Figure 2. Path Analysis

5. Discussion

5.1. *Factors determining behavioral intention to use a reference manager*

The results show that only performance expectancy and social influence are shown to have a positive and significant effect on behavioral intention, while the effort expectancy variable has not been demonstrated to have a significant effect. Student's intention to use a reference manager is more due to the perception of the benefits of using one. Preparing a thesis is considered by students to be better if they use a reference manager. In addition, the influence of peers is the next factor. When friends and people around them support them in their use of reference managers, students will increasingly intend to engage in that behavior. This is reasonable because a student's behavior is strongly influenced by other people around him, especially his or her peers.

The results of the study support the results of previous studies which show that performance expectancy has a significant effect on behavioral intention (Arif et al., 2017; Thongsri, 2018) and effort expectancy has a significant effect on behavioral intention (Arif et al., 2017). Although there are researchers who have obtained different results (Muhsin et al., 2016).

5.2. *Factors determining actual use of a reference manager*

The results of this study show that the determinants of actual use of reference managers are performance expectancy, effort expectancy, and social influence. Effort expectancy is an important predictor because it has the highest coefficient. This means that the ease of use affects students more in using Mendeley or other reference manager software. The easier it is to use the software, the more students will use it.

The researcher has been quite successful in demonstrating the application of the concept of UTAUT, even though the behavioral intention and facilitating conditions have not been demonstrated to have an effect on actual use. Those researchers who have managed to find a positive and significant effect of performance expectancy on actual use include Arif et al. (2017), Yusof et al. (2017), and Thongsri et al. (2018). Arif et al. (2017) and Yusof et al. (2017) also find the same results, that is to say effort expectancy has a significant effect on actual use. However, the results of the study are not in line with previous research (Muhsin,

2016; Arif et al., 2017; Isaias et al., 2017) which finds a significant effect of behavioral intention on actual use and a significant effect of facilitating conditions on actual use.

This study has failed to demonstrate that the policy pressure and guidance of lecturers variables are able to influence students to use reference managers. This means that students do not experience pressure or fear with regard to using or not using a reference manager. Necessity is the main reason for students to study the reference manager and use it regularly in the preparation of their theses. This study cannot confirm the subjective norm variables in TPB as determinants of students' intentions and actions in using reference managers.

6. Conclusion

It has been demonstrated that intention to use a reference manager by FE UNNES students is only influenced by performance expectancy and social influence, while effort expectancy has not been demonstrated to have a significant effect. Performance expectancy is an important predictor. The next result of this study is that the use of reference managers is significantly influenced by performance expectancy, effort expectancy, and social influence. Behavioral intention, facilitating conditions, supervisor guidance, and policy pressure have not been proven to have a significant influence. The results of this study are able to confirm that the use of a reference manager by students in the preparation of their theses was due to their need to use it and not because of pressure from faculty policies or lecturer guidance.

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