FACTORS INFLUENCING USER ACCEPTANCE OF INFORMATION TECHNOLOGY SYSTEM

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ABSTRACT: *The key to a successful IT system rollout is having a comprehensive knowledge of how the target users accept and use technology. Thus, it is important to understand what are the factors influencing user acceptance of IT systems. This study hypothesized that user acceptance is among the major defining outcomes of user perception and attitude toward IT systems. This was verified in five companies in Misamis Oriental, Philippines. The study used correlational surveys where adapted survey instruments were the main source of gathering quantitative data. After a scientific reliability test on survey instruments, 103 employees were randomly selected as respondents to the study. Correlations and linear regressions were used to analyze the collected data. Results revealed that user acceptance was greatly influenced by the perception and attitude of users regarding the IT system. It is advised that when deploying IT systems, system developers should give emphasis and carefully consider the aspects that lead to user acceptance.*

Keywords: perceived usefulness, perceived ease of use, attitude, behavioral intention to use

INTRODUCTION

For every information technology (IT) system to be launched or maintained successfully, user technology acceptance is essential. Understanding technology acceptance will help system developers to predict how new IT systems will be utilized. Therefore, recognizing the factors of user acceptance is the beginning stage. This understanding would be very helpful to actual system use, which is the end-point of developing an IT system.

IT research continues to have a strong interest in understanding the factors that affect user technology acceptance and adoption in many situations. In fact, several models and theories have been developed to explain user technology acceptance behavior. One of the models that have been introduced is the Technology Acceptance Model (TAM). The model posited that individuals would use certain technology if they believed in the system [4]. TAM is a commonly used theoretical model for understanding the user's behavior using certain technology. According to Carper [3], TAM is empirically the foremost powerful, robust, and parsimonious model for predicting the user's behavior in using an IT system. The robustness of TAM was also confirmed by Gao and Bai [8]. The model is based on the idea that a potential user can decide whether or not to employ a certain technology.

Considering the robustness of TAM in predicting the user's behavior, this study looked into the influence of constructs postulated in TAM on user acceptance. The expected results hope to confirm the TAM constructs' impact on user acceptance. Additionally, this study hopes to contribute to the research that focuses on the role of TAM in determining user acceptance.

FRAMEWORK

TAM focuses on two key beliefs that govern how people utilize the IT system. These beliefs are perceived usefulness and perceived ease of use. The two beliefs recognize *perceived usefulness* as the most important in predicting IT usage behavior. This construct comes from the word "useful", which implies being able to be put to good use [5]. Perceived usefulness is the amount of value a user places on an IT system in performing a task. Furthermore, this is the user's perception that utilizing an IT system will boost performance or productivity. With the usage of IT systems, the belief in usefulness will reveal numerous explanations. This includes the user's tremendous effect on usage behavior due to this belief.

The second belief in predicting IT usage behavior is *perceived ease of use*. This is derived from the word "ease," which signifies without hardship or exertion [5]. This is the difficulty users feel in using IT to increase their performance or productivity. In perceived ease of use, the user believes that a specific IT will be simple, requiring less physical and mental effort. The user would not have to put much effort into comprehending, learning, or using the technology [5]. There will be no difficulties in putting it to use. Hernandez et al. [9] suggested that this belief encourages users to use IT regularly.

The perceived usefulness and perceived ease of use are fundamental beliefs in predicting the user's usage behavior in IT. These two beliefs are different constructs, however, related to each other as viewed by Davis [4]. The perceived ease of use of IT drives increased performance and enables users to complete more activities for a similar amount of effort. Increased user performance is within the purview of perceived usefulness. This gives the idea that perceived ease of use directly influences the perceived usefulness of an IT system. A study of Rawashdeh [14] had shown a significant positive correlation between the two beliefs wherein perceived ease of use is an antecedent to perceived usefulness. Likewise, a study conducted by Hernandez et al. [9] and Seneler et al. [15] also concluded that perceived ease of use influences perceived usefulness. The easier to operate the IT system creates a perception of a more useful IT system.

The Theory of Reasoned Action postulates that a person's attitude toward an object is determined by their belief [1]. In other words, a person's attitude toward something stems from how they see it. The theory defines *attitude* as the entire impression of favorability toward an object, whether favorable or unfavorable. Additionally, a person's attitude results from their personal views about certain characteristics of the object, as established beliefs are connected to certain characteristics of the object. According to Tselios et al. [16], a person's attitude toward an object is based on the opinions and beliefs they have developed from using the object.

In this area of research, many studies have found a link between TAM beliefs and attitudes. A study was conducted in which perceived usefulness and ease of use were found to affect the user's attitude positively [2]. The user's beliefs about IT have a significant influence on their attitude. The

two beliefs had a positive effect on attitude toward the usage of IT [13]. The result revealed that perceived usefulness and ease of use were major drivers of positive attitudes among users.

In 1989, a collaborative study modified the TAM of Davis [4]. Davis et al. [7] included a new construct to the model called *behavioral intention to use*. The modified model proposes that behavioral intention to use IT determines its use. The new component in the TAM was included with the intention of better predicting and explaining how users behave toward technology. It relates to the user's reported intention to use IT. Pasaoglu [17] found that successful IT implementation heavily depends on the user's behavioral intention to use. Previous research frequently used behavioral intention to use as an indicator of user acceptability because data on actual usage is difficult to obtain. Behavioral intention to use has already been proven to be a highly reliable indication of user acceptance.

The causal relationships between attitude and behavioral intention to use IT have been extensively studied. This follows Davis et al.'s [7] hypothesis that one's attitude regarding the usage of IT determines one's behavioral intention to use. The behavioral intention to use IT is influenced by one's thoughts about it, whether favorable or negative. According to Ko et al. [12], attitude is an internal propensity that influences a user's behavioral intention to use technology in the future. Users with positive feelings toward technology have a stronger behavioral intention. One's attitude significantly impacts one's subsequent behavior and is a strong predictor of behavioral intention to use [13].

The perceived usefulness of the user on the IT system influences the behavioral intention to use [3]. The behavioral intention to use IT is highly influenced by attitude and perceived usefulness [10]. It was hypothesized that behavioral intention would directly be influenced by perceived usefulness because an individual will develop behavioral intention if they believe it will improve their task performance regardless of their attitude towards IT [7]. The hypothesis that perceived usefulness influences the behavioral intention to use IT was supported in Kim and Qu [11] study hypothesis testing. It was revealed that behavioral intention to use IT was strongly correlated with usefulness perceptions. In other words, if users find IT valuable, they are more inclined to use it again.

The preceding literature and studies were reviewed to explain the factors influencing users' behavioral intention to use the IT system. Figure 1 below highlights the interplay of the variables of the study.

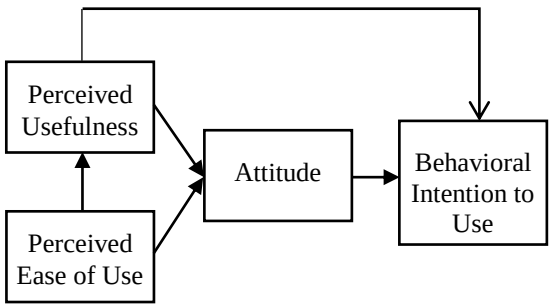

Figure 1: Schematic Diagram Showing the Interplay of Variables in the Study

METHODOLOGY

The study used correlational surveys. The 4-point scale survey instruments generated the quantitative data for the study. These were adapted from Davis [6] on perceived usefulness and perceived ease of use; attitude from Burton [2] and Ko et al. [12]; and behavioral intention to use from Carper [3], Gao, and Bai [8], and Hung and Jen [10].

All survey instruments used in this study have undergone reliability tests involving fifteen (15) users of the IT system as respondents. The instruments were tested for reliability using Cronbach's alpha. Cronbach's alpha measures the internal consistency of items in a survey instrument to gauge their reliability. The reliability coefficient resulted in 0.969 for perceived usefulness, 0.907 for perceived ease of use, 0.974 for attitude, and 0.967 for behavioral intention to use.

A total of 103 users of the IT system participated in the study. These were employees from five (5) different companies in Misamis Oriental, Philippines, randomly selected to be respondents to the study. Employees qualified to participate in the study were those currently employed during the study and employees using the IT system. Pearson product-moment correlation and linear regressions were used to organize the data to attain the study's objective.

RESULTS AND FINDINGS

Table 1 shows the relationship between perceived usefulness and perceived ease of use. The data revealed that perceived usefulness was significantly related to perceived ease of use.

Table 1: Pearson r value Showing the Relationship of Perceived Usefulness with Perceived Ease of Use (n=103)

Pearson Correlation Coefficient (r)	P-value	Qualitative Interpretation
0.594	0.000*	Significant

Note: * Significant at $p<0.05$

The correlation of attitude with perceived usefulness and perceived ease of use is presented in Table 2. The result indicated that perceived usefulness and ease of use were significantly associated with attitude.

Table 2: Pearson r values Showing the Relationship of Attitude with Perceived Usefulness and Perceived Ease of Use (n=103)

Variables	Pearson Correlation Coefficient (r)	P-value	Qualitative Interpretation
Perceived Usefulness	0.494	0.000*	Significant
Perceived Ease of Use	0.445	0.000*	Significant

Note: * Significant at $p<0.05$

Reflected in Table 3 is the relationship of behavioral intention to use with perceived usefulness and attitude. It was found that behavioral intention to use was significantly linked to perceived usefulness and attitude.

Table 3: Pearson r values Showing the Relationship of Behavioral Intention to Use with Perceived Usefulness and Attitude (n=103)

Variables	Pearson Correlation Coefficient (r)	P-value	Qualitative Interpretation
Perceived Usefulness	0.794	0.000*	Significant
Attitude	0.623	0.000*	Significant

Note: * Significant at p<0.05

To determine the impact of the independent variable on the dependent variable, linear regression analyses were conducted.

Table 4 reveals the simple linear regression analysis disclosing the influence of perceived ease of use on perceived usefulness.

Table 4: Simple Linear Regression Analysis of the Influence of Perceived Ease of Use on Perceived Usefulness

Independent Variable	**Regression Coefficient**	**T-Value**	**P-Value**
Perceived Ease of Use (PE)	0.640	7.415	0.000 *****
Dependent Variable	Perceived Usefulness (PU)		
Constant	1.306		
Adjusted R^2	0.346		
F-Value	54.976		
Significance	0.000		

Note: * Significant at the p < 0.05 level

PU = 1.306 + 0.640 PE

The value of adjusted R^2 indicates that the 34.6% variation in perceived usefulness is predicted by perceived ease of use. The remaining 65.4% could be attributed to other factors. The model is statistically significant at 0.000. This reveals that perceived ease of use is a predictor of perceived usefulness. The regression equation above illustrates the best equation model of the direct relationship between perceived ease of use on perceived usefulness. It implies that a one-unit increase in perceived ease of use corresponds to a 0.640 increase in perceived usefulness. The higher the degree of perceived ease of use, the greater the perception of the usefulness of the IT system.

This exposes that users' ease of use experience modifies their belief of an IT system's usefulness. The ease of operation of IT systems creates a perception that it is useful in improving task performance. The previous studies of Rawashdeh [14] and Hernandez et al. [9], which found a significant relationship between perceived usefulness and perceived ease of use, supported this finding.

Table 5 presents the multiple linear regression analysis showing the impact of perceived usefulness and perceived ease of use on attitude.

The value of adjusted R^2 indicates that 26.5% variation in attitude is explained by perceived usefulness and perceived ease of use. The remaining 73.5% could account for other variables that are not part of this study. The model is statistically significant at 0.000. The regression equation above represents the best equation model of the influence of perceived usefulness and perceived ease of use on attitude. The expression states that every unit change in perceived usefulness has a corresponding increase of 0.354, and every unit change in perceived ease of use has a corresponding increase of 0.252. The data also exposes that perceived usefulness and perceived ease of use with P-values of 0.001 and 0.029, respectively, are predictors of attitude toward the use of IT systems.

Table 5: Multiple Linear Regression Analysis of the Influence of Perceived Usefulness and Perceived Ease of Use on Attitude

Independent Variables	**Regression Coefficients**	**T-Value**	**P-Value**
Perceived Usefulness (PU)	0.354	3.363	0.001 *****
Perceived Ease of Use (PE)	0.252	2.217	0.029 *****
Dependent Variable	Attitude (AT)		
Constant	1.522		
Adjusted R^2	0.265		
F-Value	19.368		
Significance	0.000		

Note: * Significant at the p < 0.05 level

AT = 1.522 + 0.354 PU + 0.252 PE

As disclosed in the result, how the users perceive the usefulness and ease of use of the IT system can set their attitude towards it. An IT system that enhances performance generates a positive attitude among users. Similarly, a user exhibits a positive attitude towards the IT system if it is easy to use. This validates the finding of Burton [2], Lee et al. [13], and Kim and Qu [11], which found a significant positive relationship between the two beliefs and attitudes.

The finding also indicates that perceived usefulness influences attitude more than perceived ease of use. The users' perception of the usefulness of using the IT system has a greater effect on users' usage attitudes [15].

Table 6 determines the degree of impact of attitude and perceived usefulness on behavioral intention to use.

Table 6: Multiple Linear Regression Analysis of the Influence of Perceived Usefulness and Attitude on Behavioral Intention to Use

Independent Variables	**Regression Coefficients**	**T-Value**	**P-Value**
Attitude (AT)	0.323	4.866	0.000 *****
Perceived Usefulness (PU)	0.676	10.219	0.000 *****
Dependent Variable	Behavioral Intention to Use (BI)		
Constant	0.023		
Adjusted R^2	0.695		
F-Value	117.169		
Significance	0.000		

Note: * Significant at the p < 0.05 level

BI = 0.023 + 0.323 AT + 0.676 PU

The value of adjusted R^2 indicates that the 69.5% variation in behavioral intention to use is predicted by attitude and perceived usefulness. The remaining 30.5% could be attributed to other factors not covered in this study. The model is statistically significant at 0.000. The regression equation expressed above illustrates the best equation model of the direct influence of attitude and perceived usefulness on behavioral intention to use. It shows that a single unit

increase in attitude corresponds to a 0.323 increase in behavioral intention to use when perceived usefulness is held constant. This suggests that as users rate one unit on attitude, there is a 0.323 higher on behavioral intention to use. Likewise, when users rate one unit on perceived usefulness, there is a 0.676 higher behavioral intention to use. Furthermore, the model reveals that attitude and perceived usefulness with P-values of 0.000 and 0.000, respectively, are both predictors of behavioral intention to use.

It uncovers that the user's positive evaluative judgment and perceived usefulness contribute to the behavioral intention to use the IT system. The attitude sets the intention-behavior of users to use the IT system regularly [7]. This proves that attitude plays a significant function in predicting the behavior of the user toward the IT system [13] [14] [16]. Likewise, an IT system that increases performance attracts users to use it in performing activities. This indicates that perceived usefulness is a component of a user's behavioral intention to use the IT system in carrying out one's task, which corroborates previous researchers' findings [11].

CONCLUSIONS & RECOMMENDATIONS

Based on the results presented, it can be observed that the user's behavioral intention to use the IT system was greatly influenced by usefulness perception and attitude. It was evident that the two factors encouraged the users to use the IT system. It was also found that their belief that the IT system is easy to use and useful was the reason for developing a strong positive attitude. Furthermore, the perceived ease of use of IT systems establishes useful perception among users. Thus, it is recommended that the developer of IT systems should greatly consider the usefulness and ease of use aspects when deploying IT systems. These will enable the intended users to develop positive attitudes and fully use the IT system.

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