

ONLINE TEACHING EVALUATION FOR HIGHER QUALITY EDUCATION: STRATEGIES TO INCREASE UNIVERSITY STUDENTS' PARTICIPATION

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ABSTRACT

The primary purpose of this study was to uncover determinants of students' intention to adopt online teaching evaluation at the end of semester by proposing a research model based on the Theory of Planned Behavior (TPB). The second purpose was to investigate the efficacy of the theory for predicting such intention. Besides users' attitude and perceived behavior control, the study further decomposed the subjective norms into four different categories in order to identify the best practices and strategies that a school can use to promote the intention of participation. Valid questionnaires were collected from university students in Taiwan to test the raised research hypotheses in the paper. The results provide support for using the theory to predict students' intention of usage and many practical implications are thus suggested.

INTRODUCTION

Teaching evaluation by students have long been used as a standard and routine practice in institutions of higher education, for instructional improvement, educational quality advancement, and administrative purposes, such as decisions on faculty salary, promotion, and tenure (Kember & Wong, 2000). They have played a very important role in both students' learning process and teachers' careers. In recent years, due to the advancement of computers and internet technology, many institutions have rapidly replaced traditional student evaluations of teaching at the end of semester with electronic surveys, and adopted online evaluation systems to collect the necessary data from students (Layne et al., 1999; Moss & Hendry, 2002).

While maintaining the comparability of ratings (Leung & Kember, 2005), online evaluations have many advantages over the traditional paper-and-pencil student ratings. Researchers have indicated that traditional ways are time consuming and costly to administer (Yun & Trumbo, 2000). Usually, there is much coordination needed between offices and faculty to distribute and collect the student rating forms at the end of a term. Since manually entering the collected data is another labor- and time-intensive task, rating results tend to be delayed until several weeks after the term has ended (Layne et al., 1999). The value of the evaluation tends to be reduced for all reasons mentioned before. Nevertheless, online evaluations have none of these problems. Data from completed and returned electronic questionnaires can be automatically entered into the assigned database, be analyzed immediately, and further provide timely useful information to the students to make more informed course selections, reflection on learning through regular self-review of their own attitudes and commitment, and to the faculty for course improvement (Tucker, Jones, & Straker, 2008). Moreover, an online evaluation system gives students more opportunities and time to evaluate their instructors or courses after careful consideration, due to the fact that they can use various times during a specified period to finish the process (Layne et al., 1999; Leung & Kember, 2005).

Even though online evaluations offer a number of advantages, repeatedly reports have indicated the most pervasive problem with these electronic surveys is their response rates (Moss & Hendry, 2002; Lefever et al., 2007). Moreover, Mcbean and Lennox (1985) pointed out that to get valid evaluation survey results, a 50% response rate or an 80% return is need to give an acceptable indication of ratings, and if the response rate is very low, then the survey results may be considerably in error. Thus, if an effective and efficient online evaluation is demanded, the priority should be placed on how to increase students' intentions to use the system or participate in the process. Previous studies of online student ratings focus on the benefits and limitations of the new mode of administration (Layne et al., 1999; Moss & Hendry, 2002; Lefever et al., 2007), or the comparability of data gathered from both traditional and online surveys (Leung & Kember, 2005; Layne et al., 1999). Research on how to increase the students' adoption of the new system is still in the preliminary stage, and few studies, especially empirical studies, have discussed the issue (Norris & Conn, 2005).

The present study presents an in-depth understanding of university students’ intentions to participate in online teaching evaluations in Taiwan, utilizing Ajzen’s (1991) theory of planned behavior as a guide for identifying antecedents to the intentions, and exploring which components are significant predictors of them. Understanding the factors that influence intention will help to create a more favorable environment for greater participation, as well as help to design strategies to promote participation. Instead of simply accepting the common perception that response rates for online teaching evaluations and surveys will always be low, or implementing any possible incentive programs, the present study aims to provide initial empirical evidence for informing policies, strategies, and practices. It is in hope that the results of the study will shed lights for administrators elsewhere on best strategies to increase students’ participation of teaching evaluation as then improve the quality of education.

THEORETICAL BACKGROUND AND HYPOTHESES

Theory of planned behavior

As a useful lens to look at user beliefs and behavior, Ajzen’s (1991) theory of planned behavior (TPB) stands out as the most preferred model for prediction and understanding of a wide range of human behaviors in various age groups. It explicates relationships between attitudes, norms, perceived behavioral control, intentions, and behavior. According to TPB, the immediate determinant of an individual’s behavior is the intention to act or not. In turn, intention is jointly determined by three fundamental concepts of attitude towards the behavior, subjective norms, and perceived behavioral control, while each factor is generated by a number of beliefs and evaluations of the individual (Ajzen, 1991).

The predictiveness of the TPB across numerous behavioral domains is evident from many empirical studies in both naturalistic and experimental settings (Godin & Kok, 1996). Continually, TPB and the three constructs have also been successfully applied and investigated to explain and predict the intention and behavior of adopting various information technologies (Hsu et al., 2006; Taylor & Todd, 1995; Wu & Chen, 2005), but the role each construct plays in terms of its influence on behavioral intentions is dissimilar in different contexts. The present study was conducted to determine whether TPB could be used to predict students’ intentions to use online ratings of teaching in Taiwan. In our study the focus was on intentions, since actual usage could not be investigated due to the timescale of our study. Hence four of the constructs were considered, but the actual behavior was omitted. Figure 1 depicts the model of the current study.

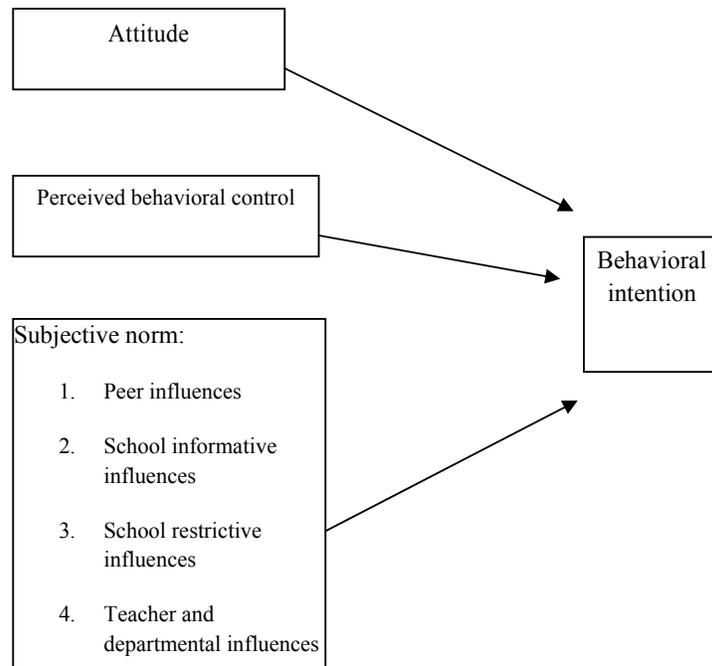


Figure 1. The model of the study

HYPOTHESES

Attitude

Attitude towards a behavior is the degree to which a person has a more or less favorable assessment of the behavior in question. Ajzen (2002) suggested that attitude is comprised of affective (enjoyableness of the behavior) and instrumental (perceived benefits) components. The positive relationship between attitude and behavioral intention has received strong empirical support in previous studies (Ajzen & Fishbein, 1980; Taylor & Todd, 1995). The TPB predicts that the more favorably an individual evaluates a particular behavior, the more likely is his/her intention to perform that behavior (Ajzen, 1991). Therefore, it is expected that students' favorable attitude towards the use of an online evaluation system will positively influence their intention to use it.

Hypothesis 1. Attitude of the students towards using online evaluation of teaching is positively related to the behavioral intention.

Subjective norms

A second antecedent to behavioral intentions is subjective norms which reflect the individual's perception of whether groups or people of importance to oneself will approve or disapprove of the performance of the adopted behavior. The more an individual perceives significant referents think he/she should engage in the behavior, the greater the individual's level of motivation to comply with those others (Ajzen & Fishbein, 1980). Some empirical studies have found that subjective norms or normative pressures positively affect people's intention to adopt innovative products such as newly invented technologies (Taylor & Todd, 1995; Green, 1998). Indeed, meta-analytical research reveals a positive association between subjective norms and behavioral intentions, ranging from .34 to .42 in different studies (Godin & Kok, 1996). Therefore, it is believed that within the context of the present study, subjective norms will reflect the students' perception of whether their behavior of using the online teaching evaluation is encouraged and accepted within their circle of influence. A positive relationship between subjective norms and intention to use an online evaluation system is hypothesized:

Hypothesis 2. Subjective norms of students in relation to usage of online evaluation affect their behavioral intentions positively.

Taylor and Todd (1995) pointed out that different social groups might have different opinions regarding the adoption of a particular technology, and will potentially influence the individual's intention to adopt the behavior. Other studies have further suggested that two types of social influences: interpersonal influence (normative influence) and external environmental influence (informational influence) can be used as determinants of subjective norms. Interpersonal influence indicates word-of-mouth influence by friends, colleagues, family, and superiors, and occurs when the person conforms to the expectations of others. External influence, on the other hand, indicates mass media reports, expert opinions, and other non-personal information considered by the person when performing a behavior, and occurs when the person accepts information as evidence of reality (Bhattacharjee, 2000; Karahanna et al., 1999). Accordingly, in the current study context, measures of subjective norms should also be further decomposed into different types of social influences.

Hypothesis 3. Each decomposed subjective norm also positively affects behavioral intentions.

Perceived behavioral control

Perceived behavioral control reflects an individual's perception of whether he/she has the necessary resources, capability, and a sense of control to successfully perform the behavior. It is the perceptions of internal and external constraints on behaviors. Internal constraints are related to knowledge/self-efficacy, and external constraints to the environment (Ajzen, 1991). Past literature has demonstrated that perceived behavioral control is an important determinant of intention and use of technology (Taylor & Todd, 1995). Norris and Cann (2005) suggested that the reasons for low response rates for online delivered survey instruments are technical problems with the online tool, difficulty accessing open computers in campus laboratories, students' relative level of technological literacy, and slow internet connection rates. Thus, when people feel that they lack the control to accomplish the behavior, they will have less intention to behave (Ajzen, 2002). Therefore, a positive relationship is hypothesized between perceived behavioral control and intention to adopt online teaching evaluation.

Hypothesis 4. Perceived behavioral control of users in relation to usage of online teaching evaluation positively affects behavioral intentions.

METHODOLOGY

Participants and procedures

Data were collected from a convenience sample of university students who are either sophomores or above in Taiwan. Because of its relative speed in data collection, and to minimize the amount of administration required by both the researchers and participants, the authors decided to use a web-based survey. However, to prevent the sampling bias of data collected from online surveys only, paper surveys were also administered for investigation. Students participated voluntarily through either electronic surveys or paper surveys, and a total of 1,217 (779 undergraduate students and 438 graduate students) valid questionnaires were used for analysis here. The invitation letters were first sent out to potential participants via email, while posters and flyers, both electronic and paper, were posted in the hallways and on public bulletin boards on campus or on the announcement page of the school website to welcome and encourage students to participate in the study. Furthermore, an incentive of cash was offered as a lucky draw prize to promote participation. To reduce the possibility that a respondent participated in the survey more than once, each respondent was required to provide part of his/her student identification number in the survey. Later, duplicate numbers were used to filter out multiple responses from the same respondent.

Approximately 76% of the respondents were male and 24% were female. In addition, around 39% of the respondents were from the College of Engineering, 32% from the College of Electrical Engineering and Computer Science, and 20% from the School of Management. About 20% of respondents found in each grade level (sophomore, junior, and senior), and about 36% of the respondents were from graduate programs. Approximately 99% of the respondents indicated that they have computers either at home or in their dormitory, and have access to the internet. Finally, the average online time per day for all the respondents was 5.62 hours with a standard deviation of 4.46.

Measurement development

To meet the purpose of this study, a self-reported questionnaire was developed, consisting of items designed to assess the four major constructs in the theory of planned behavior. Each construct was assessed by means of several direct items which were modeled on previous studies (Ajzen, 1991; Taylor & Todd, 1995; Bhattacharjee, 2000); therefore, most of them are pre-validated measures with minor wording changes to tailor these measures to the context of the current study. With the establishment of content validity, the questionnaire was refined through a pilot study before conducting the main survey. The pilot study focused on instrument clarity, question wording and validity. During the pilot study, five experienced experts in the field were invited to comment on the questions and wording. The comments of these individuals then provided a basis for revisions to the construct measures.

The belief items measuring attitude and intention were modified from the studies of Ajzen (1991; 2002) and Azjen and Fishbein (1980). Items for social influences and perceived behavior control were constructed according to Taylor and Todd (1995), Hsu et al. (2006), and Bhattacharjee (2000). In order to include more detailed determinants of behavioral intentions in the study, a decomposition of subjective norms was used to capture and identify all potential social influences. Responses to questions related to subjective norms were submitted to a principle axis factor analysis, and four sub-categories of subjective norms were found, and Table 1 indicates the factor loading for each question. Scales for each of the constructs were developed by averaging the responses to the individual items. All items were measured using a four-point Likert scale (ranging from 1 = strongly disagree to 4 = strongly agree). Following is a brief discussion of the variable measures derived from the TPB and used in the study.

Table 1. Rotated factor loadings and Cronbach's α values for subjective norms (12items)

Item	Factor 1:	Factor 2	Factor 3	Factor 4
Factor 1: Peer influences $\alpha = 0.94$				
1	0.90			
2	0.90			
3	0.88			
Factor 2: School restrictive influences $\alpha = 0.82$				
4		0.90		
5		0.89		
6		0.74		
Factor 3: School informative influences $\alpha = 0.62$				
7			0.81	
8			0.72	
9			0.62	

Factor 4: teacher and departmental influences $\alpha = 0.83$	
10	0.87
11	0.86
12	0.66
<hr/>	
Total $\alpha = 0.85$	

Intention

Respondents were asked to complete four questions to measure their level of intention to use the online evaluation of teaching. Factor analysis of the responses to these four items indicated that they depended on a single factor (factor loading of each question is between 0.72 and 0.85), and reliability analysis, using the alpha coefficient, showed the reliability to be 0.76. Therefore these four items were combined to form a single intention measure. Participants responded to the following sample items: “I intend to use the online evaluation of teaching in the future”; “Overall, my intention to use the online evaluations of teaching is pretty high.”

Attitude towards the behavior

Respondents’ attitudes towards participating in online evaluation of teaching were measured by asking them to indicate to what extent they thought using the online evaluation system would be enjoyable, pleasant, beneficial, or positive in five questions. Factor analysis of these five items indicated that they formed a single factor (factor loading of each question is between 0.78 and 0.82), and reliability analysis produced a good alpha of .86. Therefore, the items were combined to form a single attitude measure. The average overall five scales served as a general measure of direct attitude toward usage. Students indicated their attitudes through the following sample items: “I think using online evaluation of teaching is a valuable thing.”; “I like to participate in the online evaluation of teaching”; “Overall, I have a positive opinion of online evaluation of teaching.”

Subjective norms

Subjective norms were measured by twelve items each asking the respondents to indicate the extent to which they felt social pressure to use the online evaluation of teaching from others who were important to them. Three social groups were identified in the study, namely, the school, peers, and professors. A factor analysis was then performed which found that under the category of school, there were also two types of normative pressures—restrictive and informational influences. Sample items for each category are as follows. For peer influences, participants responded to the statement, “My classmates think that I should participate in online teaching evaluation.”; for school restrictive influences, participants responded to the statement, “Since I know if I don’t participate in online teaching evaluation, the school will restrict me on checking my grades, I will participate.”; for school informational influences, participants responded to the statement, “I will participate in online evaluation of teaching, because the school sends e-mails to inform me and request me to participate.”; for teacher and departmental influences, respondents needed to respond to the statement, “My teacher thinks that I should participate in online teaching evaluation.” Summating responses to the twelve scales gave a direct measure of subjective norms as a whole, with a Cronbach’s alpha of .85.

According to Table 1, almost all of the measures for the components of the subjective norms showed acceptable to very satisfying internal consistencies. These results further strengthen confidence that the questions were relatively well understood by respondents. Thus, ambiguity of meaning across participants was kept to a minimum. However, the measure of informative influences from school is an exception, with a Cronbach’s alpha reliability coefficient of only .62 which is higher than 0.6 the sufficient minimum Cronbach’s alpha for the research (Nunnally, 1967).

Perceived behavioral control

The study used six questions to measure the perceived behavioral control (PBC) that respondents felt over their ability to decide whether to use the online evaluation of teaching. Participants responded to the following sample items: “I think participating in the online evaluation of teaching is an easy thing.”; “I have enough time to participate in the online evaluation of teaching.” and “I have enough resources including computer and internet facilities to participate in online evaluation of teaching.” Factor analysis of the six items indicated a single factor, with a Cronbach’s alpha reliability coefficient of 0.87 and factor loading for each question between 0.61 and 0.85. Mean responses to the six scales provided a direct measure of PBC to use the online evaluation of teaching in the future.

RESULTS

After the variables were constructed, correlation tests were performed. The mean values, standard deviations, and Pearson’s zero-order correlations for the study variables are summarized in Table 2

Table 2. Means, standard deviations, and correlations for the study

Variable	Mean	SD	Correlations								
			1	2	3	4	5	6	7	8	
1. Behavioral intention	2.93	0.51	1								
2. Perceived behavioral control	3.20	0.49	0.48**	1							
3. Attitude	3.07	0.52	0.60**	0.46**	1						
4. Peer influence	2.64	0.68	0.45**	0.19**	0.32**	1					
5. School informative influence	2.86	0.49	0.53**	0.34**	0.42**	0.46**	1				
6. Restrictive influence	2.99	0.65	0.09**	0.15**	0.07**	0.19**	0.29**	1			
7. Teacher and departmental influence	2.66	0.65	0.32**	0.13**	0.20**	0.56**	0.21**	0.21**	1		
8. Subjective norms	2.79	0.44	0.47**	0.27**	0.34**	0.79**	0.69**	0.61**	0.76**	1	

Notes * p <0.05 ; **p<0.01 ; ***p<0.001.

The correlation matrix shows that all of the variables were significantly correlated with behavioral intentions. All the interrelationships between the variables were significant and substantial, indicating the need for performing a regression analysis of intentions on several predictors so that the unique contribution of each predictor to account for a percentage of the variance of behavioral intentions could be assessed.

To test the hypotheses, two multiple regression analyses were performed: 1). Regress behavioral intentions on common predictors discussed in TPB. 2). Regress behavioral intentions on attitude, perceived behavior control, and the four decomposed subjective norms identified in the previous section. Table 3 and 4 show the results of the two regressions of behavioral intentions.

The results obtained from the first regression analysis are presented in Table 3. Based upon the results, support was found for hypotheses I, II and IV. It can be seen that attitudes, subjective norms, and perceived behavior control made significant and independent contributions to the prediction of college students' intentions to use online teaching evaluations. For hypothesis 1, a higher level of attitude of the students towards using online evaluation of teaching is predicted to be positively associated with the behavioral intentions ($\beta=0.41$, $p<.0001$). For hypothesis II, a higher level of subjective norms perceived by the students towards using online evaluation of teaching is predicted to be positively associated with the behavioral intentions ($\beta=0.28$, $p<.0001$). For hypothesis 4, a higher level of perceived behavior control of the students towards using online evaluation of teaching also positively affects the behavioral intentions ($\beta=0.22$, $p<.0001$). The three TPB components in this proposed model accounted for 48 % (adjusted R^2) of the variance in the intention of students to use online teaching evaluation.

Table 3. Regression of attitude, subjective norms, and perceived behavior control on intention to adopt online teaching evaluation

Dependent variable: Behavioral intention			
Independent Variables	Beta (β)	t	p-value
Constant		0.67	0.51
Attitude	0.41	16.78	0.000***
Perceived behavioral control	0.22	9.33	0.000***
Subjective norms	0.28	12.44	0.000***
$R^2=0.48$ adj $R^2=0.48$ $F=372.87$ $P=0.000$			

Notes: * p <0.05 ; **p<0.01 ; ***p<0.001

To test out hypothesis III, the second regression analysis was done, with the results shown in Table 4. For hypothesis III, all four kinds of social influences identified under subjective norms were significantly associated with the behavioral intentions. Even though they were all significant predictors of the intention, the effect of school restrictive influence and teacher and departmental influence were diminutive. The values of β for these two variables were in fact very small. Among the four identified subjective norms, school informative influence was the most important determinant, and peer influence was the second. All three variables of peer influence, school informative influence, and teacher and departmental influence have positive β s, which means that a higher level of peer influence, school informative influence, or teacher and departmental influence perceived by students also positively affects behavioral intentions. However, there was a negative standardized beta found for school restrictive influence ($\beta = -0.08$, $P < 0.001$). This result shows that the more students believe there are restrictions as a consequence of not participating in online evaluations, the less likely they will have intention to do it. These six variables in the second proposed model accounted for 52 % (adjusted R^2) of the variance in the intention for students to use online teaching evaluations.

Table 4. Regression of decomposed subjective norms, attitude, and perceived behavioral control on intention to adopt online teaching evaluation

Dependent variable: Behavioral intention			
Independent Variables	Beta (β)	t	p-value
Constant		1.94	0.053
Attitude	0.34	14.24	0.000***
Peer influence	0.17	6.58	0.000***
School informative influence	0.24	9.66	0.000***
School restrictive influence	-0.08	-3.66	0.000***
Teacher and departmental influence	0.06	2.53	0.000***
Perceived behavior control	0.21	9.36	0.003**
$R^2=0.523$ adj $R^2=0.52$ $F=220.97$ $P=0.000***$			

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

DISCUSSION AND IMPLICATIONS

As stated previously, the purpose of this study was to explore possible determinants of students' intention to adopt or participate in an online evaluation of teaching through a revised theory of planned behavior approach. The findings provide support for using the theory to predict the intention of students' usage, and suggest that it may be a useful framework to guide strategies or policies aimed at promoting intentions. In the study, attitude, subjective norms, and perceived behavioral control were three positive predictors significantly contributing to intentions to perform the behavior in question, which supports previous research (Ajzen & Fishbein, 1980; Taylor & Todd, 1995). The total variance explained in intentions to adopt online teaching evaluation for both models (adj $R^2=0.48$ and adj $R^2=0.52$) was compatible with that in prior research under information and technology product and service contexts (Bhattacharjee, 2000; Bosnjak et al., 2005; Taylor & Todd, 1995), but the relative contribution of the three key determinants was exceedingly different.

Attitude is the most important determinant of intention in both models, as is evident by its values of the standardized regression weights (β) shown in Table 3 and 4. In both models it has the highest value of β , which indicates that among all the constructs we considered in the models, it is the most effective and strongest predictor of all. This is consistent with many previous studies that have stated similar findings which generally support the important motivational influence of attitudes in the prediction of intentions in diverse behavioral domains (Ajzen, 1991; Godin & Kok, 1996; Sheeran & Taylor, 1999; To et al., 2008). This suggests that believing in the importance and value of using online evaluations of teaching, and having overall positive opinions of it will be incentives for students to participate. Schools should therefore emphasize the benefits of the evaluations by stressing the goals of the process, and how meeting the objectives can lead to better personal learning outcomes and overall educational quality.

Contrary to previous studies, the second most important predictor of student's intention is the subjective norm in both models. Several researchers, in their meta-analytical studies on applications of the TPB to different behaviors, have found that subjective norms usually contribute less than attitude and perceived behavioral control in the amount of explained variance in intentions (Pavlou & Fygenon, 2006; Godin & Kok, 1996) and

sometimes do not contribute significantly to the prediction of intentions at all (Bhattacharjee, 2000; Venkatesh et al., 2003; Fang et al., 2009). Bhattacharjee (2000) explained that those results were because subjective norms have been seen as including only the normative influence, and the lack of informational influence in the conceptualization can result in the non-significant effect of subjective norms on intentions. In our first model, the scale for subjective norms included the component of informational influence, so the result showed that subjective norms could also play a relatively important role in predicting behavioral intentions. Another reason for the result was due to the fact that the present study was undertaken in a non-Western (collectivistic) culture where one would expect others' opinions to have a greater impact on the individual because of face saving, group conformity, or a higher power distance. All these would invoke a more influential role for significant others (Schepers & Wetzels, 2007; Steenkamp et al., 1999).

School informational influences stand out among all four categories of subjective norms in the second model. Similar to the external constraint or so-called informational influences in other studies (Bhattacharjee, 2000; Karahanna et al., 1999), the school informational influences in the present study refer to how the students perceive the social norms induced by the school, such as if the school has sent out email reminders, put posters around the campus, or students perceived that the school wishes them to do the evaluations. From Table 4, it shows the second highest beta weight can be found for school informational influences, which indicates its significant effect on behavioral intentions. The results mirror the findings of Norris and Conn's (2005) study. They suggested that schools can increase the participation rate easily by explicitly announcing the availability and location of the evaluation within a few weeks of the course ending. Thus, students tend to conform to school informational influences.

Another important significant predictor found under subjective norms was peer influences. The findings indicate that when a student perceives more of his/her peers' positive opinions about using the system, he/she would be motivated to comply with them. Schepers and Wetzels (2007) especially discussed how younger people and students are more easily influenced by peer opinions, so subjective norms can have stronger effects on behavioral intentions among this group. Consistent results were also found by Tucker et al. (2008) that the new system, Course Evaluation on Web, had very high student response rates, since student representatives were always part of the development and promotion of the system to the student body. One implication of this finding is that schools looking to facilitate student participation in evaluation may find it effective to strengthen perceived group norms regarding participation, which might be achieved by extensively publicizing the implementation effort, and ensuring that it is thoroughly discussed among the students, which can be done by the student government association or some other campus organizations.

The negative significant effect of school restrictive influence on students' intention to use the online evaluation was an important and interesting finding. This result shows that the more students perceive that they will be punished if they do not participate in the online evaluations, the less willing they are to participate, implying that schools should not use restrictions to force students to participate, otherwise there will be unintended outcomes. Leung and Kember (2005) have suggested that the method of forcing students to complete surveys may lead to unreliable responses and limited information from open-ended questions.

The least effective predictor among the four types of subjective norm is the influence of teachers and departments, which had very weak significant effects on intentions. This was also a surprising outcome. Normally, in a Confucius society, teachers are regarded as unquestioned authorities, and have traditionally been held in high esteem. Their power and control have been regarded as almost absolute (Cortazzi & Jin, 1997), so teachers' opinions were expected to play a substantial role in students' intentions. However, in the current context, teachers might be in an awkward position to discuss the online evaluation of teaching; as a result, they might not mention their ideas to the students. The minor role of teacher and departmental influences in predicting students' intention can thus be understood.

Finally, the relatively smaller positive significant effect of perceived behavioral control on intention suggests that perceived behavioral control is an input to, but not the most vital motivational force behind adopting online evaluation of teaching. The result is in line with the findings of previous studies (Bhattacharjee, 2000; Taylor & Todd, 1995). Here, perceived behavioral control describes students' perceptions of the availability of the skills, knowledge, resources, and experiences necessary for using or participating in the online teaching evaluation. The results show that perceived behavioral control had a weaker effect on intention due to the fact that most students were experienced users of computers and familiar with the internet, so had easy access to technological resources and infrastructures. To them, using the online evaluation system was fairly simple and easy, resulting in their common higher level of self-efficacy, and thus perceived behavioral control did not have too significant an effect on intentions of adoption.

From the findings and discussions, there are several suggestions that we can conclude with. First, attitude is the most important factor affecting students' intention to participate, so it is suggested that teachers should explain the values of the course evaluation process and student feedback to the students (Norris & Conn, 2005); nevertheless, from our sample we found that the social influences from the teachers and department are not sufficient to accomplish this task, and what really needs to be done is for the schools or the students themselves to promote the benefits and functions of online evaluations. Schools can use really simple and easy strategies to increase the participation rates, such as using many low cost ways to reach the students, reminding them about the time and place to do the evaluations, as well as the value it will have for them personally. In addition, regarding the restrictions currently used as punishment for not participating, it is proved that is not an effective strategy. They are not only ineffective, but also disparaging to the intentions to participate. Lastly, although perceived behavioral control is not as important a predictor as attitude or subjective norms, it also has a significant role. The authors examined the measures composed for perceived behavioral control, and found the average scores for the items regarding whether the students have enough time or can be sure they will not be distracted by others while completing the evaluations were lower, and the standard deviations were higher. These two areas are suspected as being what causes some students to feel they are not in control of the process. Thus, new strategies are suggested to focus on those points to increase students' intention of participation.

CONCLUSION AND LIMITATIONS

Even though research has found that student ratings can be a reliable and valid indicator of effective teaching, most evaluations are performed on a totally voluntary basis. Students can decide whether they want to participate in the evaluation or not; as a result, usually schools struggle with the vital problem of low response rates of online evaluations for teaching. However, research has proved that non-response is particularly important, due to the fact that it can lead to potential bias in the research results (Bosnjak et al., 2005). In the present study, we were able to utilize TPB to test out three key factors, and identify several new determinants (by decomposing subjective norms) of students' intentions to participate in the online evaluation for teaching. According to the specific determinants identified as significant predictors of intention, our study was able to offer suggestions for strategies designed to influence students' intentions, and thus behavior, in the hope that the participation rate will be increased and the goal of teaching evaluation will be achieved.

Despite the significance of the study, several limitations are addressed for future studies. The first limitation is imposed by the nature of the self-reported questionnaires. Honest responses are assumed to be provided by participants, but the accuracy of self reported measures is often considered questionable. However, self-reported survey data is the method most commonly used to obtain information for similar research done in the past. Secondly, with its emphasis on adoption intentions, the study did not include the measure for actual behavior. Although prior research has indicated the significant positive effect of intentions on actual behavior (Ajzen, 1991; Bosnjak et al., 2005), it is necessary for future studies to consider this variable in order to test out the complete theory with some longitudinal designs. Finally, the last concern is the inclusion of data only from university students in Taiwan, resulting in the inability to generalize the research findings to a wider population. These data only provide local-based statistics with a convenience sample, but they suggest important ideas to administrators, educators, and future researchers to better understand students' intention of participating in online evaluations for teaching and how to implement effective teaching evaluations for better educational quality.

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REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50 (2), 179–211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32, 665–683.
- Ajzen, I. & Fishbein M. (1980). *Understanding Attitude and Predicting Social Behavior*. New Jersey: Prentice-Hall.
- Bhattacharjee, A. (2000). Acceptance of Internet applications services: the case of electronic Brokerages, *IEEE Transactions on systems, Man, and Cybernetics–Part A: Systems and Humans*, 30(4), 411–420.
- Bosnjak, M., Tuten, T.L., & Wittmann, W.W. (2005). Unit non response in web access panel surveys: An extended planned-behavior approach. *Psychology & Marketing*, 22(6), 489–505.
- Cortazzi, M. & Jin, L. (1997). Communication for learning across cultures. In D. MacNamara & R. Harris (Eds.), *Overseas Students in Higher Education* (pp.79-90). London: Routledge.

- Fang, J., Shao, P. & Lan, G. (2009). Effects of innovativeness and trust on web survey participation. *Computers in Human Behavior*, 25,144-152.
- Godin, G. & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion*, 11, 87–98.
- Green, C.W. (1998). Normative influence on the acceptance of information technology-measurement and effects. *Small Group Research*, 29(1), 85–123.
- Hsu, M.-H., Yen, C.-H., Chiu, C.-M., & Chang, C.-M. (2006). A longitudinal investigation of continued online shopping behavior: An extension of the theory of planned behavior. *International Journal of Human-Computer Studies*, 64, 889-894.
- Karahanna, E., Straub, D.W., & Chervany, N. L. (1999). Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly*, 23 (2), 183-213.
- Kember, D. & Wong, A. (2000). Implications for evaluation from a study of students' perceptions of good and poor teaching. *Higher Education*, 40, 69-97.
- Layne, B.H., DeCristofoto, J. R., & McGinty, D. (1999). Electronic versus traditional student ratings of instruction. *Research in Higher Education*, 40(2), 221-232.
- Lefever, S., Dal, M., & Matthiasdottir, A. (2007). Online data collection in academic research: advantages and limitations. *British Journal of Educational Technology*, 38 (4), 574-582.
- Leung, D.Y.P. & Kember, D. (2005). Comparability of data gathered from evaluation questionnaires on paper and through the internet. *Research in Higher Education*, 46(5), 571-591.
- Mcbean, E. A. & Lennox, W. C. (1985) Effect of survey size on student ratings of teaching. *Higher Education*, 14, 117-125.
- Moss, J. & Hendry, G. (2002). Use of electronic surveys in course evaluation. *British Journal of Educational Technology*, 33(5), 583-592.
- Norris, J. & Conn, C. (2005). Investigating strategies for increasing student response rates to online delivered course evaluations. *Quarterly Review of Distance Education*, 6(1), 13-32.
- Nunnally, J. (1967). *Psychometric Theory*. New York : McGraw-Hill
- Pavlou P.A. & Fygenon, M. (2006). Understanding and predicting electronic commerce adoption: an extension of the theory of planned behavior. *MIS Quarterly*, 30(1), 115 – 143.
- Steenkamp, J.E.M., Hofstede, F., & Wedel, M. (1999). A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness. *Journal of Marketing*, 63, 55–69.
- Schepers, J.J.L. & Wetzels, M.G.M. (2007). A meta-analysis of the technology acceptance model: investigating subjective norm and moderation effects. *Information and Management*, 44(1), 90-103.
- Sheeran, P. & Taylor, S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *Journal of Applied Psychology*, 29, 1624–1675.
- Taylor, S. & Todd, P.A. (1995). Understanding information technology usage: a test of competing models. *Information System Research*, 6(2), 144–176.
- To, P-L., Liao, C., Chiang, J. C., Shih, M.-L., & Chang, Y. (2008). An empirical investigation of the factors affecting the adoption of Instant Messaging in organizations. *Computer Standards & Interfaces*, 30, 148-156.
- Tucker, B. Hones, S., & Straker, P. (2008). Online student evaluation improves Course Experience Questionnaire results in a physiotherapy program. *Higher Education Research & Development*, 27(3), 281-296
- Venkatesh, V., Morris, M. G., & Davis, G. B. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27(3), 425–478.
- Wu, I.-L., & Chen, J.-L. (2005). An extension of Trust and TAM model with TPB in the initial adoption of on-line tax: an empirical study. *International Journal of Human-Computer Studies*, 62(6), 784–808.
- Yun, G. W. & Trumbo, G.W. (2000). Comparative response to a survey executed by post, email, and web form. *Journal of Computer Mediated Communication*, 6(1), 1-25.