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Students Beliefs and Attitudes Toward Information Technology

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Abstract

A study was performed to identify the salient beliefs and attitudes that undergraduate business students hold toward information technology. A comparison between management information systems majors and other business undergraduates was done to determine if the beliefs and attitudes students hold towards information technology is significantly different.

Keywords: student beliefs, student attitudes, information technology, theory of reasoned action

1. INTRODUCTION

The use of computers in university classrooms is now commonplace and becoming ubiquitous. The long-term effects that the use of communications and information technology will have on students' learning and course instruction is still largely unknown. To better understand the motivations and expectations of student behavior related to information technology use, a study was conducted to identify the beliefs and attitudes that undergraduate business students hold toward information technology.

2. LITERATURE REVIEW

"[A]wareness of user attitudes toward computers is a critical factor in enhancing the acceptance of computers as well as understanding current user behavior and shaping future behavior, such as computer usage." (Al-Jabri and Al-Khaldi 1997)

Prior research in end-user computing found that individuals with more computer experience had higher levels of computer skill (Harrison and Rainer 1992) and computer experience has been shown to have a positive effect on computer attitudes (Loyd, Loyd et al. 1987; Colley, Gale et al. 1994; Conger, Loch et al. 1995; McIlroy, Bunting et al. 2001) and a negative effect on computer anxiety (McInerney, McInerney et al. 1994; Goss 1996). However, other research has had mixed results (Todman and Monaghan 1994; Ayersman 1996; Bradley and Russell 1997; Mahar, Henderson et al. 1997; Todman 2000; McIlroy, Bunting et al. 2001).

Some have found that males have more positive attitudes toward computers and lower levels of anxiety versus females (Okebukola 1993; Colley, Gale et al. 1994) Other studies found that females had more positive attitudes and lower levels of anxiety compared to males (Loyd, Loyd et al. 1987; Siann, Macleod et al. 1990). These results have led some to conclude that the gender gap in attitudes toward computers and their levels of computer anxiety has now become negligible due to the ubiquitous nature of technology in daily life and the perception (by females) of the computer as a communications device (King, Bond et al. 2002).

3. CONCEPTUAL DEVELOPMENT

Fishbein and Ajzen's Theory of Reasoned Action (Fishbein 1963; Fishbein 1967; Fishbein and Ajzen 1974; Fishbein and Ajzen 1975; Fishbein and Ajzen 1975; Ajzen and Fishbein 1980; Ajzen 1985; Ajzen and Madden 1986) has had broad application in explaining behavior and has been used in prior IS research (Davis 1986; Davis 1986; Davis 1989; Davis, Bagozzi et al. 1989; Davis 1989; Davis 1989; Davis 1993). The theory proposes that an individual's behavior is ultimately determined by the beliefs of that individual. This theory was used to guide an empirical study that was conducted to identify the beliefs and attitudes that undergraduate business students possess towards information technology. It is an assumption of this research that these beliefs and attitudes would influence a student's behaviors and ultimately their performance in classes that require computer-related assignments and their behavior in choosing whether to take additional courses in management information systems (MIS) or computer science. Presently, a short overview of the Theory of Reasoned Action is given as the conceptual foundation for the study.

The Theory of Reasoned Action is built using five constructs: beliefs; attitudes; intentions; subjective norms; and behaviors. The theory uses the following definitions for these constructs (Ajzen and Fishbein 1980). Beliefs represent the information an individual has about an object. A belief links an attribute to an object. Attitude refers to a person's degree of evaluative affect toward a target behavior. Intention is the subjective probability that an individual will perform a specified behavior, it is considered a type of belief where the target is always the individual and the attribute is always some behavior. Subjective norm is a person's perception of the social pressures applied to perform or not perform the behavior in question by important referents. Behaviors are specific observable acts of the subject. Behaviors may be defined with respect to the action performed, a specific target, the context, and the timeframe of interest.

Beliefs form the building blocks in the framework. Based on observations, reflection, experiences, etc., an individual develops a belief system. This belief system at any given time determines the individual's attitudes, subjective norms, intentions, and behaviors. This approach assumes a rational individual whose beliefs, attitudes, subjective norms, and intentions are internally consistent with one another and externally consistent with reality.

Using the set of beliefs toward the outcomes of performing a specific behavior, an individual then forms a favorable or unfavorable attitude about performing that behavior (for example, attending a meeting). Based on this attitude and the subjective norm for performing the behavior that the individual perceives, a person forms an intention to perform the behavior. This intention corresponds directly to a related specific behavior. However, individuals may not perform according to their intentions due to a lack of volitional control to carry out an intended behavior, adding even more complexity to understanding the behavior patterns.

Although not directly salient to a student's intention to use a computer or become an MIS major, it is likely that an individual's beliefs and attitude toward information technology would have an influence on these types of behaviors. Therefore, a study was conducted to identify undergraduate business students' beliefs and attitudes toward information technology. Differences in these beliefs and attitudes may explain why some students choose to take more courses in information systems while others avoid them. To investigate these differences the beliefs and attitudes of MIS majors and all other business majors were identified and compared.

4. RESEARCH METHOD

The research method used a nominal group technique (NGT) (Delbecq, Van De Ven et al. 1982; Adam, Hershauer et al. 1986; Sutton 1993); (Van De Ven and Delbecq 1974) to generate the beliefs of the students. This method has been used successfully in several domains including systems development (Adam, Hershauer et al. 1986;

Sutton 1993; Havelka, Sutton et al. 1998). Each participant was asked to silently and individually generate a list to answer the following question:

> *"What characteristics or features does information technology have that are important to you?"*

The items generated are then listed publicly in a round-robin fashion on a flip chart for all participants to view and discuss for clarification. After all the potential items are listed, each participant is asked to individually evaluate the items. First, by selecting the five most important items and then ranking these five items in order of importance. An overall ranking of the most important items for each group was obtained by averaging the individual rankings of each group member.

The NGT was applied to two distinct groups of students. One was a class of business undergraduates composed of all majors. The second was a class of MIS majors. Both classes were junior level courses. In addition to the ranked list of important characteristics or features of information technology, the students were asked to complete a computer attitude survey.

5. RESULTS

Table 1 presents the results of the NGT for both groups and the rankings of the characteristics and features identified as most important for each of these groups. The list of items generated by the groups can be considered a representation of the "salient" beliefs that these individuals hold towards information technology. The differences in the importance of these items to the different groups, i.e. the MIS versus the general business students represent differences in their beliefs towards information technology. To further analyze these beliefs and their potential impact on computer attitudes the results of the MIS group are discussed followed by the results of the general business group and then a discussion of the relationship between these beliefs and computer attitudes is given.

Table 1 – Nominal Group Results and Rankings

Characterisitic or feature (Information technology …)	ALL	BUS	MIS
improves work efficiency.	1	2	1
affects the way people behave.	2	5	3
improves communication.	3	1	16
makes life more convenient.	4	9	2
can be used to save time.	5	3	20
improves our ability to learn.	6	4	21
helps to advance science.	7	6	22
affects the quality of life.	8	7	23
allows jobs to have more meaning.	9	11	4
saves lives, i.e. medical uses.	10	8	18
makes us dependent on computers.	11	14	7
makes us more successful.	12	15	8
helps us make better decisions.	13	16	9
allows us to have access to more information.	14	13	12
can be used to invade our privacy.	15	17	10
can be used to be more organized.	16	18	11
makes work more effective.	17	28	5
affects the environment.	18	10	24
provides more services.	19	29	6
improved products	20	12	25
has a financial impact.	21	21	13
use is a sign of development.	22	22	15
ties us to machines.	23	19	26
helps us live longer.	24	20	27
causes fear and anxiety in people.	25	27	14
can be used as an instructional tool.	26	23	19
is addictive.	27	24	28
causes us to constantly learn new things.	28	25	29
improves our leisure time.	29	26	30
gives us choices to know other cultures.	30	32	17
is constantly changing.	31	30	31
may someday think for itself.	32	31	32
inhibits human critical thinking.	33	33	33
makes it easier to obtain learning materials, e.g. books.	34	34	34

MIS Student Beliefs

To identify the "salient" beliefs that the MIS students hold as a group, the overall rankings of the important features or characteristics of IT were calculated. Table 2 presents

Table 2 – MIS Top Ten

1	IT improves work efficiency.
2	IT makes life more convenient.
3	IT affects the way people behave.
4	IT allows jobs to have more meaning.
5	IT makes work more effective.
6	IT provides more services.
7	IT makes us dependent on computers.
8	IT makes us more successful.
9	IT helps us make better decisions.
10	IT can be used to invade our privacy.

Table 3 – Business Top Ten

1	IT improves communication.
2	IT improves work efficiency.
3	IT can be used to save time.
4	IT improves our ability to learn.
5	IT affects the way people behave.
6	IT helps to advance science.
7	IT affects the quality of life.
8	IT saves lives, i.e. medical uses.
9	IT makes life more convenient.
10	IT affects the environment.

Table 4 – Test for Different Attitudes

Class	N	Mean	StDev	SE Mean
Business	35	5.855	0.789	0.13
MIS	13	6.210	0.459	0.13
Difference = mu(0) – mu (1)				
Estimate of Difference: -0.355				
T-Test of difference = 0 (vs not =)				
T-value: -1.93				
P-value: 0.062				
DF = 37				

the top ten of these items. As can be seen from Table 2, nearly all of the items have positive connotations. Based on these beliefs it seems reasonable to expect that MIS students would have generally positive attitudes toward information technology.

Business Student Beliefs

Analogous to the MIS students, the overall rankings for the set of items that were identified by the general business students were calculated. Again, these items can be considered a proxy for the business students' salient beliefs toward information technology. The top ten items are presented in Table 3. As can be seen from Table 3, most of the items in this set also have positive connotations. This suggests that the general business students will also have positive attitudes toward information technology. However, only three of the items are present on both the MIS and the general business top ten (interestingly, the three common items are the top three items on the MIS ranking). These differences in rankings may lead to differences between MIS students' and general business students' attitudes toward technology.

Differences in Attitudes

To explore whether the differences in beliefs of MIS and general business students may lead to differences in their computer attitudes, a computer attitude survey was administered to the two groups of students. A two-sample t-test was then performed to test for significant differences between the two groups. The results are given in Table 4. As can be seen from the table, the null hypothesis of no differences between the MIS students and the general business students can be rejected at the 0.062 level. This indicates some evidence that differences in attitudes toward information technology exists, but it is not definitive. And given the mean rating of 5.855 and 6.210 for the business students and the MIS students, respectively, it is clear that both groups have positive attitudes towards information technology in general.

6. CONCLUSION

Although the results of the empirical study do not definitively indicate that differences in beliefs toward information technology lead to different attitudes toward information technology, there is some evidence that differences in beliefs toward information technology do exist between MIS majors and other business students. Of the items ranked in the top ten for MIS students, only three of these appeared in the top ten of the general business students. These items were: 1) IT improves work efficiency, 2) IT makes life more convenient, and 3) IT affects the way people behave.

The results of this study suggest that MIS students and students in other business disciplines believe that information technology, in general, is a "good thing" that has a positive impact on work and life. Although both groups held predominantly positive beliefs toward information technology, the specific beliefs that they held were different and those that were common had different levels of importance to the groups. It also appears that the MIS and other business students had positive attitudes toward information technology, although there was a significant difference between the two groups.

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