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The Impact of the Big Five Personality Traits on the Acceptance of Social Networking Website

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ABSTRACT

Social networking websites are a relatively new and wildly popular form of technology. While millions of users have adopted this technology, it is not currently known whether these users have any commonalities or whether these users represent a certain personality type. This study investigates the impact of the Big Five personality variables on the acceptance of social networking technology. Because the Technology Acceptance Model and the Unified Theory of the Acceptance and Use of Technology assume the technology in question is used for productivity gains, a new model framework will be used, specifically created for the acceptance of hedonic information systems.

Keywords

Big Five personality traits, technology acceptance, social networking websites, Facebook

INTRODUCTION

Many information systems are designed to increase user productivity, but hedonic systems and social networking websites are different. "The value of a hedonic system is a function of the degree to which the user experiences fun when using the system" (van der Heijden, 2004). Social network websites show "explicit representations of the relationships between individuals and groups in a community," and are more commonly used for entertainment and fun than for productivity gains (Finin, Ding, Zhou and Joshi, 2005). To demonstrate the popularity of these websites, the authors visited the 'About Us' section of some of the more popular sites and determined that MySpace is the largest, with over 218 million registered users. Other social networking websites include Hi5 (70 million users), Facebook (60 million users), Friendster (54 million users), Orkut (37 million users), and LinkedIn (17 million users). Five of these sites, in fact, are among the most commonly visited websites on the Internet (Alexa.com, 2008).

Studies using the Technology Acceptance Model (TAM) and the more recent Unified Theory of the Acceptance and Use of Technology (UTAUT) posit that behavioral intentions to use information systems are at least in part based upon the perceived ease of use (effort expectancy) and perceived usefulness (performance expectancy) of said systems (Davis, 1989; Venkatesh, Morris, Davis, Davis, 2003). But these variables measure perceived workplace gains by using a specific form of technology. Using the traditional measure of perceived usefulness of a system, however, websites like MySpace and Facebook would be considered counterproductive. These systems do have value and could be considered useful when they are used for hedonic purposes. Since social networking websites can be considered a form of hedonic information system, what is missing from models like TAM and UTAUT is a measure of worth of these hedonic pursuits. Based upon past theory, this study attempts to test a new model that will better explain the use of social networking websites.

In addition to this new conceptualization of perceived usefulness, this study will examine the impact of the Big Five personality traits on technology acceptance. Very few information systems studies have examined this impact, and with so many people using social networking technology, it is important for researchers to determine if a certain personality type is more likely than others to use this form of technology. While this study is limited in context to social networking websites and hedonic information systems, it will be important for future research to examine whether certain personality types are more likely than others to accept general forms of technology.

Using quantitative data collected from college students, the target population of most of the social networking sites, an attempt is made to link users to technology in a more meaningful way than has been done in the past. In addition to the new conceptualization of perceived usefulness, and the addition of more appropriate variables to explain the use of hedonic information systems, the impact of personality is also studied as an important determinant of technology acceptance.

LITERATURE REVIEW

The idea that individual differences, including personality traits, have an impact on the use and successfulness of information systems is not new (Zmud, 1979; Harrison & Rainer, 1992; Agarwal & Prasad, 1999). Zmud (1979) suggested that personality variables act as antecedents to attitudes, cognitive behaviors, and a priori involvement with information technology. Harrison and Rainer (1992) found that the personality variables of math anxiety, fear of computers or computer anxiety, a pessimistic attitude towards computers and computer intimidation were all negatively correlated to computer skill. Agarwal and Prasad (1999) mentioned, but did not specifically study personality as it relates to an individual difference in technology acceptance. Instead, these authors focused on the impact of prior similar technology experience, workforce tenure, education, participation in training, and the role of the employee in the organization (technology provider or user). These three studies, among others, lay the groundwork for the importance of personality in the acceptance and use of technology.

While there are many different types of personality assessments, two of the more accepted are the Myers-Briggs Type Indicator (MBTI) and the Big Five personality traits measured by the Revised Neuroticism-Extroversion-Openness Personality Inventory (NEO PI-R). The MBTI divides people into sixteen different personality types based on four dichotomies: extroversion vs. introversion, sensing vs. intuition, thinking vs. feeling, and judging vs. perceiving. Two examples of MBTI use in the MIS literature include an article on how personality type influences the way in which information is preferred to be received, and an article on how personality type influences a person's buying behavior at virtual stores (Barkhi, 2002; Barkhi & Wallace, 2007). The NEO PI-R measures five distinct personality traits, which include: extroversion, openness to experience, conscientiousness, neuroticism, and agreeableness.

In two separate studies of teacher acceptance of information technology, it was found that there were significant differences in willingness to accept technology between the sensing and intuitive MBTI types, with intuitive teachers being more willing to try new systems. (Chambers, Smith, Hardy & Sienty, 2001; Smith & Munday, 1995).

A few studies have used aspects of the Big Five personality traits in studying the acceptance of the Internet and personal computers in the workplace, examining conscientiousness, neuroticism, and extroversion. Conscientiousness was negatively related to the personal use of computers in the workplace, or using computers for personal rather than job-related reasons (Everton, Mastrangelo & Jolton, 2005). Hamburger and Ben-Artzi (2000) found that in women, extroversion was negatively related to the use of social websites, while neuroticism was positively related to these same sites, while in men extroversion and neuroticism were not significant predictors of the use of social sites.

When considering the entire Big Five, Marcus, Machilek, and Schutz (2006) found that owners of personal websites were less extroverted and more open to experience than people who did not own personal websites. Korukonda (2007) found that openness to experience and agreeableness were negatively related to computer anxiety, while neuroticism was positively related to computer anxiety. Finally, Korukonda (2005) found that neuroticism was positively correlated to technophobia, while extroversion was negatively correlated to technophobia.

Two studies that use both the Big Five measurement of personality and a technology acceptance framework similar to this current paper are those by Sharma and Citurs (2004) and Devaraj, Easley, and Crant (2008). Sharma and Citurs use the Big Five personality traits as moderators between the UTAUT model constructs. For example, it is theorized that extroversion and conscientiousness moderate the relationship between performance expectancy, or beliefs about productivity gains that come from using the technology, and behavioral intentions to use said technology. The one drawback of this study was that the theoretical model was not empirically tested. The study by Devaraj et al. (2008) is the most similar to this current study and uses the Big Five personality variables as antecedents to the TAM constructs of perceived usefulness and perceived ease of use. While none of the Big Five variables are theorized to be antecedents to perceived ease of use, openness to experience, neuroticism, and agreeableness are theorized to be positively related to perceived usefulness. In addition, conscientiousness is theorized to moderate the relationship between perceived usefulness and behavioral intentions to use technology. Support

was found for conscientiousness as a moderator, and for a direct link between agreeableness and perceived usefulness. Additionally, the authors found that neuroticism was negatively associated with perceived usefulness. The hypothesized link between openness to experience and perceived usefulness was found to be non-significant.

RESEARCH MODEL AND HYPOTHESES

Unlike the theoretical study by Sharma and Citurs, and the empirical study using TAM variables by Devearj et al. (2008) this current study attempts to examine the impact of the Big Five personality variables using an acceptance model better suited to explain the use of social networking websites. The model proposed by Rosen and Sherman (2006) will be modified slightly and augmented with the use of the Big Five personality traits. This past model included the variables of flow and network size as antecedents to perceived enjoyment, which is a more appropriate measure of usefulness when the system in question is hedonic in nature.

The current research model will replace perceived enjoyment with a reconceptualized perceived usefulness construct, specifically designed to measure the usefulness of social networking websites. The rewording of the perceived usefulness items include language designed to measure whether an individual’s social effectiveness has improved through the use of the technology.

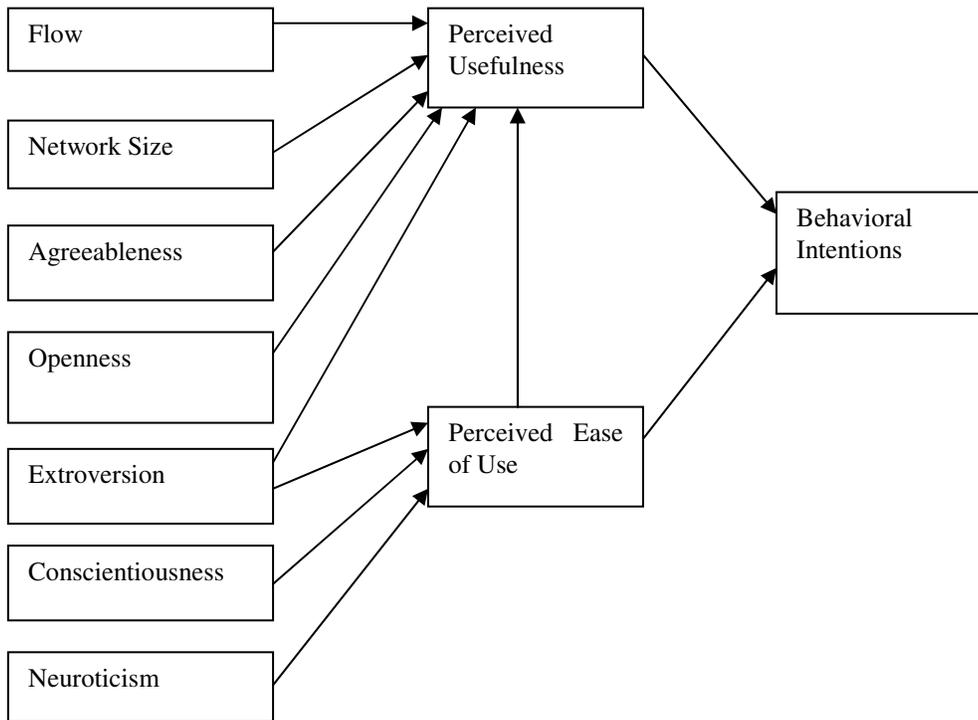


Figure 1. Research Model

Flow

One aspect of hedonic information systems and social networking websites that is not present in typical productivity software is the ability to get wrapped up in the technology and lose track of time. Csikzentmihalyi (1990) described flow as “the holistic experience that people feel when they act with total involvement.” While not specifically designed to be an MIS construct, flow can easily explain the feeling of involvement that video game players and others feel when using an immersive form of technology. Agarwal and Karahanna (2000) introduced their version of flow, called cognitive absorption. This construct is comprised of variables such as heightened enjoyment, curiosity, control, focused immersion and temporal distraction. Whether in a multidimensional or a unidimensional conceptualization, flow measures how involved a participant

is in some activity. For simplicity sake, the authors have decided to use the unidimensional construct of flow introduced by Hsu and Lu (2004) in a study of online game players.

H1: Flow is positively associated with the perceived usefulness of social networking technology.

Perceived Network Size

With social networking technology, the value of the network increases with the number of friends that you have. The idea of critical mass goes back to the innovativeness literature and Everett Rogers. Rogers (1995) explains that “the use of technology suddenly increases when a certain number of users have adopted the technology,” and that concept is known as critical mass. Others in the information systems literature have found that the value of hedonic information systems increases when either perceived critical mass (Li, Chau, & Lu, 2005; Hsu & Lu, 2004) or perceived number of users (Wang, Hsu, & Fang, 2004) increases.

H2: Perceived Network Size is positively associated with the perceived usefulness of social networking technology.

Agreeableness

This personality trait is associated with being “courteous, flexible, trusting, good-natured, forgiving, cooperative, soft-hearted and tolerant” (Barrick & Mount, 1991). People that demonstrate this trait also can be considered optimistic and value getting along with others. Similar to what Devearj et al. (2008) hypothesized, individuals that are agreeable are more likely to consider social networking technology useful, as it would help them foster their personal relationships with others.

H3: Agreeableness is positively associated with the perceived usefulness of social networking technology.

Openness to Experience

Commonly associated with traits such as “being imaginative, cultured, curious, original, broad-minded, intelligent, and artistically sensitive,” openness to experience helps distinguish creative from more conventional people (Barrick & Mount, 1991). People who exhibit this personality trait seek out new opportunities to exhibit their creativity, and social networking websites are one way to do so. Also since these individuals are more intellectually curious than their peers, a novel way to communicate with friends and associates should be appealing to these people.

H4: Openness to experience is positively associated with the perceived usefulness of social networking technology.

Extroversion

Those who score high on the extroversion scale are often considered “sociable, gregarious, assertive, talkative, and active” (Barrick & Mount, 1991). These individuals tend to be optimistic, enthusiastic, and have a can-do attitude. While the Devearj et al. (2008) study hypothesized that extroversion moderates the relationship between social norms and intention to use technology, the authors of this study have a different view of extroversion. Social networking sites would be another way for extroverts to assert themselves and thus could be considered quite useful. But in addition to this, extroverts would likely be using many different forms of communication technology, including chat programs, email, blogs, video sharing, texting, etc, so these individuals would be more likely to find communication technology easy to use.

H5: Extroversion is positively associated with the perceived usefulness of social networking technology.

H6: Extroversion is positively associated with the perceived ease of use of social networking technology.

Conscientiousness

This trait “reflects dependability; that is, being careful, thorough, responsible, organized, and planful” (Barrick & Mount, 1991). Students and workers who are conscientiousness tend to perform better on school and work-related tasks. Conscientiousness individuals are rule followers, and persistent, thus are hypothesized to be better able to follow directions and find that the social networking technology is easier to use than their non-conscientious peers.

H7: Conscientiousness is positively associated with the perceived ease of use of social networking technology.

Neuroticism

This personality trait is commonly linked to feelings of anxiety, worry, insecurity and depression, among others (Barrick & Mount, 1991). People who exhibit neuroticism are less likely to try new experiences and are more likely to have self-efficacy and self-esteem issues. When faced with new challenges, like learning a new form of technology, these individuals would be more likely to have problems or simply want to avoid the new situation altogether.

H8: Neuroticism is negatively associated with the perceived ease of use of social networking technology.

Perceived Ease of Use

One of the two major constructs in TAM, perceived ease of use is often studied in technology acceptance constructs. Defined as “the degree to which a person believes that using a particular system would be free of effort,” it has been positively associated with perceived usefulness and behavioral intentions to use technology in hundreds of studies (Davis, 1989).

H9: Perceived ease of use is positively associated with the perceived usefulness of social networking technology.

H10: Perceived ease of use is positively associated with the behavioral intentions to use social networking technology.

Perceived Usefulness

The other major construct in the TAM model that is linked to behavioral intentions to use technology is perceived usefulness, commonly defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). As mentioned earlier, the use of social networking technology could actually be considered counterproductive, and is not an appropriate measure of the value that this technology provides. Instead, this construct has been reconceptualized to ask questions about social effectiveness. Items included in this scale are as follows:

Using Social networking websites enhances my social effectiveness in college

Using Social networking websites enhances my social life

I find Social networking websites useful in my social interactions

Using Social networking websites improves my social performance in college

This is a big departure from the conventional way that perceived usefulness is used in the technology acceptance literature, and is one of the contributions of this paper. Usefulness in a social networking context is different from usefulness in a job context and the construct should appropriately measure this value.

H11: Perceived usefulness is positively associated with the behavioral intentions to use social networking technology.

METHODOLOGY

Description of Facebook

This form of social networking technology is wildly popular. With over 60 million users, Facebook ranks third among worldwide social networking websites on the number of registered users, and is among the top ten in most frequently visited websites of any kind. Launched on February 4, 2004, this site was designed to be an “online directory that connects people through social networks at schools” (Facebook.com, 2008). This has since changed, and now Facebook is open to the general public, much like the number one site, MySpace. The reason for focusing on Facebook for a study of social networking acceptance is that it was found that nearly 90% of college students use Facebook on campuses where it is available (Van Der Werf, 2006). Microsoft found the website so valuable that it recently purchased a 1.6% share of the company for a whopping \$240 million, making the total value of the site around \$15 billion dollars (Stone, 2007).

Subjects

All students at a small, Midwestern university were invited to participate in the study. About 575 students answered the call for participation and were asked to complete a survey that included demographic information, questions about the Big Five personality items, and questions related to the acceptance of social networking websites. Of the original 575 participants,

522 (91%) responded to all of the items in the questionnaire. 68% of the study participants were female, and the average age of the participants was 20.54 years old.

Measures

Self-reported personality was measured by assessing the Big Five personality traits with the International Personality Item Pool (IPIP; Goldberg et al., 2006). The entire scale is 50 items with 10 items for each facet (neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness). Participants were asked to answer questions such as 'I often feel blue (neuroticism),' 'I am the life of the party (extroversion),' 'I have a vivid imagination (openness),' 'I respect others (agreeableness),' 'I am always prepared (conscientiousness)' using a 5-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. The internal consistency reliability coefficients (alphas) for the measures ranged from .72 for agreeableness to .86 for neuroticism.

The concept of flow was measured by a three-item construct introduced by Hsu and Lu (2004). The alpha for the flow construct was .90 and a sample item is 'I have experienced flow while using Social networking websites.' Network size was measured using a four-item scale introduced in the Li, et al. (2005) study. This construct had an alpha of .78, and included items such as 'Many of my friends use social networking websites.' Perceived ease of use was measured by the 4-item scale conceptualized by Davis' (1989), which had an alpha of .90 in the current study. A sample item from this scale is 'My interaction with social networking websites is clear and understandable.' Perceived usefulness was measured with a 4-item scale that was modified from Davis' (1989) original conceptualization. This new scale had an alpha of .91 and included items such as 'I find Social networking websites useful in my social interactions.' Behavioral intention was again measured by Davis (1989) and this three-item scale had an alpha of .96. A sample item includes 'I plan to use social networking websites in the future.'

RESULTS

Table 1 shows the descriptive statistics and correlations between the model variables. The hypotheses discussed previously were tested using correlation analysis. Significant correlations appear bolded to show how all model constructs are related to each other.

Table 1. Correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. BehInt	5.37	1.12									
2. Usefulness	4.37	1.33	.309								
3. EaseofUse	5.88	0.86	.270	.090							
4. Flow	3.43	1.66	.240	.305	.059						
5. NetSize	6.09	0.80	.256	.243	.272	.072					
6. Agree	3.77	0.46	.020	.033	.051	.018	.095				
7. Open	3.65	0.62	.087	.024	.154	.021	.081	.171			
8. Extro	3.70	0.61	.159	.210	.246	.079	.140	.172	.184		
9. Consci	3.72	0.56	.022	.060	.154	.034	.085	.426	-.010	.270	
10. Neuro	2.47	0.65	.016	-.003	-.065	.124	-.017	-.147	-.035	-.418	-.252

Because the authors did not find many articles that dealt directly with the impact of the Big Five variables on technology acceptance in either a TAM or UTAUT context, and because the authors' view of the theory was often contrary to the few other studies identified, it was expected that not all of the hypothesized links would show significance in this study.

Table 2. Results of Hypotheses

	Correlation	Significance
H1: Flow → Perceived Usefulness	.305	Sig. @ 0.01 level
H2: Perceived Network Size → Perceived Usefulness	.243	Sig. @ 0.01 level
H3: Agreeableness → Perceived Usefulness	.033	Non-significant
H4: Openness to Experience → Perceived Usefulness	.024	Non-significant
H5: Extroversion → Perceived Usefulness	.210	Sig. @ 0.01 level
H6: Extroversion → Perceived Ease of Use	.246	Sig. @ 0.01 level
H7: Conscientiousness → Perceived Ease of Use	.154	Sig. @ 0.01 level
H8: Neuroticism - → Perceived Ease of Use	-.065	Non-significant
H9: Perceived Ease of Use → Perceived Usefulness	.090	Sig. @ 0.05 level
H10: Perceived Ease of Use → Behavioral Intentions	.270	Sig. @ 0.01 level
H11: Perceived Usefulness → Behavioral Intentions	.309	Sig. @ 0.01 level

New Model Variables

One aspect of this study was to introduce a new model of technology acceptance for hedonic information systems and social networking websites, so two constructs not typically found in traditional models were introduced: flow and perceived network size. The results indicate that as hypothesized, these variables are significantly correlated with perceived usefulness. In the context of this study, the results indicate that the more that participants lost track of time and became immersed in Facebook, the more useful its use was perceived to be. Participants also indicated that the larger the perceived network size of friends who were using Facebook, the more valuable the use of the technology was. These two findings are important to the study of hedonic systems and indicate that future technology acceptance models dealing with similar contexts should include these important antecedents to perceived usefulness.

Big Five Personality Constructs

Six hypotheses were generated regarding the use of personality constructs in the technology acceptance process, with three being significant and three others proving non-significant. Extroversion was found to positively influence both perceived ease of use and perceived usefulness, and conscientiousness was found to positively influence perceived ease of use as hypothesized. It was surprising to find that both agreeableness and openness to experience did not significantly influence the perceived usefulness of the Facebook technology. It was expected that those subjects who were kind, considerate, and placed value on getting along with others would not be more likely than their peers to find the social networking website Facebook useful. Similarly, those who scored higher on the openness to experience scale were hypothesized to be more likely to find Facebook useful. Those people who are more creative, intellectually curious and imaginative were found to be no more likely than their peers to find Facebook useful.

TAM Variables

The hypothesized relationships between perceived ease of use and perceived usefulness, perceived ease of use and behavioral intentions, and perceived usefulness and behavioral intentions were all found to be significant. Perhaps surprising was the moderate significance of the relationship between perceived ease of use and perceived usefulness. This could be due in part to the reconceptualization of the perceived usefulness construct to measure the social effectiveness or value of the Facebook website. More testing needs to be conducted on this brand-new construct to make sure of its validity and reliability in a social networking context.

DISCUSSION

This study makes three valuable contributions to the technology acceptance field. The first was that the study included the impact of the Big Five personality traits on the acceptance of social networking technology. The second was that a new model framework was introduced that included flow and perceived network size as important antecedents to perceived usefulness. While applied in a social networking context, these variables should be included whenever hedonic systems are being studied. Finally, the perceived usefulness construct was reworded to make it more appropriate for a non-workplace, hedonic context. Perceived usefulness was not appropriate in its current form as it measured productivity increases in a job context. Whenever hedonic systems are being studied, it is suggested that perceived usefulness be appropriately changed.

Results indicated that both flow and perceived network size were significant predictors of perceived usefulness. Three of the six relationships between Big Five and TAM constructs were significant, including extroversion to perceived ease of use, extroversion to perceived usefulness, and conscientiousness to perceived ease of use. While the other three relationships were non-significant, it has been shown that the Big Five personality traits can be important predictors of ease of use and usefulness in an acceptance context. While this study was limited to social networking technology, future research should examine the impact of the Big Five personality constructs in other hedonic and general technology contexts. It will also be important for future researchers to validate the use of flow and network size in other hedonic contexts to validate the new research model.

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