

JOURNAL OF INFORMATION SYSTEMS APPLIED RESEARCH

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The **Journal of Information Systems Applied Research** (JISAR) is a double-blind peer-reviewed academic journal published by **EDSIG**, the Education Special Interest Group of AITP, the Association of Information Technology Professionals (Chicago, Illinois). Publishing frequency is currently quarterly. The first date of publication is December 1, 2008.

JISAR is published online (<http://jisar.org>) in connection with CONISAR, the Conference on Information Systems Applied Research, which is also double-blind peer reviewed. Our sister publication, the Proceedings of CONISAR, features all papers, panels, workshops, and presentations from the conference. (<http://conisar.org>)

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An Empirical Study of Social Networking Behavior Using Theory of Reasoned Action

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Abstract

One of the most important means of communication for young people today is social networking. This study explores social networking behavior using the Ajzen and Fishbein (1980) model of human behavior known as Theory of Reasoned Action (TRA). Specifically, findings reveal that both attitude toward social networking and "subjective norm" are positively associated with intention to use social networking (SN). In addition, intention influences use of social networking. The TRA model provides a strong fit with the overall data and can be used to predict and understand the usage of social networking in the target population.

Keywords: Theory of Reasoned Action, TRA, social networking, factor analysis, structural equation modeling.

1. INTRODUCTION

One of the most important means of communication for young people today is social networking. Facebook has become the most visited website (Wilhelm, 2010). What elements influence an individual's decision to use social networking? This study is an attempt to understand SN by exploring social networking

(SN) behavior using the Ajzen and Fishbein (1980) model of human behavior known as Theory of Reasoned Action (TRA). Specifically, findings reveal that both attitude toward social networking and "subjective norm" are positively associated with intention to use SN. According to Ajzen (1980), subjective norm is defined as how behavior is viewed by our social circle or those who influence our decisions. Intention influences

the use of social networking. The TRA model provides a strong fit with the overall data and can be used to predict and understand the usage of social networking in the target population.

2. SOCIAL NETWORKING

Professional networking began as a way for business professionals to meet and greet others in their fields, whether it was to market oneself, market a product, or just share a common interest. With Internet technology as an aide, it didn't take long for online social networking to catch on. It is a commonly held belief that social networking began with websites such as Facebook and MySpace. However, online social networking is not a recent phenomenon. Interestingly, the term was coined in 1954 by social scientist J. A. Barnes (Webopedia, 2010).

In the early 1980s, bulletin board systems (BBS) services began to gain popularity. These were text-only exchanges for people who had common interests, ranging from hobbyists to academics. The popularity of BBSs lasted from the 1980s well into the 1990s. At the same time, CompuServe allowed users to share files online and to access news and events. Various email systems enabled users to exchange ideas and to share files. America Online (AOL) emerged with member-created communities that provided searchable member profiles where users could list personal information which was accessible to others. Many believe that Classmates.com was the first true online social networking site, coming onto the scene in 1995, followed by SixDegrees.com in 1997. Six Degrees allowed users to create profiles and groups with a function that enabled the user to search for friends. In 2002, social networking site Friendster was launched followed by LinkedIn and MySpace in 2003 (Nickson, 2009). From 2003 onward, many new social networking sites (SNS) were launched (Boyd & Ellison, 2007). Facebook was unveiled in 2004 but was not fully available to the public at-large until 2006, the same year Twitter was introduced (Nickson, 2009). In July 2010, Facebook had reached 500 million users (Wortham, 2010).

There are a variety of definitions for this phenomenon. According to Boyd & Ellison (2007, p. 211), social network sites are defined as,

"... web-based services that allow individuals to (1) construct a public or

semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site."

Wikipedia defines a social network as,

"... a social structure made up of individuals (or organizations) called "nodes", which are tied (connected) by one or more specific types of interdependency, such as friendship, kinship, common interest, financial exchange, dislike, sexual relationships, or relationships of beliefs, knowledge or prestige" (Wikipedia, 2010, para. 1).

According to the Pew Internet and American Life Project (Lenhart, 2009), young people are much more likely to use social networking sites than older adults. However, Lenhart found that 35% of American adult Internet users maintain a profile on an online social networking site, a four-fold increase since 2005. Teens are generally twice as likely to have profiles on social networking sites. In 2010, 41% of adults surveyed aged 18 - 65+ reported having an online social networking profile ("The Millennials", 2010). Seventy-three percent (73%) of wired American teens use social networking websites, up from 55% in November 2006 (Lenhart, Purcell, Smith, & Zickuhr, 2010). Surprisingly, given the adult population, there are a greater number of adults using online social networking as compared to the total number of teens who are using social networking (Lenhart, 2009).

Online social networking is much more prevalent than professional online networking. Most people use social networking sites to keep up with current friends (89%), make plans with friends (57%) or to meet new friends (49%) (Lenhart, 2009). Facebook is currently the most regularly-used online social network among adults (73%), followed by MySpace (48%), Twitter or similar services (19%), and LinkedIn (14%)(Lenhart et al., 2010).

Many users maintain multiple profiles, particularly when they utilize social networks for both personal and professional applications.

Fifty-one percent (51%) of social network users have two or more profiles compared to 43% of the users who have only one online profile. Eighty-three percent (83%) of the respondents with multiple profiles maintain them on different sites so that they can keep up with their friends who have profiles on various sites (24%) and to keep their personal and professional profiles separate (19%) (Lenhart, 2009).

According to Lenhart, Purcell, Smith and Zickuhr, approximately 80% of teens from lower income families (those earning less than \$30,000 annually) are more likely to use online social networks than teens from wealthier households (70%) (Lenhart et al., 2010). Both boys and girls visit social networking sites equally. Patterns of behavior are similar in the adult online community; an equal percentage of adult men and women visit social networking sites. There is no difference in ethnicity; Caucasians, African-American and Hispanic adults are equally likely to use these sites. However, those who have at least some college education (50%) are more likely to utilize these sites compared to adults who have a high school degree or less (43%). Thelwall (2008) found that female users of MySpace tend to be more interested in friendship and males more interesting in dating.

Although we are spending more time using SNSs, Birnie and Horvath found that, "online social communication appeared to complement or be an extension of traditional social behavior rather than being a compensatory medium for shy and socially anxious individuals." (Birnie & Horvath, 2002, para.1). Lewin (2010, para. 2) asserts that teens that socialize on SNSs are given "the technological skills and literacy they need to succeed in the contemporary world."

Business has jumped on the social networking and social media bandwagon. According to SocialMediaExaminer.com, "...about 77 percent of business-to-business firms use Facebook, and 83 percent of business-to-consumer firms are using it in some way." (Campbell, 2010, para 7). In a 2010 study conducted by MerchantCircle (Swartz, 2010), more than 50% of the respondents said that they planned to create or maintain a social-networking presence compared to 41% in the first three months earlier. In addition, merchant adoption of location-based services is growing rapidly – up from 25% in March 2010 to 32% in July 2010.

In a 2008 study conducted by DiMicco, Millen, Geyer, Dugan, Brownholtz & Muller, internal enterprise-level use of social networking tools "enables a new method of communication between colleagues, encouraging both personal and professional sharing inside the protected walls of a company intranet." (DiMicco et al., 2008, pg. 711). The authors supported the use of internal SNSs, particularly given that the next generation of employees, the Millennials, have used SNSs as their foremost means of communication.

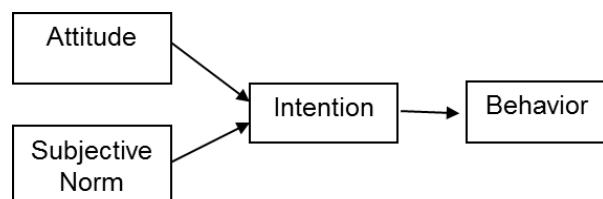
Social networking offers a variety of advantages as an alternative method of communication in business. Row (2009) suggests four key areas where business can be improved through increased use of social networking:

1. Increase the size of your network, increase the number of customers
2. Ability to build a personal relationship with people
3. Establishing an online reputation
4. Low cost marketing

3. THEORY OF REASONED ACTION

In order to explore influences on social networking behavior, a common behavioral model was selected: Theory of Reasoned Action (TRA) developed by Ajzen and Fishbein (1980). The model uses four factors: attitude, subjective norm, intention, and behavior. TRA remains an important model for measuring user behavior (Brewer et al., 1999; Lee et al., 2006; Pak, 2000; Song & Kim, 2006; Wooley & Eining, 2006; Wu & Liu, 2007). The model is shown in figure 1.

Figure 1 Theory of Reasoned Action



TRA was selected over other models (Theory of Planned Behavior and Technology Acceptance Model) similar to Wu and Liu because TRA has shown successful application to general consumer information technologies (Hansen et al., 2004; Njite & Parsa, 2005; Wu & Liu, 2007)

and organizational knowledge sharing (Hansen et al., 2004; Kwok & Gao, 2005/6; Kwon & Zmud, 1987). Intention to use is a common behavioral factor (Bahmanziari, Pearson & Crosby, 2003). Actual behavior generally follows intention in a variety of models (Bahmanziari et al., 2003; Riemenschneider & Hargrove, 2001). Theory of planned behavior also adds a measure of volitional control which is not suggested as an issue for social networking. TRA is being tested for this particular technology to verify its application for this technology. It is important that the model be tested in order to confirm applicability prior to development of specific action programs based on its theorized fit.

Definitions of the TRA model's factors are as follows:

- *Attitude* is how we feel about the behavior and is generally measured as a favorable or unfavorable mind-set.
- *Subjective norm* is defined as how the behavior is viewed by our social circle or those who influence our decisions.
- *Intention* is defined as the propensity or intention to engage in the behavior.
- *Behavior* is the actual behavior itself.

4. HYPOTHESIS

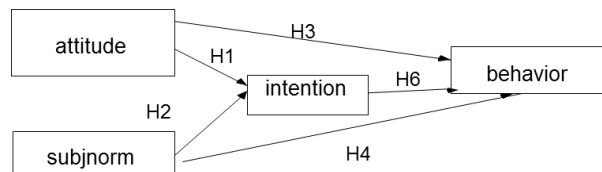
In exploring the degree of fit between the TRA model factors and social networking, a series of hypotheses were developed. The traditional TRA model suggests influences and associations among factors that are tested in this study.

- *Hypothesis one: Attitude toward social networking is positively associated with intention to use SN.*
- *Hypothesis two: Subjective norm of social networking is positively associated with intention to use SN.*
- *Hypothesis three: Attitude toward social networking is positively associated with use of SN.*
- *Hypothesis four: Subjective norm of social networking is positively associated with use of SN.*

- *Hypothesis five: Attitude toward social networking will be more strongly associated with intention than subjective norm.*
- *Hypothesis six: Intention to use social networking is positively associated with use of social networking.*
- *Hypothesis seven: Social networking technology will provide a model fit for behavioral intention and behavior.*

All of the hypotheses are graphically represented in Figure 2 except for hypothesis five, which deals with relative strength of relationship, and hypothesis seven which addresses the overall model.

Figure 2. Proposed Theory of Reasoned Action Model with Hypotheses



5. METHODOLOGY

A survey was prepared and pretested with a small group of students at a northeastern U.S. university. The survey was modified based on preliminary tests and administered to 196 students at several small northeast U.S. universities. The survey consisted of questions related to social networking intention and behavior. A subset of this study included specific questions that developed into TRA factors (Appendix 1). The use of students is appropriate since this is the group who is most active in using this technology. Studying their usage can lead to factor determination. Albaum and Peterson (2006) contend that students are "stakeholders, especially business students, who collectively constitute the future leadership of corporations".

For each of the relevant factors, survey questions modeled prior research. Subjective norm and attitude were based on Fitzmaurice (2005). Intention factor questions were modeled after Ilie, Van Slyke, Green, & Lou (2005) and behavior was based on common usage terminology and software piracy behavior factor in Woolley and Eining (2006).

The variables needed to test the theory of reasoned action include:

- *Attitudes* –The survey contained five questions that addressed respondents' attitudes toward social networking. The questions asked if they felt that social networking was useful, worthwhile and valuable.
- *Subjective Norm* – Subjective norm is defined as "the person's perception that most people who are important to him or her think he should or should not perform the behavior in question" (Ajzen & Fishbein, 1980). The survey contained four questions to measure subjective norm. Two of the questions asked included, "Most people who are important to me think I should use social networking" and "People who I listen to could influence me to use social networking."
- *Behavioral Intentions* – The behavioral intentions are the probability that the subject will use social networking. The survey questions asked the respondents if they plan to use social networking.
- *Behavior* - Behavior is the transmission of intention into action. The questions formulated in the survey asked if the respondents currently use, plan to use or will continue to use social networking.

The demographic mix shows a traditional college student population with 96% of the participants between the ages of 18 and 24. The gender mix was slightly skewed with 64% females.

The questions measured a five point Likert scale with level of agreement from 1 = strongly agree to 5= strongly disagree. SPSS 17 and AMOS 17 were used to analyze the data and test the proposed hypotheses. Factor analysis and scale reliability as well as structural equation modeling were conducted similar to Wooley & Eining (2006) and Moore (2000).

6. RESULTS

Confirmatory factor analysis and scale reliability testing was used to determine the factors used in the model. All the factors were confirmed with one component determined and eigenvalues over 1.0 which is generally seen as the level of acceptability (Moore, 2000).

The attitude five questions resulted in one component with an eigenvalue over 1.0 at 4.261. The component matrix elements all were above .5 (minimum acceptable, Moore, 2000) and scale reliability provided a Cronbach's alpha of .955, well above the minimum acceptable of .7 (Nunnally, 1978).

The four Subjective Norm questions also resulted in one factor with an eigenvalue over one, at 2.888. All components were over .5 and Cronbach's alpha was .870. As noted, these are all well above minimum levels.

Intention and its three variables clearly resulted in one factor with an eigenvalue over one, at 2.929. All components were over .5 and Cronbach's alpha was at .99. These were certainly above minimum levels.

Finally, actual behavior was measured by three variables and it demonstrated one factor with an eigenvalue over 1.0, at 2.705. All components were over .5 and Cronbach's alpha was .944.

In all cases and by all measures, all factors met acceptable levels. Once the factors were determined, the results were analyzed in AMOS 17.0 to test the hypotheses and develop the model using structural equation modeling. (Please note the L designation after a variable denotes a latent variable).

Hypothesis one proposed a positive association between attitude and intention to use SN. Theory of Reasoned Action (Ajzen & Fishbein, 1980) suggests a positive and significant relationship between both attitude and subjective norm and intention. As shown in Appendix 2, attitude toward social networking was positively associated with intention to use social networking. This correlation was significant at the $p < .001$ level. The standardized coefficient was .498. Attitude toward social networking did have an impact on intention to use SN. Hypothesis one was supported.

Hypothesis two proposed that subjective norm is positively associated with intention to use SN. Subjective norm was found to have a positive and significant correlation with intention to use SN. This association was found to be at $p < .005$ as well with a standardized coefficient of a lesser .215. Hypothesis two was supported.

Hypothesis three proposed a positive association between attitude toward social networking and use of SN. Gupta and Kim (2007) modified TRA and tested direct associations between base variables and use as opposed to only relationships through intention to use. They found many significant relationships. Our model tested the direct effect of both attitude and subjective norm on SN use. Table 2 shows an additional direct relationship, both positive and significant at $p < .001$, between attitude toward SN and actual use of SN. Hypothesis three was supported.

Hypothesis four proposed that subjective norm is positively associated with use of SN. It was also hypothesized that subjective norm would have a positive influence on use. This was not found to be the case with a p value of .425. This relationship was excluded from the model and results shown. There was no direct positive relationship between subjective norm and use of SN. Hypothesis four was not supported in this study.

Hypothesis five proposed that attitude toward social networking will be more strongly associated with intention than subjective norm. Woolley and Eining (2006) found a stronger association in TRA between attitude and intention than subjective norm and intention as it relates to software piracy. As shown in table 2, attitude toward SN had a stronger association with behavior intention than subjective norm. The standardized coefficient was nearly double. Hypothesis five was supported.

Hypothesis six proposed a positive association between intention to use social networking and the use of SN. The original model of TRA (Ajzen & Fishbein, 1980) found a strong positive relationship between intention and actual behavior. Gupta and Kim (2007) supported this relationship in a study of virtual communities. Our study supported this relationship at $p < .001$. Hypothesis six was supported.

Hypothesis seven proposed that social networking technology will provide a model fit for behavioral intention and behavior. The inclusion of all factors into a comprehensive model was tested via AMOS 17.0. The model (excluding the direct relationship between subjective norm and behavior) provided a marginally acceptable overall fit. The RMSEA is .076, below the recommended .06 or .08

(Stylianou & Jackson, 2007) and well below the absolute cutoff of .1 (Browne & Cudeck, 1993); the chi square divided by the degrees of freedom is 2.12, below 3 at .123 (Moore, 2000). These findings suggest that the model fits the data in the population from which the sample was drawn. The standardized estimates and squared multiple correlations are presented in Appendix 2 and 3 and Table 1. Hypothesis seven was supported.

**Table 1. Squared Multiple Correlations:
(Group number 1 - Default model)**

	Estimate
IntentionL	.384
behaviorL	.628

7. IMPLICATIONS AND DISCUSSION

Overall, it can be seen that Theory of Reasoned Action can be used as a model for social networking behavior. It has been proposed that social networking provides unique advantages over other electronic communication methods such as email. But despite these advantages, social networking is used much less frequently in business usage. Understanding the factors associated with intention and behavior associated with social networking suggests areas that can be focused on to increase social networking usage in the workplace. First it was found that attitude toward social networking is positively associated with intention to use SN. In fact, it is the most important influencer of intention studied. Other researchers have suggested that education of users about favorable attributes of a product can change attitudes toward the product and thus increase intention to use the product (Bang, Ellinger, Hadjimarcou, & Traichal, 2003; Xu & Paulins, 2005). Workplace education on the benefits, advantages, and details of social networking is suggested to allow further penetration of this useful technology and improve overall communications. This could have significant positive cost and productivity improvements for businesses and organizations.

The second finding is that subjective norm is positively associated with intention to use SN. Subjective norm is the "perceived social pressure to perform or not perform an action" (Tarkiainen & Sundqvist, 2005). The study revealed that use of SN by others in their social

group did have a significant influence on intention to use SN. The growth in SN use by students has been fueled by a social circle incentive. Those in the group have more social interaction and pressure exists to belong to this communication circle. This can expand through wider usage by the sampled population. This has important implications for practitioners.

The study next reviewed whether attitude had a direct influence on behavior rather than just behavior intention. It was found that attitude does have a direct influence on behavior, further emphasizing the need for education, training, and support if social networking usage is to be improved.

Conversely, subjective norm did not have a direct influence on behavior. Though subjective norm does influence intention, there was no significant direct influence on usage. Implications suggest that the social pressure provides a predisposition for behavior but then attitude provides the direct influence. This should be considered when designing education, training, and policy programs in organizations. It was determined that attitude toward social networking was more strongly associated with intention to use SN than behavioral norm. This again supports the environment and education change program to influence attitude is more important than adopted policies in an organization.

As proposed in the original Ajzen and Fishbein (1980) model, intention to use social networking is positively associated with use of social networking. Many researchers have supported this relationship (Gupta & Kim, 2007; Shimp & Kavas, 1984; Tarkiainen & Sundqvist, 2005). Since the authors' overall objective is to study and improve overall behavior, it was important that this relationship was established.

A final finding of the model development was that there was a significant covariance between subjective norm and attitude. This supports the development of a comprehensive program of social persuasion including a favorable climate and view of SN by itself as well as by peer pressure. This program plus education and training should ultimately improve use of social networking in businesses.

8. LIMITATIONS

This research examines primarily traditional students at undergraduate university locations. Results should be duplicated across other locations to confirm the preliminary findings of the study. In addition, only students were studied. Results may be different with non-students or with other age groups. Somewhat offsetting this limitation, however, is the widespread use of social networking by this target group and age demographic. With a sizable penetration, factors influencing intention and usage can be studied due to the size of the participation.

Another limitation is the sample size. Though relatively large, the number of participants can be increased to improve reliability.

Finally, the study examines only one model of human behavior. Though support and rationale for the use of Theory of Reasoned Action has been presented, there are other models which could be tested for adoption and behavior.

9. CONCLUSION

Overall this study has provided significant factors that influence and model social networking intention and behavior. We see this as the start of an exploration of ways to increase and improve penetration of this valuable communications technology in the workplace. Studies can be undertaken to confirm these findings with larger and more diverse sample groups, but preliminary findings suggest that social networking does adhere to the theory of reasoned action model and is thus subject to efforts to improve behavior through attention to the significant influencing factors of attitude, subjective norm, and intention. The authors welcome efforts to assist in this fertile research area.

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Appendices and Annexures

Appendix 1 Survey Questions and Factors

Factor	Abbreviation	Questions/Variables
Attitude	ATTITUDE	Social networking is good.
Attitude	ATTITUDE	Social networking is useful.
Attitude	ATTITUDE	Social networking is worthwhile.
Attitude	ATTITUDE	Social networking is helpful.
Attitude	ATTITUDE	Social networking is valuable.
Subjective Norm	SUBJNORM	Most people who are important to me think I should use social networking.
Subjective Norm	SUBJNORM	Close friends and family think it is a good idea to use social networking
Subjective Norm	SUBJNORM	Important people want me to use social networking
Subjective Norm	SUBJNORM	People who I listen to could influence me to use social networking
Behavioral Intention	INTENTION	I predict I will use social networking
Behavioral Intention	INTENTION	I intend to use social networking
Behavioral Intention	INTENTION	I plan to use social networking
Actual System Use	BEHAVIOR	I plan to use social networking in the future.
Actual System Use	BEHAVIOR	I currently use social networking.
Actual System Use	BEHAVIOR	I will continue to use social networking.

Appendix 2. Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
IntentionL	<---	attitudeL	.583	.089	6.527	***	par_12
IntentionL	<---	SubjNormL	.217	.078	2.776	.005	par_13
behaviorL	<---	IntentionL	.560	.064	8.766	***	par_14
behaviorL	<---	attitudeL	.297	.072	4.117	***	par_16
good	<---	attitudeL	1.000				
useful	<---	attitudeL	.839	.054	15.650	***	par_1
worthwhile	<---	attitudeL	1.080	.063	17.066	***	par_2
helpful	<---	attitudeL	.987	.060	16.417	***	par_3
valuable	<---	attitudeL	1.065	.064	16.718	***	par_4
most	<---	SubjNormL	1.000				
close	<---	SubjNormL	.955	.086	11.052	***	par_5
Imp	<---	SubjNormL	.930	.094	9.941	***	par_6
Listen	<---	SubjNormL	.981	.100	9.828	***	par_7
Pred	<---	IntentionL	1.000				
Intd	<---	IntentionL	1.057	.024	43.207	***	par_8
Plan	<---	IntentionL	1.054	.026	41.229	***	par_9
Fut	<---	behaviorL	1.000				
Cur	<---	behaviorL	1.242	.067	18.502	***	par_10
Cont	<---	behaviorL	1.289	.059	21.668	***	par_11

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
IntentionL	<---	attitudeL	.498
IntentionL	<---	SubjNormL	.215
behaviorL	<---	IntentionL	.601
behaviorL	<---	attitudeL	.273
good	<---	attitudeL	.859
useful	<---	attitudeL	.887
worthwhile	<---	attitudeL	.926
helpful	<---	attitudeL	.910
valuable	<---	attitudeL	.917
most	<---	SubjNormL	.793
close	<---	SubjNormL	.850
Imp	<---	SubjNormL	.769
Listen	<---	SubjNormL	.760
Pred	<---	IntentionL	.968
Intd	<---	IntentionL	.991
Plan	<---	IntentionL	.987
Fut	<---	behaviorL	.889
Cur	<---	behaviorL	.917
Cont	<---	behaviorL	.981

Appendix 3 Theory of Reasoned Action Model with Standardized Estimates

