Predicting consumers' attitude toward their Facebook experience: the influence of cognitive and affective factors

Mark Hall, Ph.D.
Minnesota State University, Mankato

Kevin Elliott, Ph.D.
Minnesota State University, Mankato

Juan (Gloria) Meng, Ph.D.
Minnesota State University, Mankato

ABSTRACT

Social media has changed the way individuals share information, create knowledge, and socialize with family and friends. This study examines both cognitive factors (usefulness and ease of use) and affective factors (pleasure, arousal, and dominance) that may impact consumers' attitude toward their Facebook experience through the use of both the TAM (Technology Acceptance Model) and the PAD (Pleasure, Arousal, and Dominance) paradigms. The findings suggest that affect, in the form of perceived pleasure and dominance, improves the predictive power of the cognitive factors used in the TAM in explaining consumers' attitude toward their Facebook experience.

Keywords: Facebook, Social Media, TAM, PAD

INTRODUCTION

The introduction and growth of social media have provided a myriad of research opportunities with regard to the psychological and sociological aspects of its use. The current study attempts to add to the understanding of one form of social media, Facebook. In their 2012 review of the research on Facebook use, Wilson, Gosling, and Graham identified the following broad research questions: 1) who is using Facebook, 2) why do people use Facebook, 3) how are people presenting themselves on Facebook, 4) how is Facebook affecting relationships among groups and individuals, and 5) why are people disclosing personal information on Facebook despite potential risks? The purpose of this study is to look at some of the factors that may have a role in addressing question number two: why do people use Facebook?

It is reasonable to believe that the use of Facebook may be attributable to not only the benefits it provides (cognitive), but also the emotional states that it contributes to (affective). The purpose of this study is to investigate both the cognitive and affective influence on consumers' attitude toward Facebook and their intentions to use it. In this study, the cognitive influence is captured through the use of the Technology Acceptance Model (TAM) as developed by Davis (1986). The affective influence is operationalized through the use of the PAD model (pleasure, arousal, domination) developed by Mehrabian and Russell, (1974).

Kulviwat, Brunner, Kumar, Nasco, and Clark (2007) integrated these two models into their Consumer Acceptance of Technology (CAT) model. They found that the PAD contributed significant explanatory power over and above the TAM in explaining consumer acceptance of a personal data assistant (PDA). Using the PAD as a predictor of the attitude toward and intentions to use Facebook has not previously been examined. Nor has the interaction of the TAM and the PAD been looked at previously regarding the use of Facebook.

SOCIAL MEDIA

The use of social media continues to grow in the United States. According to the most recent Pew Social Media Update (Duggan, Ellison, Lampe, Lenhart, and Madden, 2015), 58% of adults use Facebook, 23% use LinkedIn, 22% use Pinterest, 21% use Instagram, and 19% use Twitter on a regular basis. Additionally, 52% of adults used two or more social media sites in 2014, a significant increase from 2013. The percent of adults using only one social media site dropped from 36% in 2013 to 28% in 2014. Moreover, the use of social media platforms varies across demographic groups. Over half (53%) of 18-29 years olds use Instagram while 42% of women are Pinterest users (compared to just 13% of men). While 50% of college graduates use LinkedIn, just 12% of high school graduates are LinkedIn users.

Burke, Kraut, and Marlow (2011) identified three types of behaviors on social network sites. The first type of behavior is "directed communication with friends" and consists of personal, one-on-one exchanges. A second type of behavior is "passive consumption of social news" and involves reading others' updates. The final behavior is writing for others' consumption, which is labeled "broadcasting". Novak (2008) identified no fewer than twenty two categories of social media use, to include peer pressure, social interaction, information gathering, self-expression, self-esteem, and social capital.

FACEBOOK

Facebook remains the most popular social media site, but showed no overall growth in 2014 (Duggan, et. al., 2015). The exceptions to this trend seems to be with older adults as 56% of on-line adults, 65 and over, were found to be Facebook users; a significant increase from 45% in the previous year. Ryan and Xenos (2011) found that Facebook users tend to be more extraverted and narcissistic, but less conscientious and socially lonely, than nonusers. Carpenter (2012) also reported that self-promoting behaviors associated with narcissism are commonly found on Facebook.

Even though the overall growth of Facebook has slowed, the engagement levels of its users continues to grow. Approximately 70% of Facebook users were engaged with the site daily in 2014, which was an increase from 63% in the previous year. This is a significantly higher daily engagement rate than that seen with Instagram (49%), Pinterest (17%), Twitter (36%), or LinkedIn (13%). Facebook remains the most popular site for those that use only one form of social media, with 79% of those that use only one site using Facebook. Of those that use more than one social media site, Facebook is also used by 91%, 94%, 88%, and 86% of Twitter, Instagram, Pinterest, and LinkedIn users respectively.

Why people use Facebook has also been the focus of a significant amount of research. Nadkarni and Hofmann (2012) identified 42 evidence based studies on factors that contribute to the use of Facebook and classified these factors as: 1) personality characteristics, 2) demographic characteristics, 3) impression formation, 4) self-esteem, 5) social connectedness, 6) privacy issues, and 7) general uses of Facebook. After reviewing this literature they proposed a dual factor model of Facebook use by hypothesizing that Facebook use was primarily motivated by the need to belong, and the need for self-presentation. Cheung, Chiu, and Lee (2011) found that social presence (instant communication and connection with friends) was a major reason individuals use Facebook. Similarly, Dwyer, Hiltz, and Passerini (2007) reported that Facebook members use the site to manage relationships initiated offline, even where the protection of privacy is minimal.

Wilson, Gosling, and Graham (2012) in their review of the research involving Facebook, contend that researchers have either focused on external motivations (external press that encouraged users to engage in Facebook), or more commonly, internal motivations to try to explain why people use Facebook. With regard to internal motivations, they maintain that 1) desire to keep in touch with friends, 2) social capital, 3) social grooming, 4) minimizing loneliness, and 5) relieving boredom are all reasons that have been looked at in trying to answer the question of why people use Facebook.

Hughes, Rowe, Batey, and Lee (2012) looked at the use of both Facebook and Twitter for informational purposes as well as for social purposes. For social purposes, they found that the use of Facebook was positively correlated with both sociability and neuroticism while the use of Twitter for social purposes was positively related to openness and sociability and negatively related to conscientiousness. For information purposes, the use of Facebook was positively related to neuroticism, extraversion, openness and sociability and negatively related to conscientiousness and need for cognition. In the case of Twitter for information purposes, its use was positively related to conscientiousness, and need for cognition and negatively related to neuroticism, extraversion, and sociability.

Other research has focused on how personality characteristics impact the use of Facebook. Among other traits, these studies have often used the Five Factor Model of

neuroticism, extraversion, openness, agreeableness, and conscientiousness as predictors of social media use. Moore and McElroy (2012) found that the more extraverted people had more Facebook friends, but also reported less frequent use of Facebook. Those respondents with high degrees of emotional stability reported less time spent on Facebook but greater frequency of use.

Ross, Orr, Sisic, Arseneault, Simmering, and Orr (2009) found some relationship between Facebook behavior and extraversion, but overall reached the conclusion that personality factors were not as influential in predicting Facebook use as the previous literature might suggest. A follow-up study (using measures other than self-reported usage) conducted by Amichai-Hamburger and Vinitzky (2010) claims to have found stronger relationships between Facebook behavior and personality.

THE TECHNOLOGY ACCEPTANCE MODEL (TAM) AND FACEBOOK

Technology acceptance has commonly been operationalized through the use of the Technology Acceptance Model (TAM) as developed by Davis (1986). The TAM is arguable the most parsimonious and widely accepted of the technology acceptance models (Srite & Karahanna, 2006; Lin, Shih, & Sher, 2007; Bagozzi, 2007). Bagozzi (2007) reports that over 700 citations have been made of the 1989 article (Davis, Bagozzi, & Warshaw) in which the ability of the TAM to explain technology acceptance was tested. The TAM is an adaptation of the venerable theory of reasoned action (TRA) (Ajzen & Fishbein, 1980) and proposes that the acceptance of a technology in the workplace is impacted by both the perceived usefulness (PU) and the perceived ease of use (PEOU) of the technology. Perceived usefulness deals with the extent to which using a particular system increases job performance in a particular context while perceived ease of use deals with the extent to which using a system would be free of effort (Davis, Bagozzi, & Warshaw, 1989).

Several studies have looked at the relationship between the TAM components and the acceptance and use of Facebook. Lane and Coleman (2011), Rauniar, Rawski, Yang, and Johnson (2014), and Choi and Chung (2013) all found that the perceived usefulness (PU) of Facebook was a significant predictor of either the intent to use it or its actual use. Additionally, all three of these studies found the perceived ease of use (PEOU) of Facebook to be a significant predictor of the perceived usefulness (PU) of Facebook. Neither Lane and Coleman (2011) nor Choi and Chung (2013) found the perceived ease of use (PEOU) of Facebook to be a predictor of the intent to use Facebook or its actual use. This final relationship was untested in the Rauniar, et. al. (2014) study. Significant evidence seems to exist that the components of the TAM model are predictors of the acceptance and use of Facebook.

PLEASURE, AROUSAL, AND DOMINANCE (PAD)

Mehrabian and Russell (1974) introduced the idea of using three emotional dimensions: pleasure, arousal, and dominance (PAD) to describe perceptions of physical environments. Pleasure deals with whether the individual perceives the environment as enjoyable or not while arousal reflects the extent to which the environment stimulates the individual. Dominance captures whether the individual feels in-control or not in the environment.

In the marketing domain, the PAD has been used in assessing the emotions associated with television ads (Holbrook and Batra, 1987), the atmospherics in both retail (Donovan and Rossiter, 1982; Donovan, Rossiter, Marcoolyn, and Nesdale, 1994; Turley and Milliman, 2000)

and on-line contexts (Chang, Chih, Liou, and Hwang, 2014; Hsieh, Hsieh, Chiu, and Yang, 2014), and various consumption experiences (Havlena and Holbrook, 1986).

Even though the PAD was originally configured with three components, pleasure and arousal seem to have been used to a greater extent by researchers than dominance (Bakker, van der Voordt, Vink, and de Boon, 2014). Donovan and Rossiter (1982) chose to omit the dominance portion of the PAD in their model as did Baker, Levy, and Grewal (1992). On the other side of the issue, Yani-de-Soriano and Foxall (2006) have made convincing arguments for the continued inclusion of the dominance component.

RESEARCH HYPOTHESIS AND PROPOSED MODEL

Figure 1 (appendix) presents the relationships to be tested in this research. It would be reasonable to believe that consumers and organizations have certain goals in mind when they use Facebook. These goals may include, among other things, social connectedness or impression formation (Nadkarni and Hofmann, 2012), minimizing loneliness or reliving boredom (Wilson, Gosling, and Graham, 2012), or employing it for informational purposes (Hughes, Rowe, Batey, and Lee, 2012). The perceived usefulness of Facebook (PU) would therefore be a function of the extent to which its use allows the respondent the opportunity to achieve their particular goal(s).

Perceived ease of use of Facebook would reflect the extent to which using it would be free of effort as an attempt is made to achieve that goal(s). Perceived ease of use would involve, among other things, ease in navigation, ease in uploading and sharing, and an intuitive interface. Perceived ease of use has been shown to be related to perceived usefulness in a number of studies employing the TAM. This is true whether the focus was on Facebook specifically (Lane and Coleman, 2011, Rauniar, Rawski, Yang, and Johnson, 2014, and Choi and Chung, 2013) or on some other application (Davis, 1989). In this vein, the following two hypotheses are proposed:

> Hypothesis 1: The perceived usefulness (PU) of Facebook is hypothesized to have a positive impact on the attitude toward the Facebook experience.

> Hypothesis 2: The perceived ease of use (PEOU) of Facebook is hypothesized to have a positive impact on the attitude toward the Facebook experience.

The TAM primarily reflects a cognitive, utilitarian perspective of the use of Facebook. It would also be reasonable to think that the entertainment value of Facebook may have a more affective component to it and that these emotional states may be reflected through the PAD. In this regard, hypotheses 3 through 5 are presented.

> Hypothesis 3: The perceived pleasure when on Facebook is hypothesized to have a positive impact on the attitude toward the Facebook experience.

> Hypothesis 4: The perceived arousal when on Facebook is hypothesized to have a positive impact on the attitude toward the Facebook experience.

> Hypothesis 5: The perceived dominance when on Facebook is hypothesized to have a positive impact on the attitude toward the Facebook experience.

It is well established that attitudes have both cognitive and affective components. These attitudinal components are reflected in the TAM and the PAD respectively. It is reasonable to believe that the two components in conjunction would explain more of a person's attitude toward Facebook than would either component by itself. In this regard, hypothesis six is presented.

Hypothesis 6: The PAD model contributes explanatory power over and above the TAM model in explaining the attitude toward the Facebook experience.

The relationship between attitude and behavioral intention is well established in psychological theory. The Theory of Reasoned Action (TRA) as proposed by Ajzen and Fishbein, (1980) maintains that a person's behavioral intention is a function of their attitude toward the behavior and subjective norms. Hypothesis 7 reflects this perspective.

Hypothesis 7: The attitude toward the Facebook experience is hypothesized to have a positive impact on intentions of future Facebook use.

METHODOLOGY

Data was collected using a nationally representative Survey Monkey Audience sample of U. S consumers age 18 and over during the spring of 2013. Respondents were not directly compensated for their participation, but a $.50 donation was made upon their behalf to charity and they were entered into a sweepstakes for a $100 prize. Institutional Review Board (IRB) approval for the study was acquired through the home university of the three researchers. Potential respondents were made aware of the fact that participation in the study was voluntary and were assured of confidentially. Informed consent to participate was provided by each respondent.

The questionnaire initially asked the respondent whether or not they used Facebook. Those that answered affirmatively were then asked how long they had been using Facebook, how much time they spent on Facebook each day, and how frequently they visited Facebook. Usefulness and ease of use of Facebook were then measured using five item scales taken from Kulviwat, Brunner, Kumar, Nasco, and Clark (2007) who attributed them to Lund (2001). The pleasure, arousal, and dominance (PAD) associated with the use of Facebook was then measured using six item scales taken from Kulviwatt, et. al. (2007) who attributed them to Mehrabian and Russell (1974). Attitude toward Facebook was assessed with a four item scale taken from Kulviwatt, et. al. (2007) who adapted it from Bagozzi, Baumgartner, and Yi (1992). Intentions regarding future Facebook use was assessed using a two item scale as developed by the authors. Respondent gender, age, household income, education level, and census region location were provided to the researchers by the panel administrators. The complete questionnaire (in condensed form) can be found in Table 1 (appendix).

The data was analyzed using LISREL. Model fit assessment was conducted through Chi-square, RMSEA (root-mean-square error of approximation), as well as multiple fit indices of CFI (Comparative Fit Index), IFI (Incremental Fit Index), and NNFI (Non-Normed Fit Index). All hypotheses were tested using structural equation modeling.

RESULTS

A total of 1,422 individuals responded to the survey. Of these, 1075 (76.4%) indicated that they used Facebook. This percentage was slightly higher than the 71% of on-line adults found to use Facebook in the most recent Pew update on social media use (Duggan, et. al., 2015). As it is fairly well established that Facebook use varies across demographic groups, an analysis was made of the issue. Most significant were the differences with regard to Facebook use across gender (68.2% for males versus 81.3% for females), age (89.9% for the 18-29 year old segment versus 64.4% for the over 60 crowd), and location (64.8% for the New England region versus 81.2% for the East South Central). The complete results of this analysis are presented in Table 2 (appendix).

The 1,075 Facebook using respondents had been on Facebook for an average of 4.1 years (median of 4 years, mode of 5 years), spent on average of 1.69 hours per day on Facebook (median of 1 hour, mode of 1 hour), and visited Facebook on average 4.56 times per day (median of 3 times, mode of 1 time). The complete demographic characteristics of those respondents that indicated that they used Facebook are presented in Table 3 (appendix).

Coefficient alphas were calculated for each of the multiple item constructs. Values of .889, .96, .907, .748, .758, .971, and .947 were generated for the usefulness, ease of use, pleasure, arousal, dominance, attitude, and intentions constructs respectively.

Two models were tested in this study. The first was the TAM only model, which was achieved by fixing the pleasure to attitude, arousal to attitude, and dominance to attitude paths at zero. This approach yielded the fit indices found in Table 4 (appendix), and the path coefficients presented in Figure 2 (appendix). All LISREL generated path coefficients were significant at the .001 level (***).

Support is clearly found in this analysis for Hypotheses 1, 2, and 7. The perceived usefulness and the perceived ease of use of Facebook were both found to be significant drivers of the attitude toward the Facebook experience. Additionally, the attitude toward the Facebook experience was found to be a significant driver of the intention of future Facebook use.

The second model included the PAD, as well as the TAM. This approach yielded the fit indices found in Table 5 (appendix), and the path coefficients presented in Figure 3 (appendix). Four of the path coefficients were significant at the .001 level (***), one was significant at the .01 level (**) and one was not significant.

These results clearly provide support for Hypotheses 3 and 5. The perceived pleasure and the perceived dominance when on Facebook were both found to be significant drivers of the attitude toward the Facebook experience. Hypothesis 4, however, was not supported by the data as no significant relationship was found between perceived arousal when on Facebook and the attitude toward the Facebook experience.

With regard to hypothesis six, a procedure offered by Werner and Schermelleh-Engel (2010) was employed in which the chi-square statistic for the larger model (TAM and PAD) was subtracted from the chi-square statistic for the smaller model (TAM only). The same was done for the degrees of freedom associated with both the larger and smaller models. In this case, the chi-square (difference) of 534.56 was significant at the .01 level with three degrees of freedom (difference). Because the chi-square statistic (difference) was significant, evidence exists that the larger model fits the data better than the smaller model. This implies that the ability to predict attitudes toward Facebook use is improved when the PAD is added to the TAM. Therefore,

support is found for this hypothesis. Finally, the second model provides a reaffirmation of Hypothesis 7.

DISCUSSION

The current study's focus was to assess the relative influence of cognitive and affective factors on consumers' attitudes towards and intentions to use Facebook through the use of the TAM and PAD models. The results show strong support for the TAM in using the cognitive indicators of perceived usefulness and perceived ease of use in predicting consumers' attitudes toward their Facebook experience. In addition, the findings also indicate evidence of support for the PAD in using affective factors of pleasure, arousal, and dominance in explaining consumers' attitude toward their Facebook experience.

The results support most of the hypothesized relationships in the proposed Facebook model. Hypotheses #1 and #2 were supported by the findings that the perceived usefulness and perceived ease of use of Facebook have a direct and positive effect of consumers' attitudes toward their Facebook experience. Similarly, Hypotheses 3 and 5 were also supported in that both perceived pleasure and perceived dominance when on Facebook significantly impacts consumers' attitude toward their Facebook experience. In addition, the PAD model was found to contribute explanatory power over and above the TAM model in explaining attitude toward Facebook experience (Hypothesis 6). And finally, attitude toward Facebook experience was also found to have a significant impact on intentions of future Facebook use (Hypothesis 7). Hypothesis 4 was not supported as perceived arousal when on Facebook did not influence consumers' attitude toward their Facebook experience.

The findings related to Hypotheses 2, 4 and 5 differ slightly from those reported by Kulviwat et al. (2007), who found perceived ease of use and perceived dominance as non-significant predictors of attitude toward adopting an innovation (personal digital assistant - PDA), and perceived arousal as a significant predictor of attitude toward adopting an innovation. These findings suggest that the predictive impact of cognitive and affective factors on attitudes toward technology may be technology specific. What holds true for one form of technology may not hold true for all forms of technology. Attitudes towards experience with a technology platform (i.e., Facebook) may be impacted differently than attitudes towards adopting a specific technology product (.i.e., a PDA), which is what Kulviwat et al. (2007) was assessing.

LIMITATIONS AND FUTURE RESEARCH

Although this study did provide additional insight into the influence of cognitive and affective factors on consumers' attitude toward their Facebook experience, a number of limitations do exist. First, our findings were obtained from a single study. Therefore, caution must be exercised when generalizing the results to the entire consuming population. Second, this study assessed intentions to use Facebook in the future, rather than actual Facebook behavior. Although, it is well documented that behavioral intentions do commonly manifest themselves in actual behavior. Third, this research did not specifically look at the relationships between perceived ease of use and perceived usefulness and between perceived usefulness and intentions to use Facebook. These two relationships have been firmly established in previous research in the Facebook context, but were not considered to be central to this research. Nonetheless, their inclusion could have provided a more complete picture. Finally, although the sample size in this

study was relatively large, respondent participation was based on self-selection, and as a result, some selection bias could exist within the sample.

Future research should focus on the influence cognitive and affective factors have on consumers' attitude toward their Facebook experience, and intentions to use Facebook, across different individual characteristics (e.g., gender, age, level of self-control), as well as different cultures. Additional research is also needed to assess other cognitive factors besides usefulness and ease of use, as well as other affective factors beyond pleasure, arousal, and dominance that may impact consumers' Facebook experience.

REFERENCES

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, N.J.: Prentice-Hall.

Amichai-Hamburger, Y., & Vinitzky, G. (2010). Social network use and personality. *Computers in Human Behavior*, 26, 1289-1295

Bagozzi, R. P. (2007). The legacy of the technology acceptance model and a proposal for a paradigm shift. *Journal of the Association for Information Systems*, 8(4), 244-254.

Bagozzi, R. P. Baumgartner, H. & Yi, Y. (1992). State versus action orientation theory of reasoned action; an application to coupon usage. *Journal of Consumer Research*, 18, 505-518.

Baker, J., Levy, M., & Grewal, D. (1992). An experimental approach to making retail store environmental decisions. *Journal of Retailing*. 68, 445-460.

Bakker, I., van der Voordt, T., Vink, P., & de Boon, J. (2014). Pleasure, arousal, dominance: Mehrabian and Russell revisited. *Currant Psychology*. 33, 405-421.

Burke, M., Kraut, R., & Marlow, C. (2011). Social capital on Facebook: Differentiating uses and users. *Annual Conference on Human Factors in Computing Systems*, Vancouver, BC.

Chang, S., Chih, W., Liou, D. and Hwang, L. (2014). The influence of web aesthetics on customers' PAD. *Computers in Human Behavior*, 36, 168-178.

Carpenter, C. (2012). Narcissism on Facebook: Self-promotional and anti-social behavior. *Personality and Individual Differences*, 52, 482-486.

Cheung, C., Chiu, P-Y, & Lee. M. (2011). Online social networks: Why do students use facebook? *Computers in Human Behavior*, 27 (4), 1337-1343.

Choi, G., & Chung, H. (2013). Applying the Technology Acceptance Model to social networking sites (SNS): impact of subjective norm and social capital on the acceptance of SNS. *International Journal of Human-Computer Interaction*, 29, 619-628.

Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: theory and results.* Doctoral dissertation, Sloan School of Management. Massachusetts Institute of Technology.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science, 35*(8), 982-1003.

Donovan, R. J. & Rossiter, J. R. (1982). Store atmosphere: an environmental psychology approach. *Journal of Retailing*, 58 (Spring), 34-57.

Donovan, R. J., Rossiter, J. R., Marcoolyn, G., & Nesdale, A. (1994). Store atmosphere and purchasing behavior. *Journal of Retailing*, 70(3), 283-294.

Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. (2015, January). *Social Media Update 2014*. Pew Research Center.

Dwyer, C., Hiltz, S., & Passerini, K. (2007). Trust and privacy concern within social networking sites: A comparison of Facebook and MySpace. *Proceedings of the Thirteenth Americas Conference on Information Systems,* Keystone, CO (August).

Havlena, W. J., & Holbrook, M. B. (1986). The varieties of consumption experience: comparing two typologies of emotion in consumer behavior. *Journal of Consumer Research*, 13, 394-404.

Holbrook, M. B. & Batra, R. (1987). Assessing the role of emotions as mediators of consumer responses to advertising. *Journal of Consumer Research*, 14, 404-420.

Hsieh, J., Hsieh, Y., Chiu, H., &Yang, Y. (2014). Customer response to web site atmospherics: task relevant cues, situational involvement and PAD. *Journal of Interactive Marketing*, 28, 225-236.

Hughes, D., Rowe, M., Batey, M. & Lee, A. (2012). A tale of two sites: Twitter vs. Facebook and the personality predictors of social media usage. *Computers in Human Behavior*, 28, 561-569.

Kulviwat, S., Brunner, G. C., Kumar, A., Nasco, S. A., & Clark, T. (2007). Toward a unified theory of consumer acceptance technology. *Psychology and Marketing*, 24(12), 1059-1084.

Lane, M. and Coleman, P. (2011). Technology ease of use through social networking media. *Journal of Technology Research*, 3, 1-12

Lin, C., Shih, H. & Sher, P. J. (2007). Integrating technology readiness into technology acceptance: the TRAM model. *Psychology and Marketing, 24*(7), 641-657.

Lund, A. M. (2001). Measuring usability with the USE questionnaire. *Usability Interface*, 8, 2.

Mehrabian, A. & Russell, J. A. (1974). An approach to environmental psychology. Cambridge, MA: MIT Press.

Moore, K. & McElroy, J. (2012). The influence of personality on Facebook usage, wall postings, and regret. *Computers in Human Behavior,* 28, 267-274.

Nadkarni, A. & Hofmann, S. (2012). Why do people use Facebook? *Personality and Individual Differences*, 52(3), 243-249.

Novak, T. P. (2008) The social web. *Marketing Science Institute Immersion Conference*. Boston MA. October 14-15.

Rauniar, R., Rawski, G., Yang, J., & Johnson, B. (2014). Technology acceptance model (TAM) and social media usage: an empirical study on Facebook. *Journal of Enterprise Information Management*, 27(1), 6-30.

Ross, C., Orr, E. S., Sisic, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. (2009). Personality and motivations associated with Facebook use. *Computers in Human Behavior*, 25, 578-586.

Ryan, T. & Xenos, S. (2011). Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage. *Computers in Human Behavior*, 27, 1658-1664.

Srite, M, & Karahanna, E. (2006). The role of espoused national cultural values in technology acceptance. *MIS Quarterly*, 30(3), 679-704.

Turley, L. W., & Milliman, R. E. (2000). Atmospheric effects on shopping behavior: a review of the experimental evidence. *Journal of Business Research*, 49, 193-211.

Werner, C. & Schermelleh-Engel, K. (2010, February). *Introduction to structural equation modeling with LISREL*. Frankfurt: Goethe University.

Wilson, R. E., Gosling, S. D., & L. T. Graham (2012). A review of Facebook research in the social sciences. *Perspectives on Psychological Science*, 7(3). 203-220.

Yani-de-Soriano, M. M., & Foxall, G. R. (2006). The emotional power of place: the fall and rise of dominance in retail research. *Journal of Retailing and Consumer Services*. 13, 403-416.

APPENDIX

Figure 1
Proposed Facebook Model

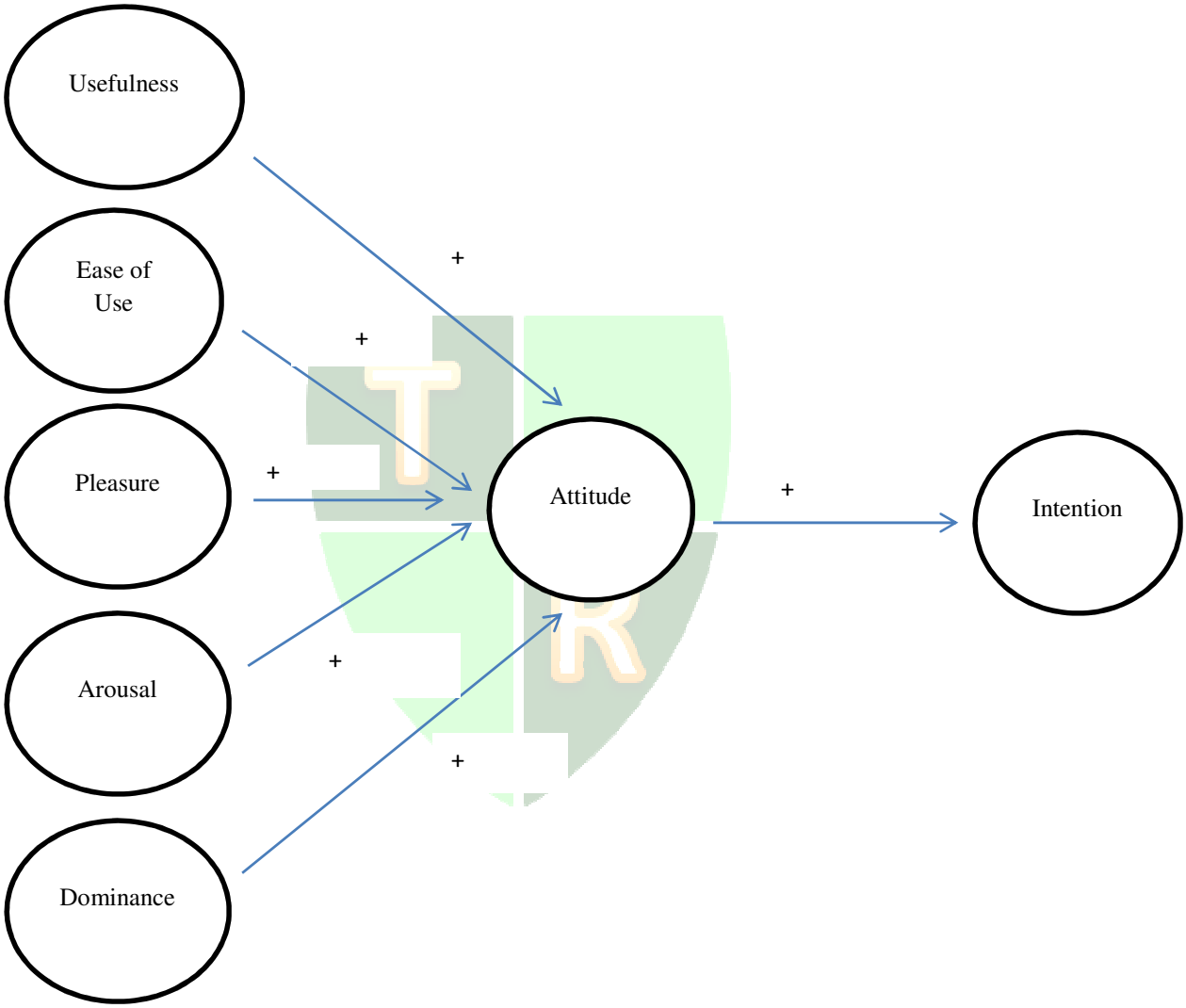

Table 1—Questionnaire

Do you use Facebook?

How long have you been using Facebook (to the nearest whole year)?

On average, how much time do you spend on Facebook per day (to the nearest whole hour)?

On average, how many times per day do you visit Facebook?

Please indicate your agreement or disagreement with each of the following statements regarding Facebook (1=Strongly Disagree, 5=Strongly Agree)

- It helped me be more effective.
- It helped me be more productive.
- It saved me time to use it.
- It required the fewest steps to accomplish what I wanted to do with it.
- It made the task I wanted to accomplish easier to get done.
- It was easy to use.
- I learned to use it quickly.
- It was simple to use.
- I easily remember how to use it.
- It was easy to learn to use it.

For each pair of descriptors, please indicate how you typically feel while on Facebook.

Happy	1	2	3	4	5	Unhappy
Pleased	1	2	3	4	5	Annoyed
Satisfied	1	2	3	4	5	Unsatisfied
Contented	1	2	3	4	5	Melancholic
Hopeful	1	2	3	4	5	Despairing
Relaxed	1	2	3	4	5	Bored
Stimulated	1	2	3	4	5	Relaxed
Excited	1	2	3	4	5	Calm
Frenzied	1	2	3	4	5	Sluggish
Jittery	1	2	3	4	5	Dull
Wide-awake	1	2	3	4	5	Sleepy
Aroused	1	2	3	4	5	Unaroused
In Control	1	2	3	4	5	Cared for
Controlling	1	2	3	4	5	Controlled
Dominant	1	2	3	4	5	Submissive
Influential	1	2	3	4	5	Influenced
Autonomous	1	2	3	4	5	Guided
Important	1	2	3	4	5	Awed

Overall, how would you describe your experience with Facebook?

Bad	1	2	3	4	5	Good
Negative	1	2	3	4	5	Positive
Unfavorable	1	2	3	4	5	Favorable
Unpleasant	1	2	3	4	5	Pleasant

Please indicate your intentions regarding future Facebook Usage.

I plan to spend a lot less time on Facebook	1	2	3	4	5	I plan to spend a lot more time on Facebook
I plan to visit Facebook a lot less frequently	1	2	3	4	5	I plan to visit Facebook a lot more frequently

Table 2
Do You Use Facebook by Demographics

Demographic	Level	Use Facebook	Valid Percent
Overall		1075/1407	76.4%
Gender			
	Men	437/641	68.2%
	Women	556/684	81.3%
Age			
	18-29	187/208	89.9%
	30-44	239/285	83.9%
	45-60	319/447	71.4%
	>60	248/385	64.4%
Household Income			
	0-24,999	209/274	76.3%
	25,000-49,999	144/183	78.7%
	50,000-99,999	285/382	74.6%
	100,000-149,999	151/205	73.7%
	150,000+	154/207	74.4%
Education			
	Less than High School Degree	9/12	75%
	High School Degree	92/130	70.8%
	Some College	278/362	76.8%
	Associate or Bachelor Degree	351/456	77.0%
	Graduate Degree	263/365	72.1%
Location (Census Region)			
	New England	59/91	64.8%
	Middle Atlantic	120/161	74.5%
	East North Central	153/200	76.5%
	West North Central	73/98	74.5%
	South Atlantic	169/231	73.2%
	East South Central	52/64	81.2%
	West South Central	82/104	78.8%
	Mountain	83/117	70.9%
	Pacific	195/249	78.3%

T
R

Table 3
Demographic Characteristics of Those Respondents That Used Facebook

Demographic	Level	Frequency	Percent	Valid Percent
Gender				
	Male	437	40.7	44
	Female	556	51.7	56
	Missing	82	7.6	
Age				
	18-29	187	17.4	18.8
	30-44	239	22.2	24.1
	45-60	319	29.7	32.1
	>60	248	23.1	25
	Missing	82	7.6	
Household Income				
	$0-$24,999	209	19.4	22.2
	$25,000-$49,999	144	13.4	15.3
	$50,000-$99,999	285	26.5	30.2
	$100,000-$149,999	151	14	16
	$150,000+	154	14.3	16.3
	Missing	132	12.3	
Education				
	Less than High School Degree	9	.8	.9
	High School Degree	92	8.6	9.3
	Some College	278	25.9	28
	Associate or Bachelor Degree	351	32.7	35.3
	Graduate Degree	263	24.5	26.5
	Missing	82	7.6	
Location (Census Region)				
	New England	59	5.5	6
	Middle Atlantic	120	11.2	12.2
	East North Central	153	14.2	15.5
	West North Central	73	6.8	7.4
	South Atlantic	169	15.7	17.1
	East South Central	52	4.8	5.3
	West South Central	82	7.6	8.3
	Mountain	83	7.7	8.4
	Pacific	195	18.1	19.8
	Missing	89	8.3	

Table 4
Fit Indices for the TAM Model

	Chi-Square	DF	Ratio	Sig.	RMSEA	CFI	IFI	NNFI	Decision
TAM only	2550.10	514	4.96	.000	.07	.96	.96	.96	Accept

Figure 2
The TAM only Model

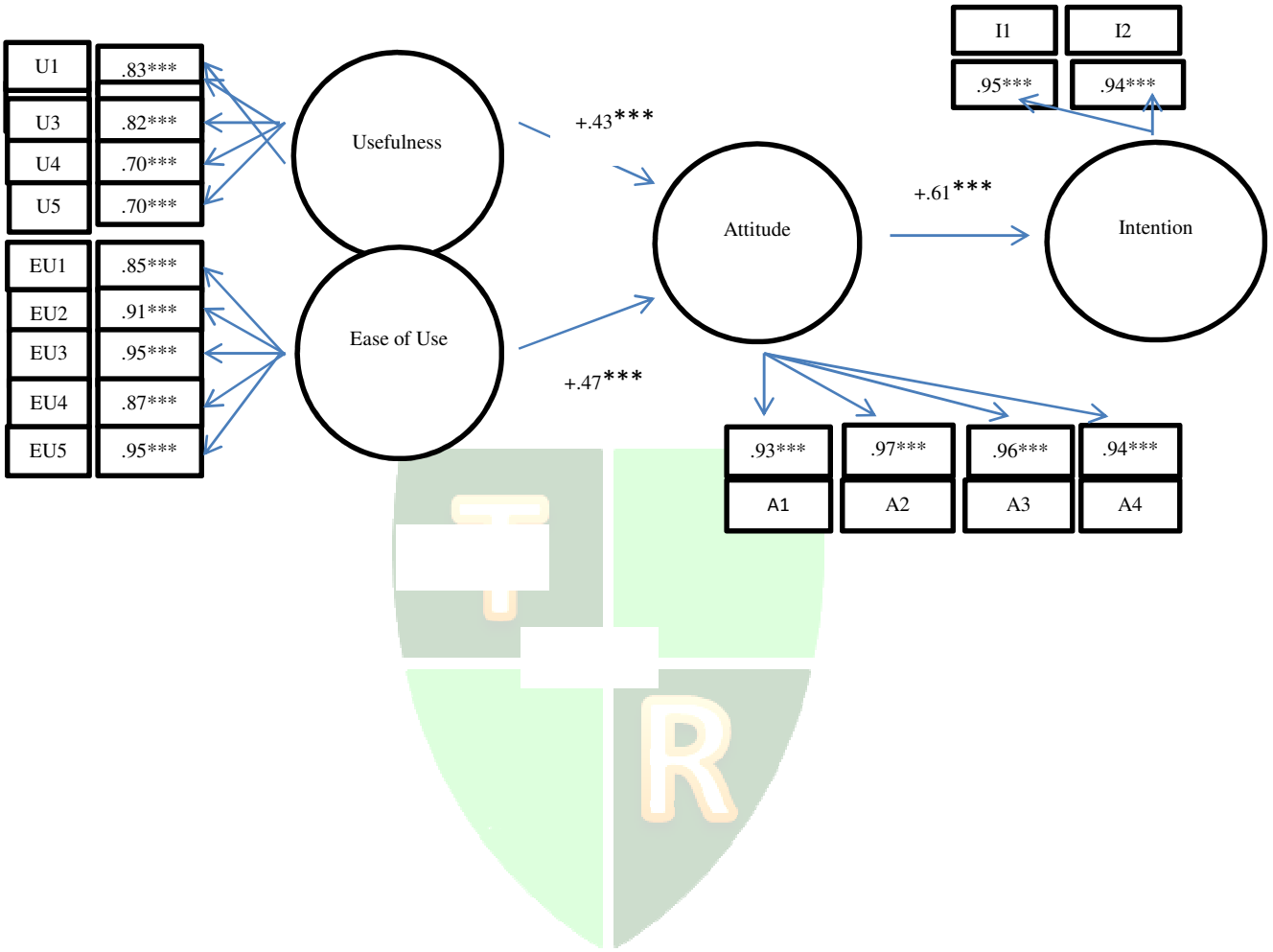

Table 5
Fit Indices for the TAM plus PAD Model

	Chi-Square	DF	Ratio	Sig.	RMSEA	CFI	IFI	NNFI	Decision
Tam plus PAD	2015.54	511	3.94	.000	.06	.97	.97	.97	Accept

Figure 3
The TAM plus PAD Model