

**SME INTERNET USE:  
THE MODERATING ROLE OF NORMATIVE INFLUENCE**

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**ABSTRACT**

*Of all electronic commerce technologies, the Internet is particularly relevant to SMEs interested in improving efficiency and competitive position. A consistent theme in the SME Internet adoption literature relates to the potential importance of accounting for normative influence. We extend thinking in the area by exploring the potential moderating effect of behavioral normative influence in SME technology acceptance. Consistent with predictions, owner/manager perceptions of normative Internet usage are found to interact with usefulness perceptions, which moderate the relationship between owner/manager perceived usefulness and Internet usage intention. Specifically, when normative influence is not perceived to be prevalent in the SME's environment, perceptions that the Internet could prove useful have a strong positive effect on owner/manager intention to increase usage of the Internet. In contrast, when the SME context is perceived to be associated with strong normative influence, usefulness perceptions do not greatly affect owner/manager intention to increase use of the Internet.*

**Keywords:** Internet use, normative influence, technology acceptance

## INTRODUCTION

Over the last 25 years, the business landscape has seen dramatic technological changes. Electronic commerce, including the use of the Internet, holds the potential to enhance business performance through improvement in efficiency and competitive position (Turban et al., 2008; Porter, 2001). The Internet has been viewed as a powerful tool enabling small firms to “level the playing field” when competing with larger firms; few times in the history of commerce have there been truly major changes in the way business can be conducted available to small and medium-sized enterprises (SMEs) (Levenburg, Schwarz, and Motwani, 2005). Indeed, this potential accounts for firms allocating approximately 50% of new capital investment in information technology (Westland and Clark, 2000).

Over this same period of time, the importance of SMEs has grown as they have increasingly become a key component of many countries' economies. When considering the definition of SMEs for the context of this research the term, SME covers a wide range of definitions and measures. Different countries adopt different criteria such as employment, sales or investment for defining small and medium enterprises. Hence different sources use different criteria in compiling relevant statistics. Further, the definition of an SME on the basis of a specific criterion is not uniform across countries (Ayyagari, et al., 2003). There is no universally accepted definition of an SME, even within the U.S. government. This situation reflects the relative nature of the “small” and “medium” classifications, which can apply differently to firms in the manufacturing, agricultural, and service sectors (U.S. International Trade Commission, 2010). For this research, we utilize the size standard in

number of employees as classified by the United States Small Business Administration, which also makes our data parameters consistent with World Bank parameters for small and medium enterprises (Ayyagari, et al., 2003). In general, U.S. businesses qualify as SMEs with 500 employees or less (U.S. SBA, 2012). SMEs represent about 90% of the total number of firms worldwide thus playing a significant role in global employment opportunities (Hall, 2002). SMEs account for approximately 60% of the total global workforce (Kotelnikov, 2007). Further, many SME's are conceived as embodying valued characteristics of organizations such as possessing flexibility and innovativeness (Al-Qirim, 2007; Liu, Chen, and Liao, 2005).

Of all electronic commerce technologies, the Internet is particularly relevant to SMEs interested in improving efficiency and competitive position in that they are not able to make the significant technological infrastructure investments of larger organizations. As such, the Internet may allow SMEs to realize the benefits of electronic commerce by allowing these firms to communicate with customers and suppliers, collect market information, provide information and promote goods and services, support the ordering of goods and services, and offer after sales support (Doherty and Ellis-Chadwick, 2003). Although electronic commerce technologies, including the Internet, have been widely adopted by large companies, the adoption of these technologies by SMEs is lagging behind that of larger firms (Kotelnikov, 2007; MacGregor and Vrazalic, 2006; Lee and Xia, 2006; Lee and Runge, 2001). Large firm IT adoption studies are difficult to generalize to SMEs because of fundamental differences between large firms and SMEs including the central

role of the CEO and the focus on generalist rather than specialist skills among employees in SMEs (Thong, 1999). Clearly, the decision making of small firms may be distinct from that of larger firms (Celuch, Murphy, and Callaway, 2007).

Electronic commerce adoption by SMEs is an important topic as evidenced by increased research attention over the past decade (cf., Kendall, et al., 2001; Kaynak, Tatoglu and Kula, 2005; Al-Qirim, 2007). However, while more recent studies have been conducted in other countries to examine the use of the internet by SMEs, similar studies focused on U.S. small firms are sparse (Levenburg, Schwarz, and Motwani, 2005). Thus, it is recognized that understanding in the area is in need of further development and refinement (Parker and Castleman, 2007).

Internet usage consists of a range of behaviors with small business sector research emphasizing two primary domains: communication and transactions. We focus on customer communication as this is a discrete behavioral domain that holds implications for a firm's ability to operate adaptively in its environment (Murphy, Celuch, and Callaway, 2007). Liao, Welsch and Stocia (2003) suggest that Internet use may facilitate external knowledge acquisition and internal knowledge dissemination which improves firm responsiveness. Further, Internet usage for communication with customers is a potentially important component of a small firm's market sensing activity (Johnson et al., 2003). Firms responding to customer information may adjust product/service offerings (Evans, 1991; Achrol and Kotler, 1999; Day, 1999) thereby strengthening their customer-company connection. Evidence suggests that intentions represent the underlying motivation to future

behavior (Ajzen, 1991). Thus, we argue that examining SME intention to use the internet for managing customer communication provides a "window" into the future customer responsiveness of the SME as these intentions are likely to be associated with other behaviors reflective of a customer orientation.

The purpose of this research is to shed light on understanding SME Internet adoption. While multiple perspectives have been used to explore SME Internet adoption, a consistent theme to emerge from the literature is the potential importance of accounting for nuanced effects associated with normative influence. Further, in work related to the broader technology adoption literature often applied in larger firm contexts, normative influence, while accounted for, has not heretofore been explored as a moderator. With respect to normative influence, social psychology has increasingly advocated focusing on a behavioral norm (i.e., an individual's belief about what significant others are doing in a given context) in models explaining behavioral intention (Kashima and Gallois, 1993). We believe the concept of behavioral norms is relevant to understanding information technology use, particularly for SMEs with limited knowledge and skill resources as they may not approach the decision from an explicit strategic orientation but may instead look to the behavior of significant environmental stakeholders (i.e., customers, competitors, and suppliers) for direction regarding Internet adoption.

We extend thinking in the area by not only exploring the potential moderating effect of normative influence in the SME technology acceptance domain but also by including an underutilized normative influence construct, behavioral norm, which we believe has the

potential to enhance understanding of boundary conditions associated with SME Internet adoption. We next provide background in terms of the technology acceptance theory, its extensions, and reasoning for normative influence as a moderator of SME Internet adoption.

### **SME Technology Adoption**

The Theory of Planned Behavior (TPB) (Ajzen, 1991) and the Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989) were developed to explain individual-level behavior. Both have been applied to small firm e-business adoption given that the owner/manager is likely to be the primary decision maker in this context (de Guinea et al., 2005; Premkumar, 2003). The TPB conceives of attitude, subjective norm, and perceived control as immediate antecedents of SME technology adoption intention (Harrison et al., 1997). In contrast, the TAM emphasizes perceived usefulness and perceived ease of use as impacting attitude and intention toward SME technology adoption (Grandon and Pearson, 2004). While both the TPB and TAM allow for the prediction of intention and subsequent behavior, they have been critiqued for failure to account for complexities tied to the social milieu. Specifically, criticism of the TAM focuses on its failure to explicitly account for potential normative influence. With respect to the TPB, although the perspective explicitly includes normative influence, criticism centers on its failure to account for the effects of alternative forms of normative influence (Parker and Castleman, 2009; Eagly and Chaiken, 1993).

Beyond the SME e-business realm, the role of normative influence has also been a point of contention in broader technology adoption models. For example, some models have included social influence

(Taylor and Todd, 1995) while others have not included the construct (Davis et al., 1989). Prior research has found effects for social influence in mandatory settings (Venkatesh and Davis, 2000), for less experienced women (Venkatesh and Morris, 2000) and for older workers (Morris and Venkatesh, 2000). We now turn to a review of relevant literature related to technology adoption.

### **Extensions of the Technology Acceptance Model (TAM)**

Given that the TAM was specifically developed to explain individual-level technology adoption, it is not surprising that it has been the most widely used framework to explain a range of information technology adoption. As a result, in response to critiques and in an effort to improve predictive and explanatory power as well as practical relevance the model has been revised and extended. Briefly, TAM2 extended TAM by incorporating additional determinants (including normative influence) of one of its core constructs, perceived usefulness, and also including two moderators (experience and voluntariness) of the subjective norm-usefulness and subjective norm-intention relationship (Venkatesh and Davis, 2000). The Unified Theory of Use and Technology Acceptance builds on TAM and TAM2 by synthesizing elements in prominent technology acceptance models (including some reviewed above) to reconfigure construct relationships as well as add gender and age as moderators (Venkatesh et al., 2003). Finally, TAM3 extends TAM2 by adding additional constructs to explain the perceived ease of use construct and positing several additional moderated relationships between antecedents and core perceived usefulness and ease of use constructs (Venkatesh and Bala, 2008).

Overall, work related to extensions of TAM confirms their explanatory power as between 40-70% of the variance in intention to adopt technology is explained by variants of TAM (Venkatesh and Davis, 2000; Venkatesh et al., 2003; Venkatesh and Bala, 2008). Of relevance to the present research, across all models, the core constructs of perceived usefulness and perceived ease of use are significant antecedents of intention to adopt technology. With respect to normative influence, subjective norm is found to indirectly, through perceived usefulness, and directly influence intention to adopt technology for mandatory organizational contexts (Venkatesh and Davis, 2000). Venkatesh et al. (2003) found the effect of normative influence on intention to be contingent on moderators (gender, age, experience, and voluntariness) such that its effect was nonsignificant without the moderators. Finally, Venkatesh and Bala (2008) found the effect of subjective norm on intention to be moderated by experience and voluntariness with normative influence becoming weaker with increasing experience in voluntary contexts.

In summary, the research related to extensions of the TAM is impressive given its breadth of theoretical integration, ecological validity (new system introductions for a range of industries and organizations across multiple time periods), and predictive power tied to technology adoption intention and actual usage. Note that, of relevance to the present research, studies examining extensions to the TAM were not specifically focused on SMEs or Internet adoption. Further, they included system implementation training, which, given limited resources (time, employees, and money), SMEs may not be able to avail themselves of such opportunities.

### **A Case for Normative Influence as a Moderator in SME Internet Adoption**

Research confirms that SMEs do not always proactively and systematically (i.e., strategically) account for external factors in making e-business adoption decisions. Yet we also know that pressure from customers, competitors, and suppliers are important external factors in information technology adoption, and specifically Internet adoption (Alzougool and Kurnia, 2010; Del Aguila-Obra and Padilla-Melendez, 2006; Alonso Mendo and Fitzgerald, 2005). Further, as noted previously, the notion of accounting for more nuanced effects associated with normative influence as an external factor influencing e-commerce adoption is prominent in the SME literature.

In the broader technology adoption literature, subjective norm is found to, indirectly (through perceived usefulness), and directly influence intention to adopt technology for mandatory organizational contexts. In addition, the effect of normative influence on adoption intention is found to be contingent on moderators (gender, age, experience, and voluntariness). Note that in this literature, studies were not specifically focused on SMEs or Internet adoption, and they include system implementation training, which, given limited SME resources, is not always available. As noted by Riemenshneider, Harrison, and Mykytyn, (2003), in the context of information technology adoption, SMEs are both understudied and unique relative to larger firms.

Venkatesh et al., (2003) note that despite the fact that the variance explained by the Unified Theory of Acceptance and Use of Technology is high, future work should examine further boundary conditions in attempts to deepen understanding of technology adoption. One area that we

believe is ripe for further consideration is the notion of normative influence as a moderator in technology adoption, particularly for SME Internet adoption. Note that while extensive work has explored the notion of moderation of normative influence in technology adoption, to our knowledge, this is the first study to explore normative influence as a moderator in the SME Internet adoption realm.

Exactly how and why might normative influence operate in the context of SME Internet adoption? Dick and Basu (1994), in the context of customer loyalty, broached the notion that subjective norms may impact repeat patronage. They view norms as potentially complementing or contradicting the effects of attitudes and as such conceive of norms as moderators of consumer loyalty. These authors reference early work on the attitude-behavior relationship, which suggests that norms may mitigate the effect of attitudes on behavior if the norms are contrary to the attitudes (Wicker, 1969; Ehrlich, 1969).

Rook and Fisher (1995) examined normative influence in the context of impulsive purchasing behavior. They posit that impulsive buying depends on a consumer's possession of an impulsive buying trait as well as on their normative judgments associated with the impulsive purchase. Thus, an impulsive consumer is more likely to engage in impulsive purchases when evaluating the purchase as normatively appropriate in comparison to an impulsive consumer who views the purchase as normatively inappropriate. Results supported the contention that normative evaluations moderate the relationship between an impulsivity trait and buying behavior for student as well as in-store samples.

Park and Smith (2007) highlight the prominence of normative influence on a range of health behaviors. They specifically focus on the impact of different types of normative influence in the context of using the Theory of Planned Behavior (TPB) to explain organ donation. Of interest for the present study is the distinction between what are often referred to as subjective norms and behavioral norms. While much research that attempts to explain individual-level decisions and behavior has utilized a subjective norm (i.e., an individual's belief about what significant others think the individual should do in a given context), increasing attention has been focused on a behavioral norm (i.e., an individual's belief about what significant others are doing in a given context) as a predictor in models (Kashima and Gallois, 1993). Of relevance for the present research, Park and Smith (2007) include behavioral norms in examining relations among TPB constructs in the organ donation context and find that behavioral norms moderate the effects of all three TPB constructs (attitude, subjective norm, and perceived behavioral control) on intention to sign a state registry for organ donation.

Therefore, in developing a model to examine SME owner/manager Internet adoption, we retain two of the most important antecedents of technology adoption, perceived usefulness and perceived ease of use, in that both have been found to be significant predictors of intention to adopt technology. Based on the central propositions related to the TAM and its extensions, perceived ease of use related to the Internet should be positively related to the perceived usefulness of the Internet. In turn, perceived ease of use and perceived usefulness should be positively related to Internet usage intention. Recall that subjective norm has been included in

revised TAM models and has been implicated in both perceived usefulness and intention to adopt technology. We extend thinking in the area by not only accounting for the moderating effects of normative influence but also by including the behavioral norm construct. As such, we posit that behavioral norms will moderate the relationship between perceived usefulness and Internet adoption intention. This thinking is consistent with Eagly and Chaiken's (1993) caution against insufficient consideration of the social context of decisions as well as with literature within psychology highlighting the need for consideration of normative influences beyond subjective norms (Ajzen, 2002; Godin and Kok, 1996; Sheppard, Hartwick, and Warshaw, 1988). We believe the concept of behavioral norms is particularly relevant to understanding information technology-related cognitions and behavior, particularly for SMEs as some may not approach the decision from an explicit strategy perspective but may instead look to the behavior of significant stakeholders (i.e., customers, competitors, and suppliers) in their environment for direction regarding Internet adoption.

Based on the prior discussion related to the TAM and its extensions, if an SME owner/manager believes that it will not be difficult to use the Internet, this should be positively related to the owner/manager believing that the Internet will be useful in managing information. In turn, Internet

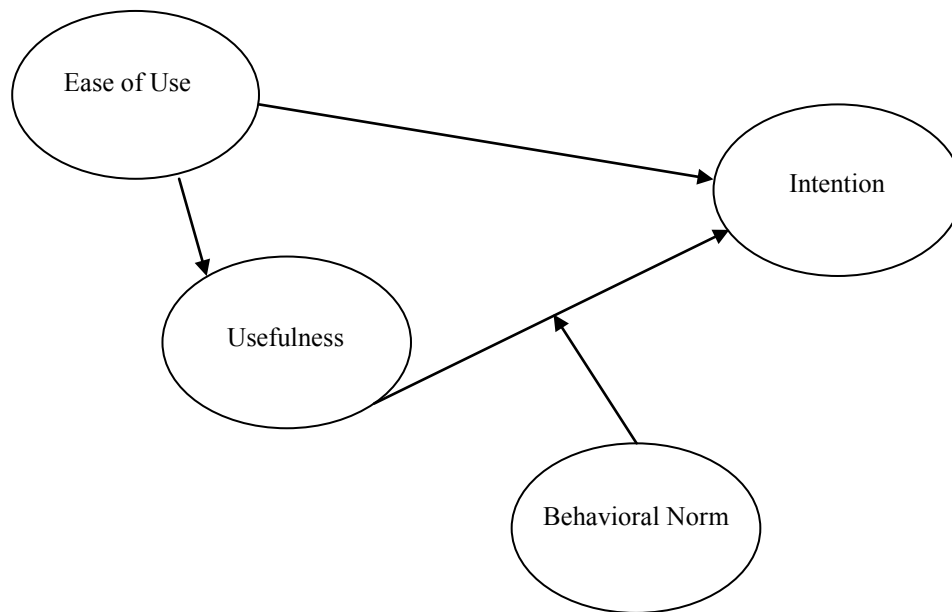
ease of use and usefulness perceptions should be positively related to owner/manager intention to increase use of the Internet for managing information. Thus, ease of use perceptions should have both direct and mediated effects on usage intention. Therefore, it is formally hypothesized that:

*H1: SME owner/manager perceptions of ease of using the internet will be positively related to perceptions of the usefulness of the Internet for managing information.*

*H2: SME owner/manager perceptions of ease of using the internet will be positively related to the intention to increase use of the Internet.*

*H3: SME owner/manager perceptions of ease of using the internet will partially work through (be partially mediated by) owner/manager perceptions of the usefulness of the Internet for managing information to influence intention to increase use of the Internet.*

*H4: SME owner/manager perceptions of usefulness of the Internet for managing information will be positively related to the intention to increase use of the Internet (please refer to Figure 1).*

**Figure 1: Hypothesized Mediating and Moderating Relationships**

Further, for the primary contribution of this research, we argue that it is an understanding of the joint influence of SME owner/manager perceptions that the Internet will be useful in managing information as well as perceptions tied to the normative behavior of key stakeholders that is posited to be important in understanding SME owner/manager Internet usage intention. In looking to the behavior of significant stakeholders (i.e., customers, competitors, and suppliers), when an SME owner/manager perceives strong stakeholder Internet usage, this should mitigate the influence of perceived usefulness on Internet usage intention. Thus, it is hypothesized that:

*H5: SME owner/manager perceptions related to the usefulness of the Internet for managing information will interact with (be moderated by) behavioral norm perceptions tied to key stakeholders to influence intention to increase use of the Internet. When normative influence is*

*high, perceived usefulness should not significantly explain Internet usage intention. In contrast, when normative influence is low, perceived usefulness should significantly explain Internet usage intention. (please refer to Figure 1).*

## METHOD

### Sample and Procedure

The sample frame for this study consisted of a list of 910 SMEs (that is, companies with up to 500 employees) in the Midwest. Each company was mailed a letter explaining the purpose of the research, a questionnaire, and a postage-paid return envelope. The letter was addressed to an individual representing top management in each company, with an offer to send a summary of the study's results if requested.

One hundred and thirty nine surveys were returned representing a response rate of 15.3 percent. Questionnaires were received from a variety of companies with the



majority representing the retail, construction, and financial services sectors. Respondents were predominantly middle-aged, male, college educated, and, as targeted, members of upper management. Companies represented in the sample ranged in size from one to 500 employees with a mean of 100 employees and a median of 25 employees. Approximately three-fourths of the firms had annual total revenues of less than ten million dollars.

The response rate of this study is comparable to response rates typically found in business sector research. In addition, discussions with managers at area firms suggest that such response rates are typical for the geographic area surveyed. Further, non-response bias was assessed by testing for differences between early and late respondents on the variables used in this research. No statistically significant differences were found between these two groups for any of the constructs employed in this study.

### Questionnaire

Although using the internet encompasses a range of behaviors, small business sector research has conceived of Internet use as relating to two primary domains: communication and transactions. We focus on customer communication as this is a discrete behavioral domain that holds implications for a firm's ability to operate flexibly in its environmental (Murphy, Celuch, and Callaway, 2007). Internet use may facilitate external knowledge acquisition and intra-firm knowledge dissemination to improve responsiveness (Liao, Welsch and Stocia, 2003). Internet usage for communication with customers is a potentially important component of a small firm's market sensing activity. Johnson et al., (2003) noted the importance of market sensing activities in firms'

responses to environmental demands. Of relevance to the present research, firms responding to market information may adjust product/service offerings (Evans, 1991; Achrol and Kotler, 1999; Day, 1999). Prior research has shown that small businesses use the Internet for customer communication and management (Ramsey & Ibbotson, 2006; Deans, Gray, Ibbotson and Knightbridge, 2003; Adams and Deans, 2001).

Measures for the questionnaire consisted of scales developed for constructs relevant to this research. The authors relied on literature reviews as well as knowledge of area firms in this process. Early drafts of the questionnaire were reviewed and pretested for readability and understandability by area company representatives. The final questionnaire included the following measures: Perceptions related to the ease of use and usefulness of using the Internet, Internet usage-related behavioral norms, and Internet usage intention. Recall that measures are oriented towards capturing the perceptions of the SME owner/manager as they are likely to be the key/primary decision maker in this context. The concluding portion of this survey consisted of individual respondent and company descriptors.

### Measures

*Perceived usefulness* consisted of three seven-point items, with respondents providing perceptions relating to their company's likelihood of improving its ability to obtain, share, and respond to customer information through use of the Internet. *Perceived ease of use* consisted of two seven-point items, with respondents providing perceptions relating to their companies' confidence and lack of difficulty in using the Internet for customer

communications. *Behavioral norm* consisted of three seven-point items, with respondents providing perceptions relating to use of the Internet for business communications by their companies' important stakeholders (i.e., customers, suppliers/vendors, and competitors). *Behavioral intention* consisted of three seven-point items, with respondents providing perceptions relating to their company's intent to increase its use of the Internet within the next 12 months to obtain, share, and respond to customer information.

### RESULTS

The purpose of this study is to test for moderated mediation, that is, from the perspective of an SME owner/manager, the mediational effect of Internet usefulness perceptions on Internet ease of use perceptions and Internet usage intention varies across levels of normative influence. As a precursor to analyses, confirmatory factor analysis using structural equation modeling (AMOS 18) was used to assess the convergent and discriminant validity of measures before testing hypotheses. With respect to the measurement model, observed indicators were all statistically significant ( $p < .05$ ) and evidenced large loadings on their corresponding factors. Fit statistics of the measurement model were

$\chi^2 (33) = 66.20$ ,  $p = .000$ , CFI = .97, RMSEA = .08, which suggest that the observed indicators are representative of constructs. The combination of CFI and RMSEA are consistent with ranges recommended for the evaluation of model fit for small sample sizes with a small number of observed variables (Hu and Bentler, 1999; Hair et al., 2006). Further, Cronbach's Alpha and composite reliabilities were above recommended thresholds (composite reliabilities for perceived usefulness = .94, behavioral norm = .85, and intention = .90) (Fornell and Larcker, 1981). Table 1 presents measures used in this study.

The amount of variance extracted (AVE) for the constructs is .85 for usefulness, .65 for behavioral norm, and .75 for intention. For all pairs of constructs, the amount of variance extracted for each construct is greater than the squared correlation between constructs. These results provide support for the discriminant validity of the measures (Fornell and Larcker, 1981). Based on internal consistency and validity assessments of the measures, summated scores of the multi-item scales were used to address the research hypotheses. Table 2 provides the means, standard deviations, correlations, and reliabilities for the measures used in this study.

**Table 1: Construct Measures**

Constructs and Items	Standardized Coefficient
<b>Perceived Usefulness</b> (scaled: very unlikely/very likely)	
Within the next twelve months, using the Internet will:	
Significantly improve your company's ability to obtain information from customers.	.90
Significantly improve your company's ability to share information from customers.	.94
Significantly improve your company's ability to respond to requests for information from customers.	.92
<b>Perceived Ease of Use</b> (scaled: strongly disagree/strongly agree)	
Within the next twelve months:	
Our company would not have any difficulty using the Internet for customer communication.	.84
Our company is very confident in its ability to use the Internet for customer communication.	.91
<b>Behavioral Norm</b> (scaled: strongly disagree/strongly agree)	
Over the next twelve months:	
Most of our major customers will use the Internet for a significant amount of business communication.	.82
Most of our major supplier/vendors will use the Internet for a significant amount of business communication.	.77
Most of our major competitors will use the Internet for a significant amount of business communication.	.82
<b>Intention</b> (scaled: strongly disagree/strongly agree)	
Our company intends to increasingly use the Internet within the next twelve months to:	
Obtain information from our customers.	.79
Share information with our customers.	.83
Respond to requests for information from our customers.	.97

**Table 2: Descriptive Statistics and Correlations for Study Constructs**

		Mean	Standard Deviation	X1	X2	X3	X4
X1	Ease of Use	5.8	1.45	.78**			
X2	Usefulness	5.1	1.51	.57**	.89		
X3	Behavioral Norm	4.8	1.48	.34**	.47**	.84	
X4	Intention	5.3	1.67	.65**	.76**	.39**	.93

\*\* Correlation is significant at the .01 level. A correlation is provided on the diagonal for the ease of use construct as it is represented by a two item measure.

Reliabilities (Alphas) are shown on the diagonal for constructs assessed via three item measures.

Hierarchical regression analysis, involving a series of models increasing in complexity, was used as a means of testing the hypothesized mediating and moderating relationships (Cohen and Cohen, 1983). In the first series of models, to test for mediation, perceived ease of use is entered as a predictor of perceived usefulness and then ease of use and usefulness are entered as predictors of intention to increase use of the Internet. In the second series of models, to test the moderating effect of behavioral norm, the behavioral norm and the interaction term (usefulness x behavioral norm) are added to the first series model with ease of use and usefulness predicting intention.

In order to test whether usefulness perceptions mediate the effect of ease of use perceptions on intention to increase use of the Internet, three conditions must be met. 1) Ease of use should have a significant effect on usefulness. 2) Ease of use should also have a significant effect on Internet usage intention. 3) As compared to condition #2, the impact of ease of use on intention should significantly diminish when usefulness is included in a regression model with ease of use predicting intention (Baron and Kenny, 1986).

With respect to H1, ease of use has a significant effect on usefulness, thus, condition #1 is met. Ease of use also significantly influences Internet use intention, thus, condition #2 is met. Lastly, the influence of ease of use is diminished (with the standardized coefficient decreasing from .65 to .32 with this coefficient still retaining significance) when usefulness is included in the regression model predicting relationship intention, meeting condition #3. In summary, consistent with predictions for SME owner/managers, perceived

usefulness is found to partially mediate the relationship between perceived ease of use and intention to increase Internet usage for managing customer information (please refer to Table 3).

We next examine the moderating role of behavioral norm as perceived by the SME owner/manager (H2). In the first step, ease of use, usefulness, and behavioral norm are entered as predictors of Internet usage intention. In the second step, to test the moderating effect of behavioral norm, the interaction term (usefulness x behavioral norm) is added to the first step model. Mean centering was not employed, as recent evidence suggests that there is no advantage to mean centering in terms of addressing collinearity issues or stability of estimates (Echambadi and Hess, 2007).

Table 3 presents results of the hierarchical regression analyses. Predictions receive support by the data given that the usefulness x behavioral norm interaction significantly explains an additional amount of variance in relationship continuity ( $R^2$  change = .02, significant at  $p < .05$  level), after controlling for the direct effects of usefulness and behavioral norm, with the influence of ease of use significant. This effect compares favorably with common ranges ( $R^2$  changes .02-.03) reported for moderator effects in non-experimental studies (Champoux and Peters, 1987).

As a precaution, variance inflation factors (VIF's) were examined to assess the effects of collinearity among the independent variables, particularly when the interaction term is a function of the other independent variables. Note that the VIF for the interaction term is above the recommended 10.0 cutoff (Hair et al., 2006). As a further check, the authors also utilized the two-step procedure identifying condition indices

above 30, and for any such indices, identifying multiple variables with variance proportions above 90 percent. The condition index for the interaction term was 40.42. However, the proportion of variance accounted for by this term did not exceed .90 for two or more variables (Hair et al., 2006). Thus, a collinearity problem is

not indicated. Taken together, results support the prediction of moderated partial mediation, that is, the partial mediational effect of perceived usefulness between perceived ease of use and Internet usage intention varies across levels of perceived normative influence.

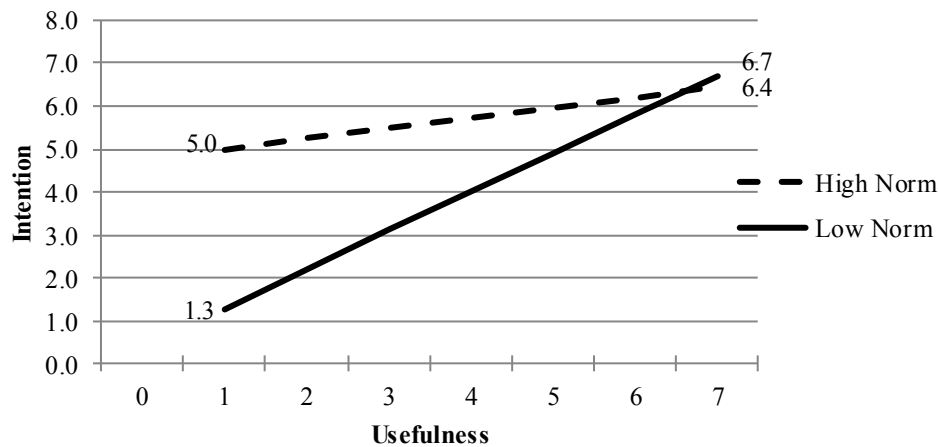
**Table 3: Hierarchical Regression Analyses Testing the Mediating Effect of Usefulness and the Moderating Effect of Behavioral Norm on Usefulness and Intention**

	R <sup>2</sup>	R <sup>2</sup> Change	Model Results		
			F value	F value Change	VIF
<b>Mediation Test</b>					
Usefulness = (.57**) Ease of Use	0.33		66.17**		
Intention = (.65**) Ease of Use	0.43		101.22**		
Intention = (.32**) Ease of Use + (.56**) Usefulness	0.64	0.21	125.88**	87.00**	1.48
<b>Moderation Test</b>					
Intention = (.32**) Ease of Use + (.57**) Usefulness + (.01) Behavioral Norm	0.64	0	83.32**	0.02	1.7
Intention = (.32**) Ease of Use + (.84**) Usefulness + (.01) Behavioral Norm + (-.49*) Usefulness X Behavioral Norm	0.66	0.02	65.29**	4.57*	20.56

Note: Standardized coefficients appear in parentheses. \*p < .05 \*\*p < .01

To identify the nature of the interaction, slopes are plotted for individuals one standard deviation above the mean (Mean = 6.7) and one standard deviation below the mean (Mean = 2.2) for perceived behavioral norm. Figure 2 displays the interaction effect on Internet usage intention. As expected, under low behavioral norm conditions, stronger

usefulness perceptions significantly enhanced Internet usage intention (F=125.09, p < .01). In contrast, usefulness perceptions do not have this effect on Internet usage intention under high behavioral norm conditions as such conditions drive stronger intention to follow stakeholder Internet usage (F=1.30, p=.266).

**Figure 2: Interaction of Usefulness and Behavioral Norm on Intention to Increase Use of the Internet**

In summary, consistent with predictions, SME owner/manager perceptions relating to the usefulness of the Internet for managing customer information are found to partially mediate the effect of owner/manager Internet ease of use perceptions on their intention to increase use of the Internet for managing customer information. Further, owner/manager perceptions of normative Internet usage are found to interact with usefulness perceptions which moderate the relationship between owner/manager perceived usefulness of the Internet and Internet usage intention. Specifically, when normative influence is not perceived to be prevalent in the SME's environment, perceptions that the internet could prove useful in managing customer information have a strong positive effect on owner/manager intention to increase usage of the Internet for managing customer information. In contrast, when the SME context is perceived to be associated with strong normative influence, perceptions that the Internet can be useful in managing customer information do not greatly affect owner/manager intention to increase use of the Internet to manage customer

information as the high norm is associated with a strong intention.

## DISCUSSION

The present study extends both SME e-commerce research and research related to the Technology Acceptance Model (TAM). Recall that a theme to emerge from the SME e-commerce literature related to the potential importance of accounting for nuanced effects associated with normative influence. Further, work related to the TAM, while accounting for normative influence has not explored the potential of the construct as a moderator and has tended to explore its application with students (in earlier work) or in larger firm contexts (in more recent work). We extend thinking in the area by not only exploring the potential moderating effect of normative influence in the SME Internet adoption domain but also by including an underutilized normative influence construct, behavioral norm, which we believe has the potential to enhance understanding of boundary conditions associated with SME Internet adoption. We believe this approach may help explain some inconsistencies in

findings related to core TAM constructs. For example, consistent with the TAM, some research has found strong effects for perceived benefits (perceived usefulness) (cf., Al-Qirim, 2007; Kaynak et al., 2005) while some have not (Tsao et al., 2004).

Findings support the core components of the TAM in that if an SME owner/manager believes that it will not be difficult to use the Internet for customer communication, this was positively related to the owner/manager believing that the Internet will be useful in managing customer information. In addition, Internet ease of use and usefulness perceptions were positively related to owner/manager intention to increase use of the Internet for managing customer information. As expected, ease of use perceptions had both direct and partially mediated effects on usage intention. We extend thinking in the area by finding support for the notion that it is an understanding of the joint influence of perceptions that the Internet will be useful in managing customer information as well as perceptions tied to the normative behavior of key stakeholders that is important in understanding SME owner/manager Internet usage intention. In looking to the behavior of significant stakeholders, when an SME owner/manager perceived strong stakeholder Internet usage, this mitigated the influence of perceived usefulness on Internet usage intention. Note that this parsimonious model explained 66% of the variance in Internet usage intention which compares favorably with explained variance ranges (i.e., 40-70%) reported in the literature related to the TAM. Note that this research by design focuses on intention rather than current behavior as this is consistent with the theory that intention provides an indicator of willingness to perform the behavior in the future. Given

the rapidly changing information technology landscape, we deemed assessing future behavior as more important than assessing current behavior. Further, if we had measured both current and potential behavior at the same time, we run the risk of biasing future predictions (Albarracin, et al., 2001). Future research could examine current behavior, which may capture SME propensity for reactivity to the past and current situation while the present study might capture SME propensity for proactivity in response to the evolving current and future environment.

Clearly, the present research highlights the importance of considering normative influence in SME technology adoption. More current revisions of the TAM delineate antecedents of the perceived usefulness construct as a means of developing pragmatic guidance to impact technology acceptance. However, given the results of the present research, if potential technology partners or government entities in the SME ecosystem wish to encourage technology adoption, it would appear that relying on the apparently logical and time honored approach of communicating factors associated with the benefits of technology usage (perceived usefulness), under conditions of strong normative influence, would not provide return for the resource expenditure. Under such conditions, effort educating the SME owner/ managers on the extent of usage by key stakeholders is likely to be a more effective approach. What might be the underlying mechanism for this type of normative influence? Park and Smith (2006) conjecture that subjective norms (i.e., what a person perceives important others think they should do) might have more impact in the decision to enact more socially constrained behaviors. Whereas, behavioral norms (i.e., perceptions of what

important others are actually doing) might be more likely to come into play when a decision is individually oriented. This is often the difference between large organizational decision making where a group or committee is responsible for a decision versus an SME decision context where an owner/manager is the decision maker. This line of thinking would argue for the incorporation of the behavioral norm construct in further applications of the TAM in the SME context.

Future research in the area could include more nuanced conceptualizations of the normative construct. Park and Smith (2006) examine conceptions of norms which include others' expectations, approval, and behavior and find support for differential as well as interactive effects among the various types of norms. In addition, given the potential importance of family members in the small business sector, future research could include this additional stakeholder beyond the ones used in the present study (i.e., customers, suppliers, and competitors). Further, some research suggests that stakeholders might exert differential influence on SME technology adoption, which argues for more fine-grained exploration of the normative influence associated with specific stakeholder groups (Bharati and Chaudhury, 2006).

At first blush, SME adoption of Internet technology under high normative influence conditions appears to contradict the strategy literature. Yet, adoption of technology prior to factoring how it might be useful does not mean that SME do not "connect the dots" at a later time. Celuch and Murphy (2010) suggest that SME capabilities tied to aligning information technology to strategy may be related to broader action tendencies of SMEs in

response to their environment. Therefore, some SMEs bias for action may mean that implementation precedes strategic understanding. Note that we concur with Broadbent and Weill (1996) that managers need to be clear regarding their strategic intent in order to more fully realize the benefits from information technology. We simply note that clarity of strategy may crystalize after initial implementation. Indeed, we suggest that this is one way SMEs can span the strategy gap – the difference between what a firm "must do" and what it "can do" (Zack, 1999). What a firm must do drives what a firm must know. Zack (1999) notes the importance of bridging this related knowledge gap in order to achieve clarity in strategy. Yet a firm cannot formulate strategy if it doesn't know what it needs to know with respect to a strategic option so experimentation through action is a way of bridging the knowledge gap. This thinking is not inconsistent with findings reported earlier that external factors sometimes resulted in small business adoption of e-business even when firms had not developed e-business capabilities (Caldeira and Ward, 2003; Rivard et al., 2006).

A potentially interesting question relates to would the same dynamics identified in the present study for using the Internet for customer communication management hold for moving back up the supply chain and using the Internet for supplier communication management? Future research could also examine the potential of behavioral norms moderating the adoption of other information technologies in addition to the Internet.

As with any study employing cross-sectional, self-report measures of respondent perceptions, results should be interpreted with these limitations in mind.



Future research could address design and measurement issues. Most notably, it is acknowledge that we do not assess actual technology adoption behavior but instead use adoption intention. Self-report limitations notwithstanding, it is important to note that common methods variance is not likely to account for the interaction effects, the principle focus of this study, as method variance should increase correlations consistently between construct measures (Aiken and West, 1991).

In conclusion, while there is still more to be learned about why SMEs adopt technology, normative influence appears to play an important role in the process. The present study, which considered behavioral norms as a moderator of core technology adoption perceptions, hopes to contribute to further research that extends understanding of SME technology adoption.

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