

Influencing Knowledge Sharing on Social Media: A Gender Perspective

Jae Hoon Choi^{a,*}, Ronald Ramirez^b, Dawn G. Gregg^c, Judy E. Scott^d, Kuo-Hao Lee^e

^a Assistant Professor, Austin E. School of Business, University of Wisconsin Green Bay, USA

^b Associate Professor, School of Business, University of Colorado Denver, USA

^c Professor, School of Business, University of Colorado Denver, USA

^d Retired Professor, School of Business, University of Colorado Denver, USA

^e Associate Professor, Ziegler College of Business, Bloomsburg University, USA

ABSTRACT

Online Word-of-Mouth communication, or eWOM, has dramatically changed the way people network, interact, and share knowledge. Studies have examined why consumers choose to share knowledge online, especially online product reviews, as well as the motivations of individuals to share product ideas online. However, the role of gender in shaping the motivation and types of knowledge shared online has been given little consideration. Using concepts from Social Exchange Theory and the Theory of Reasoned Action, we address this research gap by developing and testing a model of gender's influence on knowledge sharing in a social media context. A PLS analysis of survey data from 257 students indicates that reputation, altruism, and subjective norms are key motivators for knowledge sharing intention in social media. More importantly, that gender plays a moderating role within the motivation-knowledge sharing relationship. We also find that subjective norms have a greater impact on knowledge sharing with women than with men. Collectively, our research results highlight individualized factors for improving customer participation in external facing social media for marketing and product innovation.

Keywords: Social Media, Knowledge Sharing, Gender, Reputation, Subjective Norms

I . Introduction

Electronic Word-of-Mouth (eWOM), posted in online review sites, customer forums and social media, represents a vital communication mechanism between consumers and organizations. Especially as

hundreds of millions of people have integrated social media into their daily activities (Boyd and Ellison, 2008; Kim et al., 2015; Lou and Koh, 2017). Facebook, Facebook Messenger, YouTube, WhatsApp, WeChat, and Instagram, for example, each has over one billion monthly active users (Statista, 2019). This has led

*Corresponding Author. E-mail: choij@uwgb.edu

to dramatic change in the way organizations interact with current and potential new customers (Gallagher and Ransbotham, 2010; Leimeister et al., 2009). Research has highlighted the value of eWOM on influencing consumer buying behavior (Chu and Kim, 2011; Lee and Youn, 2009; Nielsen, 2012) and other critical organizational factors including brand equity, customer service, product feedback, and firm equity value (Kim and Ko, 2012; Luo et al., 2013; Wang et al., 2012).

Unlike the organizational controlled one-way conversations of the industrial era, customers are empowered to freely start conversations on social media and can post information independent of the product manufacturer. Focal organizations have become just another participant in the community conversation (van Noort and Willemsen, 2012). While losing control of communication can be a challenge, the information created online is a new source of value to the organization. User created content contains knowledge rich with valuable and transformative data, reflective of a new form of information innovation that is taking place outside of the firm. Social media posts can contain insight on product shortfalls and quality service issues, consumer trends, and technical innovation (Du et al., 2016). These new data can be transformative and can be used by organizations to develop new products and new revenue streams, as well as to improve existing processes. Inventory costs, for example, can be reduced through better product-market fit and more efficient marketing communications and message delivery (Heinonen, 2011).

Existing research investigates individual motivations for knowledge sharing in the context of online settings. Moderating factors have also been examined, involving participant involvement (Chang and Chuang, 2011), perceived usefulness (Yang, 2017),

and exchange ideology (Lin, 2007). What has yet to be addressed, however, is the moderating influence of an individual's gender. We address this gap by examining eWOM knowledge sharing of product information in social media, and how motivations for such knowledge sharing may vary based on an individual's gender. Existing research highlights how social media enables customers to share ideas regarding products and services and that such sharing is a common occurrence (Heinonen, 2011; Vithayathil et al., 2017). However, while researchers have found that gender does influence IT artifact use in general (Gefen and Straub, 1997; Morris et al., 2005; Venkatesh and Morris, 2000) including the use of social media (Kimbrough et al., 2013), the variation in social media knowledge sharing by gender has received little attention. As women and men often have different perspectives on numerous subjects, such as on products (Atlason et al., 2017), understanding both perspectives is important.

Motivating participation in social media is challenging as knowledge sharing by external sources (e.g., consumers) is voluntary, with control of the conversation residing on the social media platform and not within any specific product manufacturer. In addition, participants cannot expect any tangible or monetary incentives from sharing their knowledge on a social media platform. Social Exchange Theory provides insight into individual knowledge sharing in social situations, including online (Casimir et al., 2012; Liang et al., 2008; Wu et al., 2014; Yan et al., 2016). As the social environment is a primary setting through which individual information sharing takes place, we utilize Social Exchange Theory (SET) to model why a person intends to share knowledge in social media; for personal and social benefits related to reputation. This is consistent with research identifying reputation as a key motivator for knowledge

sharing in knowledge management systems (Hung et al., 2011) and blogs (Hsu and Lin, 2008).

A model of knowledge sharing intention must also include factors reflecting norms of behavior (Chen et al., 2009; Jolaei et al., 2014; Lin and Lee, 2004). In this context, the motivation and influence of others deemed relevant, on performing the positive behavior of sharing knowledge. As such, we enhance our model by adopting concepts from the Theory of Reasoned Action (TRA) to explicitly include the role of social influence on the behavioral intention of knowledge sharing (Ajzen and Fishbein, 1973; Fishbein and Ajzen, 1975). In particular, we incorporate subjective norms in our model as the sharing culture in online social networks has been shown to be an important contributor to knowledge sharing intention (Pi et al., 2013).

Research has also identified altruism as an important motivating factor for knowledge sharing in an online environment (Chang and Chuang, 2011; Ma and Chan, 2014), including eWOM sharing in a restaurant satisfaction context (Yang, 2017). In the social setting, altruism involves sharing knowledge unconditionally, with the individual experiencing a sense of satisfaction from the action itself and an enjoyment of helping others (Ma and Chan, 2014). Thus, altruism is a stimulating factor in sharing behavior and positively impacts both the quantity and quality of knowledge shared. It also helps bond individuals to the social community, creating a cohesion among participating members (Ma and Chan, 2014).

Guided by earlier research, the application of SET and TRA theories and key individual motivators provide a foundation for our model of knowledge sharing intention. Our model highlights the influence of intangible costs, intangible benefits and social influences on knowledge sharing behavior.

Gender has been found to moderate the relation-

ship between knowledge sharing behavior and trust, strength of social ties, and reciprocity (Chai et al., 2011). Men, for example, are more concerned with privacy when deciding to share knowledge whereas women putting a higher value on social ties when deciding upon knowledge sharing. While this study examined a blogging context, it did identify the importance of understanding gender and its role in generating information exchange in online communities. Gender was also identified as an important factor in predicting participation and consumption behavior in YouTube (Khan, 2017). Men, for example, are more likely to dislike, comment on, and share videos. Together these studies indicate that understanding gender differences can help social media companies design services and network sites for active engagement and maximum participation (Kimbrough et al., 2013). Understanding why men and women share knowledge on social media will allow firms to develop strategies for brand messaging and consumer feedback response, as well as use the data to inform future product innovation. At minimum, firms need to thoroughly understand social media generated data across all genders to ensure they remain current with market trends and to not continue on stale innovation paths.

To test our model, we collect and analyze data from undergraduate and graduate students who are using Facebook in the U.S. and South Korea. In total, we analyze 257 valid cases using partial least squares (PLS). Our empirical analysis provides evidence that reputation, altruism, and subjective norms are important factors for the intention to share knowledge in social media. In addition, subjective norms affect knowledge sharing intentions more strongly for women than men. This study is the first to find gender effects on subjective norms in the perspective of social media knowledge sharing and contributes

to the understanding of motivators for knowledge sharing in a leading social media platform.

The remainder of the paper is organized as follows. The literature review, theoretical discussion, and hypotheses development is presented in the next section. Research methods are then discussed, following by data analysis, empirical results, and results discussion. Finally, a conclusion with contributions and limitations is presented.

II. Literature Review and Hypotheses

In this section, we introduce concepts from Social Exchange Theory and the Theory of Reasoned Action, and develop our conceptual model of the influence of gender on an individual's intention to share knowledge.

2.1. Social Exchange Theory (SET)

SET explains social exchange as a process of interpersonal interactions within social environments (Blau, 1964; Thibaut and Kelley, 1959). Similar to economic exchange theory, SET assumes that individuals evaluate the various costs and benefits associated with different behavior, and choose the most profitable behavior for themselves.

However, unlike economic exchange, social exchange involves only intangible costs and intangible benefits (Gefen and Keil, 1998). There are no explicit rules or regulations of reciprocity in return for the costs in social exchange (Gefen and Ridings, 2002). If there are explicit rules or regulations of reciprocity involving intangible goods, then it is an economic exchange of intangible goods. Although there is no guarantee of reciprocity, in a social exchange, an individual expects that the other party will reciprocate

his/her favor (Blau, 1964; Thibaut and Kelley, 1959).

Knowledge sharing in social media can be viewed as a social exchange. Information and knowledge are considered an exchange resource, and can be viewed as private goods. A person invests his/her time and effort to obtain them, and decides whether or not to share the knowledge asset they have developed and acquired. Costs are incurred by the individual who shares knowledge in social media, both in obtaining the knowledge and posting on the social media platform. The individual may expect intangible reciprocity via recognition or respect from others. Indeed, reputation has been identified as a potential benefit from knowledge sharing (Wasko and Faraj, 2005), especially when the participation is voluntary.

Furthermore, the interaction between an individual who shares knowledge and an individual who gets the knowledge does not involve an explicit contract. There is no guarantee that an individual who shares knowledge will receive any rewards, or an individual who gets the knowledge will respect the individual who shares the knowledge. The costs and benefits cannot be easily quantified due to their intangible characteristics.

Social psychologists consider that knowledge sharing has an egotistic aspect explained by economic and social exchange theory (Deci, 1975). Even though participation in social media is voluntary, with no economic rewards, users who share knowledge in social media may expect social rewards in the form of recognition and reputation based on feedback from others. Reputation is "...the degree to which a person believes that participation could enhance personal reputation through knowledge sharing" (Hsu and Lin, 2008, p. 68), and is an important factor for an individual to achieve and maintain status in a group (Wasko and Faraj, 2005).

Research has identified a link between knowledge

contribution in organizations and improvement in reputation of the contributor (Ba et al., 2001; Constant et al., 1994; Constant et al., 1996). This relationship contributes to the motivation of knowledge sharing in organizations (Kankanhalli et al., 2005; Wasko and Faraj, 2005) and in social settings as well as reputation affects different levels of social entities (Fombrun, 1996). In Facebook, for example, anticipated reputation was found to have a positive influence on attitude toward knowledge sharing (Pi et al., 2013). Thus, the perception that sharing knowledge will enhance one's reputation will motivate individuals to share their knowledge in social media. Accordingly, we hypothesize:

H1: Reputation is positively related to knowledge sharing intention on social media.

However, "reputation" does not explain all the motivation on sharing knowledge in social media. Foa and Foa (1974) presents six types of resources in exchange which are love, status, information, money, goods, and services. Kahneman (2003) explores human limitations and complications, which contradicts basic assumption of traditional economics and rationality. Using this view, people may not always maximize benefits and minimize costs.

While traditional economics may view decision behavior as driven by a self-oriented cost and benefit analysis, individual motives or goals may also be socially induced. Using this lens, decisions are made with a reflection on the benefits of a decision to society as opposed to the individual (Simon, 1992). Such altruistic behavior or altruism is an essential part of an individual's social instincts (Darwin, 1871) and motivates the decision making to sacrifice his own benefit in order to increase the benefits of others (Simon, 1992). Research has found evidence of al-

truistic behavior in customers, for example, in the provision of market information (Price et al., 1995). We suggest this is the case with individuals who freely share knowledge in social media to help others, despite incurring the cost of time, effort, and opportunity.

Altruism is usually demonstrated through pro-social behaviors such as sharing, helping, cooperation, and community service (Batson, 2012). Altruistic motives can be explained by exchange rules (Meeker, 1971). People who act altruistically share information because they want to give something to others, express concerns and care, or reduce the distress of others (Price et al., 1995). Such perceived, intangible benefits are considered when deciding on knowledge sharing action (Chang and Chuang, 2011; Deci, 1975; Hsu and Lin, 2008) and such action can be reinforced through the satisfaction experienced from this type of altruism (Ba et al., 2001; Wasko and Faraj, 2000). We expect similar motivating behavior related to knowledge sharing in social media. Thus, we hypothesize:

H2: Altruism positively influences intention to share knowledge on social media.

2.2. Theory of Reasoned Action (TRA)

TRA has been applied to explain a wide range of human behavior including IT adoption and usage (Morris et al., 2005) and has also been applied empirically to examine behavior in individuals and organizational environments (Morris et al., 2005). Bock and Kim (2002) suggest TRA is a good fit for application in the area of knowledge sharing in public organizations.

TRA assumes an individual's behavior is driven by their behavioral intention. Attitude toward behav-

ior and subjective norms are the precursor to behavioral intention (Ajzen and Fishbein, 1973; Fishbein and Ajzen, 1975), and attitude toward behavior is an individual's judgment whether or not to perform a behavior (Fishbein and Ajzen, 1975). Subjective norms are one's perception of social pressure about whether to perform a behavior or not (Morris et al., 2005), and the perceived norms of people who are important to an individual can affect a decision toward the behavior.

In this study, we are interested in social influence or subjective norms, especially as social media are based on users' social relations. An individual may share knowledge in social media based on a perception that the individual may think his/her social media friends want him/her to share knowledge. An individual may also think that he/she lags behind others if he/she does not share knowledge in social media or will be alienated if he/she does not do so. Thus, it is important to explore if social influence plays a role in sharing knowledge on social media.

This view of subjective norms on knowledge sharing does not imply that an individual views a behavior or its result favorably. We are simply arguing, as supported by previous research, that subjective norms have a strong and positive influence on the intention to perform a behavior (Morris et al., 2005; Venkatesh and Morris, 2000; Venkatesh et al., 2003), and are an important factor for intention to share knowledge in organizations (Bock and Kim, 2002; Bock et al., 2005; Chow and Chan, 2008).

Subjective norms are important not only in organizations, but also in private environments (Ajzen and Fishbein, 1973; Fishbein and Ajzen, 1975). People use social media to maintain and participate in social networks that are important to them. Even though knowledge sharing may be voluntary, pressure from friends in social media may play an important role

in the intention to share knowledge in social media like Facebook (Pi et al., 2013). Accordingly, we hypothesize:

H3: Subjective norms have a positive effect on intention to share knowledge on social media.

2.3. Gender

Gender effects have been found to be an important factor in the IT discipline (Gefen and Straub, 1997; Morris et al., 2005; Venkatesh and Morris, 2000). Women and men have been found to differ in their *perception* of communication technology (Gefen and Straub, 1997). Gender differences have been found in *the determinants of behavioral intention* in IT usage; e.g., male workers are more influenced by instrumentality while female workers are more influenced by social and environmental factors (Venkatesh and Morris, 2000). Women and men can also differ in *knowledge sharing characteristics* on blogs (Chai et al., 2011) and in their *utilization* of social media (Kimbrough et al., 2013). Whether technology or gender related factors are relatively more influential remains an open question; the characteristics of a technology, for example, were found to be more important than demographic characteristics in technology acceptance (Morris et al., 2005). However, what existing research does agree upon is that gender is an important factor to consider when examining individual level questions related to technology.

Research has shown that building an individual's reputation enhances one's status, especially in the context of knowledge sharing (Chang and Chuang, 2011). Men have a higher degree of concern for ego than women (Miller and Karakowsky, 2005), and men show an increasing awareness of status in a social environment (Tannen, 1990). In knowledge

sharing, contributors demonstrate to others that they have valuable expertise and receive recognition in response to their sharing. This, in turn, helps to establish the contributor's reputation (Ba et al., 2001). Given a man's concern for ego and social status, we hypothesize:

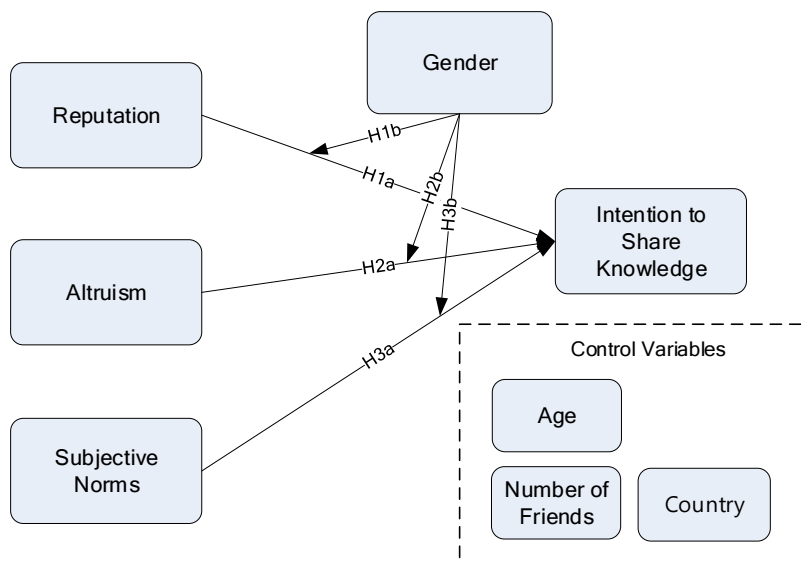
H4a: Reputation is positively related to knowledge sharing intention in social media more strongly for men than women.

Women are more concerned with helping others than men are (Bridges, 1989), and women consider pleasing others more highly than men (Miller, 1986). This may indicate that women are more in tune with the needs of others and may value behavior that helps a community rather than themselves. Indeed, altruism related to knowledge sharing has been found to be stronger for women than men in organizational settings (Lin, 2008). We expect this altruism gender variation characteristic to remain

in knowledge sharing on social media. Especially as research indicates men may have more self-centric motivations. Thus, we hypothesize:

H4b: Altruism positively influences intention to share knowledge in social media more strongly for women than men.

Women and men differ in the extent they are influenced by others (Becker, 1986; Eagly and Carli, 1981). Women tend to be more people-oriented while men tend to be more independent (Minton and Schneider, 1985). Research has shown that women are strongly motivated by affiliation needs (Hoffman, 1972) and tend to be more network oriented (Tannen, 1990). Together, this may influence behavior on social media. It is this type of behavior, the sharing of information and knowledge, that will be approved by her social media community. Accordingly, we hypothesize:



<Figure 1> Conceptual Model

H4c: Subjective norms have a positive effect on intention to share knowledge on social media more strongly for women than men.

Our four hypotheses are illustrated in the conceptual model below.

III. Methodology

3.1. Measurement Development

The measures used to operationalize the four constructs were adapted and modified from previous research. Reputation was adapted from Kankanhalli et al. (2005), and Wasko and Faraj (2005). Altruism was adapted from Hsu and Lin (2008), Podsakoff et al. (1990), Price et al. (1995), and Wasko and Faraj (2005). Subjective norms were adapted from Bock and Kim (2002), Bock et al. (2005), and Hsu and Lin (2008). Finally, Intention to Share Knowledge was adapted from Bock and Kim (2002), Bock et al. (2005), and Hsu and Lin (2008). These survey items focus on individual perceptions of reputational benefits, helping (altruism) benefits and existing social norms related to participation on Facebook and whether differences in these perceptions influence knowledge sharing behavior.

The survey included an introductory statement which asked subjects to answer questions as if they were considering providing information about electronic products to their friends on Facebook. Knowledge sharing about products is an important activity on Facebook as well as at other social media sites. Electronic products were chosen as the focus for this study because both men and women use electronic products and prior research has found that gender differences do exist when evaluating fea-

tures of electronic products (Atlason et al., 2017).

A pretest of 26 items, excluding 4 general items, was performed by 5 IS researchers, who categorized and prioritized the initial items. They evaluated how favorable (from 1 as the lowest to 7 as the highest) each item was with regard to the construct. And then, a pilot test was used with 38 undergraduate students in a mid-western university. As a result, 23 items including 4 demographic items were selected for the questionnaire. A Seven-point Likert scale with anchors ranging from Strongly Disagree (1), Neutral (4), to Strongly Agree (7) was used. The final questionnaire is in the <Appendix>.

3.2. Survey Administration

The study sample was taken from undergraduate and graduate students who were using Facebook in 3 mid-western and 1 western university campuses in the U.S. and 3 university campuses in South Korea. Facebook was chosen as the platform, since it is the most widely used social media in the world (Statista, 2019). It is also the only social media which is extensively used both in the U.S. and Korea. Students are frequent users of social media, and as such represent a suitable population to sample for the purposes of this study. Although users span the young to elderly, the age group of students is representative of the age group that uses social media most frequently. For example, students have been used as a sample population in previous studies on social media (Choi and Scott, 2013; Ellison et al., 2007).

Researchers created an online survey in SurveyMonkey for U.S. subjects. Paper based surveys were distributed to Korean subjects by faculty members at their universities. In the introductory statement, researchers highlighted that the questions were regard-

ing their perspectives on sharing knowledge about electronics products.

3.3. Control Variables

Facebook was launched in the U.S., and it is the first social media which has been spread over the world. Koreans had intensively used their social media, CyWorld, since 1999 before Facebook became popular. However, increasingly Koreans have been spending more time on Facebook than CyWorld. Thus, comparing the users who spread Facebook to the world and the users who have had longer experience in using social media may provide useful insights. Therefore, we control for the users in two regions. This study also examines whether there are differences among age groups and among users with differing numbers of friends in social media

IV. Results

The data were analyzed with SPSS 18, AMOS 18, and PLS-Graph build 1130. Responses were received from 271 students. However, 14 responses were removed because of missing values or the same values for all the question items. Responses from 257 students were analyzed. 52.9% of the respondents were female students (136) and 47.1% of the respondents were male students (121). 27.2% of the respondents were younger than 21 (70), 47.9% of the respondents were between 21 and 30 years old (123), 22.2% of the respondents were between 31 and 40 years old (57), and 2.7 % of the respondents were older than 40 (7). 48.6 % of the respondents lived in the U.S. (125), and 51.4% of the respondents lived in South Korea (132). Finally, 5.4% of the respondents had less than 51 friends in Facebook (14), 21.0% of the

respondents had between 51 and 100 friends in Facebook (54), 12.1% of the respondents had between 101 and 150 friends in Facebook (31), 16.7% of the respondents had between 151 and 200 friends in Facebook (43), 10.9% of the respondents had between 201 and 250 friends in Facebook (28), 9.7% of the respondents had between 251 and 300 friends in Facebook (25), 8.9% of the respondents had between 301 and 350 friends in Facebook (23), 8.9% of the respondents had between 351 and 400 friends in Facebook (23), and 6.2% of the respondents had more than 400 friends in Facebook (16).

The reliability of the constructs was tested using Cronbach's alpha and factor loadings. One item of Reputation and one item of Altruism were removed from the analysis, since they substantially affected reliability (Cronbach's alpha). Two items of Subjective Norms were also removed from the analysis, since they substantially affected reliability (factor loadings). The composite reliability ranges from .87 to .93 (Reputation = .87, Altruism = .88, Subjective Norms = .92, Intention to Share Knowledge = .93), which are adequate since they are above .7. These results support construct validity of the model.

<Table 1> shows the correlation estimates between the constructs, and the square root of average variance extracted (AVE) on diagonal values. The AVEs are between .62 and .79, which are above the required value of .50. The square roots of AVEs which are from .79 to .89 are higher than the absolute value of correlation estimates which are from .17 to .35. These results support the discriminant validity of the model.

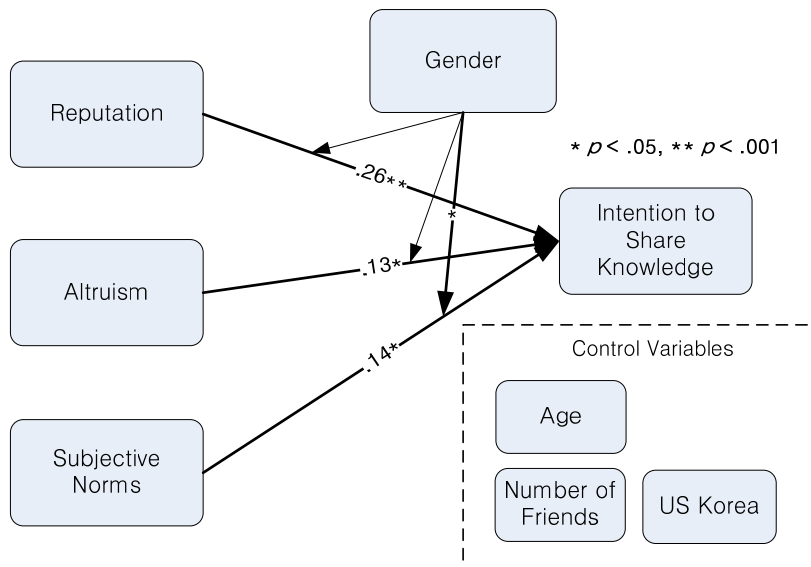
<Table 2> summarizes the results and the hypotheses supported, and <Figure 2> shows the analysis of the structural model. Hypothesis 1a, reputation is positively related to knowledge sharing intention in social media, is supported; .26, $t = 3.34$. Hypothesis

<Table 1> Correlations of Constructs

Construct	Reputation	Altruism	Subjective Norms	Intention to Share Knowledge
Reputation	.79			
Altruism	.35	.80		
Subjective Norms	.22	.17	.89	
Intention to Share Knowledge	.33	.24	.22	.88

<Table 2> Hypotheses Supported

Hypotheses	Supported	Estimates	t-statistics
Reputation → Intention to Share Knowledge	Yes	.26	3.34
Altruism → Intention to Share Knowledge	Yes	.13	2.29
Subjective Norms → Intention to Share Knowledge	Yes	.15	2.41
Reputation (Men > Women)	No	.25, .25	0.09
Altruism (Men < Women)	No	.13, .14	0.04
Subjective Norms (Men < Women)	Yes	.05, .21	1.98



<Figure 2> Structural Model

2a, altruism positively influences intention to share knowledge in social media, is supported; .13, $t = 2.29$. Hypothesis 3a, subjective norms have a positive effect on intention to share knowledge in social media, is supported; .15, $t = 2.41$. Finally, hypothesis 3b,

subjective norms have a positive effect on intention to share knowledge in social media more strongly for women than men, is supported; the estimates of male .05 and the estimates of female .21, $t = 1.98$. The R^2 value of Intention to Share Knowledge

is .15 ($R^2 = .15$). To explore how the relationship between reputation and intention to share knowledge, the relationship between altruism and intention to share knowledge, and the relationship between subjective norms and intention to share knowledge differ by gender, new constructs reputation X gender, altruism X gender, and subjective norms X gender were added to the PLS model.

Testing the impact of the control variables shows that there is no statistically significant difference between students that are different ages. There is no statistically significant difference between the U.S. and South Korean students, either. In addition, there are no statistically significant differences between students with differing numbers of friends in social media.

V. Discussion

The results indicate that reputation significantly motivates knowledge sharing intention in social media. This is consistent with the results of previous studies exploring the relationship between reputation and knowledge sharing in organizations (Ba et al., 2001; Chang and Chuang, 2011; Constant et al., 1994; Constant et al., 1996; Kankanhalli et al., 2005; Wasko and Faraj, 2005). This indicates that the perception or expectation that one's reputation will be enhanced by sharing knowledge is a significant predictor of knowledge sharing intention. In other words, that reputation is an important motivator for knowledge sharing in some online environments. However, men do not consider reputation to a greater extent than women when making decisions regarding the intention to share knowledge in social media. This may be because building reputation which enhances one's status (Chang and Chuang, 2011) is important

not only for men, but also for women. In addition, the fact that electronics is a product category relevant to both women and men suggests both groups are willing to share knowledge on electronics.

The results show that altruism is another important motivator for the intention to share knowledge in social media. This indicates that people like to share their knowledge in social media, since they expect their knowledge to be of some help to others. This could be because their friends in social media include people who are important to them such as their family, relatives, and close friends. However, altruism does not have a stronger effect for women than men in the intention to share knowledge in social media. One possible explanation to this result is that men care for their family, relatives, and close friends to the same extent as women.

The results also show that social factors (subjective norms) are important for the intention to share knowledge on social media. This is consistent with the previous studies that found subjective norms as an important factor for the intention to share knowledge in organizations (Bock and Kim, 2002; Bock et al., 2005; Chow and Chan, 2008), and in Facebook (Pi et al., 2013). This indicates that people pay attention to their friends in social media; and feel affiliation by using social media. They may feel that a lack of sharing will separate them from their friends in social media. When their friends ask something about electronics, or post a photo about electronics with a question mark (?); they may feel that they are expected to share knowledge about them.

In addition, subjective norms are more salient to women compared with men in the intention to share knowledge on social media. This may be because women tend to be more people-oriented (Minton and Schneider, 1985). They may be more motivated by affiliation. Another possible explanation is that

women may be more responsive to a favorable reaction (e.g., more 'Like' in Facebook) from their friends in social media. Women may weigh the opinions of others in sharing knowledge in social media, and the opinions may influence their intention to share knowledge in social media. This also indicates that women may emphasize maintaining relationships more than men.

However, there is no difference related to age, the number of friends in social media, and between the U.S. students and Korean students. This is consistent with prior studies that have found that the major motives for using social network sites are similar between two countries (Kim et al., 2011).

VI. Conclusion

The results of this study provide researchers a theoretical model for further studies. It tests a framework examining the factors, reputation, altruism, and subjective norms, influencing knowledge sharing about electronic products in social media. This framework shows that different factors influence knowledge sharing in social media. People share knowledge for rewards (social rewards in this study), due to the motivation to help others, and because of social pressure. Besides, women are more sensitive than men in social pressure. This indicates that the motivation to share product knowledge in social media is complex, and there needs to be further research on this topic.

Practitioners also have the potential to utilize social media, externally, as a marketing tool. Organizations could utilize social media to increase customers' loyalty to its brand by communicating through social media. People want to try products that their friends or family recommend, and social media could be

a good medium for conveying those product recommendations. Social media use could also facilitate product knowledge sharing among customers. Managers are interested in knowledge sharing, since it affects customer behavior (Godes and Mayzlin, 2004; Hennig-Thurau et al., 2004; Vithayathil et al., 2017). Customers share their experiences and knowledge, which influence decision making (Heinonen, 2011).

In addition, customers are active producers of the business value for organizations (Heinonen, 2011). Organizations need to participate more in their customers' social media activities, and encourage them. Some organizations are taking notice of feedback from customers. The feedback has influenced correction of product flaws, and provided inspiration for new product development.

One possible way to facilitate knowledge sharing is for organizations to design reward systems to encourage customer product knowledge contributions. This could include coupons and discounts or other reward systems that enhances the reputation of the contributor (as reputation is a strong motivator for knowledge sharing in social media). Online review platforms provide reputation based "badges" to reward frequent contributors of product knowledge to their sites. Amazon designates gives frequent reviewers a "top reviewer" and Yelp uses a similar "elite badge," and Naver, a web portal in Korea, also uses this strategy.

Since altruism is another strong motivator for knowledge sharing on social media, another possible way to facilitate knowledge sharing is that organizations display images which inspire empathy and emphasize human touch. For example, organizations also could donate to charitable organizations, when a customer's contribution reaches a certain level.

There are limitations to this study. First, Facebook

was the only platform used for this study. Future research could also consider other social media to generalize the results across platforms. Second, there are motivators other than individual behavioral motivators including reputation, altruism, and subjective norms for intention to share knowledge in social media ($R^2 = .15$). Finally, this study focuses on social rewards. Future research needs to examine economic rewards, since social media are becoming more associated with advertising involved in monetary activities.

To conclude, we believe that social media are beneficial for knowledge sharing. Knowledge is a valuable

intangible asset that could benefit the receivers. We also believe that expectation of reputation, altruism, and social influence can facilitate knowledge sharing in social media. This paper provides a theoretical framework examining the factors (reputation, altruism, subjective norms, gender) influencing knowledge sharing in social media. Our contribution is important because despite social media being used widely throughout the world, theoretical understanding is limited. This paper also provides rationale for practitioners to utilize social media for marketing and product innovation.

<References>

- [1] Ajzen, I., and Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behavior. *Journal of Personality and Social Psychology*, 27(1), 41-57.
- [2] Atlason, R. S., Giacalone, D., and Parajuly, K. (2017). Product design in the circular economy: Users' perception of end-of-life scenarios for electrical and electronic appliances. *Journal of Cleaner Production*, 168, 1059-1069.
- [3] Ba, S., Stahtaert, J., and Whinston, B. (2001). Research commentary: Introducing a third dimension I information systems design: The case for incentive alignment. *Information Systems Research*, 12(3), 225-239.
- [4] Batson, C. (2012). A history of prosocial behavior research. In A. W. Kruglanski, W. Stroebe, A. W. Kruglanski, W. Stroebe (eds.), *Handbook of the history of social psychology*. New York: Psychology Press.
- [5] Becker, B. J. (1986). Influence again: An examination of reviews and studies of gender differences in social influence. In J. S. Hyde and M. C. Linn (eds.), *The psychology of gender: Advances through meta-analysis*. Baltimore, MD: Johns Hopkins University Press.
- [6] Blau, P. M. (1964). *Exchange and power in social life*. New York, NY: Wiley.
- [7] Bock, G., and Kim, Y. (2002). Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. *Information Resources Management Journal*, 14, 14-21.
- [8] Bock, G., Zmud, R. W., Kim, Y., and Lee, J. (2005). Roles of extrinsic motivators, social-psychological forces, and organizational climate. *MIS Quarterly*, 29(1), 87-111.
- [9] Boyd, D. M., and Ellison, N. B. (2008). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230.
- [10] Bridges, J. S. (1989). Sex differences in occupational values. *Sex Roles*, 20(3-4), 205-211.
- [11] Casimir, G., Lee, K., and Loon, M. (2012). Knowledge sharing: Influences of trust, commitment and cost. *Journal of Knowledge Management*, 16(5), 740-753.
- [12] Chai, S., Sanjukta, D., and Rao H. R. (2011). Factors affecting blogger's knowledge sharing: An investigation across gender. *Journal of Management Information Systems*, 28(3), 309-342.
- [13] Chang, H. H., and Chuang, S. S. (2011). Social capital and individual motivations on knowledge sharing: Participant involvement as a moderator. *Information & Management*, 48, 9-18.
- [14] Chen, I. Y. L., Chen, N. S., and Kinshuk (2009).

- Examining the factors influencing participants' knowledge sharing behavior in virtual learning communities. *Journal of Educational Technology & Society*, 12(1), 134-148.
- [15] Choi, J. H., and Scott, J. E. (2013). Electronic word of mouth and knowledge sharing on social network sites: A social capital perspective. *Journal of Theoretical and Applied Electronic Commerce Research*, 8(1), 69-82.
- [16] Chow, W. S., and Chan, L. S. (2008). Social network, social trust and shared goals in organizational WOM. *Information & Management*, 45(7), 458-465.
- [17] Chu, S. C., and Kim, Y. (2011). Determinants of consumer engagement in electronic word-of-mouth (eWOM) in social networking sites. *International Journal of Advertising*, 30(1), 47-75.
- [18] Constant, D., Kiesler, S., and Sproull, L. (1994). What's mine is ours, or is it? A study of attitudes about information sharing. *Information Systems Research*, 5(4), 400-421.
- [19] Constant, D., Sproull, L., and Kiesler, S. (1996). The kindness of strangers: The usefulness of electronic weak ties for technical advice. *Organization Science*, 7(2), 119-135.
- [20] Darwin, C. (1871). *The descent of man* (1st ed.). London: Murray.
- [21] Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- [22] Du, S., Yalcinkava, G., and Bsteler, L. (2016). Sustainability, social media driven open innovation, and new product development performance. *Journal of Product Innovation Management*, 33(S1), 55-71.
- [23] Eagly, A. H., and Carli, L. L. (1981). Sex of researchers and sex-typed communications a determinants of sex differences in influenceability: A meta-analysis of social influence studies. *Psychological Bulletin*, 90, 1-20.
- [24] Ellison, N., Steinfield, C., and Lampe, C. (2007). The benefits of Facebook "friends": Exploring the relationship between college students' use of online social networks and social capital. *Journal of Computer-Mediated Communication*, 12(3), 1143-1168.
- [25] Fishbein, M., and Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research, reading*. MA: Addison-Wesley.
- [26] Foa, U. G., and Foa, E. B. (1974). *Societal structures of the mind*. Springfield, IL.
- [27] Fombrun, C. J. (1996). *Reputation*. Boston: Harvard Business School Press.
- [28] Gallagher, J., and Ransbotham, S. (2010). Social media and customer dialog management at Starbucks. *MIS Quarterly Executive*, 9(4), 197-212.
- [29] Gefen, D., and Keil, M. (1998). The impact of developer responsiveness on perceptions of usefulness and ease of use: An extension of the technology acceptance model. *The DATA BASE for Advances in Information Systems*, 29(2), 35-49.
- [30] Gefen, D., and Ridings, C. M. (2002). Implementation team responsiveness and user evaluation of customer relationship management: A quasi-experimental design study of social exchange theory. *Journal of Management Information Systems*, 19(1), 47-69.
- [31] Gefen, D., and Straub, D. W. (1997). Gender differences in the perception and use of E-mail: An extension to the technology acceptance model. *MIS Quarterly*, 21(4), 389-400.
- [32] Godes, D., and Mayzlin, D. (2004). Using online conversations to study word-of-mouth communication. *Management Science*, 23(4), 545-560.
- [33] Heinonen, K. (2011). Consumer activity in social media: Managerial approaches to consumers' social media behavior. *Journal of Consumer Behavior*, 10, 356-364.
- [34] Hennig-Thurau, T., Gwinner, K. P., Walsh, G., and Gremler, D. D. (2004). Electronic word-of-mouth via consumer-opinion platforms: What motivates consumers to articulate themselves on the Internet? *Journal of Interactive Marketing*, 18(1), 38-52.
- [35] Hoffman, L. W. (1972). Early childhood experiences and women's achievement motives. *Journal of Social Issues*, 28(2), 129-155.
- [36] Hsu, C. L., and Lin, J. C. C. (2008). Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation.

- Information & Management*, 45, 65-74.
- [37] Hung, H. Y., Durcikova, A., Lai, H. M., and Lin, W. M. (2011). The influence of intrinsic and extrinsic motivation on individuals' knowledge sharing behavior. *International Journal of Human-Computer Studies*, 69(6), 415-427.
- [38] Jolaei, A., Md Nor, K., Khani, N., and Md Yusoff, R. (2014). Factors affecting knowledge sharing intention among academic staff. *International Journal of Educational Management*, 28(4), 413-431.
- [39] Kahneman, D. (2003). Maps of bounded rationality: Psychology for behavioral economics. *The American Economic Review*, 93(5), 1449-1475.
- [40] Kankanhalli, A., Tan, B. C. Y., and Wei, K. (2005). Contributing knowledge to Electronic knowledge repositories: An empirical investigation. *MIS Quarterly*, 29(1), 113-143.
- [41] Khan, M. L. (2017). Social media engagement: What motivates user participation and consumption on YouTube? *Computers in Human Behavior*, 66, 236-247.
- [42] Kim, H. W., Chan, H. C., and Gupta, S. (2015). Social media for business and society. *Asia Pacific Journal of Information Systems*, 25(2), 211-233.
- [43] Kim, A., and Ko, E. (2012). Do social media marketing activities enhance customer equity? An empirical study of luxury fashion brand. *Journal of Business Research*, 65(10), 1480-1486.
- [44] Kim, Y., Sohn, D., and Choi, S. M. (2011). Cultural difference in motivations for using social network sites: A comparative study of American and Korean college students. *Computers in Human Behavior*, 27(1), 365-372.
- [45] Kimbrough, A. M., Guadagno, R. E., Muscanell, N. L., and Dill, J. (2013). Gender differences in mediated communication: Women connect more than do men. *Computers in Human Behavior*, 29(3), 896-900.
- [46] Lee, M., and Youn, S. (2009). Electronic Word of Mouth (eWOM): How eWOM platforms influence consumer product judgement. *International Journal of Advertising*, 28(3), 473-499.
- [47] Leimeister, J. M., Huber, M., Bretschneider, U., and Krcmar, H. (2009). Leveraging crowdsourcing: Activation-supporting components for IT-based ideas competition. *Journal of Management Information Systems*, 26(1), 197-224.
- [48] Liang, T., Liu, C., and Wu, C. (2008). Can social exchange theory explain individual knowledge-sharing behavior? A meta-analysis. *Proceedings of 29th International Conference on Information Systems*.
- [49] Lin, C. (2007). To share or not to share: Modeling knowledge sharing using exchange ideology as a moderator. *Personnel Review*, 36(3), 457-475.
- [50] Lin, C. P. (2008). Clarifying the relationship between organizational citizenship behaviors, gender, and knowledge sharing in workplace organizations in Taiwan. *Journal of Business Psychology*, 22, 241-250.
- [51] Lin, H. F., and Lee, G. G. (2004). Perceptions of senior managers toward knowledge sharing behaviour. *Management Decision*, 42(1), 108-125.
- [52] Lou, L., and Koh, J. (2017). Enhancing fan participation in social media based virtual brand communities: The case of Like, comment, and share activities. *Asia Pacific Journal of Information Systems*, 27(1), 54-76.
- [53] Luo, X., Zhang, J., and Duan, W. (2013). Social media and firm equity value. *Information Systems Research*, 24(1), 146-163.
- [54] Ma, W. W. K., and Chan, A. (2014). Knowledge sharing and social media: Altruism, perceived online attachment motivation, and perceived online relationship commitment. *Computers in Human Behavior*, 39, 51-58.
- [55] Meeker, B. F. (1971). Decisions and exchange. *American Sociological Review*, 36, 485-495.
- [56] Miller, J. B. (1986). *Toward a new psychology of women* (2nd ed.). Boston: Beacon Press.
- [57] Miller, D. L., and Karakowsky, L. (2005). Gender influences as an impediment to knowledge sharing: When men and women fail to seek peer feedback. *Journal of Psychology: Interdisciplinary and Applied*, 139(2), 101-118.
- [58] Minton, H. L., and Schneider, F. W. (1985).

- Differential psychology, prospect heights*. IL: Waveland Press.
- [59] Morris, M. G., Venkatesh, V., and Ackerman, P. (2005). Gender and age differences in employee decisions about new technology: An extension to the theory of planned behavior. *IEEE Transactions on Engineering Management*, 52(1), 69-84.
- [60] Nielsen, A. (2012). *Nielson: Global consumers' trust in "earned" advertising grows in importance*. Business Wire.
- [61] Pi, S. M., Chou, C. H., and Liao, H. L. (2013). A study of Facebook groups members' knowledge sharing. *Computers in Human Behavior*, 29, 1971-1979.
- [62] Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., and Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *Leadership Quarterly*, 1, 107-142.
- [63] Price, L. L., Feick, L. F., and Guskey, A. (1995). Everyday market helping behavior. *Journal of Public Policy & Marketing*, 14(2), 255-266.
- [64] Simon, H. A. (1992). Altruism and economics. *Eastern Economic Journal*, 18(1), 73-83.
- [65] Statista. (2019). *The statistics portal*. Retrieved December 20, 2019 from <http://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>
- [66] Tannen, D. (1990). *You just don't understand: Women and men in conversation*. New York: William Morrow.
- [67] Thibaut, J. W., and Kelley, H. H. (1959). *The social psychology of groups*. New York: Wiley.
- [68] Van Noort, G., and Willemsen, L. M. (2012). Online damage control: The effects of proactive versus reactive webcare interventions in consumer-generated and brand-generated platforms. *Journal of Interactive Marketing*, 26(3), 131-140.
- [69] Venkatesh, V., and Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115-139.
- [70] Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- [71] Vithayathil, J., Dadgar, M., and Osiri, J. K. (2017). Social media usage and shopping preferences: An empirical investigation. *Proceedings of the 50th Hawaii International Conference on System Sciences*.
- [72] Wang, X., Yu, C., and Wei, Y. (2012). Social media peer communication and impacts on purchase intentions: A consumer socialization framework. *Journal of Interactive Marketing*, 26(4), 198-208.
- [73] Wasko, M. M., and Faraj, S. (2000). It is what one does: Why people participate and help others in electronic communities of practice. *Journal of Strategic Information Systems*, 9(2-3), 155-173.
- [74] Wasko, M. M., and Faraj, S. (2005). It is what one does: Why should I share? Examining social capital and knowledge sharing contribution in electronic networks of practice. *MIS Quarterly*, 29(1), 35-57.
- [75] Wu, I., Chuang, C., and Hsu, C. (2014). Information sharing and collaborative behaviors in enabling supply chain performance: A social exchange perspective. *International Journal of Production Economics*, 148, 122-132.
- [76] Yan, Z., Wang, T., Chen, Y., and Zhang, H. (2016). Knowledge sharing in online health communities: A social exchange theory perspective. *Information & Management*, 53(5), 643-653.
- [77] Yang, F. X. (2017). Effects of restaurant satisfaction and knowledge sharing motivation on eWOM intentions: The moderating role of technology acceptance factors. *Journal of Hospitality & Tourism Research*, 41(1), 93-127.

<Appendix> Questionnaire

The questionnaire (excluding the general questions) uses a seven-point Likert scale ranging from Strongly Disagree (1), Neutral (4), to Strongly Agree (7)

General
What is your gender? What is your age? About how many total Facebook friends do you have? Where is your location?
Reputation
I feel that sharing knowledge in Facebook improves my reputation I share knowledge in Facebook to improve my reputation Sharing knowledge in Facebook improves others recognition of me When I share knowledge in Facebook, my friends in Facebook praise me My friends in Facebook who share their knowledge in Facebook have more prestige than those who do not
Altruism
I like helping other people in Facebook I am willing to help others to solve problems in Facebook Sharing knowledge in Facebook can help others with similar problems When I have the opportunity, I help others solve their problems in Facebook When I have the opportunity, I give my time to help others when needed in Facebook
Subjective Norms
People who are important to me think that I should share knowledge in Facebook People who influence my behavior think that I should share knowledge in Facebook My Facebook friends think that I should share knowledge in Facebook My Facebook friends encourage me to share knowledge in Facebook It is expected of me that I share knowledge in Facebook
Intention to Share Knowledge
I plan to share knowledge with my Facebook friends in Facebook I will try to share knowledge with my Facebook friends in Facebook I intend to share knowledge with my Facebook friends in Facebook I will provide my knowledge at the request of my Facebook friends in Facebook

◆ About the Authors ◆



Jae Hoon Choi

Dr. Jae Hoon Choi is an Assistant Professor of Data Science at the University of Wisconsin Green Bay. He received his Ph.D. in Computer Science and Information Systems from the University of Colorado, his M.S. in Information Management from Syracuse University, and B.A. in Economics from Yonsei University. Prior to his doctoral degree, he was employed as an ERP consultant and a senior advisor. His research focuses on using data and statistical methods to develop new insights on business performance, and the effects of emotional factors on the economic decisions of individuals and organizations. His work has been published in *Information Systems Frontiers*, *Real Estate Finance*, *Journal of Theoretical and Applied Electronic Commerce*.



Ronald Ramirez

Dr. Ronald Ramirez is an Associate Professor of Management Information Systems and is the Associate Dean of Programs at the Business School, University of Colorado Denver. He previously served as the Director of the Information Systems area and Director of the Business School's Undergraduate Program. Ron received his Ph.D. in Management Information Systems from the Merage School of Business at the University of California Irvine, an M.B.A. in Finance from the Marshall School of Business at the University of Southern California, and a B.S. in Electrical Engineering from California State University Fresno. Dr. Ramirez has research expertise in organizational and economic issues as they relate to investment and use of technology, primarily in the areas of value maximization, organizational structure, process change, data governance, and firm innovation. His research has been published in *Information Systems Research*, *Journal of Management Information Systems*, *Information Systems Journal*, *Information & Management*, *Decision Support Systems*, and the *Journal of Operations*



Dawn G. Gregg

Dr. Dawn G. Gregg is a Full Professor at the University of Colorado at Denver and is the Director of Assurance of Learning for the Business School. Prior to her current role she has served as the Associate Dean of Programs and as the Administrative Director of the Bard Center for Entrepreneurship. She received her Ph.D. in Computer Information Systems and her M.S. in Information Management from Arizona State University, her M.B.A. from Arizona State University West, and her B.S. in Mechanical Engineering from the University of California at Irvine. While at CU Denver, she founded and was CEO of Developing Minds Software. Prior to her doctoral studies, she was employed for nine years as a research and development engineer. Her current research focuses on how to organize and maintain Web-based content so that it can be used to better meet business and special education needs. Her work has been published in numerous journals such as *MIS Quarterly*, the *International Journal of Electronic Commerce*, *Information & Management*, *Communications of the ACM*, and *Decision Support Systems*.



Judy E. Scott

Dr. Judy E. Scott is a Retired Professor of Information Systems at the University of Colorado Denver. Her teaching and research interests are in the area of e-business, enterprise systems, organizational learning and knowledge management. She serves on the editorial board of *Management Information Systems Quarterly Executive*, *Information Systems Management* and the *International Journal of Strategic Information Technology and Applications*.



Kuo-Hao Lee

Dr. Kuo-Hao (Howard) Lee is an Associate Professor of Finance at the Bloomsburg University of Pennsylvania. He has been served as the Coordinator of the Personal Finance Program for the Finance Department since 2012. Dr. Lee's research specialty and academic publications are focused on International Investment, Risk Management, Portfolio Diversification, and Corporate Finance. Dr. Lee is also enthusiastic about collaborating with researchers in other disciplines, including Information Technology Management, Economics, Accounting, and Decision Makings.

Submitted: October 29, 2019; 1st Revision: February 2, 2020; Accepted: April 22, 2020