INVESTIGATING THE INTENTION TO SHARE KNOWLEDGE IN VIRTUAL COMMUNITIES BASED ON THE FIVE-FACTOR MODEL

A running head: Virtual communities based on the Five-factor model

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ABSTRACT

The Web site virtual community Mobile01 is the 3C product forum with the highest browsing rate in Taiwan. In this study, we used the theory of reasoned action to analyse the actions of Mobile01 users and examined intention to share knowledge based on the Five-factor model. We used a questionnaire survey and structural equation modeling analysis to verify the research hypotheses. The results indicated that in the Mobile01, attitude and subjective norms were 2 factors that influenced intention to share knowledge. Five personality traits also influenced attitude towards and subjective norms for knowledge sharing. Extraversion, openness, and agreeableness significantly positively influenced attitude towards knowledge sharing and subjective norms about knowledge sharing. The results of this study can serve as a reference for related authorities.

Keywords: Virtual community, Theory of Reasoned Action, Five-factor model, Knowledge sharing

1. INTRODUCTION

Because of the increase in frequency of Internet use and the advent of the information technology era, the number of people using the Internet worldwide has rapidly increased. Internet use has become indispensable to people's daily lives. The increase in frequency of Internet use has caused the use rate of virtual communities to increase substantially; people can share information and knowledge and express their thoughts through virtual communities in addition to using paper-based or face-to-face communication methods. As indicated by Armstrong and Hagel (1996), virtual communities have become a widely used platform for

knowledge sharing; through the Internet and virtual communities, people can communicate and share knowledge, and similar interests can strengthen social cohesion.

In the era of IT development, computer, communications, and consumer electronic (3C) products are prevalent. People frequently discuss 3C products and share experiences through virtual communities. According to the statistical web traffic data provided by Alexa Internet in 2016, the Web site Mobile01 is the 3C product forum with the highest browsing rate in Taiwan. Mobile01 is a social networking Web site for discussing 3C products, mobile phones and devices, and various attractions in Taiwan; the majority of members are Taiwanese. In this study, the theory of reasoned action (TRA) was adopted to construct a research framework and model for determining the relationship between the five-factor model and knowledge sharing on Mobile01 and investigating the influence of latent variables. The results of this study can serve as a reference for related authorities.

2. LITERATURE REVIEW

Galton (1884) was the first researcher to propose the term personality trait. In 1981, Goldberg proposed the "Big Five" a list of five major personality traits. Costa and McCrae (1992) proposed the Big Five model, which could be applied to various cultures and various assessment methods, and demonstrated that the model has maintained relevance, is widely accepted, and is reliable; the five dimensions of personality proposed by Costa and McCrae comprised neuroticism, extraversion, openness, agreeableness, and conscientiousness.

Knowledge sharing can be applied to various fields. Chow and Chan (2008) observed managers of companies in Hong Kong to explore the relationship between social capitalism and organizational knowledge sharing. The results indicated that social networks and shared goals influenced willingness to share knowledge. Chang, et al. (2008) explored determinants that influenced users' intention to share knowledge on blogs and forums. The results indicated that the intention to share knowledge was influenced by internal and external interests and costs. According to Yeh and Huang (2011), trustworthiness, knowledge compilation efforts, and helpfulness significantly influenced the intention to share explicit and tacit knowledge. Sun et al. (2012) indicated that team members' sense of trust at an early stage was influenced by initial trust and early communication; sense of trust at an early stage and communication level at a late stage strengthened social cohesion and increased the satisfaction of team members at a late stage, and the knowledge-sharing behaviour of team members was influenced by late-stage communication, conflicting objectives, opportunism, and information asymmetry. Hsiao and Huang (2012) determined that the knowledge-sharing behaviour of team members was influenced by social skills, personal traits, and external environments. According to Jiang and

Lin (2013), expected relationship improvement influenced the relationship between knowledge-sharing willingness and behaviour; when people believed that sharing knowledge with colleagues improved relationships, willingness to share knowledge became highly positively correlated with knowledge-sharing behaviour. According to Cheng and Guo (2015), both social interaction tie and membership esteem were found to have mediating effects between knowledge contribution and social identity. In addition, knowledge contribution was found to have a direct influence on social identity.

Fishbein and Ajzen proposed the TRA in 1975. The purpose of this theory was to predict the influence of attitude on behaviour. This theory originated from theories of social psychology and was used to examine the relationship between personal attitude and usage intention in the information management field. The TRA has often been used to explore the behavioural intention of humans. According to the TRA, people typically execute rational decisions; in other words, people's behaviour is completely controlled by will. The TRA is typically used to predict and explain a particular behaviour or intention. People's actual behaviour is controlled by their behavioural intention; behavioural intention is influenced by both behavioural attitude and subjective norms. Behavioural attitude is determined by behavioural beliefs and resultant evaluations, and subjective norms are determined by normative beliefs and motivation to comply.

3. METHODS

Based on the TRA, a research framework and hypotheses were established in this study to explore the influence of the Big Five on the intention to share knowledge on Mobile01. The research model in this study comprised five dimensions: the five-factor model, attitude towards knowledge sharing, subjective norms for sharing knowledge, and intention to share knowledge. Figure 1 shows the research framework and model.
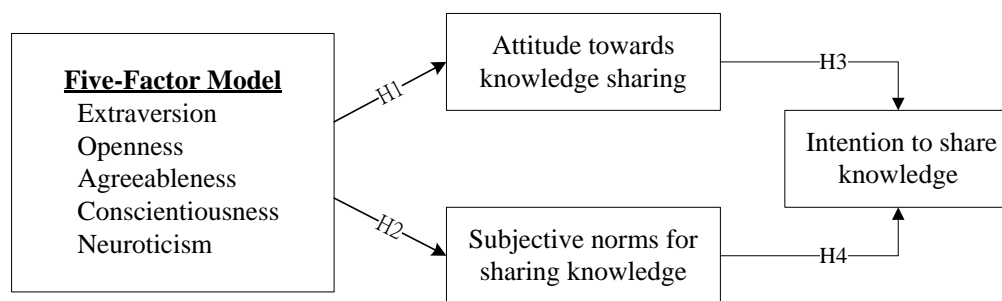

Figure 1: Research framework and model

Regarding the theory of planned behaviour (TPB), Ajzen (1989) mentioned an exogenous variable, personal trait, which influenced behavioural attitude. Wu and Li (2007) studied IT staff's knowledge-sharing behaviours and determined that personality trait was an exogenous variable that influenced attitude. Devaraja at al. (2008) explored the influence of the Big Five on technology acceptance and use, and determined that personal traits influenced subjective norms. Teh and Yong (2011) examined the relationship between the Big Five and knowledge-sharing behaviours, and concluded that personality traits influenced the attitude towards knowledge sharing. Hsing (2012) explored the knowledge-sharing behaviour of students based on the TRA and determined that personality traits positively influenced attitude. Huang (2012) examined the relationship between demographic variables for entrepreneurs who joined a convenience store chain and personality traits and entrepreneurial behaviour, and concluded that personality traits were positively correlated with the attitude and subjective norms of entrepreneurs. Hsu (2012) explored the personality traits of teenagers, idolatry, and attitude towards clothing consumption and determined that personality traits were significantly correlated with attitude towards clothing consumption. Wang et al. (2012) indicated that extraverts are more likely to use the communicative function of social networking sites, including status update, comment, and adding more friends. Based on the aforementioned studies, we proposed Hypotheses H1 and H2:

> **H1:** *The Big Five significantly influence attitude towards knowledge sharing*
>
> **H2:** *The Big Five significantly influence subjective norms for knowledge sharing*

Fishbein and Ajzen (1975) considered that behavioural intention was influenced by attitude and subjective norms. Ryu et al. (2003) explored the knowledge-sharing behaviours of doctors, and determined that subjective norms for knowledge sharing exhibited the greatest influence on behavioural intention. Lin and Lee (2004) investigated the knowledge-sharing behaviours of senior managers, and observed that both attitude and subjective norms positively influenced intention. Kuo and Young (2008) investigated factors that influenced intention to share knowledge based on the TRA and TPB, and observed that both attitude and subjective norms influenced intention to share knowledge. Shu and Chuang (2010) explored the intention of virtual community members to share knowledge, and determined that attitude towards knowledge sharing positively influenced intention to share knowledge. Teh and Yong (2011) studied knowledge sharing from an organizational-behaviour perspective and observed that attitude towards knowledge sharing positively influenced the intention to share knowledge. According to Wu's study (2012) regarding the knowledge-sharing behaviour of virtual community members from a TRA perspective, attitude towards knowledge sharing and subjective norms influenced the intention of Facebook members to share knowledge. According to Lu's study (2012) regarding knowledge sharing intention and behaviour, the attitude of

organizational members towards knowledge sharing positively influenced intention to share knowledge. Cheng (2013), based on TRA, investigated the influences of IT applications and organizational climate on knowledge-sharing behaviours, and determined that both attitude towards knowledge sharing and subjective norms for knowledge sharing significantly positively influenced intention to share knowledge. Based on the aforementioned studies, Hypotheses H3 and H4 were proposed in this study:

H3: *Attitude towards knowledge sharing significantly influences intention to share knowledge*

H4: *Subjective norms for knowledge sharing significantly influence intention to share knowledge*

4. RESULTS

This study used SPSS 18 and LISREL 8.72 for data analysis. The questionnaire used in this study was designed based on studies by Costa and McCrae (1992), Fishbein and Ajzen (1975), and other studies (Ajzen, 2002; Bock et al., 2005; Pavlou & Fygenson, 2006). To assess the perceptions of participants, a 5-point Likert scale was employed for this questionnaire.

4.1 Preliminary data analysis

The valid sample in this study comprised 222 Mobile01 users, 167 of which were men (75.2%), and 55 of which were women (24.8%). We surmised that the majority of participants were men because this Web site was related to 3C products. The majority of Mobile01 users in this study were aged 21–35 years, possessed an education level of university level or above, and were students (followed by IT professionals). A total of 79.2% of the participants had used the Internet for more than 10 years, and were thus highly experienced in using the Internet. A total of 52.3% of the participants used the Internet for an average of 2–4 hours daily. This result fulfilled the requirement of this questionnaire regarding frequent Internet use. According to the survey conducted in this study, 222 people had used Mobile01, and 61 people had never used Mobile01. This result indicated that Mobile01 was the preferred Web site of numerous people. Among the participants who had used Mobile01, 41.4% had shared knowledge on Mobile01, and 58.6% had not. This result indicated that most virtual community members used the community Web site to seek and browse information, followed by those who shared knowledge. The majority of the participants had used Mobile01 for 1–3 years (41.4%), indicating that although Mobile01 has been established for a long time, it only recently became people's preferred Web site. Most of the participants used Mobile01 on an average of less than 5 times per week, indicating the gradual acceptance of Mobile01. The majority of the participants used Mobile01 for an average of 30 min to 1 h each time. The majority of participants sought information about mobile phones,

followed by information about computers, notebook computers, and Apple products; this result indicated that Mobile01 was a 3C product forum Web site with a high browsing rate.

4.2 Confirmatory factor analysis

In this study, confirmatory factor analysis was performed and preliminary fit criteria, overall model fit criteria, and internal structure model fit criteria were assessed. The results of this study indicated that the preliminary fit indices were within an acceptable range. Table 1 shows the criteria and results for the overall model fit analyses.

Table 1: Criteria and results for overall model fit analyses

Indices		Criteria	Results
Chi-squared test	χ^2	$p > .1$	655.33
	χ^2/df	< 2	1.09 (655.33/598)
Goodness-of-fit indices	Goodness-of-fit index (GFI)	> 0.8	0.87
	Adjusted goodness-of-fit index (AGFI)	> 0.8	0.84
	Normed fit index (NFI)	> 0.9	0.94
	Nonnormed fit Index (NNFI)	> 0.9	0.99
Alternative indices	Comparative fit index (CFI)	> 0.9	0.99
	Root mean square error of approximation (RMSEA)	< 0.05	0.0087
Residual analysis	Root mean square residual (RMR)	As low as possible	0.027
	Standardized root mean square residual (SRMR)	< 0.08	0.049

The internal structure model fit criteria for this study were within an acceptable range and were described as follows. Most of the individual reliability (IR) values were higher than or close to a standard value. Although several IR values did not reach the standard value, related *T* values or factor loadings reached standard values, indicating that this questionnaire possessed satisfactory IR. According to Fornell and Larcker (1981), the composite reliability (CR) values for individual latent variables should be higher than 0.6. Except for extraversion, the CR values for all dimensions were higher than 0.6, indicating that this study possessed excellent CR. Aaverage variable extracted (AVE) values represented the ability of latent variables to explain the variance

of a measurement variable. A high AVE value indicated that a latent variable possessed excellent reliability and convergent validity. In this study, most of the AVE values were approximately 0.5, indicating that this study possessed excellent reliability and convergent validity. Discriminant validity (DV) was used to determine unrelated latent variables and to remove repeated dimensions and questions. Among the various models, the restrictive chi-squared value must be higher than the nonrestrictive chi-squared value with a degree of freedom (*df*) of 1 and a *p* value lower than .001 to demonstrate excellent DV for two dimensions. The results indicated excellent DV for various dimensions in this study.

In this study, we assessed the preliminary fit criteria, the overall model fit criteria, and the internal structure model fit criteria, and the results met the assessment standards.

4.3 Structural equation modelling analysis

According to the results of this study, the Big Five significantly influenced attitude towards knowledge sharing (H1); extraversion, openness, and agreeableness significantly positively influenced attitude towards knowledge sharing on Mobile01 and conscientiousness and neuroticism significantly negatively influenced attitude towards knowledge sharing on Mobile01. Mobile01 facilitates knowledge sharing by enabling users to write unboxing articles on the Web site, professional editors to write review articles, and customers to write comments about experiences using products. In this study, we assumed that extraverts enjoy meeting new friends, open-minded people are willing to share their views, agreeable people are altruistic, and that these three types of people possess positive attitudes towards knowledge sharing. Conscientious person are deliberate and do not provide opinions if they are uncertain; neurotic person are often hostile and are not open to sharing knowledge. Therefore, these two types of people possess negative attitudes towards knowledge sharing. The results of this study indicated that the Big Five significantly influenced subjective norms for knowledge sharing (H2). According to this study, extraversion, openness, and agreeableness significantly positively influenced subjective norms for knowledge sharing on Mobile01; conscientiousness and neuroticism significantly negatively influenced subjective norms for knowledge sharing on Mobile01. In this study, we assumed that conscientious people think prudently and neurotic people possess a strong sense of self-awareness, and that these two types of people are not easily affected by subjective norms. In addition, this study demonstrated that both attitude towards knowledge sharing and subjective norms for knowledge sharing significantly influenced the intention to share knowledge (H3 and H4). According to this study, if the attitude of Mobile01 users towards knowledge sharing was positive, their intention to share knowledge was high; the subjective norms of Mobile01 users for knowledge sharing significantly influenced intention to share knowledge.

5. CONCLUSION

Because technology and 3C products are rapidly developing, people consider information about 3C products crucial. Accordingly, numerous virtual communities have emerged and users can share professional knowledge, hobbies, and fun experiences through these virtual communities. Mobile01, the most popular networking Web site among Taiwanese people, has attracted substantial attention. In addition to providing a 3C product forum, Mobile01 contains information about other topics. Therefore, this study explored the influence of the Big Five on intention to share knowledge on Mobile01. This study determined that the Big Five significantly influenced intention to share knowledge, and attitude and subjective norms for knowledge sharing were two factors that directly influenced intention to share knowledge.

Regarding the attitude towards knowledge sharing, this study determined that a positive attitude towards knowledge sharing increased intention to share knowledge. In addition, subjective norms for knowledge sharing significantly positively influenced intention to share knowledge. In other words, intention to share knowledge was affected by the suggestions or views of family members and friends. Mobile01 is a renowned knowledge-sharing Web site in Taiwan. Users can share information about 3C products and obtain information about videos, cars and motorbikes, fashion, sports, life, travel, and food through this Web site. The majority of Mobile01 users can obtain the information they require, and therefore their attitude towards knowledge sharing tends to be positive. Accordingly, most Mobile01 users are willing to share knowledge and to establish mutual trust relationships. An interactive relationship forms during the knowledge-sharing process in the Mobile01 virtual community. The positive views of people's friends and relatives towards Mobile01 can affect subjective norms and further enhance intention to share knowledge. A virtuous cycle of knowledge sharing can increase the number of users and popularity of Mobile01. In summary, attitude and subjective norms for knowledge sharing significantly influenced intention to share knowledge, indicating that the results accorded with TRA.

The main factor that influenced attitude towards knowledge sharing and subjective norms for knowledge sharing was personality traits. In this study, we observed that three personality traits (i.e., extraversion, openness, and agreeableness) significantly positively influenced attitude and subjective norms for knowledge sharing. In this study, we assumed that people with these personality traits were lively, enthusiastic, sociable, friendly, and helpful, and were willing to help other people. In addition, we assumed that their attitude towards knowledge sharing was positive and they were willing to share knowledge or opinions with others. However, the two personality traits, namely, conscientiousness and neuroticism, significantly negatively influenced attitude and subjective norms for knowledge sharing. This study inferred that conscientious people were prudent and careful and did not easily express opinions or share knowledge;

neurotic people were hostile, often possessed negative emotions, and were unwilling to share knowledge or experiences. Moreover, conscientious and neurotic Mobile01 users were unsure whether the Web site protected their privacy and therefore were unwilling to express their opinions. This study suggested that Web site managers should protect user privacy, enhance Web site safety, and prevent unauthorized leakage of personal data, to enable conscientious and neurotic users to feel comfortable sharing knowledge. Thus, users with various personality traits could share knowledge and obtain various types of information from the Web site.

Based on the TRA, this study analysed the influence of the Big Five on intention to share knowledge. This study identified the factors that affected intention to share knowledge and assessed the influences of various personality traits on intention to share knowledge. The results of this study can serve as a reference for related authorities. In addition, the results of this study related to personality traits can be applied to management or recruiting of enterprise employees. This type of application can benefit enterprises.

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