

Is competence set expansion in the information service industry a planned behavior? The moderating effects of action control style

Daniel Y. Shee^{a*} and Ya-Ling Wu^b

^a*Department of Information Management, National Changhua University of Education, Changhua, Taiwan, Republic of China;* ^b*Department of Management Information Systems, National Chengchi University, Mucha, Taipei, Taiwan, Republic of China*

Technological advancement has brought dramatic changes to most industries. As a result, the pressure to compete has intensified tremendously. This is especially evident in the information service (IS) industry where the need of companies to expand their employees' competence set (CS) becomes critical. This study investigated whether CS expansion in the IS industry is a planned behavior moderated by individual style of action control. A mail survey was carried out to collect data from the IS companies in Taiwan. A total of 190 valid samples were obtained. The results of analyses showed that our proposed model provided a good fit to the data. Attitude tendency (AT), subjective norms (SN), and computer/information technology (IT) self-efficacy positively affected employees' intentions of expanding the CS. Moreover, we found that the action control style moderated the effects of AT, SN, and computer/IT self-efficacy on behavioral intention. The implications of this study as well as its limitations are discussed.

Keywords: competence set expansion; information service industry; action control style

Introduction

The 1990s have brought major technological advances to industry in general, intensifying competition and forcing major changes within companies. This phenomenon is especially apparent in the information service (IS) industry because operations here depend highly on the know-how and knowledge related to information technology (IT). This knowledge is possessed by a particular group within a company. This competent group, thus, becomes one source of core competitiveness. As IT continues to develop in leaps and bounds, the question arises of how to expand the competence set (CS) of personnel serving in the IS industry.

The term 'competence' comes from 'competere' meaning 'to seek together' in Late Latin, and 'to be suitable' in Middle French. During the past decades, a great deal of research has been conducted in the field of business administration, which contributes significantly to several areas of this field, including organizational core competence, competence-based management, and competence-based competition (Bonger & Thomas, 1994; Hamel, 1994;

*Corresponding author. Email: dyshee@cc.ncue.edu.tw

Prahalad & Hamel, 1990; Sanchez & Heene, 1996; Verdin & Williamson, 1994). Although the research products seem diverse, the term 'competence' is commonly defined in the literature as a combination of knowledge and skills of the employees and stakeholders of an enterprise (Hamel, 1994; Nordhaug, 1993; Prahalad & Hamel, 1990). Bassellier, Reich, and Benbasat (2001) argued that the knowledge-based viewpoint emphasizes the transfer of knowledge among different tasks to handle more complex, non-routine, and unstructured works; on the other hand, the skill-based viewpoint suggests training of personnel for specialized skills related to a particular job or profession in order to obtain an agreement between the skills of the personnel and the job requirements. Other viewpoints involving the definitions of competence vary. Some of them, for example, experience and know-how, are conceptually consistent with or similar to the aforementioned two; while others, for example, personal traits, motive, and social role, are distinct and less mentioned in the literature and yet still related to the working performance of a person (Bassellier et al., 2001; Haynes, 1979).

In this paper, CS is defined as a particular collection of competence items (e.g., knowledge, skills, experience, and other elements as mentioned above) required for the resolution of a particular category of problems or tasks. Yu (1990) pointed out that once individuals are of the opinion that they have possessed a particular CS, they will be more confident in dealing with challenges. Nevertheless, a CS might 'fade away' or become outdated over time, resulting in problems or tasks needing to be processed becoming unsolvable. Unless efforts are constantly devoted to CS expansion, a person's CS will be limited within a certain domain. Therefore, the CS expansion should be seen as a goal-directed activity. The goal is the acquisition of desired competence items necessary for satisfying one's current and/or future job requirements. In order to attain this goal, one must take certain actions such as pursuing further learning/education, consulting others, and working/cooperating with other people (Nordhaug, 1993). Consequently, what is originally a challenging problem will become a structured one.

The rapid progress of IT characterizes the IS industry; as a result, employees in this industry must continuously expand their CS in order to perform their job well. From the standpoint of IS companies, individual CS expansion represents an activity of organizational development carried out at the most fundamental level of a company, and it will contribute to a particular department, or even the entire company functioning well because 'people' are an essential element (Nordhaug, 1993). Accordingly, the exploration of CS expansion becomes a key issue.

Based on the theory of planned behavior (TPB) (Ajzen, 1985, 1991), this study first investigates whether attitude tendency (AT), subjective norms (SN), and computer/IT self-efficacy (CITSE) will influence employees' intentions of expanding the CS in the IS industry. However, as pointed out by Hagger, Chatzisarantis, and Biddle (2002), the cognition-intention/behavior relation is affected by sample characteristics. There are also many studies suggesting that personality traits may moderate the relationships proposed in the TPB (e.g., Bozionelos & Bennett, 1999; Conner, Povey, Sparks, James, & Shepherd, 2003; Cooke & Sheeran, 2004; Rhodes, Courneya, & Hayduk, 2002). In fact, action control theorists have proposed that a goal-directed activity can be divided into a pre-decisional phase, which involves forming the intention, and a post-decisional phase, which involves exhibiting the intention-driven behaviors in order to achieve the goal (Corno, 1989, 1994; Garcia, McCann, Turner, & Roska, 1998), and that action control style plays a role in these phases (Cherng & Lin, 2002). For example, Kuhl (1985) proposed that for the post-decisional phase, there is no definite relationship between intention and actual behavior because prior to engaging in actual behavior,

people's intentions may weaken or be replaced by other competing intentions, and that action control acts as a key factor to strengthen or protect the original intentions to ensure the completion of the actual behaviors. Although most discussions concentrate on the post-decisional phase, this study will aim at the pre-decisional one. Hence, a perspective of action control will be next employed to investigate the variances produced by different styles of action control in the pre-decisional phase of CS expansion when we model such a goal-directed activity as a planned behavior.

The remainder of this paper is organized as follows. Section 2 introduces the background of this study, the IS industry in Taiwan. In Section 3, we describe the conceptual development of this study. Section 4 explains the methodology, including the measurement development, pretest and pilot test, and data collection. The results of data analyses are presented in Section 5. Section 6 provides a discussion focused on the implications and limitations of this study. Finally, in Section 7, we draw our conclusions.

Background: the IS industry in Taiwan

In Taiwan, the Directorate General of Budget, Accounting and Statistics (2001), a government agency, defined the IS industry as an industry which includes companies 'possessing data processing equipments, engaged in custom-designed programs, making information system analyses, having a process for reporting data, providing network services, developing software packages, and offering consulting services.' On the other hand, according to the *Information Industry Almanac* published by The Institute for Information Industry (III) (1994), a non-profit organization acting as a key technology contributor to empower the information and software industry in Taiwan, prior to 1986 the information industry was divided into a total of eight segments as per the government's definition: computer manufacturing (including peripherals), computer leasing and sales (including peripherals), software design, data processing, data entry, information provision, training and education, and others. By 1987, the III proposed its own classification scheme by modifying the government's earlier viewpoint to a more software-focused one. According to this scheme, the software industry was classified into four segments: custom-made software, software package, system integration, and data processing. In 1990, in order to accommodate industrial development, the III consulted the viewpoints of the Association for Data Processing and Services Organization of the US and the Japan Information Service Industry Association to redefine the information and software industry. Consequently, the III renamed the information and software industry as the IS industry.

Based on the III's redefinition in 1990, the IS industry was divided into six segments: software package, turn-key system, system integration, professional services, network services, and processing services. Subsequently, as customers' demand for a total solution increased, boundaries between those segments became indefinite. In 2000, the III redefined the IS industry as 'the industry that specializes in information system or value-added software services' and in line with this definition, the six-segment approach was revised. The IS industry was thus divided into three categories based on the business models: products, projects, and services (Tung et al., 2001). Owing to their wide coverage, each of the three categories was further divided into two sub-categories. The product category was divided into software package and turn-key systems,

the project category into system integration and professional services, and the service category into network services and processing services. The IS industry definition adopted in this study is in accordance with that proposed by III in 2000.

Conceptual development

This study attempts to explore the factors that influence employees’ intentions of expanding the CS from the perspective of TPB in the IS industry. This means that AT, SN, and CITSE will be hypothetically taken as the antecedents to behavioral intention (BI). Furthermore, we will examine whether the effects of the aforementioned factors on BI are different when employees are subjected to different styles of action control. The research model is shown in Figure 1.

Hypotheses related to the TPB

Among numerous cognition–intention/behavior models in social and behavioral sciences, Ajzen’s (1985, 1991) TPB is one which has received extensive recognition. TPB was developed out of the Theory of Reasoned Action (Fishbein & Ajzen, 1975) which is primarily used to predict human behavior. The Theory of Reasoned Action proposed that human behavior is determined by BI, and this BI is influenced by attitudes towards a particular behavior and by SN. However, the Theory of Reasoned Action assumed a total volitional control by people over their behaviors. Ajzen, therefore, extended the Theory of Reasoned Action and proposed the TPB by adding a new construct, perceived behavioral control, as an antecedent to intention and behavior to enhance the predictability of the theory.

However, Hsu and Kuo (2001) argued that difficulty arises when using perceived behavioral control in research because (1) this construct cannot reflect all aspects of control belief and (2) some problems regarding the measurement of this construct still persist. Consequently, Bandura’s (1986) self-efficacy was recommended as a substitute construct for perceived behavioral control. This is deemed valid because these two constructs are ‘quite similar: both are concerned with perceived ability to perform a behavior’ (Ajzen, 2002, p. 668). Above all,

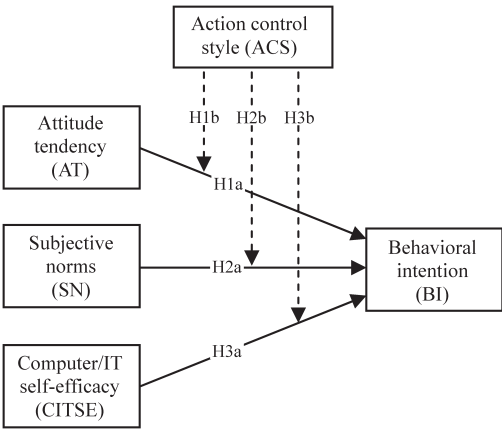


Figure 1. Research model.

‘the concern of self-efficacy is clearly with control over the behavior itself’ (Ajzen, 2002, p. 667), rendering this construct more suitable than perceived behavioral control for predicting human behavior. Considering the context of this study, what we refer to as self-efficacy is the CITSE, which is defined as people’s judgments of their own capabilities to use computer/IT products or applications.

Fishbein and Ajzen (1975) defined attitude as the judgment by an individual for a particular behavior. This attitude will be affected by behavioral belief and evaluation. Behavioral belief refers to individuals’ expectation that exhibiting a particular behavior will bring them certain consequences, while evaluation refers to the responses to these consequences. For example, if individuals have a positive judgment on good job performance and they are of the opinion that using IT will promote job performance, then they will hold a positive attitude towards the adoption of IT. The relationship between AT and BI has been tested and confirmed in many studies (e.g., Chiou, 1999; Pavlou & Fygenson, 2006; Taylor & Todd, 1995). Accordingly, this study proposes the following hypothesis:

H1a: Attitude tendency positively influences the intention of competence set expansion.

SN refer to the perceived social pressures to engage or not engage in a particular behavior, which is determined by normative belief and motivation to comply (Fishbein & Ajzen, 1975). Normative belief is a function of the expectations of important referent others on an individual’s behavior, while motivation to comply refers to the degree to which an individual conforms to the expectations of important referent others. Many studies (e.g., Gary, Franklin, Alan, & Mohammed, 1995; Mathieson, 1991; Taylor & Todd, 1995) have shown that there is a positive relationship between SN and BI. Accordingly, this study proposes the following hypothesis.

H2a: Subjective norms positively influence the intention of competence set expansion.

Bandura (1986, p. 391) defined self-efficacy as ‘people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances.’ This construct reflects people’s beliefs in their abilities to perform a particular behavior (Pavlou & Fygenson, 2006), and these beliefs positively influence their BIs (Compeau & Higgins, 1995; Hill, Smith, & Mann, 1987). Hsu and Kuo (2001) further supported the role of self-efficacy on the intentions of performing related behaviors in the future. Therefore, we suggest that in the IS industry, the higher the employees’ CITSE, the stronger their intentions of expanding the CS.

H3a: Computer/IT self-efficacy positively influences the intention of competence set expansion.

Hypotheses related to the moderating effects of action control style

Goal is a key element in a self-regulated behavior (Butler & Winne, 1995; Locke & Latham, 1990; Zimmerman, 1989). According to Lemos (1999), goal plays two major functions in the regulation of behavior: directing and monitoring. Early self-regulated behavior theorists proposed that people would take the necessary actions after setting a goal so as to produce the expected results (Cherng, 2001). However, there is no definite correlation between goal-setting and the expected results (Corno, 1989, 1994; Kuhl, 1985). In other words, goal-setting does not guarantee the occurrence of action-taking or action-completion. This is because not everyone is able to devote all their efforts to attaining the goal. A possible explanation for this may be the weakening of BI or the replacement of original BI by other competing intentions (Kuhl, 1985).

Among those action control theorists who proposed that action control plays a pivotal role in forming, strengthening, and protecting BI, Kuhl (1985) classified the action control into two different types: action-orientated style, which uses the active control mode, and the state-orientated style, which uses passive control mode. According to Chang (2002) and Kuhl (1994a), action-orientated individuals emphasize the structure of an action. They excel in devising comprehensive plans for an action and then carrying them out. As a result, the traits these people exhibit are self-confidence and positivism. On the other hand, those with a state-orientated style are accustomed to concentrating on the states of past and present. In addition, they are pre-occupied with experiences of failure or unpleasantness. State-orientated individuals over-emphasize on external issues and spend large amounts of time on making a decision. Accordingly, these people are characterized as being hesitant and volatile, resulting in procrastination and alienation.

The action control style implies a particular personality trait. The differences between the action-orientated individuals and state-orientated individuals are their level of self-confidence and the extent to which they ponder over incoming messages before making a decision. The action control style will influence the formation and maintenance of BI (Kuhl, 1994a). A person with a state-orientated style, upon receiving an external message regarding CS expansion from important referent others, will become bogged down in a dilemma: to do or not to do, thereby hindering the forming of the BI. Consequently, the effect of SN of an extrinsic nature on BI will be reduced when employees in the IS industry have a state-orientated style. On the other hand, if employees have an action-orientated style, they will have a higher level of self-confidence in expanding the CS, and their attitude towards such a behavior will reflect this self-confidence (Chiou, 1999). This signifies that the effect of AT on BI is stronger when employees in the IS industry have an action-orientated style. However, when both have high CITSE, state-orientated individuals would have a greater drive and willingness than action-orientated ones to expand the CS, making that the effect of CITSE on BI will be weaker when employees in the IS industry exhibit an action-orientated style.

H1b: The effect of attitude tendency on the intention of competence set expansion will be stronger when employees' style of action control is action-orientated than when it is state-orientated.

H2b: The effect of subjective norms on the intention of competence set expansion will be stronger when employees' style of action control is action-orientated than when it is state-orientated.

H3b: The effect of computer/IT self-efficacy on the intention of competence set expansion will be stronger when employees' style of action control is state-orientated than when it is action-orientated.

Research methodology

Questionnaire design

The questionnaire was divided into a total of four parts. In the first, the term 'CS expansion' was defined as a planned, goal-directed activity which aims at acquiring new knowledge, skills, and experiences. The second part concerned the measures related to the TPB. For the constructs of AT, SN, and BI, the measures were developed based on Ajzen (1985, 1991) and Fishbein and Ajzen (1975) using a seven-point Likert-type scale ranging from 'strongly disagree' (1) to 'strongly agree' (7). For the construct of CITSE, the measures used were adapted from

Compeau and Higgins (1995). The third part included 15 items for assessing action control style, which were adapted from Chang (2002) and Kuhl (1994b). Finally, the fourth part was comprised of demographic questions. It should be noted that since this study was to be carried out in a Chinese context, we developed a Chinese version questionnaire.

Pretest and pilot test

After completing the initial draft design, in order to ensure face and content validity, this draft questionnaire was sent to two professors in MIS, one professor in technology management, two doctoral students in MIS, and one Ph.D. candidate in business administration, to rate the adequacy and relevance of the measurement items in terms of research context and constructs (pretest). Then, a pilot test was conducted by administering the questionnaire to a small pilot sample comprising 10 employees currently serving in the IS industry. Based on the results of pretest and pilot test, minor modifications were made in the wording, and the final version questionnaire was accordingly agreed.

Data collection

This study used a mail survey to collect data. The subjects were members of Information Service Industry Association of R.O.C. or Taiwan Joint Computer Association, which are both industrial organizations that include the majority of IS and software companies in Taiwan as their members. This study adopted a total sampling strategy, with one copy of the questionnaire sent to each of those 1046 member companies. As a result, a total of 190 valid samples were returned, yielding an effective response rate of 18.2%. The demographics of the valid respondents are shown in Table 1.

Data analyses

In this study, SPSS for Windows 12.0 was first used to examine the reliability and validity of the measuring instrument. AMOS 4.0 was then used to test the research model and the moderating effects of action control style.

Exploratory factor analysis

We first conducted an exploratory factor analysis with varimax rotation to assess the construct validity, including the convergent and discriminant validities (please see Table 2).¹ The results show that all items loaded highly on their hypothesized factors and loaded with low coefficients on all other factors. The indicators were above the standard suggested by Hair, Anderson, Tatham, and Black (1995), proving a stable and acceptable factor solution (total explained variance = 77.26%; Kaiser-Meyer-Olkin coefficient (KMO) = 0.89; $\chi^2 = 3918.52$ for Bartlett Test of Sphericity ($p = 0.000$); and case-to-variable ratio = 9.05:1). The reliability test also shows that all factors had a value of Cronbach's alpha greater than 0.9, indicating a considerable level of internal consistency among the measurement items within each construct (Nunnally, 1967).

Testing the structural model

Hypotheses which constituted the structural model were tested with AMOS 4.0. In order to increase the fit between the model and the observed data, model reduction was carried out.

Table 1. Demographic information of respondents.

	<i>n</i>	%
Number of employees		
Less than 20	71	37.4
20–100	71	37.4
100–200	28	14.7
200–500	11	5.8
500–1000	5	2.6
Over 1000	4	2.1
Annual sales revenue (NT\$)		
Less than \$5 million	23	12.1
\$5–10 million	29	15.3
\$10–30 million	33	17.4
\$30–50 million	20	10.5
\$50–100 million	27	14.2
Over \$100 million	58	30.5
History of company		
Within 1 year	5	2.6
1–3 years	21	11.1
3–5 years	29	15.3
5–10 years	40	21.1
Over 10 years	95	50.0
Business model*		
Software package	111	58.4
Turn-key systems	53	27.9
System integration	131	68.9
Professional services	125	65.8
Network services	71	37.4
Processing services	23	12.1

Note: *For the business model, the investigated companies were allowed to choose more than one when answering this question.

For those latent constructs with comparatively more measurement items (SN and CITSE), new indicators were thus created by factor analysis. This means that each new indicator was a parcel, a unit-weighted sum of several original items (MacCallum, Roznowski, Mar, & Reith, 1994). Subsequent analyses with AMOS were carried out on the basis of new indicators.

Figure 2 shows the results of the analysis. The indices of model fit indicated a good fit of the model ($\chi^2_{(38)} = 110.22$; $\chi^2/\text{df} = 2.90$; goodness-of-fit index (GFI) = 0.91; adjusted goodness-of-fit index (AGFI) = 0.84; normed fit index (NFI) = 0.94; comparative fit index (CFI) = 0.96; root mean square residual (RMR) = 0.08). The parameter estimates corresponding to the hypotheses demonstrated that, among three structural paths analyzed, two were significant at the $p < 0.01$ level (AT→BI: $t = 4.09$; SN→BI: $t = 4.52$) and one was significant at the $p < 0.1$ level (CITSE→BI: $t = 1.90$), rendering an empirical support to the proposed model. The percentage of explained variance (R^2) showed that the model explained 48% of the variance of BI. Among those exogenous variables, the SN had the greatest effect on BI ($\gamma = 0.39$).

Testing the moderating effects of action control style

In order to test the moderating effects of the action control style, this study conducted the following two-stage analysis. First, based on the median of action control style scores, we

Table 2. Exploratory factor analysis (rotated).

Construct (acronym; Cronbach's alpha)	Item	Factor loading	Eigenvalue	Variance explained	Accumulated variance explained
Computer/IT self-efficacy (CITSE; $\alpha = 0.96$)	CITSE4	0.89	9.15	43.55	43.55
	CITSE3	0.87			
	CITSE8	0.86			
	CITSE9	0.85			
	CITSE5	0.83			
	CITSE2	0.81			
	CITSE6	0.81			
	CITSE10	0.81			
	CITSE7	0.80			
	CITSE1	0.79			
Subjective norms (SN; $\alpha = 0.91$)	SN6	0.83	4.45	21.19	64.74
	SN5	0.82			
	SN3	0.81			
	SN4	0.77			
	SN2	0.73			
	SN1	0.63			
Attitude tendency (AT; $\alpha = 0.94$)	AT1	0.90	1.60	7.64	72.38
	AT3	0.88			
	AT2	0.81			
Behavioral intention (BI; $\alpha = 0.93$)	BI1	0.81	1.02	4.88	77.26
	BI2	0.76			

divided the valid samples into the group of action-orientated style (a total of 84 samples) and the group of state-orientated style (a total of 106 samples); then, we tested the structural models of each group. The results, as shown in Table 3, reveal that, for the state-orientated group, all three variables significantly affected the BI; for the action-orientated group, only the SN played the influential role.

Next, we tested whether individual γ coefficients were equal between the two groups. A significant χ^2 difference ($\Delta \chi^2$) between the constrained model and the unconstrained model

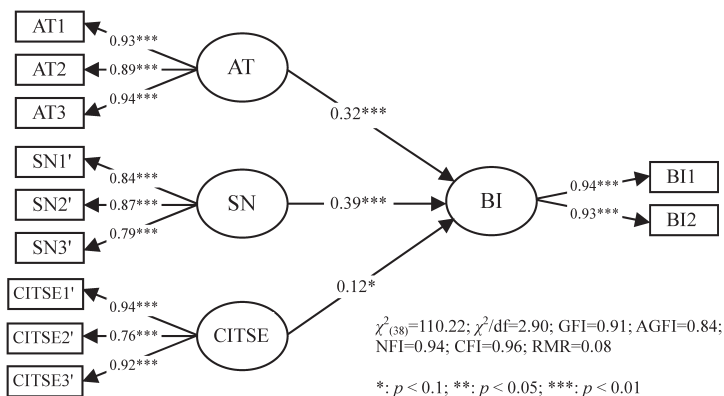


Figure 2. The path coefficients of structural model (SN1'–SN3', CITSE1'–CITSE3': new indicators).

Table 3. The moderating effects of action control style.

Hypothetical relationship	Action-oriented group		State-oriented group		The difference between the constrained model and the unconstrained model
	γ coefficient	<i>t</i> -value	γ coefficient	<i>t</i> -value	$\Delta \chi^2$ (<i>p</i> value)
AT → BI	0.06	0.40	0.46	5.03***	6.92 (0.0085)***
SN → BI	0.75	4.62***	0.26	2.48**	3.85 (0.0497)**
CITSE → BI	−0.12	−1.19	0.22	2.73***	7.01 (0.0081)***

Action-oriented group: $\chi^2(\text{df}:38) = 74.22$; $\chi^2/\text{df} = 1.95$; GFI = 0.87; RMR = 0.08.
State-oriented group: $\chi^2(\text{df}:38) = 123.81$; $\chi^2/\text{df} = 3.26$; GFI = 0.83; RMR = 0.11.

***p* < 0.05.
****p* < 0.01.

supports the inequality of the path coefficients, proving the moderating effect of the action control style. The results given in Table 3 indicate that *H2b* and *H3b* were supported by the data, while *H1b* was not.

Discussions

This study explains how AT, SN, and CITSE shape employees’ intentions of expanding the CS in the IS industry, and how the action control style moderates these relationships. Following are the implications, as well as the limitations, of this study.

Implications

SN enable the shaping of BI. Such a finding, which is applicable to both groups, affirms the effects of culture, social pressures, social norms, and the opinions of others on BI (Rogoff, 1995). Accordingly, treating the company as a learning organization is essential. Managers in the IS industry should set a good example and expand their own CS. The test in this study has proven that the effect of SN on the intention of expanding the CS will be stronger when an employee’s style of action control is action-orientated. For those action-orientated employees, the companies should support their efforts in CS expansion or encourage them to expand their CS.

Concerning the CITSE, the result of testing the entire sample shows that it positively influences the intention of expanding the CS, demonstrating that individuals’ perception of their ability to perform a particular behavior will determine their intention of performing related behaviors. However, further test finds that this relationship can only be established for the state-orientated group. The reason for this might be that those state-orientated individuals tend to lack confidence. Once they perceive that they have the ability to utilize computer/IT products or applications well, they will thus become more proactive than they used to be. This change will, in turn, encourage them to act decisively after pondering the CS expansion issue. In contrast, those with an action-orientated style are inherently confident; the CITSE, therefore, is less influential to them. For those with a state-orientated style, owing to their lack of confidence at the beginning, the CITSE thus becomes a significant factor.

For the entire sample, AT promotes the forming of the intention of expanding the CS, corroborating that individuals' BIs are affected by their behavioral beliefs, and by the evaluation of the results produced by this behavior. IS companies should engage in shaping, consolidating, or even changing their employees' attitudes towards CS expansion by establishing some incentive programs. Offering on-job training/education and corresponding promotion/raise, for example, are viable strategies. On the other hand, opportunities outside the company may influence employees' attitudes as well. This should remind companies to cooperate with educational institutions (e.g., colleges) that provide advanced study. It should be noted that *H1b* is not supported by the data. Instead, our result shows that the effect of AT on BI will be stronger when the employees' style of action control is state-orientated than when it is action-orientated. The reason for this might be that the attitude towards CS expansion does not reflect the level of self-confidence. Rather, it reflects 'the subjective values of the behavior's perceived outcomes' (Ajzen, 2002, p. 668). In other words, in the context of this study, attitude towards a particular behavior has something to do with a kind of people's expectations (outcome expectation) as CITSE does (efficacy expectation). This signifies a similarity between these two constructs, allowing us to infer that the observed moderating effect of action control style in the relationship between AT and BI may be like what we have confirmed in the relationship between CITSE and BI. Consequently, a positive attitude is a more influential factor for those with a state-orientated style than those with an action-orientated style.

In summary, in Taiwan's IS industry, the TPB can be used to predict employees' intentions of expanding the CS, and the individual style of action control plays a pivotal role of moderator in shaping their intentions. The results obtained in this study confirm the findings of Bozionelos and Bennett (1999), Conner et al. (2003), Cooke and Sheeran (2004), and Rhodes et al. (2002), which argued that the predictability of the TPB is affected by certain personality trait variables. We also find the importance of personality trait (action control style) in the pre-decisional phase of a goal-directed activity (the forming of the intention of expanding the CS), which corroborates the viewpoint of the action control theorists.

Limitations

This study is subjected to some limitations. First, when applying the TPB, we did not incorporate the construct of actual behavior into our model due to the difficulty of objective measurement. If this construct is to be truly measured under such a given context, the data can most likely be obtained by self-report of the respondents, which is a subjective judgment of their behaviors. However, measuring actual behavior this way will result in doubtful content validity, and may possibly fail in the convergent and discriminant validities. As a result, this study was carried out using a reduced form of the TPB to investigate the CS expansion in the IS industry.

Secondly, testing the moderating effects of the action control style requires that all the returned samples be divided into two groups. Since we employ the technique of structural equation modeling to analyze the data, a considerable amount of samples are required. The consequence of dividing returned samples into two groups is a reduction in the amount of samples for analysis in each group, which may lower the stability of the results. It may also cause a few

indices of model fit to slightly fall behind the standard. Although the results obtained in this study are acceptable, we still hope that subsequent research can resolve this problem and render the findings greater stability.

Conclusions

Past research has proved that the TPB is a well-constructed model for predicting and explaining human behaviors. This study therefore employs this model as the theoretical foundation to investigate the CS expansion in Taiwan's IS industry. The results of our empirical investigation reveal that, in terms of the entire sample, the model provides an ideal fit to the data. The AT, SN, and CITSE have a significantly positive effect on employees' intentions of expanding the CS. Since the TPB is often affected by sample characteristics, this study examines the moderating effects of action control style. The results of the analyses reveal that the individual style of action control moderates all of the three relationships proposed in the research model. As a result, the implementation of the strategies proposed in the previous section must take this personality trait variable into consideration, and the IS companies should test for individual style of action control in order to achieve a better understanding of their employees.

Note

1. The construct of action control style was excluded because it was measured with a nominal scale.

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