The Impact of Cognitive Styles on Users' Future Intention to Use E-negotiation Systems

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Abstract

Individual differences in cognitive style have long been regarded as key factors in the success of information systems (IS) and an important topic for IS development and implementation. However, few empirical studies of cognitive style have been conducted in the discipline of negotiation systems (NS). To draw the attention of NS researchers, this study applied Foxall's style/involvement model (SIM) to reveal the relationship between users' unique cognitive styles and their ENS future use intentions. The theoretical model was tested using empirical data collected from an online laboratory experiment involving 92 subjects. Findings confirmed that underlying differences in individuals' adaptive-innovative styles and involvement levels were associated with significant differences in their future use intention towards ENSs. More specifically, more-involved innovators reported the highest future use intention towards ENSs among the four segments. This study not only extends the IS research stream of cognitive style in the context of ENS, but also broadens the knowledge of cognitive styles in the context of information systems by introducing a SIM that has been well examined in the disciplines of social psychology and marketing.

1. Introduction

Negotiation support systems (NSSs) can be seen as a special type of group support system (GSS) designed to help negotiators to achieve optimal settlements [1]. By reducing the time and cost of negotiations and putting decision-makers in control of a process that quickly clarifies tradeoffs, recognizes party satisfaction on all negotiation issues and generates optimal solutions, NSSs provide a real alternative to conventional negotiation in terms of business arrangements and the settlement of litigations. Since the Internet has greatly changed the ways in which people communicate with each other and exchange information within and between companies [2], it is now possible for communication to occur at a distance and for offers/counteroffers to be exchanged while simultaneously managing confidential information via a number of technologies, including e-mail, web-enabled decision support systems and E-negotiation systems (ENSs) [3]. Reducing the time spent in negotiating and dealing with conflicts is always a central desire amongst managers. Practitioners and researchers are thus seeking ways to explore alternative ways to use the Internet in crafting deals and resolving disputes [4, 5]. With the help of information technology, a high-performance ENS is able to facilitate managers' handling of complex sales interactions [6] by eliminating or minimizing some conventional negotiation challenges and providing greatly improved negotiated outcomes.

Information systems (ISs) such as ENSs represent considerable investments, on which managers expect to realize a return of efficiency and improved decision-making [7]. However, the expected benefits and returns from IS investments can only be realized if the intended users accept and utilize these systems [8]. In fact, the future use intention, which reflects the likelihood that a system will be institutionalized in the future, is argued to be more important than current system usage [9, 10] from a long-term operational perspective. In other words, only when the ENSs are used appropriately and continuously by their intended users will the expected efficiency and effectiveness benefits for the company be shown. However, negotiation theory and research have predominantly focused on economic outcomes [11], and only recently have studies begun to examine the acceptance and continuance of NSSs or ENSs. For example, Lim et al. [1] surveyed 600 top Singaporean companies regarding their CEOs' intentions to adopt NSSs. Based on 93 valid responses, their results indicate that the theory of planned behavior (TPB) [12] is a better predictor of the CEOs' adoption intentions than the technology acceptance model (TAM) [13]. Examining the acceptance of the Negoisst system's communication support feature, Kohne et al. [6] reported that efficient communication support had a considerable impact on users' perceptions of NSSs. As regards ENSs, Vetschera et al. [14] examined user assessments of Internet-based negotiation support systems using an extended TAM, and revealed that users' evaluations of analytical and communication components differed

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significantly. Doong and Lai [15] explored negotiators' intentions to continue to use an ENS using Oliver's [16] expectation and disconfirmation theory (EDT). Based on a 17-day laboratory experiment with 170 subjects, their results indicated that when the actual experience or perceived performance is better than the expectation, negotiators have a stronger intention to continue using an ENS. A common thread underlying these studies is that they examine NSS or ENS as an information technology innovation for users to accept or evaluate. Indeed, individuals' acceptance of an innovation has become an issue of interest for researchers across several different disciplines, such as information management, marketing and organizational management (e.g., [55, 56]).

Other than TPB, TAM and EDT, the persistent effect of individual differences in cognitive style on acceptance decisions towards different technologies is another important research stream, offering unique insights for IS development and implementation [8, 17, 18]. This issue is becoming increasingly important as today's new technological innovations are introduced and changed more rapidly than ever before. The rationale behind these studies is that behaviour is explicable in terms of underlying psychological constructs [19]. For example, Blaylock and Rees [20] reported that decision-makers with different cognitive styles prefer different sets of information and these dynamically varied sets are incorporated into their decision-making processes. Zmud [21] proposed a model presenting the relationships between users' cognitive behavior, user attitude, system design characteristics and user involvement. Baronas and Louis [22] further contended that involvement has long been considered as a key component of effective system implementation; thus, its influence on system acceptance is tested in their study. However, recent negotiation or IS research has scarcely examined users' future use intention from a cognitive style perspective. Attempts to bridge this gap can be found in Agarwal and Prasad's [7] and Yi et al.'s [8] studies. The former argued that user innovativeness moderated the relationship between users' perceptions about a new IS innovation and intentions to use this innovation. The latter reported that personal innovativeness not only directly influenced intentions to use IS innovation, but also indirectly influenced their perceptions of the IS innovation. Further, Nagasundaram and Bostrom [57] investigated how the creative cognitive style might influence individuals' usage of GSS.

To expand upon the existing IS studies of cognitive style, the current study has been designed to apply Foxall's style/involvement model, which has been well established and examined in several different psychology and marketing disciplines, to provide intensive insights into the relationship between users' creative cognitive style and their future use intentions towards ENSs. More specifically, this study aims to provide answers to the following research questions: do individuals differ in their future use intentions towards a new ENS innovation? If they do, do such differences result from inherent characteristics of their cognitive styles? If they do differ, what kinds of individuals will tend to use a new ENS innovation more frequently? These questions have persisted as an important concern among managers and researchers because the anticipated benefits of a company's investment into ENSs will not be achieved without continued usage by the intended users. The remainder of this paper is organized as follows: first, the extant literature is discussed and hypotheses are set out; the research methodology is then outlined, the research results are presented, and finally a conclusion and implications are given.

2. Literature Review and Hypotheses

Consumer decision-making is usually depicted as a cognitive process. Psychologists use the term *cognitive style* to refer to the manner in which individuals make decisions and solve problems [23, 24, 25]. Cognitive style is "an individual's way of processing information, or his/her preferred approach to decision making and problem solving as distinct from his cognitive level, ability or complexity" [26]. Individual innovativeness is such a cognitive style that has been widely discussed in social science and marketing disciplines. Consumer innovativeness is relevant to marketing theory and practice, as companies rely increasingly on the success of new product introductions for future growth and profitability. Recently, users' innovativeness has also been investigated in the IS discipline in terms of explaining individuals' acceptance of or intention to use information systems (e.g. [7, 8]).

2.1. Theoretical Background to Foxall's (1995) Style/Involvement Model

Individual innovativeness theory was first developed by rural social researchers and Rogers' (1962) Diffusion of Innovations Theory is the most well-known example. He indicated that diffusion is a

complex process, often involving "contingent" (previous) adoptions and "re-inventions" (new uses for an adopted technology), and further defined diffusion as "the process by which an innovation (new idea) is communicated through certain channels over time among the members of a social system". Measuring the relative time of adoption, he classified individuals into five groups: from the earliest to the latest adoption, these groups are innovators, early adopters, early majority, late majority, and laggards. He also proposed five characteristics of innovations, namely relative advantage, compatibility, complexity, trialability, and observability, which have also been investigated in the IS field (e.g. [7]). However, researchers have criticized this time-of-adoption approach for both theoretical and methodological reasons [40, 50]. First, time-of-adoption is only a temporal concept in which the "innovativeness" construct is not clearly operationlized as it should to be [50]. Second, findings cannot be compared across studies; nor can they be generalized. Hence, marketing researchers have proposed different theoretical concepts and measurements (e.g. [42, 50]), and Foxall's series of studies have become one of the major schools [52].

Foxall's work was based on Kirton's [27] theory of adaptive-innovative cognitive styles. Kirton [27] designed a personality dimension continuum ranging from "adaptor" to "innovator". He proposed that individuals can be located on this continuum and that their locations represent their styles of problem solving and decision making. To identify and measure these personality differences, the Kirton Adaption-Innovation Inventory (KAI), comprising 32 items and utilizing a 5-point scoring scale, was developed as a measure of cognitive style that possesses attractive psychometric properties [28]. According to Kirton [27], adaptors tend to accept problems as defined and produce solutions that are aimed at doing things better without changing existing work patterns or interactions [27]. In other words, extreme adaptors prefer to seek better solutions that can be undertaken without major changes to their daily routines. The adaptor feels most comfortable working within well-established operating procedures and rules.

In contrast, innovators tend to redefine problems and generate alternatives so as to do things differently. They do not mind that their actions may cause a complete re-evaluation of the problem. Extreme innovators produce diverse ways to meet requests and solve problems by thinking creatively. They love to challenge or break established rules and procedures, take risks, explore and trial so as to advocate novel perspectives and solutions. However, they are easily bored by routine tasks.

Given the important role that innovators play in innovation acceptance and diffusion, researchers have extensively discussed their characteristics. For example, Robertson *et al.* argued that innovators are likely to be higher income earners, more highly educated, younger, more socially mobile, have more favorable attitudes towards risk, exhibit greater social participation, and have a higher opinion leadership. Others contend that innovators are heavy users within the product category, and have significant experience in similar product categories [39, 54]. Furthermore, Foxall [53] described innovators as:

- having more abstract thinking, leading them to ask more questions, search widely for information, and investigate more relationships.
- likely to try discontinuously new products and accept the risk of buying an unsatisfactory item.
- use more environmental stimuli, taking in more of the data that impinge on them, and using them more actively to find a solution.
- likely to be broad categorizers, risking errors and costs to take advantage of potential positive chances.

2.2. Foxall's (1995) Style/Involvement Model

Building on Kirton's [30] adoption-innovation theory and the KAI, Foxall has initiated a series of studies to address the question of whether innovators actually adopt more innovations. Further, he aims to explore the impact of other constructs that may influence individuals' adoption of innovations. He introduced consumer involvement as an explanatory variable to verify why adopters, rather than innovators, were found to purchase the most health food products [26, 32]. He used Zaichkowsky's [31] Revised Personal Involvement Inventory (RPII) to measure this construct in his early studies. His work has successfully demonstrated the explanatory ability of the style/involvement model regarding the diverse range of consumers' adaptive-innovative personalities and the subsequently frequency of their purchase/use of an innovation [33, 34, 35, 36, 37, 38].

For example, Foxall and Bhate [34] interviewed 151 female grocery shoppers and measured their innovativeness and involvement levels relating to their

purchase choice of health food brands. Their findings indicated that *less-involved adopters, innovators, and more-involved adaptors* differed significantly in their health food brand purchases, and that *more-involved adaptors* were responsible for the highest number of purchases from health food brands. This may result from a higher commitment to healthy eating in *more-involved adaptors,* which consequently leads them to continuously seek more product information. In contrast, *less-involved adopters,* who did not care much about healthy eating and preferred to keep buying familiar foods in the supermarkets, were responsible for the fewest purchased brands. Findings indicated the importance of consumers' involvement with the product in the initial adoption decision. This confirmed past suggestions that involvement presumably stems from the heavy product class use and high levels of experience that are known to categorize initial adopters [39].

Consistent findings were shown in Foxall's other studies. Foxall and Bhate [33] reported that compared to *less-involved adopters, more-involved adaptors* have significantly higher overall computer usage, programming experience, frequency of computer use and number of software packages used. Further, these factors were also reported to be significantly higher in *more-involved innovators* than in *less-involved innovators*. In another study examining home computer application usage, Foxall and Bhate [35] reported that both innovative cognitive style and a high level of personal involvement with computing are significantly related to the number of home computer software packages used by their participants. Additionally, Szmigin and Foxall [37] consistently demonstrated that different payment methods could be linked to consumers' cognitive styles using a qualitative approach. They revealed that in terms of KAI categories, Controllers and Product Enthusiasts tended to be adaptors, whilst Finessers and Money Managers were usually innovators.

Pallister et al. [38] aimed to examine Foxall's style/involvement model with different measurements and used Hurt et al.'s [40] innovativeness scale (HJC), which correlates to the KAI [41], to measure the consumer innovativeness construct. Their findings indicated similar results: consumers were found to have different involvement levels in different financial service products: medium towards mortgages, low towards life assurance, medium-high towards pensions, and high towards savings and investments. Particularly, in the innovative product category of investment and savings, buyers reported significantly higher innovativeness HJC scores than non-buyers. Further, buyers' innovativeness scores were reported to relate to their interests in reading and comparing product information and updating product information and to their confidence in their purchase decisions. Consequently, compared to adaptors, innovators' personality profiles, characterized by welcoming the new and different [41] and being flexible, assertive and expedient [42, 28] were also confirmed by the HJC scale.

More recently, Wang et al. [19] have examined the style/involvement model in the context of Internet buying with a sample of 1044 participants from a top international branding website in Taiwan. Their study was designed to examine this model with different measurements, and applied Goldsmith and Hofacker's Domain Specific Innovativeness (DSI) scale and Mittal's Purchase Decision Involvement (PDI) scale. The robustness of Foxall's style/involvement model was confirmed in this way because despite the fact that different innovativeness and involvement measurements were used (i.e. the DSI and PDI), the findings were consistent with those of studies using the KAI and RPII.

The results revealed four segments, with underlying differences in cognitive styles and involvement levels, which differed significantly in their Website purchase frequencies. Further, *more-involved adaptors* were found to be responsible for the highest Website purchase frequency compared to the other three segments. Furthermore, *less-involved innovators*' actual Website buying frequency was significantly lower than that of *more-involved innovators*, whilst that of *less-involved adaptors* was also significantly lower than *more-involved adaptors*. This supported Foxall and Bhate's [34] argument that consumers' involvement with their purchases dominates their adoption of innovations. Additionally, this study demonstrated how consumers with different cognitive styles and involvement levels differ in their decision-making processes when transferring their brand loyalty in the traditional market to the same brand's Website in the B2C e-commerce market. Each of the four segments - i.e. *less-involved adaptors, more-involved adaptors, less-involved innovators,* and *more-involved innovators* - was found to have a unique Website loyalty comprising different predictors. This confirmed Foxall's [43] proposal regarding how these four segments differ in terms of their problem-solving

and decision-making processes according to their style/involvement.

The reviewed studies have indicated that Foxall's style/involvement model is an important addition to cognitive style research because it provides empirical results to show how consumers' involvement levels, whether in the product, purchase or computer usage context, interact with their cognitive styles and subsequently impact on their purchase/use of innovations. Given that ENS can been seen as a new information technology for negotiators to adopt, Foxall's style/involvement model was applied in this study to reveal how individuals' underlying cognitive constructs and involvement levels may influence their future use intention. Based on the discussion above, it is hypothesized that:

H1: The four segments underlying different cognitive styles and involvement levels - i.e. less-involved adaptors, more-involved adaptors, less-involved innovators and more-involved innovators - will differ significantly in their future use intentions towards the ENS.

H2: More-involved innovators' future use intention towards ENS will be significantly higher than that of less-involved innovators, whilst more-involved adaptors' future use intention towards ENS will be significantly higher than that of less-involved adaptors.

H3: More-involved adaptors' future use intention towards ENS will be the highest among the four segments.

3. Research Methodology

3.1. Experiment Design

Empirical data were collected via an online laboratory experiment using an ENS developed exclusively for the current study. Ninety-two graduate students (52 male and 40 female) were recruited for this experiment. The negotiation task involved a baseball glove signed by Chie-Ming Wang, the famous pitcher for the New York Yankees, who is well known among Taiwanese students. Subjects were randomly paired and assigned to the roles of seller or buyer in this negotiation. Each of them was told to achieve the best price from the negotiation, i.e. sellers must try to sell for as high a price as possible, whilst buyers must try to get the lowest final price possible. The starting price that sellers quoted to buyers was USD 30. All subjects were requested to finish this negotiation within six rounds (i.e. each buyer/seller could only bargain on the price six times). To ensure the quality of negotiation, subjects who completed the negotiation and achieved performance in the top 50% were given the chance to win one of two Nintendo Wii games consoles that were provided to motivate the participants in this experiment.

All the respondents were required to fill out two questionnaires at different stages of the experiment. The first questionnaire asked about the subjects' demographic profiles and negotiation experiences. Subjects filled out the first questionnaire at the beginning of the experiment. After that, the subjects were told to read the negotiation case and initiate the negotiation. Upon completion of the negotiation, the subjects were asked to fill out the second questionnaire regarding their innovativeness level towards the ENS, their involvement towards the negotiation task, and their future intentions to use the ENS.

The average age of subjects was 24, and all of them had previous negotiation experiences and E-negotiation experiences via email, MSN or Inspire. Eight-six out of the ninety-two subjects achieved agreements and the average time taken to complete a negotiation was thirty minutes. It took three days to complete the whole experiment.

3.2. Questionnaire Development

Three constructs were developed and examined in this study. Personal innovativeness towards the ENS was defined as "the tendency to learn about and adopt the ENS" and the measurement was adapted from Goldsmith and Hofacker's [44] Domain Specific Innovativeness (DSI). Personal involvement towards the ENS was defined as "an individual's perception of the relevance of the negotiation task based on inherent needs, values, and interest" and the measurement was adapted from Zaichkowsky's [31] Revised Personal Involvement Inventory (RPII). Finally, future use intention towards the ENS was measured using three items adapted from Bhattacherjee [45]. Seven-point Likert scales were used in this study, with the exception of the RPII, which utilized a seven-point semantic scale. Table 1 provides the scale items for these constructs.

Table 1. Summary of scale items

Construct		Measure Items
Domain-specific innovativeness (DSI)	DSI1	If I heard about a new ENS, I would look for ways to experiment with it.
	DSI2	Among my friends, I am usually the first to try out new ENSs.
	DSI3	In general, I am hesitant to try out new ENSs
	DSI4	I like to experiment with new ENSs
Revised personal involvement inventory (PII)		To me, this negotiation task is:
	PII1	important …unimportant
	PII2	boring …interesting
	PII3	relevant …irrelevant
	PII4	exciting …unexciting
	PII5	means nothing…means a lot
	PII6	appealing …unappealing
	PII7	fascinating …mundane
	PII8	worthless …valuable
	PII9	involving …uninvolving
	PII10	not needed …needed
Future use intention (USE)	USE1	When I have to negotiate, I intend to continue using the ENS.
	USE2	I intend to continue using the ENS rather than any alternative means.
	USE3	I would like to continue using the ENS.

4. Research Results

4.1. Data Validation

Analyses of all variables (i.e., the personal involvement inventory, domain-specific innovativeness, and future use intention) were conducted using SPSS for Windows version 13.0. All three constructs demonstrated adequate reliability and construct validity. Cronbach's alpha was 0.95 for the Personal Involvement Inventory, 0.86 for domain-specific innovativeness, and 0.88 for future use intention. Furthermore, the scales were tested for internal consistency and a specified factor structure using confirmatory factor analysis. Factor analysis results shows that factor loadings on their intended constructs were all above 0.60, with no cross-loadings higher than 0.40, which indicated that the factors were unidimensional. The scores on the items of each variable were aggregated for further analyses.

4.2. The Prediction of Future Use Intention

Table 2 shows the means, standard deviations, and intercorrelations for innovativeness, involvement, and future use intention. Two antecedents of future use intention were significantly positively related to innovativeness ($r=0.23$, $p=0.03$) and involvement ($r = 0.42$, $p < 0.01$). As expected, there was no correlation between innovativeness and involvement. To provide a robust statistical examination, a multiple regression model was developed to test whether innovativeness and involvement are useful predictors of ENS future use intention:

$$\text{Intention} = \beta_0+\beta_1*\text{Involvement}+\beta_2*\text{Innovativeness}$$

Table 2. Summary of descriptive statistics

Construct	Means	Std. Dev.	Factor Correlations[a]		
			DSI	PII	USE
DSI	3.49	1.18	0.86		
PII	4.20	1.50	0.06	0.95	
USE	4.85	1.03	0.23*	0.42**	0.88

*p<0.05, **p<0.01

[a]Diagonal elements are alpha reliability. Off-diagonal elements are the correlations among constructs.

The results of this analysis show that the overall regression model was significant ($F(2, 89) = 12.64$, $p < 0.01$, $R^2 = 0.47$). The beta weights for innovativeness and involvement were both significant ($\beta_1 = 0.41$, $p < 0.01$ and $\beta_2 = 0.21$, $p = 0.03$ respectively), demonstrating that both variables contributed uniquely to the prediction of future use intention. More specifically, involvement was the strongest predictor and made a more significant contribution to the prediction of ENS use than did innovativeness.

4.3. Hypotheses Testing

An analysis of variance (ANOVA) was sequentially applied to further examine whether the four segments, with their underlying differences in creative cognitive styles and involvement levels, would differ significantly with regard to their future use intentions towards the ENS. Following Foxall and Bhate's [34] example, respondents whose DSI scores were higher

than the mean were categorized as *innovators*; others were *adaptors*. Similarly, respondents with RPII scores higher than the mean were categorized as *more involved*, while others were *less involved.* These four groups were cross-tabulated and the 92 respondents were subsequently divided into *less-involved adaptors* (30, 32.61%)*, more-involved adaptors* (19, 20.65%)*, less-involved innovators* (19, 20.65%)*,* and *more-involved innovators* (24, 26.09%).

Results indicated that the segment type effect ($F(3, 88) = 15.948$, $p < 0.01$, power= 1.000) was significant. Thus, hypothesis 1 was supported. Since the ANOVA yielded a significant result, pairwise comparisons of the expectations groups using post-hoc tests was employed to investigate the differences among the segments in terms of future use intention. Fisher's LSD post-hoc test (Table 3) indicated that the differences between treatments were all significant: That is, more-involved adaptors' future use intention towards the ENS was the highest among four segments. This finding also confirmed that more-involved innovators' future use intention towards the ENS was significantly higher than that of less-involved innovators, whilst more-involved adaptors' future use intention towards the ENS was significantly higher than that of less-involved adaptors. Thus, support was found for hypotheses 2 and 3.

5. Conclusion and Implications

The study's findings revealed that first, users with underlying differences in cognitive style and involvement levels - i.e. *less-involved adaptors, more-involved adaptors, less-involved innovators,* and *more-involved innovators* - differed significantly in their future use intentions towards the ENS. This confirmed the notion that behavior is explicable by underlying psychological constructs [19] and that different cognitive styles will lead to different attitudes or beliefs. Second, *more-involved innovators'/adaptors'* future use intentions towards the ENS were reported to be significantly higher than those of *less-involved innovators/adaptors, respectively.* This finding revealed that individuals' involvement with the negotiation task, rather than their innovativeness towards the ENS, dominated the underlying decision-making process as to whether to use the system in the future. Thus, more-involved individuals were reported to have significantly higher future use intentions than those who were less involved. Third, *more-involved adaptors'* future use intention towards the ENS was the highest among the four segments, indicating that *more-involved adaptors* will be the most supportive to the ENS usage in the long run.

Table 3. Results of post-hoc test.

Group I	Group J	Mean Difference (I-J)	Sig.
More-involved adaptors	More-involved innovators	0.54	0.04*
	Less-involved innovators	1.09	0.00**
	Less-involved adaptors	1.61	0.00**
More-involved innovators	More-involved adaptors	-0.54	0.04*
	Less-involved innovators	0.54	0.04*
	Less-involved adaptors	1.06	0.00**
Less-involved innovators	More-involved adaptors	-1.09	0.00**
	More-involved innovators	-0.54	0.04*
	Less-involved adaptors	0.52	0.04*
Less-involved adaptors	More-involved adaptors	-1.61	0.00**
	More-involved innovators	-1.06	0.00**
	Less-involved innovators	-0.52	0.04*

*p<0.05, **p<0.01

These results confirmed the findings of previous studies by Foxall and Bhate [33, 34, 35], Pallister et al. [36], and Wang et al. [19] in a different context of ENS future use intention. The theoretical contribution of the current study was thus two-fold. On the one hand, it confirmed Foxall's style/involvement model by using the DSI and RPII scales, which are different to the scales used in Foxall's original studies (which used the KAI and RPII) and that of Wang et al. [19] (which employed the DSI and PDI). That is, by showing consistent findings, it has demonstrated the robustness of Foxall's style/involvement model, showing that it is not limited to either the more abstract or to the domain-specific scale adapted; nor is it limited to specific innovation types or objects On the other hand, this study was the first in the IS or negotiation disciplines to investigate individuals' use intentions towards a negotiation system from the psychological perspective

in terms of the cognitive constructs of innovativeness and involvement. It has successfully revealed that individuals' cognitive styles and involvement levels can be used to predict their ENS future use intentions because these constructs have been shown to underlie their decision-making processes [26].

These findings are also central to companies' ENS implementation. Given that individuals' intentions and behaviors differ significantly according to their underlying cognitive styles and involvement levels, managers will be able to develop ways to better manage and control the NSS or ENS implementation process. For example, managers could specify target employees through selection when implementing a company's new NSS or ENS. Further, managers can also control the speed and efficacy of ENS diffusion within the company by strategically using different proportions of employees with different cognitive styles and involvement levels. That is, employees with high involvement in the negotiation task or job should be recruited first, whether they have high or low innovativeness towards the negotiation system. Managers could then decide how to use these innovators and adaptors interchangeably according to the different stages of ENS implementation.

In the initial stage of ENS implementation, managers need to stimulate the interests of company employees towards the ENS and encourage positive perceptions of the ENS, so as to quickly broaden acceptance within the company. At this stage, *more-involved innovators* will be particularly helpful. *More-involved innovators* are highly motivated to learn any new ENSs and can learn quickly because they tend to have broad knowledge about information systems. Innovators are also opinion leaders [46] in their circles of acquaintances; thus, *more-involved innovators* can actively influence other employees' perceptions in terms of the ease of use and usefulness of an ENS to facilitate its diffusion within the company. Further, innovators can also share their professional knowledge of ENS usage with the adaptors to help the latter learn more quickly and ease adaptors' uncomfortable feelings regarding the new system. Thus, the best implementation strategy for managers is to use a higher percentage of more-involved innovators in the initial stage of ENS implementation. Their positive word-of-mouth towards the new system will gain the benefits of greater ENS acceptance within the company in the initial stage.

In contrast, *more-involved adaptors*, while they are less inclined to learn and accept a new ENS system, are actually the most frequent users of any new technology system once they have learned to use it. *More-involved adaptors,* in particular, will be keen to learn and use the new ENS often because they are highly involved with the negotiation task and therefore want to work more effectively and efficiently. To prepare this specific group for the new ENS, manager may have to arrange more training courses for them. Consequently, it will be a good idea to only recruit a smaller proportion of *more-involved adaptors* in the initial stage of ENS implementation so as to save on the cost of training. As noted previously, adaptors recruited in the early stage can learn from the innovators regarding the techniques of ENS usage. However, at the second stage of the ENS implementation, managers might want to replace the existing *more-involved innovators* with a higher proportion of *more-involved adaptors* who will learn steadily and continue to use ENS most frequently to deal with their daily work. Finally, more-involved employees who have been trained to use ENS are likely to become a good base for spreading the word about this system before mass employees within the company formulate any position towards the ENS. Managers can thus rely on the know-how and skills that more-involved employees have established in relation to the ENS to promote the new system to the remaining employees. By strategically controlling the employee mix in the new ENS implementation, the company's substantial investment in the new ENS will reap fruitful benefits and the operational goals of enhancing employees' negotiation effectiveness, efficiency and improved decision-making will also be met.

It is worth mentioning that by using the mean as the cut-off point in assigning subjects to different groups and transforming the ordinal variables into categorical variables, a loss of the statistical power and information utility may occur. Application of the findings of the current study to a different IS context would be prudent. Future studies are encouraged to test different ISs, such as decision support systems (DSS), online auction systems (OAS), and knowledge management systems (KMS) so as to establish a thorough profile of user creative cognitive style and IS usage.

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6. References

[1] Lim, J., B. Gan, and T-T. Chang, "A Survey on NSS Adoption Intention," The proceedings of HICSS-35, (2002), Maui, Hawaii.

[2] Kiesler, S. and L. Sproull, "Group Decision Making and Communication Technology," Organizational Behavior and Human Decision Processes, 52 (1992), pp. 96-123.

[3] Weber, M., G. Kersten, and M. Hine, "Visualization in e-Negotiations: An Inspire ENS Graph is Worth 334 Words, on Average," Electronic Markets, 16, 3 (2006), pp. 186-200.

[4] Landry, E. M., "Scrolling around the New Organization: The Potential for Conflict in the On-line Environment," Negotiation Journal, 16 (2000), pp. 133-142.

[5] McKersie, R. B. and N. O. Fonstad, "Teaching negotiation theory and skills over the Internet," Negotiation Journal, 13 (1997), pp.363–368.

[6] Kohne, F., M. Schoop and D. Staskiewicz, "An Empirical Investigation of the Acceptance of Electronic Negotiation Support System Features," in Proceedings of the Thirteenth European Conference on Information Systems (Bartmann D., Rajola F., Kallinikos J., Avison D., Winter R., Ein-Dor P., Becker J., Bodendorf F. and Weinhardt C. eds.), Regensburg, Germany, 2005.

[7] Agarwal, R. and J. Prasad, "The Antecedents and Consequents of User Perceptions in Information Technology Adoption," Decision Support Systems, 22, 1 (1998), pp. 15-25.

[8] Yi, Mun Y., Kirk D. Fiedler, and Jae S. Park, "Understanding the Role of Individual Innovativeness in the Acceptance of IT-Based Innovations: Comparative Analyses of Models and Measures," Decision Sciences, 37, 3 (2006), pp. 393-426.

[9] Ritti, R. Richard and Jonathan H. Silver, "Early Processes of Institutionalization: The Dramaturgy of Exchange in Interorganizational Relations," Administrative Science Quarterly, 31, 1 (1986), pp. 25-42.

[10] Yin, Robert K., "Life Histories of Innovations: How New Practices Become Routinized," Public Administration Review, 41, 1 (1981), pp. 21-28.

[11] Naquin, Charles E. and Gaylen D. Paulson, "Online Bargaining and Interpersonal Trust," Journal of Applied Psychology, 88, 1 (2003), pp. 113-120.

[12] Ajzen, I. and M. Fishbein, "Understanding Attitudes and Predicting Social Behavior," Prentice-Hall, Englewood Cliffs, NJ., 1980.

[13] Davis, F. D., R. P. Bagozzi, and P. R. Warshaw, "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models," Manage Science, 35, 8 (1989), pp. 982-1003.

[14] Vetschera, R., G. Kersten, and Koszegi S, "User Assessment of Internet-based Negotiation Support Systems: An Exploratory Study," Journal of Organizational Computing and Electronic Commerce, 16, 2 (2006), pp. 123-148.

[15] Doong, H. S. and H. Lai, "Exploring Usage Continuance of E-negotiation Systems: Expectation and Disconfirmation Approach," Group Decision Negation (2008), forthcoming.

[16] Oliver, R. L., "A Cognitive Model for the Antecedents and Consequences of Satisfaction," Journal of Marketing Research, 17, 3 (1980), pp. 460-469.

[17] Benbasat, I. and Ronald N. Taylor, "The Impact of Cognitive Styles on Information System Design," MIS Quarterly, 2, 2 (Jun78), pp. 43-54.

[18] Lusk, Edward J. and M. Kersnick, "The Effect of Cognitive Style and Report Format on Task Performance: The MIS Design Consequences," Management Science, 25, 8 (1979), pp. 787-798.

[19] Wang, Hui-Chih, John G. Pallister, and Gordon R. Foxall, "Innovativeness and Involvement as Determinants of Website Loyalty: I. A Test of the Style/Involvement Model in the Context of Internet Buying," Technovation, 26, 12 (2006), pp. 1357-1365.

[20] Blaylock, Bruce K. and Loren P. Rees, "Cognitive Style and the Usefulness of Information," Decision Sciences, 15, 1 (1984), pp. 74-91.

[21] Zmud, Robert W., "Perceptions of Cognitive Styles: Acquisition, Exhibition and Implications for Information System Design," Journal of Management, 5, 1 (1979), pp. 7-20.

[22] Baronas, Ann-Marie K. and Meryl Reis. Louis, "Restoring a Sense of Control During Implementation: How User Involvement Leads to System Acceptance," MIS Quarterly, 12, 1 (1988), pp. 110-124.

[23] Guilford, J.P., "Cognitive Styles: What are they?" Educational and Psychological Measurement, 40 (1980), pp. 715-735.

[24] McKenna, F. P., "Measures of Field Dependence: Cognitive Style or Cognitive Ability?" Journal of Personality and Social Psychology, 11 (1984), pp. 51-55.

[25] Messick, S., "The Nature of Cognitive Styles," Educational Psychologist, 19 (1984), pp. 59-74.

[26] Foxall, G. and C. G. Haskins, "Cognitive Style and Consumer Innovativeness: An Empirical Test of Kirton's Adaptation-Innovation Theory in the Context of Food Purchasing," European Journal of Marketing, 20, 3/4, (1986), pp. 63-80.

[27] Kirton, M. J., A Theory of Cognitive Style, In: Kirton M. J. Editor. Adaptors and Innovators: Styles of Creativity and Problem-Solving. London: Routledge, 1994, pp. 1-36.

[28] Kirton, M. J. KAI Manual: Hatfield Occupational Research Centre, 1987.

[29] Bagozzi, R. P. and G. R. Foxall, "Construct Validation of a Measure of Adaptive-Innovative Cognitive Styles in Consumption," International Journal of Research in Marketing, 13 (1996), pp. 201-213.

[30] Kirton, M., "Adaptors and Innovators - A Description and Measure," Journal of Applied Psychology, 61, 5

(1976), pp. 622-629.
[31] Zaichkowsky, J. L. The Personal Involvement Inventory: Reduction, Revision, and Application to Advertising. Burnaby, BC: Faculty of Business, Simon Fraser University, 1987.
[32] Foxall, G. R. and C. G. Haskins, "Cognitive Style and Discontinuous Consumption: The Case of Healthy Eating," Food Marketing, 3, 2 (1987), pp. 19-35.
[33] Foxall, G. R. and S. Bhate, "Cognitive Style, Personal Involvement and Situation as Determinants of Computer Use," Technovation, 11, 3 (1991), pp. 183-199.
[34] Foxall, G. R. and S. Bhate, "Cognitive Styles and Personal Involvement of Market Initiators for 'Healthy' Food Brands: Implications for Adoption Theory," Journal of Economic Psychology, 14, 1 (1993a), pp. 33-56.
[35] Foxall, G. R. and S. Bhate, "Cognitive Style and Use-Innovativeness for Applications Software in Home Computing: Implications for New Product Strategy," Technovation, 13, 5 (1993b), pp. 311-325.
[36] Foxall, G. R. and J. G. Pallister, "Measuring Purchase Decision Involvement for Financial Services: Comparison of the Zaichkowsky and Mittal Scales," International Journal of Bank Marketing, 16, 4/5 (1998), pp. 180-194.
[37] Foxall, G. R. and I. Szmigin, "Adaption-innovation and Domain-specific Innovativeness," Psychological Reports, 84, 3 (1999), pp. 1029-1030.
[38] Pallister, John G., Wang, Hui-Chih, and Gordon R. Foxall, "An Application of the Style/Involvement Model to Financial Services," Technovation, 27, 1/2 (2007), pp. 78-88.
[39] Gatignon, H. and T. S. Robertson, "A Propositional Inventory for New Diffusion Research," Journal of Consumer Research, 11, 4 (1985), pp. 849-867.
[40] Hurt, H. Y., K. Jeseph, and C. D. Cook, "Scale for the Measure of Innovativeness," Human Communication Research, 4, 1 (1977), pp. 58-65.
[41] Goldsmith, R., "The Factorial Composition of the Kirton Adaption-Innovation Inventory," Educational and Psychological Measurement, 45, 2 (1985), pp. 245-250.
[42] Goldsmith, R., "Personality characteristics associated with Adaption-Innovation," Journal of Psychology, 117, 2 (1984), pp. 159-165.
[43] Foxall, G., Consumer Decision Making Process, Level and Style, in M. J. Baker (Ed.), The Marketing Book (5th ed.), Butterworth-Heinemann, UK, 2003.
[44] Goldsmith, R. E. and C. F. Hofacker, "Measuring Consumer Innovativeness," Journal of the Academy of Marketing Science, 19, 3 (1991), pp. 209-221.
[45] Bhattacherjee, A. and Premkumar, G. "Understanding Changes in Belief and Attitude towards Information Technology Usage: A Theoretical Model and Longitudinal Test," MIS Quarterly, 28, 2 (2004), pp. 229-254.
[46] Rogers, E.M. Diffusion of Innovations. New York: The Free Press, 2003.
[47] Robertson, T. S. "The Process of Innovation and the Diffusion of Innovation," Journal of Marketing, 31,1 (1967), pp. 14-19.
[48] Silk, A. J., "Overlap among Self-designated Opinion Leaders: A Study of Selected Dental Products and Services," Journal of Marketing Research, 3, 3 (1966), pp. 255-259.
[49] Robertson, T. S. Innovative Behavior and Communication. New York: Holt, Rinehart and Winston Inc., 1971.
[50] Midgley, D. F., and Dowling, G. R., "Innovativeness: The Concept and Its Measurement," Journal of Consumer Research, 4, 4 (1978), pp. 229-242.
[51] Mittal, B., "Measuring Purchase-decision Involvement," Psychology and Marketing, 6, 2 (1989), pp. 147-162.
[52] Mudd, S., "The Place of Innovativeness in Models of the Adoption Process: An Integrative Review," Technovation, 10, 2 (1990), pp. 119-136.
[53] Foxall, G. R., "Consumer initiators: Adaptors and Innovators," British Journal of Management, 5, 2 (1994), pp. 3-12.
[54] Goldsmith, R., and Flynn, L. R., "Identifying Innovators' Markets," European Journal of Marketing, 26, 12 (1992), pp. 42-55.
[55] Majchrzak, A., and Cotton, J., "A Longitudinal Study of Adjustment to Technological Change: from Mass to Computer-Automated Batch Production," Journal of Occupational Psychology, 61 (1988), pp. 43-66.
[56] Harrison, A. W., and Rainer, R. K., Jr., "The Influence of Individual Differences on Skill in End-user Computing," Journal of Management Information Systems, 9, 1 (1992), pp. 93-111.
[57] Nagasundaram, M and Bostrom, R. P., "The Structure of Creative Processes Using GSS: A Framework for Research", Journal of Management Information System, 11, 3 (1994), pp. 87-104.