

# UNDERSTANDING A BIDDER'S ESCALATION OF COMMITMENT IN THE ONLINE C2C AUCTION

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## Abstract

*There has been little previous studies which investigates dark-side factors such as overbidding behavior in the online C2C transactions. For this reason, this study attempts to find situations with the escalation of commitment to bids using Internet auction systems and also examines whether the bidder's bidding is irrational. Therefore, this study applies escalation of commitment to explain the auction process such as the "going, going, gone period" with competition in Internet C2C auctions. In order to describe the auction process in terms of escalation of commitment, this study proposes psychological sunk costs, completion effect, and self-justification as the key factors of escalation of commitment and also willingness to continue bidding reflecting the decision maker's escalation behavior in terms of persistence perspective as final dependent variable. The results of PLS analysis indicate that a bidder's overbidding behavior is explained by the escalation of commitment.*

*Keywords: Psychological Sunk Costs, Self-Justification, Completion Effect, Competition Intensity, Willingness to Continue Bidding*

## 1 INTRODUCTION

The winning bid is often based on an overestimation of the item's true value and a winner often overpays and feels regret, which is so called the winner's curse which is also arise when the bidder appears to have made the wrong decision even if the decision appeared to be the right one at the time it was made(Oh, 2002; Tan et al., 2005). This regret had also derived from winner's curse occurring as the number of bidder increases. That is closely related to auction fever phenomenon. Auction fever implies irrational, emotionally charged overbidding. Therefore, this study attempts to propose the predictive model which describes the dark-side of the online auction markets offering overbidding behavior and also has investigated a bidder's irrational behavior in the auction fever phenomenon by introducing Staw's (1981,1987) escalation of commitment, which has been cited in psychology (Moon, 2001a,b). Escalation of commitment (Keil et al.2000b; Ku, 2005; Moon, 2001b) has tended to display escalation as an outcome of emotional or logical distortion in the orderly course of rational decision-making. It can be the escalation of a situation in which a decision-maker who is personally responsible for negative decision outcomes consistently commits a greater amount of resources(Staw, 1981). It may be generated when a decision-maker continuously commits a task although there is negative

feedback related to his or her own course of action (Brokner, 1992). So, this study attempts to investigate explaining the following research questions:

- 1) Is a bidder's willingness to continue bidding influenced by the determinants of escalation of commitment?
- 2) Is there a bidder's difference in escalation of commitment depending upon the level of competition intensity?

To answer above research questions, this study considers willingness to continue bidding which reflects a decision maker's escalation behavior in terms of persistence perspective as a final dependent variable in order to explain the escalation of commitment. And also, the key factors of escalation of commitment – psychological sunk costs, completion effect, and self-justification may surface the online auction sites.

## **2 LITERATURE REVIEW AND THEORETICAL BACKGROUNDS**

Escalation of commitment is defined as the “*investment decisions that have gone astray when standing before setback or loss, the decision maker faces a painful dilemma*”(Fox and Hoffman, 2002) Some escalation studies provide a solid theoretical base for explaining that a decision-maker is facing the falling course of action. In escalation studies, a wide range of psychological theories have been employed in an attempt at finding a psychological rationale for explaining the phenomenon (Schaubroeck and Williams, 1994) In general, they include several theories such as the self-justification theory (Bobocel and Meyer, 1994), prospect theory (Arker and Blumer, 1985; Kahneman and Tversky, 1979; Kahneman et al., 1986a, b), and approach avoidance theory (Conlon and Garland, 1993; Garland and Conlon, 1998; Moon, 2001a). Thus, this study focuses on these theoretical approaches because these are among the most frequently invoked theories used to describe escalation behavior. Based upon these studies, this study assumes that generating escalation of commitment can explain changing a bidder's decision-making pattern through the escalation situation in the online auction. It explains that bidders may make errors due to the auction fever phenomenon so that they may become fallible decision-makers.

### **2.1 The Definition of Continued Commitment**

According to Meyer and Herscovitch(2001), commitment has been defined as “*a frame of mind or psychological state that compels an individual toward a course of action*” (p.303). Commitment can have an impact on the individual's attitude and behavior.

Li et al.(2006) has clarified the concept of commitment into commitment to a prior course of action (Salancik, 1977) and commitment to a relationship (Morgan and Hunt, 1994). by reviewing previous literatures. Therefore, we find that the notion of commitment can focus on the persistence of behavior in a kind of relationship. Namely, the fundamental concept of commitment describes the situation driving a decision maker continuous action.

Given its definition, we expect continued commitment to purchase to be relevant in a bidder's bidding behavior. Therefore, we convict that the continued commitment can be applicable to the research model.

### **2.2 Prior Studies of Escalation of Commitment**

According to the results of prior studies, escalation of commitment can be determined by several factors. Staw and Ross (1987) conducted research on the escalation model of poor project management in organizations. Their results showed that the determinants of escalation could be divided into project characteristics, psychological characteristics and organizational characteristics. Among IS research, there is Keil et al. (2000a)'s study. They examined whether decision-makers are willing to continue the project because of sunk cost, risk propensity, and risk perception by comparing

countries. Meanwhile, Heung et al.(2003) proposed DoC (de-escalation of commitment) under escalation of commitment situations in the software development project. They also investigated how social factors and psychological factors affect DoC when the possibility of the software development project was low. In addition, Moon (2001b) insisted that escalation of commitment could be influenced by the interaction effect between the completion effect and sunk costs. According to his study, escalation of commitment was affected by the completion effect and sunk costs in separate dimensions in the past. However, he mentioned that the impact on the escalation of commitment was very strong when the completion effect and sunk costs were both affected.

Based upon these studies, this study assumes that generating escalation of commitment can be identically explained in the online auction surroundings in terms of changing a bidder's decision-making pattern through the escalation situation. It explains that bidders may make errors due to the auction fever phenomenon so that they may become fallible decision-makers. Therefore, this study considers the escalation of commitment as a key factor to explain decision-making errors in Internet C2C auction markets. Through the escalation of commitment, a bidder who already participated in the bidding process can continue his or her bidding because of sunk costs (he or she has already invested time and effort in the bidding process), self-justification (he or she is trying to convince himself or herself that making an initial bid for the item was good idea), or pressure to complete the bidding process (he or she is willingly to complete his or her bidding process before the auction's close).

From these views, this study deliberates sunk costs, self-justification and completion effect as the factors influencing the escalation of commitment in Internet C2C auction markets. Thus, this study has supposed that these factors can influence the escalation of commitment and that a bidder may become a fallible decision-maker who loses sight of his or her limits because of consequences of generating the escalation of commitment.

### **3 RESEARCH MODEL AND HYPOTHESIS**

#### **3.1 Research Model**

As shown in Figure 1, this study predicts that these bidders' decision-making processes will occur in the escalation of commitment situation, elevate their willingness to continue bidding, and will be moderately affected by the competition intensity of bidding due to competitors' bidding.

In general, a bidder's motivation for bidding is often stimulated by competition with others (Gilkeson and Reynolds, 2003). Competition can be regarded as being an extremely important variable in determining bidding behavior (Gilkeson and Reynolds, 2003; John and Zaichkowsky, 2003). It also increases arousal in bidders and may lead to bidders being swept up in a bidding war they never intend (Kagel and Levin, 2002). Most bidders who have planned to participate in an auction perceive the listed products' value to be a certain amount. It means that their personal valuation and the amount for which that person believes the listed products will be sold(John and Zaichkowsky, 2003). That is, the bidders' own decision-making can be affected depending on the competition in the Internet auction [40]. In addition, competition of the auction creates a state of competitive arousal in the bidders that cause bidders to lose sight of their limits and bid past them (Ku et al.2005). Because of competition, online bidders may lose control while bidding and buying so that they get from winning contests and how they were attracted to the challenge of playing against a rival. Based on the results of prior studies, bidders may deduct that fierce competition intensity gives the signals which the listed products are very attractive. After all, the level of competition intensity can be shown by the number of bids in a specific bidding. In this study, willingness to continue bidding in this study reflects a decision maker's escalation behavior in terms of persistence perspectives. Escalation can be explained on the basis of persistence behavior because it can be the continued investment to achieve the goal just before completing a task (Fox and Hoffman, 2002). Therefore, this study can predict that the escalation of commitment can be an important factor in increasing the level of a bidder's willingness to continue bidding.

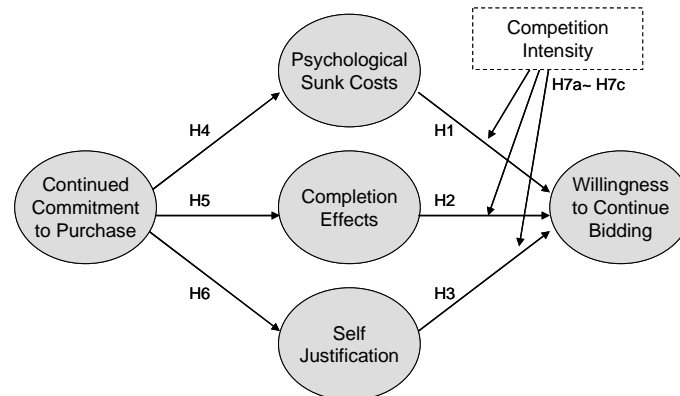


Figure 1. The proposed research model

### 3.2 Research Hypothesis

- H1: The higher the level of a bidder's psychological sunk costs will lead to an increase in the bidder's willingness to continue bidding.
- H2: As the auction gets closer to the ending time, the bidder's willingness to continue bidding will increase.
- H3: The high level of a bidder's psychological self-justification will lead to increase willingness to continue to bid.
- H4: As bidders' continued commitment to purchase increases, the level of psychological sunk costs will increase.
- H5: As the level of continued commitment to purchase increases, the completion effect of the bidding process closer to the ending time will increase.
- H6: As bidders' continued commitment to purchase increases, the level of self-justification costs will increase.
- H7a: The impact of the relationship between psychological sunk costs and willingness to continue bidding will be greater in high competition intensity group rather than that of low competition intensity group.
- H7b: The impact of the relationship between completion effects and willingness to continue bidding will be greater in high competition intensity group rather than that of low competition intensity group.
- H7c: The impact of the relationship between self-justification and willingness to continue bidding will be greater in high competition intensity group rather than that of low competition intensity group.

## 4 RESEARCH METHOD AND RESULTS

### 4.1 Research Methods

All research variables were measured using multiple-item scales adapted from prior studies. Items for willingness to continue bidding were adapted from Keil et al.(2000b) Items for psychological sunk costs, self-justification and completion effect were adapted from Keil et al.(2000b), Moon(2001a) and revised from them. Items for continued commitment to purchase were adapted and revised from Meyer and Herscovitch (2001) Items for competition intensity were developed by inferring Gilkeson and Reynolds (2003)'s notion of competition in the online auction sites.

And also, this study adapts partial least squares (PLS) to analyze the data collected from online survey. It was selected to test the hypotheses for two reasons. First, it is not contingent upon data having multivariate normal distributions and interval nature . In general, it is better suited for handling

manipulated constructs such as sunk costs. Second, it is appropriate for testing theories in the early stages of development (Chin et al., 2003). Given that this study is an early attempt to advance a theoretical model on a bidder's willingness to continue biddings, PLS can be used to analyze the data. In our study, PLS-Graph Version 3.0 is used to accommodate the presence of variables and moderating effects. This study conducts a survey from online bidders who have prior experiences using URL([http://pors.2.pollever.com/researchservice/sample\\_test/pollever.asp?pkey=S22235501](http://pors.2.pollever.com/researchservice/sample_test/pollever.asp?pkey=S22235501)) link that brought up the web-based survey instrument. They were requested to complete the questionnaire with regard to the last Internet consumer-to-consumer auction web site at which they had made a bid to purchase a product. Totally, the sample comprised 500 responses were collected and final response were 479 through screening out missing values for analyzing the research model.

## 4.2 Results

In the results of analyzing sample characteristics, 242 of respondents (50.6%) tend to visit internet auction sites for purchasing a product at least 1-3 times a month. And also, 400 of total respondents tend to make bids 1~5 times for getting a product. Most respondents use Auction ([www.auction.co.kr](http://www.auction.co.kr))(n=393, 82.2%), G-market ([www.gmarket.co.kr](http://www.gmarket.co.kr))(n=75, 15.7%), Onket ([www.onket.com](http://www.onket.com)) (n=10, 2%). In the next, validation of measurement was first assessed. Reliability was assessed using internal consistency scores, calculated by the composite reliability scores. Internal consistencies of all variables are, as shown in Table 1, considered acceptable because composite reliabilities in this measurement model range from 0.907 to 0.954 (Churchill, 1979; Hair, et al., 1998; Nunally, 1978).

Constructs	Items	Total sample (n=479)			High competition intensity (n=233)			Low competition intensity (n=246)		
		Factor Loadings	C.R.	AVE	Factor Loadings	C.R.	AVE	Factor Loadings	C.R.	AVE
Psychological Sunk Costs	SC1	0.840	0.954	0.806	0.830	0.906	0.762	0.767	0.935	0.743
	SC2	0.889			0.885			0.833		
	SC3	0.927			0.901			0.912		
	SC4	0.925			0.920			0.910		
	SC5	0.897			0.858			0.876		
Self-Justification	SJ1	0.911	0.907	0.830	0.904	0.908	0.712	0.912	0.879	0.785
	SJ2	0.910			0.916			0.867		
Continued Commitment to Purchase	CCP1	0.897	0.919	0.791	0.879	0.906	0.828	0.890	0.909	0.768
	CCP2	0.896			0.887			0.887		
	CCP3	0.874			0.858			0.849		
Willingness to Continue Bidding	WCB1	0.852	0.931	0.773	0.839	0.931	0.818	0.817	0.903	0.700
	WCB2	0.888			0.875			0.872		
	WCB3	0.871			0.868			0.843		
	WCB4	0.824			0.795			0.815		
Completion Effects	CE1	0.813	0.918	0.738	0.809	0.907	0.709	0.741	0.895	0.682
	CE2	0.825			0.806			0.775		
	CE3	0.910			0.880			0.916		
	CE4	0.872			0.851			0.858		
Competition Intensity	CI1	0.910	0.948	0.807						
	CI2	0.935								
	CI3	0.901								

Table 1. Results of Testing Convergent Validity

Convergent and discriminate validity is shown when PLS indicators (a) load much higher on their hyphenised factor than on other factors and (b) when the square root of each factor's average variance extracted (AVE) is larger than its correlations with other factors. Therefore, we evaluated construct validity using convergent validity and discriminant validity. Convergent validity was assessed by

factor loadings and average variance extracted (AVE) (Fornell and Bookstein, 1982). As shown in Table 1, all factor loadings for the items in the measurement model exceeded 0.70 in each group and all average variances extracted were greater than 0.50, thereby demonstrating adequate convergent validity (Fornell and Bookstein, 1982). Discriminant validity can be assessed by comparing the shared variances between constructs with the average variance extracted from the individual construct (Fornell and Larcker, 1981). As shown in Table 2 and Table 3, the square root of all AVEs is much larger than all other cross correlations. The results provide support for discriminant validity. Jointly, these findings suggest appropriate convergent and discriminant validity for construct validity. In addition, we classified each subgroup in centering the average of competition intensity (centering on 4.79): high competition intensity (above average value) and low competition intensity (below average value) and also tested the validity and reliability.

	Mean	STD	SC	SJ	CCP	WCB	CE	CI
SC	4.90	1.06	<b>0.806</b>					
SJ	4.68	0.95	0.566	<b>0.830</b>				
CCP	4.47	1.08	0.527	0.474	<b>0.791</b>			
WCB	4.74	0.99	0.616	0.561	0.528	<b>0.773</b>		
CE	4.50	0.94	0.633	0.579	0.621	0.632	<b>0.738</b>	
CI	4.79	1.05	0.445	0.434	0.525	0.446	0.365	<b>0.807</b>

The diagonal elements (in bold) represents the AVE.

Table.2 Results of Testing Discriminant Validity<sup>1</sup> using AVE

	C.R	Correlations of Constructs (high competition intensity group)					C.R	Correlations of Constructs (low competition intensity group)				
		CCP	SC	SJ	CE	WCB		CCP	SC	SJ	CE	WCB
CCP	0.91	<b>0.83</b>					0.91	<b>0.77</b>				
SC	0.91	0.47	<b>0.76</b>				0.94	0.24	<b>0.74</b>			
SJ	0.91	0.36	0.47	<b>0.71</b>			0.88	0.41	0.47	<b>0.79</b>		
CE	0.91	0.52	0.61	0.47	<b>0.71</b>		0.90	0.38	0.46	0.53	<b>0.68</b>	
WCB	0.93	0.48	0.51	0.52	0.57	<b>0.82</b>	0.90	0.38	0.56	0.45	0.41	<b>0.70</b>

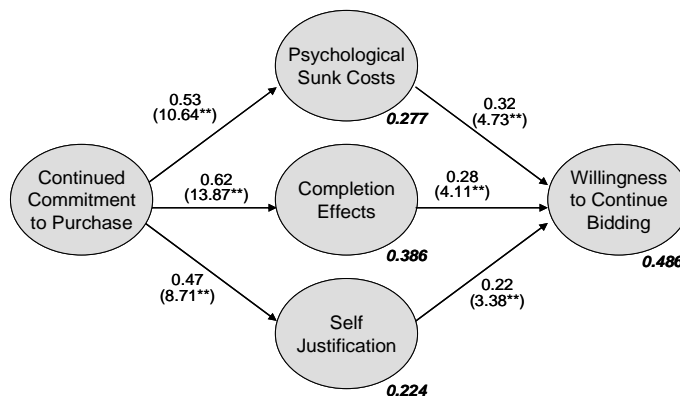
The diagonal elements (in bold) represents the AVE.

Table.3 Results of Testing Discriminant Validity using AVE in each subgroup

With satisfactory results in the measurement model, we then examined the structural model to test the relationships among constructs. Given the large sample used in this study, a strict significance level of 0.01 was used for all statistical tests<sup>2</sup>. The explanatory power of a structural model could be evaluated by looking at the  $R^2$  value (variance accounted for) in the final dependent construct. The final dependent construct (willingness to continue bidding) had  $R^2$  values of 0.486. In addition, other constructs also had  $R^2$  value for the followings: psychological sunk costs ( $R^2 = 0.277$ ), completion effects ( $R^2 = 0.386$ ) and self-justification ( $R^2 = 0.224$ ). After computing path estimates in the structural model using the entire sample, PLS used a jackknifing technique to obtain the corresponding T-values. Each hypothesis (H1 to H6) corresponded to a path in the structural model (see Figure 2). Support for each hypothesis could be determined by examining the positive sign and statistical significance of the T-value for its corresponding path.

<sup>1</sup> CCP(continued commitment to purchase), SC(psychological sunk costs), CE(completion effect), SJ(self-justification), WCB(willingness to continue bidding) and CI(competition intensity)

<sup>2</sup> When sample sizes are large, statistical tests can be very sensitive and may detect spurious effects. One way to overcome this problem is to use a very strict significance level for data analyses (Fornell and Larcker, 1981).



\*\* p<0.01(t-value)

Figure 2. PLS Results for the Proposed Research Model

To test moderating effects, this study estimated a series of structural models for each subgroup. Researchers have concluded that the subgroup analysis is appropriate for testing strength moderation in the case of nominal moderating variables. Thus, we closely patterned our analysis after Keil et al.[35] to test the moderating effect of competition intensity. We estimated two separate models in PLS: high competition intensity subgroup, and the low competition intensity subgroup. We then tested for differences across those models using the test for differences suggested by Chin et al.(2003) and implemented by Keil et al.(2001a,b) In order to more rigorously compare the results across subgroups, this study calculated t-statistics to evaluate the differences in path coefficients across models. Because we met assumptions for comparing gamma's suggested by Carte and Russell(2003) this study used procedures described by Chin et al.(2003). As shown in Table 4, comparing high competition intensity and low competition intensity, there are some remarkable findings. The impacts of the relationship between psychological sunk costs, self justification, completion effects and willingness to continue bidding in high competition subgroup are stronger than those of low competition subgroup. Thus, the impacts of the relationship among factors of the escalation of commitment and willingness to continue bidding are moderated by the level of competition intensity in the online auction.

From → To	high competition intensity (n=233)			low competition intensity (n=246)			Statistical Comparisons of Paths
	path	std error	t-value	path	std error	t-value	
SC → WCB	0.38	0.048	5.56	0.17	0.048	2.16	47.86***
CE → WCB	0.26	0.044	4.21	0.15	0.049	2.08	25.80***
SJ → WCB	0.34	0.045	5.03	0.23	0.058	2.42	23.10***

Table 4. Statistical Comparison of Paths

## 5 DISCUSSIONS

Before this study discusses interpretation on each hypothesis and research implications, there are several limitations of the study that are worth mentioning. First, measures used in this study are largely self-reported as opposed to objectively measured. Self-reported data are subject to the fallibility of people's memories or even deliberate alteration through social desirability biases (Teo and Ywong, 2003; Thatcher and Perrew, 2002) It may suffer from common method variance that could inflate observed relationships between constructs. However, James et al.(1979) mentioned that common method variance is a concern when there appears to be a systematic inflation in the correlation of constructs matrix. Examination of matrix in Table 5 in this study demonstrates that correlations are varied across constructs at relatively low levels. Although some constructs are correlated, formal tests for collinearity suggested the correlation do not significantly influence results. Thus, common method variance does not appear to be a significant flaw in this study.

Constructs	Collinearity Statistics	
	Tolerance	VIF
Continued commitment to purchase	0.40	2.32
Completion effects	0.40	2.23
Self-justification	0.53	1.87
Psychological sunk costs	0.42	2.35
Competition intensity	0.55	1.81

Table 5. Collinearity Statistics

Second, the questionnaires could not be filled in right after the completion of a bidding a round. Afterwards, the questionnaires are administered as bidders were leaving the auction. Thus, the recall may not have been completely accurate, as the respondents may have bid on many items, and were asked to recall only one. In attempt to coordinate this challenge, it needs to ask for the respondents to recall the last item they bid on. Because we use retrospective measurements which require respondents to recall their processes after having performed a particular task, it results in difficulty to recall facts which were not internalized in long term memory. But, this method has the advantage of not interfering with ongoing problem solving process (Todd and Benbasat, 1987). This study focuses on assessing individual judgment and choice with in the human judgment processing to predict an individual's output based on the input cues being processed. Thus, this approach can be appropriate for this research although respondents' recall may not have been completely accurate.

### 5.1 Interpretations

This study has several key findings from testing the research hypothesis. There were also significant relations from continued commitment to purchase to psychological sunk costs, self-justification and completion effects.

As shown in the results of testing H1, it found that bidders may not abandon their bidding processes because of the many sunk costs involved in any prior investment of efforts or time (Ku et al., 2005). Thus, a higher the level of a bidder's psychological sunk costs affect bidder's willingness to continue bids. In general, prior studies mentioned that a decision-maker had a tendency to perceive the effect of project completion, the willingness to continue a project increased (Heung et al., 2003; Keil et al., 2000a) from finding H2. This study also found that the bidder's willingness to continue bidding would increase as the auction got closer to the ending time. Thus, bidders should be more likely to bid past their limits towards the end of the auction when there is little time left. In the case of supporting H3, self-justification was influenced by commitment to choice (Schoorman and Holahan, 1996).in traditional paradigm of determinant of escalation bias. It means that a bidder has tendencies to escalate his or her commitments to purchase a product in order to self justify his or her previous behavior (Keil et al., 1995). Therefore, we revealed that bidders can make decisions about their willingness to continue bidding when their psychological self-justification increases.

As mentioned earlier, H4 was significant. If bidders are absorbed in purchasing a product under escalating commitment to purchase, they can spend a lot of time and efforts. It means that they accumulated their own psychological sunk costs. Therefore, we verified the positive relationship between continued commitment to purchase a product and bidder's psychological sunk costs. In the case of supporting H5, it demonstrated that bidders had tendencies to complete a progressive bidding process near to the end of time because of their continued commitment to purchase a product. In the case of H6, a bidder tends to escalate his or her commitment to a course of action to self-justify his or her prior behavior grounded in Keil et al.(2000a)'s study. According to prior studies (Fox and Hoffman, 2002; Keil et al., 2000b), individuals are likely to act rationally from the perspective of the persistence paradigm. Based upon this statement, this study found that bidders made decisions about their willingness to continue bids when increasing their psychological self-justification.

Based upon these results of hypotheses related to escalation of commitment, bidders more continue bidding because of their psychological sunk costs (they have already invested time in the bidding process), self-justification (they are trying to convince themselves that making and initial bids for the item was good) and completion effect (they lose sight of their limits and bid because of time

pressures). Namely, there exist the escalation satiations, which may be an irrational, multiply determined process, in the internet auction market. Finally, considering the moderating effect of competition intensity, H7-1, H7-2 and H7-3 were significant. Some previous studies mentioned that a bidder's motivation for bidding can be often stimulated by competition with others (Gilkeson and Reynolds, 2003; John and Zaichkowsky, 2003). On the basis of result of moderating effect in this study, an increase of the competition intensity may emanate continuous attractive signals to the bidders so that they perceive more values from the listed products. In the different angle, it can be explained by decision-making under dynamic environments from the perspective of decision-making under stress. Decision making behavior is considerably affected by the dynamics of environment, because most natural dynamic situations contain much uncertainty (Kerstholt, 1994). During a dynamic situation, critical judgments are frequently made under conditions of acute temporary or prolonged stress. According to Kowalski-Trakofler et al.(2003)s' study, they proposed the definition of stress had been "*a process by which certain work demands evoke an appraisal process in which perceived demand exceed resources and result in undesirable physiological, emotional, cognitive and social changes*". Thus, the effect of stressful conditions on human judgment is of importance.

Therefore, this study can suggest the understanding of the interplay between stress and a bidder's judgment and decision making activities would a better understanding of how they reach the choices they make in emergent situations. In this context, in dealing with the uncertainty of a continually changing environment like bidding processes, a bidder must make a decision whether continue to bids or not especially under stress situations because bidding in auctions usually requires a series of rapid decisions, often succession.

## 5.2 Theoretical and Practical Implications

This study presents a research model of a bidder's biased decision-making process and tests its predictions in conjunction with those of rational choice and escalation of commitment. Based on these findings, we have several theoretical implications.

First, auction fever phenomenon may require models like the escalation of commitment situations. This escalation of commitment processes can affect overbidding behavior which was irrational. Thus, bidders could irrationally exceed their limits as more people continued bidding or considered their sunk costs, completion effect and self-justification as the determinants of the escalation of commitment situations. Second, previous views in escalation of commitment (Keil et al., 2000b; Ku et al., 2005; Moon, 2001b) have tended to display escalation as an outcome of emotional or logical distortion in the orderly course of rational decision-making. In consistent with prior studies, we viewed overbidding behaviors as highly influenced by the past sunk costs and also approached to escalation as an irrational product of human motivational systems. Third, from a descriptive standpoint, the integration of the determinants such as psychological sunk costs, completion effect and self-justification of escalation of commitment results in a more predictive model that better explains irrational overbidding behavior in the internet auction markets. Finally, it clarified how psychological sunk costs, completion effect and self-justification help shape a bidder's overbidding behavior in the internet auction markets and also integrated the moderating role of competition intensity in the Internet auction surroundings.

And also, practical implications on a bidder's overbidding behavior can help to begin to bridge the informational gap between the auctioneer and the bidder by making both aware of the dynamics that are present at an auction sale. This study synthetically suggests internet auction sites in providing a kind of personalized services such as RSS (really simple syndication or rich site summary) to help bidders' biased decision making processes. If bidders purchase the listed product which they did not want to purchase it with undesirable auction prices, it can be generating problems regarding a revisiting the websites or maintaining customer loyalty to the websites. Thus, internet auction sites need to provide warnings services such as personalized e-mail services to bidders when bidders tend to have overbidding behaviors in the bidding process. Based upon this service, it can be important for internet auction sites to notify bidders to provide personalized services to them for purchasing products with reasonable prices. As online auction sites help bidders' right decision-making in the

bidding process, they can reinforce maintaining trust which can reduce a tremendous barrier to online transactions.

### 5.3 Suggestions for Future Research

The future study can be expanded in several ways. An interesting perspective can be to view the auction process as a continuous and repeated game like a gambling. It may explain bidding behaviors as the entertainment, or hedonic aspect of internet auctions. Therefore, it would be interesting to show how the bidders behave in terms of hedonic, enjoyment and thrill derived from the participation. It also can be these factors affecting the price a bidder is willing to pay. And also, additional research can propose more comprehensive model on a basis of decision-making that includes both cognitive and emotional components. Thus, it needs to organize the extended research model to broader view with these findings by exploring other factors that can influence bidding decisions. Therefore, the next step in a systematic investigation is to examine the relationships between the specific emotions such as anxiety, regret and depression or decision-making under stress and escalation of commitment. It will provide a better understanding of the influence of feelings about auction mechanisms on a bidder's behavior.

## 6 CONCLUSIONS

In contrast to this rational choice in traditional online auction studies (Banpa et al., 2004; McAfee and McMillan, 1987; Wally and Fortin, 2005), auction fever implies irrational, emotionally charged overbidding. This situation results when the winning bid is often based on an overestimation of the item's true value. It suggests that a winner will often overpay and feel regret. This regret has also derived from winner's curse occurring as the number of bidder increases. Namely, it is closely related to auction fever phenomenon. Therefore, auction fever may require model to describe dark-side factors of overbidding behavior in the online auction markets. The escalation of commitment situation in the online auction can describe a bidder's overbidding behavior which implies irrational behavior because previous views in escalation of commitment (Keil et al., 2000b; Ku et al. 2005; Moon, 2001b) have tended to display escalation as an outcome of emotional or logical distortion in the orderly course of rational decision-making. This study also presumes that bidders who invested lots of time, bids, and effort in specific auctions may be conscious of their need to justify their bids and escalate their commitments. In particular, it can be explained by applying escalation of commitment in order to explain the auction process such as the "going, going, gone period" with competition in online C2C auctions. From this surrounding, this study finds that there exist the escalation satiations, which can be an irrational, multiply determined process, in the online auction market. Our findings can capture a kind of a bidder's irrational behavior in the auction process and also suggest that escalation of commitment in the auction would provide another step toward understanding influences of cognitive and emotional factors in decision-making in the auction sites.

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