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THE MODERATING ROLE OF PERCEIVED EFFECTIVENESS OF THIRD-PARTY CONTROL ON TRUST AND ONLINE PURCHASING INTENTIONS

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Abstract

This study proposes a research model to understand the moderating role of customers' perceived effectiveness of third-party control in the e-commerce environment on (1) the trust building process and (2) the effect of trust on customers' online purchasing intention. The model was tested using a sample of 383 online consumers collected in New Zealand. The results show that perceived effectiveness of third-party control moderates the effect of trust in predicting online purchasing intention. Furthermore, the results differentiated the mediating effects of trust between online vendor-specific factors (i.e., perceived website quality, capability of order fulfillment, and reputation) and purchasing intention, such that trust does not mediate when perceived effectiveness of third-party control is low. Academic and practical implications and future research are also discussed

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Keywords: E-commerce, trust, online business, third-party control mechanisms, between group analysis, moderation analysis.

Introduction

E-commerce research has long established that trust is the foundation for e-commerce (Keen, 1999), and numerous recent research has investigated the central role of trust in affecting customer online purchasing intention (Gefen et al., 2003b; Jarvenpaa and Tractinsky, 1999; Jarvenpaa et al., 2000; Lim et al., 2006; Pavlou and Gefen, 2004). A careful scrutiny of this research identifies two important gaps. First, although many studies have implied that trust plays a mediating role between vendor specific factors (i.e., trust-building levers) and purchasing intention (McKnight et al., 2002), little research has examined the extent to which trust mediates this relationship. Second, most research to date has assumed that trust unconditionally increases e-commerce customers' behavioral intentions, but has not adequately explored potential moderators on trust and purchase intention, with very few exceptions (e.g., Gefen and Pavlou, 2006). We consider that these two issues are pertinent given the central role of trust.

Our study addresses these two gaps. The objective of this study is to find out to what extent and under what circumstances trust mediates the effects of several common vendor characteristics, regarded as trust-building levers, on a customer's purchasing intention. To do so, we suggest a moderator, perceived effectiveness of third-party control, and examine its effect on customer trust and purchasing intention.

Third-party control refers to a legally binding third party (such as a credit agency or an escrow service) that protects the transacting parties against potential risks of loss, and thereby may serve as a mechanism to reduce the general social uncertainty associated with an online transaction[1]. Perceived effectiveness of third-party control is defined as the extent to which customers believe that the third party can guarantee successful and risk-free online transactions. We explore how several well-studied relationships about vendor specific factors, trust and purchasing intention varies (if at all) across situations where perceived effectiveness of third-party control is (1) low and (2) high (see Figure 1). The preliminary findings add to the literature with a potentially important moderator for further research.

Literature Review and Research Model

A model for understanding the interplay of vendor-specific factors, trust, perceived effectiveness of third party control, and customer purchasing intention is provided in Figure 1. The research model accounts for both the trust-mediated and direct effects of vendor-specific factors on purchasing intention. We propose to test the model in situations where perceived effectiveness of third-party control is (1) low and (2) high, to see how the mediation effects hold in either situation. These hypotheses are discussed in the following sections.

[1] This construct is different from perceived regulatory effectiveness of online market place proposed in Gefen and Pavlou (2006). Perceived regulatory effectiveness is a community-level construct, while control by legally binding third parties operates at the societal level, not specific to any community.

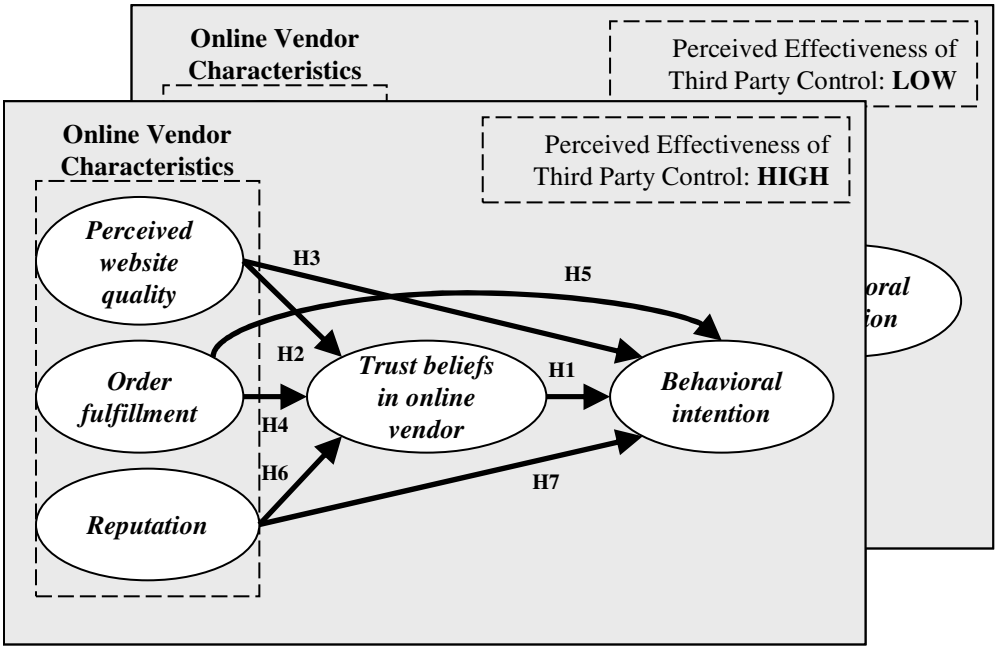


Figure 1: Research Model with Hypotheses Sampling Frameworks

Behavioral Intention

We define behavioral intentions as customer intentions to purchase through a particular website. A strong correlation between behavioral intentions and actual behavior has been confirmed in the existing research, therefore measuring behavioral intention as a proxy for actual behavior is common in information systems research (Agarwal and Prasad, 1998; Karahanna et al., 1999; Venkatesh, 1999, 2000). We use customer behavioral intention as the key dependent variable in our study.

Trust Beliefs in the Online Vendor

Trust is a belief that others one chooses to trust will not act opportunistically by taking advantage of the situation, and will behave in a dependable, ethical, competent, and socially appropriate manner (Hosmer, 1995; Kumar et al., 1995; Zucker, 1986). Trust as a belief has been defined in terms of "integrity (trustee honesty and promise keeping), benevolence (trustee caring and motivation to act in the trustor's interests), competence (ability of the trustee to do what the trustor needs), and predictability (consistency of trustee behavior)" (McKnight et al., 2002, p. 303). Trust is used as a mechanism to govern exchange relationships that are characterized by uncertainty, vulnerability, and dependence, and in fact, numerous studies have established that trusting beliefs strongly influence customers' intention to purchase online (e.g., Gefen and Heart, 2006; Jarvenpaa and Tractinsky, 1999). We hypothesize that:

H1: Consumer trust in an online vendor is positively related to online buying behavior.

Online Vendor Characteristics

Key online vendor characteristics include: (1) the layout and design of its web presence; (2) its capability and past record for order fulfillment; and (3) its overall reputation. The literature has demonstrated that these online vendor-specific factors are instrumental to trust building processes as well as online purchasing (Chang, 2003; Chu et al., 2005; Koufaris and Hampton-Sosa, 2004; McKnight et al., 2002; Pennington et al., 2003; Yoon, 2002). We discuss them one by one below.

Perceived Website Quality

An online store's web presence is the main source upon which a consumer can judge its trustworthiness. A well-designed and organized user interface can reduce consumers' cost of searching and the time required for information processing and hence increase the customer's belief that the vendor running the website has high integrity and will behave in a competent, benevolent and therefore trustworthy manner (Flavian et al., 2006; Kim, 2003). Thus:

H2: Perceived website quality is positively related to trust in the online vendor.

A number of technology acceptance studies have generally supported the link between high perceived information systems quality and usage (Ajzen, 1985; Pavlou and Fygenson, 2006). Likewise, previous TAM studies have also pointed out that the higher the quality of a system the greater the likelihood of using it will be (Venkatesh and Davis, 2000). We hypothesize that:

H3: Perceived website quality is positively related to online buying behavior.

Order Fulfillment

Since a product must be delivered in order to complete an online transaction, order fulfillment is a critical factor directly influencing the success of the transaction. Order fulfillment is not under control of the customer, thus the vendor's ability to assure the customer of successful delivery is especially important. Capability of order fulfillment largely depends on a vendor's competence in delivering ordered products through its distribution channel, as well as its integrity in keeping promises, which positively affects customers' trust in the vendor . This means:

H4: Perceived online vendor's ability of order fulfillment is positively related to trust in the online vendor.

The IS expectation-confirmation model (Bhattacherjee, 2001) has stated that confirmation of a customer's expectation leads to higher customer satisfaction which in turn leads to continued IS use. High order fulfillment quality then implies realization of the expected benefits of purchasing, which positively affect the customer's likelihood of purchasing. Stated formally:

H5: Perceived online vendor's ability to fulfill orders is positively related to online buying behavior.

Reputation

Reputation of a vendor is defined as the perception the customers has about an organization regarding its honesty and concern towards its customers (Doney et al., 1998). Reputation is a valuable asset that requires a long-term investment of resources, effort, and attention to customer relationships and indicates past forbearance from opportunism, which in turn generates trust. This trust generates from the belief that firms with a good reputation are reluctant to risk their goodwill by

acting opportunistically (Ahuja, 2000; Granovetter, 1985; Gulati and Gargiulo, 1999; Kramer, 1999) as the costs of untrustworthy behavior are perceived to be higher for firms that already have a good reputation (Axelrod, 1984). Therefore, a company's reputation is crucial to the consumers' evaluation of the company's credibility which in turn results in consumer trust in the vendor. Thus:

H6: The reputation of an online vendor is positively related to trust in the online vendor.

Previous marketing and strategy studies have established a direct relationship between a vendor's reputation and the expansion of the customer base (Dholakia, 2005; Dupree, 2005; Neville et al., 2005). Extending them into the e-commerce context, we hypothesize that:

H7: The reputation of an online vendor is positively related to online buying behavior.

Perceived Effectiveness of Third-Party Control

A primary reason why trust plays a central role in online transactions is because trust can reduce social uncertainty (Luhmann, 1979). Trust is particularly critical for a individual to rule out the possibilities of potential loss - particularly when no other cue is available to reduce that uncertainty (Gefen, 2000; Gefen et al., 2003a). However, if another cue is available, then the function of one's trust in a party to be trusted (e.g., an online vendor) may change. Indeed, social and organizational theories have suggested that social uncertainty relates to both a certain party (e.g., an individual or an organization) as well as to a broader society (Fukuyama, 1995; Mayer and Davis, 1995). Thus, while trust is one way to confront the presence of social uncertainty directly caused by the trusted party, the extent of this uncertainty is partially determined by perceived effectiveness of controlling the uncertainty at the societal level (Zucker, 1986).

The Internet has sufficiently advanced to a level that supports the emergence of an "e-society" in which most real-world social and business activities can take place, with commercial transactions such as online buying and selling being a typical instance. Adopting the theoretical perspective of social uncertainty to the e-commerce context, an individual's trust can be associated with an online party (e.g., a virtual individual or an online organization/vendor), as well as the whole Internet-based social structure (i.e., e-society) in general.

We propose that third-party control mechanisms associated with e-commerce is an approach to reduce online customers' overall perception of the social uncertainty at the e-society level. Third parties refer to legally binding mechanisms, such as credit card guarantees (resources provided by financial institutions in case of fraudulent seller behavior) and escrow services that authorize payments only after the customer accepts the deal and agrees to pay (e.g., Paypal, SafeTrader) (Pavlou and Gefen, 2004). These legally binding third-parties operate to regulate transactions at the level of the e-business environment, not only specific to a certain marketplace or online vendor, and thus are relatively independent from the online vendor (i.e., a customer's perceived effectiveness of these third-party control mechanisms does not vary across different online vendors he/she conducts transactions with). However, different online customers may perceive the effectiveness of these third-party mechanisms differently. While early research has proposed that legally binding third-party control mechanisms may reduce customers' perceived uncertainty of conducting business with a particular seller by building trust and reducing risk through trust transference (Pavlou and Gefen, 2004; Stewart, 2003), empirical evidence does not strongly concur (Pavlou and Gefen, 2004). Based on the theories of trust and social uncertainty (Luhmann, 1979), we propose that effective third-party mechanisms reduce online customers' perceived uncertainty toward the overall transactional activities in the Internet-based business environment, which in turn affects the necessity of trust in an particular vendor. When online customers have little confidence in the effectiveness of these third-party control mechanisms to set and enforce

appropriate rules of conduct in the e-business environment, overall e-social uncertainty is high. According to Fukuyama (1995), individuals in a culture where regulatory authorities are perceived as ineffective tend to hesitate in transacting with strangers regardless of their level of trust in the stranger. Similarly, in an e-business world where most of the online vendors are strangers, customers who perceive these third-party control mechanisms as ineffective may refrain themselves from conducting businesses with unknown vendors in the first place. In such a circumstance, trust in the online vendor does not even need to play a role in affecting transaction intentions.

In contrast, in a culture where regulatory mechanisms are generally perceived as effective, individuals are more willing to do business with strangers beyond their family and close friends (Fukuyama, 1995). In such a circumstance, the role of trust in affecting transaction intentions becomes important because individuals who are open to conduct businesses with strangers would choose who to do businesses with based on who might be perceived as more trustworthy. Therefore, we hypothesize a moderating role of the perceived effectiveness of third party control mechanisms:

> *H8: Perceived effectiveness of third party control mechanisms moderates the effect of customer trust in an online vendor and purchase intention, such that the effect of trust on purchasing intention will be stronger for high levels of perceived effectiveness of third party control mechanisms.*

Specifically, we propose

(a) *if perceived effectiveness of third party control mechanisms is low, the impact of trust as a mediator on purchasing intention is insignificant;*

(b) *if perceived effectiveness of third party control mechanisms is high, the impact of trust as a mediator on purchasing intention is positively significant*

We believe that the factor 'perceived effectiveness of third-party control' does not affect the trust building processes. According to Fukuyama (1995), individuals in low trust cultures are generally not willing to conduct businesses with strangers, preferring instead to transact with agents that are known / recommended to them. That is not to say however that in such a situation that trust does not have a role to play. Cognitive and/or affective (see McAllister 1995) processes to assess the trustworthiness of an agent are still likely to be enforced – be they personal or impersonal. Similarly in the online context we believe that the trust-building levers of perceived website quality, perceived order fulfillment, and perceived reputation will affect trust in an online vendor regardless of the level of perceived effectiveness of third party control. However we also believe that trust will only leads to purchase intention when the effectiveness of third-party control mechanisms is perceived as high.

Methodology

Questionnaire Development

To test the proposed model (see Figure 1) a survey was designed. Most constructs in this study, except perceived effectiveness of third party control, have been established in the existing literature and we drew on these measures for our study. Table 1 details the sources of the measures used in this study. We followed (de Vaus, 1995, p. 83-6) advice for

wording questions to develop the questionnaire. The questionnaire was piloted among staff and students in a large university before being accepted as the final version.

Table 1: Source of Measures	
Construct	**Source / Notes**
Perceived effectiveness of third party control	New scale developed based on definition, recent literature (e.g., Pavlou and Gefen 2004), and preliminary qualitative interviews.
Vendor image / reputation	From Spencer (1999)
Perceived ability of vendor to fulfill orders	Based on Butler (1991); Rayport and Jaworski (2002); Thomas and Housden (2002); and Torkzadeh and Dhillon (2002).
Trust in the vendor	Items adapted and modified from Einwiller (2003)*, Jarvenpaa et al. (2000) Garbarino and Lee (2003).
The vendor's website	Adapted / modified / based on Yoon (2002); Chakraborty et al. (2002); and Balananbis and Reynolds (2001).
Likelihood of buying online again	Items adapted / modified / based on Jarvenpaa et al. (2000).
* Einwiller sourced these items from Doney and Cannon (1997), Kennedy et al (2001), Oswald and Fuchs (1998) and by considering the results of McKnight and Chervany's (2002) meta analysis of trust definitions (see Einwiller 2003:208).	

Data to test the research model were collected from samples of university personnel in New Zealand. Respondents were instructed to complete the questionnaire only if: (1) they had prior real purchasing experience from an online website and (2) the product or service bought was for personal use. This overcame the problem of respondents answering questions relating to any purchases they made online on behalf of the university.

The sampling frame consisted of 4,500 university personnel selected from contact address on the university Web site. A random sample of 1500 was generated from this sampling frame (choosing every third person). A total of 383 completed (and useable) questionnaire were returned, representing a 30% overall response rate.

Missing Data

The data was checked for missingness. All the cases (383) had missingness less than 10% i.e. we had information on more than 90 percent of variables for a given case. There was no systematic missingness, therefore, assumptions of missing completely at random (MCAR) were met, therefore, the missingness was handled using full-information maximum likelihood method (Bollen and Curran, 2006; Little and Rubin, 2002).

Perceived Effectiveness of Third-Party Control

Development of this construct was inspired by Pavlou and Gefen (2004). Whereas they measured the perceived effectiveness of escrow services and credit card guarantees separately we created four items to measure the perceived effectiveness of third party agents in the online environment (see Table 2). To ensure the items measured customers' ***general*** perceptions of the overall effectiveness of third party agents in the online environment (as opposed to specific agents /

mechanisms) we worded the items carefully and created a separate section explicitly soliciting "general beliefs about online purchasing" at the very beginning of the questionnaire. The construct reliability for this factor was high (Cronbach alpha > .74) and all the items were loaded on a single factor with acceptable factor loadings (Table 2). Weighted average of four items was used to construct the factor score. The two groups (Low and High) were obtained using median split at the score of 3.91 of a 1-7 scale.

Table 2: EFA for Perceived Effectiveness of Third-Party Control	
Items descriptions	**λ**
When buying online, I am confident that there are mechanisms in place to protect me against any potential risks of online shopping if something goes wrong with my online purchase	.860
I have confidence in third parties (e.g. SafeTrader, TRUSTe) to protect me against any potential risks (leaking of personal information, credit card fraud, goods not received etc) of online shopping if something goes wrong with my online purchase.	.823
I believe that there are other parties (e.g. your credit card company) who have an obligation to protect me against any potential risks (leaking of personal information, credit card fraud, goods not received etc) of online shopping if something goes wrong with my online purchase.	.585
I am sure that I cannot be taken advantage of (leaking of personal information, credit card fraud, goods not received etc) as a result of conducting purchases online.	.713

Results

Measurement model

First-order Constructs

All constructs except 'perceived web site quality' were treated as first order latent constructs. A two step approach was followed to perform standard tests of reliability and validity, including those for item reliability, internal consistency, and discriminant validity (tables 3 and 4) (Anderson and Gerbing, 1988; Fornell and Larcker, 1981). Confirmatory factor analysis was performed and we followed the standard procedure of dropping one item at a time (Schumacker and Lomax, 2004; Thompson, 2000) until the remaining items in the model had acceptable loading values. To test discriminant validity and unidimensionality we compared two constructs at a time by setting their covariance to one and comparing model fit indices. We also used criteria of average variance extracted (AVE) and matrix of loading and cross loading to establish discriminant validity (Fornell and Larcker, 1981).

Table 3: Individual Item Loadings		
Construct and their items (those that were retained)	**λ^a Low**	**λ^b High**
Repurchasing Intention		
Likelihood/probability that you will purchase online from the same vendor…		
In the medium term	.62	.64
In the long term	.99	.99
Trust		
I believe that this vendor is consistent in quality and service.	.67	.73
I believe that this vendor is keen to fulfill my needs and wants.	.66	.74
I believe that this vendor is honest.	.80	.81
I believe that this vendor wants to be known as one that keeps promises and commitments.	.71	.70
I believe that this vendor has my best interests in mind.	.72	.68
I believe that this vendor is trustworthy.	.86	.87
I believe that this vendor has high integrity.	.89	.88
I believe that this vendor is dependable.	.92	.93
Perceived Website Quality		
Extremely easy to use.	.76	.69
Extremely well organized.	.74	.70
Extremely easy to navigate.	.86	.86
Extremely easy to find information that I want.	.88	.89
Extremely clear layout.	.76	.73
Extremely easy to conduct online shopping.	.91	.89
Extremely fast in transmitting words and images.	.73	.64
Excellent in terms of operational efficiency (i.e. working links etc).	.72	.70
Extremely useful search/help functions.	.68	.65
Extremely interesting.	.90	.89
Extremely exciting.	.80	.82
Extremely entertaining.	.65	.68
High attention grabbing ability.	.71	.69
Perceived Capability of Order fulfilment		
I believe that this vendor has knowledge and expertise in distribution (i.e. how to deliver products/services).	.63	.67
I believe that this vendor has efficiently integrated all necessary departments/systems that are needed to deliver products or services.	.94	.94
I believe that this vendor has an efficient system for processing orders received.	.78	.80
Perceived Vendor Reputation		
Excellent public image.	.76	.74
Extremely committed to customer satisfaction	.75	.68
Extremely innovative	.6	.62
Products and/or services are excellent.	.78	.77
Has an excellent reputation.	.81	.81
Extremely reliable.	.69	.69
a (b) : Item loadings for group with low (high) on perceived effectiveness of third party control.		

Table- 4: Construct Correlations*

		AVE [a]	(1)	(2)	(3)	(4)	(5)
(1)	Repurchasing Intention	.83 (.83)	***.94[b]*** ***(.95)***				
(2)	Trust	.78 (.80)	.18 (.48)	***.93*** ***(.94)***			
(3)	Perceived website quality [c]	.78 (.74)	.26 (.29)	.46 (.50)	***.89*** ***(.94)***		
(4)	Perceived capability of Order fulfillment	.79 (.81)	.28 (.21)	.51 (.62)	.42 (.39)	***.93*** ***(.94)***	
(5)	Perceived vendor reputation	.73 (.72)	.30 (.32)	.63 (.64)	.67 (.44)	.43 (.50)	***.88*** ***(.87)***

*Information for group with high perceived effectiveness of third party control is in parenthesis.
[a] Square root of the average variance extracted (AVE)
[b] Diagonal elements show the Internal Consistency Reliability (ICR)
[c] AVE and ICR for perceived website quality were calculated using the standardized regression weights of first order constructs (navigation, technology and playfulness). AVE and ICR for individual dimensions were: navigation AVE .80 (.78), ICR .94 (92); technology .77 (.73), .91 (.87); and playfulness .77 (.76), .91 (.92).

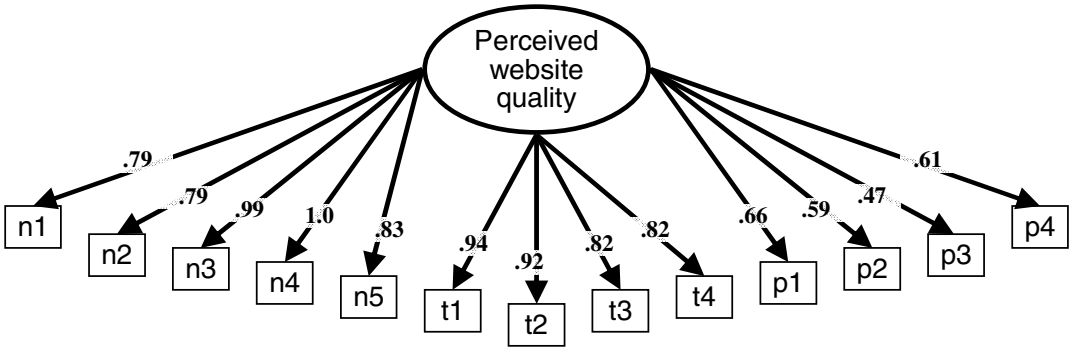
Second-order Constructs

Extant literature suggests that website characteristics is a multi-dimensional second order latent construct involving first order constructs such as playfulness, usefulness, user friendliness etc. Principal component factor analysis, with direct oblimin rotation was performed to identify the factors. Three factors were identified and labeled (1) navigability, (2) technology and (3) playfulness respectively. A split sample approach was followed (Schumacker and Lomax, 2004; Segars and Grover, 1993; Thompson, 2000) to arrive at the final factor structure. First a random sample of 150 cases was chosen from the dataset and the remaining 233 were kept as hold out cases. Second, exploratory factor analysis was performed on the sample of 150 cases and confirmatory factor analysis (CFA) was done on the hold out sample of 233. Third, once CFA replicated the factor structure obtained using EFA, a first order and second order operationalization of perceived website quality (PWQ) was performed using the total sample. The results are presented in Figure 2. All the fit indices indicate that the second order operationalization of PWQ fits the data well and provides improvement over the first order operationalization (see model fit summary embedded in Figure 3). In subsequent analysis the second order operationalization of PWQ was used.

Structural Models

The structural model (base model) as presented in figure 1 as tested on those who had a low (henceforth referred to as the 'Low' group) and high (henceforth referred to as the 'High' group) perception of the effectiveness of third party agents in the online environment. Fit indices (Table-5) for the Low group were very good ($\chi 2$=610.46, df=432; CFI=.951, IFI=.952, RMSEA=.047) whereas those for the High group were moderate ($\chi 2$=695.57, df=432; CFI=.935, IFI=.936, RMSEA=.057) (Hu and Bentler, 1999).

Hypothesis H4, H5, H6 and H7 were supported in the Low group and hypothesis H1, H2, H4, and H6 were supported in the High group. Hypothesis 3 was not supported. To establish the mediating role of trust between online vendor characteristics and intention to purchase we used nested model comparison together with criteria of fit indices and significance of indirect effects. We conducted this test by constraining b3, b5, and b7 respectively to zero and then compared the nested model to the base model. The results indicate that trust has no mediating effect in the Low group whereas it completely mediates (cf. Loehlin, 1997; Mayer and Gavin, 2005; Schumacker and Lomax, 2004) (1) Perceived Capability of Order Fulfillment -> Purchasing Intention; (2) Perceived Reputation ->Purchasing Intention; and (3) Perceived Web Quality -> Purchasing Intention in the High group.



Model Fit Summary						
	CFI	TLI	NFI	RMSEA	Chi-square	df
First Order	.859	.78	.846	.149	472.45	50
Second Order	.991	.985	.976	.039	72.16	46

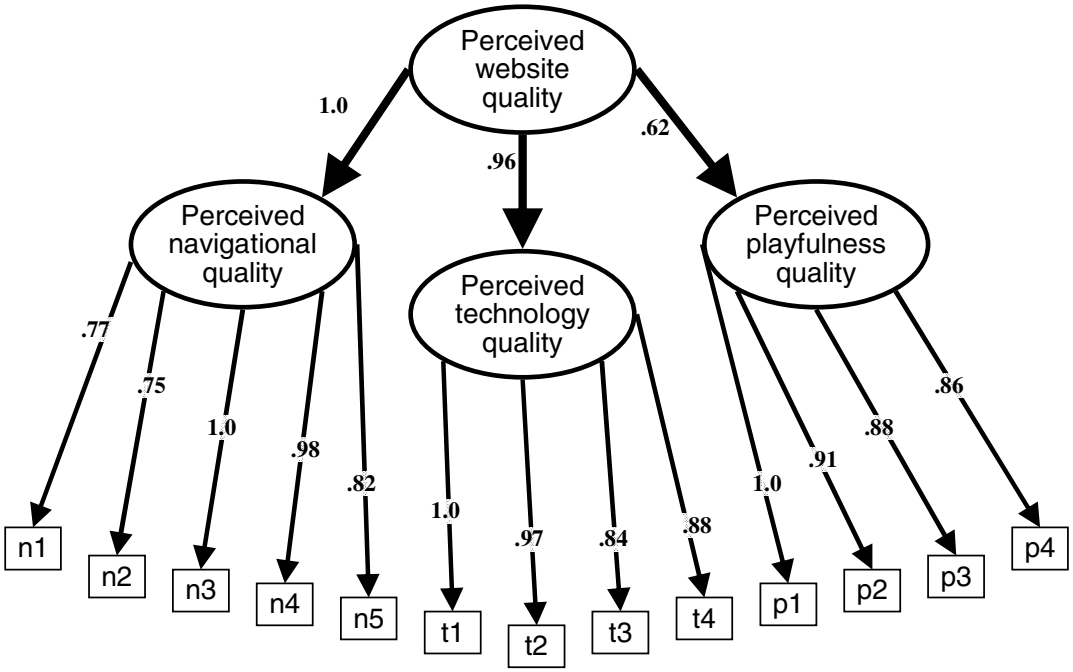


Figure 2: Comparison of first order and second order operationalization for perceived website quality

Table 5: Test of mediation: Nested model comparison

		Low Third Party Control Group (N=192)					**High Third Party Control Group (N=191)**			
		Base Model	**Model-1**	**Model-2**	**Model-3**		**Base Model**	**Model-1**	**Model-2**	**Model-3**
H1	Trust --> Repurchasing Intention ***(b1)***	-.099	-.100	-.035	-.004		.383***	.379***	.336***	.412***
H2	Perceived Web Quality -> Trust ***(b2)***	.036	.037	.031	.019		.201*	.202*	.203*	.203*
H3	Perceived Web Quality -> Repurchasing Intention ***(b3)***	.046	@	.122	.350+		.083	@	.065	.097
H4	Perceived Capability of Order Fulfillment -> Trust ***(b4)***	.263***	.263***	.265***	.268***		.426***	.427***	.434***	.426***
H5	Perceived Capability of Order Fulfillment -> Repurchasing Intention ***(b5)***	.168*	.169*	@	.201*		-.117	-.102	@	-.109
H6	Perceived Reputation -> Trust ***(b6)***	.608***	.609***	.610***	.614***		.473***	.472***	.470***	.473***
H7	Perceived Reputation ->Repurchasing Intention ***(b7)***	.297+	.320*	.266	@		.065	.074	.045	@
$\chi 2$		610.46	610.50	616.21	613.45		695.57	696.18	697.21	695.97
df		432	433	433	433		432	433	433	433
CFI		.951	.952	.950	.951		.935	.935	.935	.935
TLI		.944	.944	.942	.943		.925	.926	.925	.926
IFI		.952	.952	.951	.952		.936	.936	.936	.936
RMS EA		.047	.047	.047	.047		.057	.057	.057	.057
$\Delta\chi^2$		-	.045	5.75	2.99		-	.612	1.636	.404
p-value		-	.833	.016	.084		-	.434	.201	.525

@ path was constrained to 'zero'; + p<.10, * p<0.05, ** p<0.01, *** p<0.001
Note: b3, b5 and b7 were constrained to zero in Model-1, 2 and 3 respectively.

Between groups differences

Hypothesis 8 was also supported. In the default model (Figure 1) all the structural parameters were allowed to vary freely across the two groups while measurement model equivalence constraints were imposed (Anderson and Gerbing, 1988)[2]. The default model fitted the data well (Table 5). Subsequently, equality constraints were imposed on the path coefficients. In Model A, b1 across the groups was constraint to equality. Imposition of this constraint deteriorated the model fit ($\Delta\chi^2$=11.93, df=1, p=.001), hence path coefficients for Trust -> Purchasing behavior are significantly different in the two groups. Similarly, $\Delta\chi^2$ for Model E is significant ($\Delta\chi^2$=7.124, df=1, p=.008). The equality constraint on b3 across the two groups deteriorates the model fit and hence path coefficients for Order fulfillment -> Purchasing behavior are different in the two groups. This suggests the moderation effect of Perceived effectiveness of third party control on the relationship between 1) trust and purchasing behavior, and 2) order fulfillment and purchasing behavior.

For model B, the $\Delta\chi^2$ value did not show any deterioration in model fit. This indicates that we do not lose much of the information by assuming b2 to be equal in both the groups (Bentler and Bonett, 1980; Hu and Bentler, 1999; Schumacker and Lomax, 2004). Similarly, Model C, D, F and G indicate that there is no difference between b3, b4, b6 and b7 in the two groups (Table 6).

Table 6: Between the groups comparison

Model[a]	Constraint	χ2	DF	$\Delta\chi^2$	P	CFI	RMSEA
Default model	(no structural constraint)	1523.28	933			.924	.041
Model A	b1_1=b1_2[b]	1535.20	934	11.93	***.001***	.923	.041
Model B	b2_1=b2_2	1525.58	934	2.30	.129	.924	.041
Model C	b3_1=b3_2	1523.28	934	0.008	.931	.924	.041
Model D	b4_1=b4_2	1523.44	934	.159	.690	.924	.041
Model E	b5_1=b5_2	1530.40	934	7.124	***.008***	.924	.041
Model F	b6_1=b6_2	1524.43	934	1.152	.283	.924	.041
Model G	b7_1=b7_2	1524.79	934	1.516	.218	.924	.041

[a] Measurement model was constrained to be equal across the groups (Low and High) in all the models.
[b] b1 (path coefficient between Trust and Repurchase intention) was constrained to be equal for Low and High groups.
Compared to default model, constrained models (A and E) had significantly (**) poor fit and hence b1 and b5 are different across groups with Low and High perceived effectiveness of third party control.

[2] The measurement model between two groups did not differ significantly ($\Delta\chi^2$=33.699, df=27, p=.175), hence measurement invariance was established.

Discussion

Moderation and Mediation Effects

We confirmed the moderating role of perceived effectiveness of third-party control mechanisms. When perceived effectiveness of third-party control mechanisms is low, the effect of trust on purchasing intention is not significant (-.099, n.s.); when it is high, the effect of trust on purchasing intention is positive and strongly significant (.383, $p<.001$). The difference between the two path coefficients is highly significant ($\Delta\chi^2=11.93$, df=1, $p=.001$), indicating a strong moderating effect. Also as expected, perceived effectiveness of third-party control has no moderating effect on trust building processes related to web quality, reputation and order fulfillment (i.e., Models B, D, F in Table 6 not significant).

While previous research has largely assumed that trust unconditionally mediates between trust-building levers and purchasing intention (e.g., Jarvenpaa and Tractinsky, 1999; Lim et al., 2006), our results show that the mediation effect may not always hold. We found that, while trust completely mediates the relationships in the High group as prior literature suggests, it does not mediate the relationships in the Low group.

In addition, we found that perceptions of vendor reputation and order fulfillment have by far the greatest effect on trust in both the groups, claiming themselves as strong trust-building levers. The path coefficients of these two factors were .608 and .263 for the Low group and .473 and .426 for High group respectively. All these coefficients were highly significant ($p<0.001$). The path coefficient from perceived website quality to trust was insignificant in the Low group but was significant in the High group (.201, $p<0.05$).

Theoretical Implications

The study makes several contributions. First, the present study challenges an assumption underlying most previous research that trust unconditionally influences online purchasing intention by theoretically identifying and empirically testing the construct of perceived effectiveness of third-party control mechanisms as a moderator. As Gefen and Pavlou (2006) point out, most existing e-commerce research on trust was conducted in societies of high-trust cultures (e.g., America, Israel, Australia), where individuals generally perceive social, legal and regulatory mechanisms to be effective (e.g., credit card guarantee, escrow services). By comparing low versus high perceived effectiveness of third-party control mechanisms, our study shows that the picture may be more complex in situations where effectiveness of these mechanisms is perceived as low: trust may not even be needed to play a role in such situations. Future research may test this model in other cultures where individuals don't generally trust legal and regulative authorities.

Second, the study is among the first to explicitly differentiate and compare the mediating effects of trust. It shows that the significance of trust as a mediator is different in low versus high perceived effectiveness of third party controls. Our study suggests that trust fully mediates between vendor specific factors (i.e., perceived website quality, order fulfillment quality, and reputation) and purchasing intention only when perceived effectiveness of third-party control is high - a context often assumed in the prior literature. When third-party control is perceived as ineffective, trust does not mediate at all and purchasing intention is only predicted by perceived order fulfillment quality. Thus, the significant results about trust

mediation in the prior literature (e.g., Gefen et al., 2003b; Jarvenpa and Tractinsky 1999) are rejected in the low third-party effectiveness group. Third-party control effectiveness as an important e-commerce boundary condition is implied.

In addition, the study contributes to the e-commerce literature with the finding that order fulfillment is (another) instrumental trust-building factor (among others), particularly to customers who already have purchasing experience with the online vendor. Moreover, it is an important factor predicting purchasing intention when trust does not function in the low third-party effectiveness situation.

Methodologically, the study introduces another way of testing between-group differences of path coefficients, in addition to product indicator approach (Chin et al., 2003) and between-group comparisons of path coefficients (Keil et al., 2000; Venkatesh, 2000; Venkatesh and Morris, 2000). This study employs an approach of between group analysis using covariance based SEM (AMOS) that uses full information[3] and provides a means of testing measurement invariance and structural invariance through goodness of fit indices. This approach has been widely used in the management disciplines such as organizational behavior (e.g., Mayer and Gavin 2005), thus it could be a promising method for the IS research.

Practitioner Implications

The study provides managerial implications to online vendors. First, online vendors, and the e-commerce environment at large, cannot overemphasize the importance of reinforcing the effectiveness of legally binding third-party's control mechanisms. While it is important to focus on a set of key "trust-building levers" for trust building to translate customers' trust to online purchasing intention, they must collectively build and situate themselves in an e-business environment with effective third-party control mechanisms.

Limitations and Future Research

In order to advance our work we must acknowledge the limitations in it. We believe there are two (minor) concerns. First, future work must clearly justify the inclusion of certain variables in the model. For example, it was suggested that the variable 'Perceived Capability of Order Fulfillment' is a trusting belief and not an antecedent per se. Second, the scale we used to measure the variable 'Reputation' in our model (developed by Spencer 1999) is a relatively new one and although we found it to have very good psychometric properties there was the viewed expressed that it did have internal and external elements that should be distinguished and modeled accordingly. We urge fellow researchers to replicate this model in various e-buying contexts and settings taking into account the limitations that we have just mentioned.

Conclusions

The study examined the effects of online vendor characteristics, third-party control mechanisms, online trust, and customer purchasing intention. The results show that perceived effectiveness of third-party control mechanisms moderates the effect of trust on purchasing intention. The study also shows that trust mediates the relationships between vendor specific factors (trust building levers) and purchasing intention only when perceived effectiveness of third-party control is high. This is an area worthy of future research.

[3] PLS as a method does not use full available information which results in the "PLS parameter estimates are less than optimal regarding bias and consistency" (Chin et al., 2003, Appendix A, Supplemental Material)

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