

## **Website characteristics, Trust and purchase intention in online stores: - An Empirical study in the Indian context**

Boudhayan Ganguly

Satya Bhusan Dash

Indian Institute of Management  
Lucknow

Dianne Cyr

Faculty of Business  
Simon Fraser University  
Surrey, BC Canada

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### **Abstract**

Lack of trust in online transactions has been cited, by past scholars, as the main reason for the abhorrence of online shopping. In this paper we proposed a model and provided empirical evidence on the impact of the website characteristics on trust in online transactions in Indian context. In the first phase, we identified and empirically verified the relative importance of the website factors that develop online trust in India. In the next phase, we have tested the mediator effect of trust in the relationship between the website factors and purchase intention (and perceived risk). The present study for the first time provided empirical evidence on the mediating role of trust in online shopping among Indian customers.

**Keywords:** *Trust, online shopping purchase intention, mediator, website factors*

## 1.0 Introduction

Over the years the evolution of the Internet as a marketing medium has become a global phenomenon. The rise in the number of households possessing computers and the ease of Internet access has led to this widespread acceptance of ecommerce. According to Jupiter corporation e-commerce in US is to reach \$144 Billion by 2010. The penetration of e-commerce is quite high in developing economies of Asia too. According to Internet and Mobile Association of India (IAMA) size of the E-Commerce industry in India is expected to reach \$1,858,731,266 at the end of 2007-08. However, even in 2006 the percentage of Internet users who use the Internet for ecommerce is only 4 %. According to Tan and Guo (2005) the Internet is viewed by the customers as a world of chaos and purchase is made only if benefits are more than the risks. According to Grabner-Krauter and Kaluscha (2003) lack of trust is cited as the main reason for not doing online shopping. Trust contributes positively towards the success of online transactions (Jarvenpaa and Tractinsky, 1999; Lee and Turban, 2001). Further, we believe that in order to have a better understanding of online trust one needs to comprehend the various factors influencing the process of building trust online. Some authors like Sultan et al (2002); and Teo and Liu (2007) had classified the antecedent factors of trust. From our exhaustive review of literature we have classified the factors as website factors, customer factors and vendor factors. In this empirical study we focus on the website factors which influence trust in online shopping.

Several studies, such as Ranganathan and Ganapathy (2002), Cyr (2008), have pointed out several website factors that lead to trust/purchase intention in the developed ecommerce markets of US, Canada and Europe. Despite these findings, the external validity of the causal relationship between website factors and trust and also that between trust and its consequences remain a debatable issue. Unless the scope of research on effect of website characteristics on trust is expanded to countries with different cultural orientations, prior findings will continue to be valid in western societies only. India is different in many ways from the western countries where the previous studies have been conducted - a) e-commerce is nascent in India. The rise of e-commerce in India took place only in this decade. According to I-cube report (2008) even in 2001 the Internet penetration was less than 1%. b) According to Internet World Stats data, the Internet connectivity in India is still not at par with the US with only 7% using broadband connection even in 2008. d) Nascent cyber laws compared to western countries such as the US and Canada. e) Prior researchers like Cyr et al (2005) did show that Indians have strong preference for localization of website. In this paper we investigate what website factors generate trust in the online shopping among Indian customers and test the validity of the studies carried out in the developed ecommerce markets of US and Canada.

We further conceptualize that trust is the generic mechanism through which the antecedent website factors affect purchase intention. So, in this paper we propose that the antecedents of purchase intention affect trust and trust in turn increases purchase intention.

We note that none of the scholarly works have comprehensively studied the influence of website factors on trust in online shopping in the Indian context. Several authors such as Cyr (2008), Yoon (2002) etc have looked at website characteristics that generate online trust in western cultural context. However, in India, in the context of B2C online shopping, there has been limited scholarly work that focuses on the influence website factors that generate trust although this has been partially addressed by Dash and Saji (2006). The objectives of this study are

- a) To review past literature, identify and empirically test the website factors that are antecedents of trust
- b) To identify the consequences of trust in online shopping how trust is related to them.  
and
- c) To empirically test the role of trust on the relationships between these antecedent website factors and purchase intention (and perceived risk) in the B2C online shopping context.

Our paper is divided into four parts. After the introductory first section, in section 2 we review the relevant literature related to online trust, propose a general conceptual model depicting the major consequences of trust and website factors as antecedents of online trust in B2C online shopping and also propose hypotheses related to the mediator role of trust in online shopping. In the third section we present the methodology and results. In the last section, we discuss managerial and research implications of the findings from the study and the limitations of our work respectively.

## **2.0 Hypotheses Development: The Website characteristics as antecedents of Trust in online transactions of online stores**

In this study we focus on those website characteristics which are most frequently found in the literature. This includes Information design, navigation design, visual design, privacy, security, communication and social presence of the website. In the following paragraphs we elaborate more on the effect of key website factors on trust in online store.

### *Website Information Design*

Information design is concerned with the information that is put on the webpage and how the information is organized. Prior studies like Ranganathan

and Ganapathy (2002) have empirically shown that right information on the website generates purchase intention. Mithas et al (2007) have found empirically that relevant and updated information generates loyalty. Besides, Cyr (2008) has empirically shown that information design generates trust among the customers of the online portals. Thus we propose,

*H1: Higher perception of information design in the website results in higher customer trust with the online store.*

### *Website Navigation Design*

Navigation Design of a website is concerned with the browsing of the website with ease. Cyr (2008) argued that even if detailed information is put on the site the customer may be leaving the site if he finds it difficult to search for the information he wants. Harridge-March (2006) had argued that proper navigation helps the customer save time and overcome financial and performance risks and therefore leads to trust. Yoon (2002) has empirically shown that navigation design results in trust.

*H2: Higher perception of navigation design in the website results in higher customer trust with the online store.*

### *Website Visual Design*

Visual design of the website deals with the aesthetic beauty of the website. This includes the use of graphics, colors, photographs, various font types to improve the look and feel of the site. Karvonen (2000) had shown that 'aesthetic beauty' positively affect trust. Cyr (2008) argued and empirically established that the visual design of the website positively affects trust.

*H3: Higher perception of visual design in the website results in higher customer trust with the online store.*

### *Website enabled Communication*

Two way communication with vendor deals with options to communicate with the online store, presence of online sales person, timely feedback to the online store. These interactions with the online store facilitate this information exchange between online store and buyer in a purely virtual world. According to Korgaonkar et al (2006) proper information services with the vendor includes features like option to communicate with the salesperson, reviews from other shoppers, third party evaluation and information exchange with online vendor is an antecedent to purchase intention. Ribbink et al (2004) argued that communication is part of e-quality and is an antecedent to satisfaction. Similarly, Mukherjee and Nath (2003) have argued that timely communication generates trust by resolving disputes and ambiguities. Thus we propose the following

*H4: Higher perception of communication with the online store results in higher customer trust with the online store.*

#### *Website Social Presence*

The social presence in the Internet domain speaks of how human warmth and sociability can be integrated through the web-interface in order to positively influence consumer attitudes towards online shopping. Social presence of websites speaks of human touch in the website, (Gefen and Straub, 2004), possibility of interaction in the website, (Finin et al, 2005), friendliness and belongingness to the web store, (Brock, 1998). Social Presence is the online buyers' sense of awareness of the presence of the interaction partner and a higher degree of social presence should lead to better perception about the online store. In fact Gefen and Straub (2004), Hassnein and Head (2006) have shown empirically that social presence can positively affect the trust with the website. Thus we propose.

*H5: Higher perception of social presence of the website results in higher customer trust with the online store.*

#### *Website Privacy*

Privacy over the Internet is the ability to control what information one reveals about oneself over the Internet, and to control who can access that information. Web site privacy talks about the concern of the consumer that the company is gathering personal information, negative attitude towards company that asks for personal information, hesitation in sharing personal information, statement on how information will be used, (Ranganathan and Ganapathy, 2002). According to Miyazaki and Fernandez (2001), gathering, sharing personal information by placing cookies on the computer and contacting the consumer without his consent, reduces privacy and we believe that it reduces the perceived benevolence and credibility of the online vendor thereby reducing trust. Several past researchers such as Chellapa (2005), Suh and Han (2003) have shown that website privacy is an antecedent to trust.

*H6: Higher perception of privacy in the website of the online vendor results in higher customer trust with the online store.*

#### *Website Security*

According to the Computer Security Institute three of the major areas of security are: confidentiality, integrity, and authentication or availability. Confidentiality means that information cannot be accessed by unauthorized parties. Integrity means that information supplied by the user cannot be tam-

pered by unauthorized parties. Authentication means that no one should be able to impersonate others when they are using the Internet. Krishnamurthy (2001) pointed out that the online store should also be certified by 3rd party assurance to improve security. Ranganathan and Ganapathy (2002) emphasize the use of secure modes by online companies for transaction. Several studies such as, Koufaris and Hampton-Sosa (2004), Chellapa (2005), Sultan et al (2002), Chen and Barns (2007) have shown that improvement in security results in increase in trust with the online vendor. Thus we propose

*H7: Higher perception of security in the website of the online vendor results in higher customer trust with the online store.*

### *Trust and Purchase Intention*

Purchase Intention is concerned about the likelihood to purchase products online. In order to increase the acceptance of e-commerce it is indispensable for the consumer to intend to use a retailer's website to obtain and provide information in order to complete a transaction by purchasing a product or service. Purchase intention is the final consequence of a number of cues for the e-commerce customer. Jarvenpaa and Tractinsky (1999) have argued that a customer's willingness to buy from the online store shall increase if the seller is able to evoke the customer's trust. Several studies such as Bauer, et al (2006), Bhattacharjee (2002), Dash and Saji (2007), Gefen et al (2003), Gefen (2000), Gefen and Straub (2003), Kim and Kim (2005), Salam et al (2005), Suh and Hun (2003), Sultan et al (2002), Chouk and Perrien (2004) have empirically shown that increase in customer trust increases purchase intention. Thus, we propose:

*H8: Higher perception of customer trust results in higher purchase intention.*

### *Trust and Perceived Risk*

Perceived risk has been defined by Chellapa (2005) as the uncertainty that the customers face when they cannot foresee the consequences of their purchase decisions. As the Internet is a virtual and global channel for buying and selling goods the seller cannot be physically felt and thereby it creates a perception of uncertainty in online transactions and therefore perceived risk in online shopping is high. Jarvenpaa and Tractinsky (1999) argued that there is no assurance that the customer shall get what he sees on the Internet. If there are technical problems during transactions, then the seller is not bound to bear the expenses. According to Yoon (2002), online trust is different from offline trust in three ways. First of all there is huge distance between the buyer and seller, secondly, the absence of sales person and thirdly there is no physical contact between the buyer and the product. So trust with the online vendor is indispensable for reducing perceived risk. Thus we propose

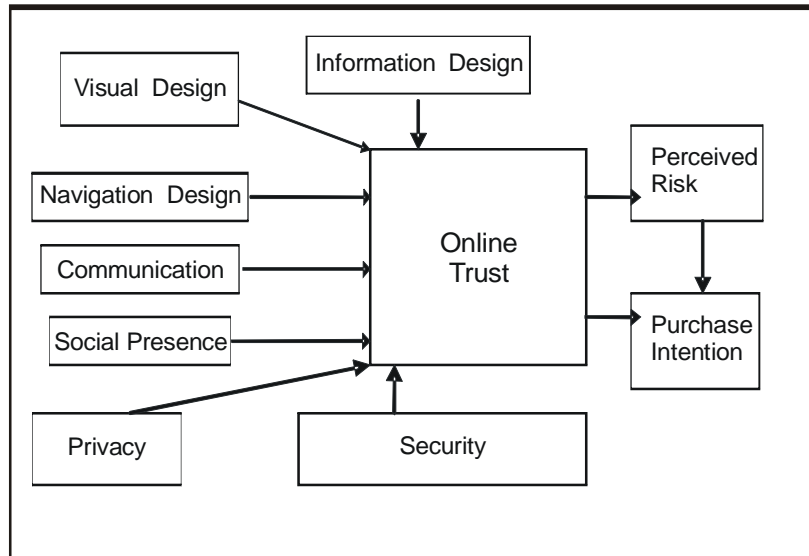
*H9: Higher perception of customer trust results in lower perception of perceived risk in online shopping.*

### *Perceived Risk and Purchase Intention*

For online customers increased level of perceived risk is likely to reduce purchase intention. Consumers are reluctant to provide information on the Internet because they fear their private information may be misused by some unauthorized person. Jarvenpaa and Tractinsky (1999) argued that a customer may be willing to buy from an online store if it is perceived to be of low risk even if he does not have a highly positive attitude towards the store. Choi and Lee (2003), Jarvenpaa and Tractinsky (1999), and Dash and Saji (2007) have empirically shown that increased level of perceived risk reduces purchase intention. Thus, we propose the following

*H10: Higher perception of perceived risk in online shopping results in lower purchase intention.*

We present the conceptual model derived from the above hypotheses in Figure 1.



*Figure 1: The website characteristics as antecedents and perceived risk and purchase intention as consequence of trust in online stores.*

## *2.1 The Mediating Role of Trust*

Although some past studies provided empirical evidence that several factors such as privacy, security and website design (Ranganathan and Ganapathy, 2002), develop purchase intention directly, there have been a plethora of papers (Yoon, 2002; Dash and Saji, 2006; Chen and Barns, 2007) that conceptualized that the antecedent factors generate trust and trust in turn generates purchase intention. Baron and Kenny (1986) in their seminal paper defined that a mediator variable is a variable that represents the generic mechanism through which the focal independent variables are able to positively influence the outcome variable. Further, in the context of relationship marketing, Morgan and Hunt (1994) had suggested and empirically established that trust would mediate the relationship between commitment and its antecedents such as communication and opportunistic behaviour. Auh (2005) in the context of service marketing had divided the attributes that generate loyalty as soft and hard attributes. Drawing inspiration from social exchange theory he argued that soft attributes involve more human interactions like social and relational attributes whereas hard attributes are related to the core of the service such as competence, functionality, and reliability. Auh (2005) further established that trust is a mediator in the relationship between the soft attributes and service quality.

In the context of online shopping the outcome variable 'purchase intention' is a hard attribute as it is a measure of saleability of the online store. We also note that in the context of online shopping the attributes information design, visual design, navigation design, communication exchange, social presence, perceived privacy, and perceived security are soft attributes as they deal with social and relational attributes such as human contact, warmth, attentiveness, care etc. So we propose that these soft attributes would influence their outcome variable 'purchase intention' through the key mediating variable trust. Therefore, in this study we conceptualize that trust represents the generic mechanism through which these focal independent variables are able to positively influence purchase intention with the online company. For example, an online company may provide enough information content on its site but if the information provided in the website does not generate trust then it would not be able to generate purchase intention. Furthermore, Sultan et al (2002) had empirically established the mediating role of trust in online context. In their study trust is established as a mediator between the focal independent variables (Ex. Website characteristics and consumer characteristics) and purchase intention. In the similar vein, we conceptualized mediating role of trust in our model.

Thus we frame the next set of propositions with trust as a mediator variable.

H11: Trust mediates the positive effect of (a) perceived information design (b) perceived visual design (c) perceived navigation design on purchase intention (d) perceived communication exchange (e) perceived social presence (f) perceived privacy (g) perceived security and purchase intention.

Similarly we hypothesize that the focal independent variables negatively influences perceived risk through trust. In other wards the antecedent variables are able to reduce perceived risk by developing trust toward online store. Therefore, we propose the following

H12: Trust mediates the negative effect of (a) perceived information design (b) perceived visual design (c) perceived navigation design (d) perceived communication exchange (e) social presence (f) perceived privacy (g) perceived security and perceived risk.

### **3.0 Methodology**

#### *3.1 Context of study and Sampling*

The population under study comprised of customers in India who are involved in B2C transactions. The sampling frame consisted of students from various premier B-schools in India. The student sample was primarily chosen because according to an IAMAI report most of the online shoppers in India are from younger age groups and these age groups are heavy users of the Internet. The students from the premier B-schools of India have continuous Internet access from their Institutes and hence served our purpose. A questionnaire was designed to measure Trust, Purchase Intention and website characteristics. The scales for the constructs were taken from existing literature in the domain of ecommerce. The scale for measuring Information design, navigation design and visual design were adapted from Cyr (2008). The scale for 'communication' was taken from Nath and Mukherjee (2003), social presence from Gefen and Straub (2004), security from Koufaris and Hampton-Sosa (2004) privacy from Chen and Barns (2007). Trust was measured by the scales used by Chellapa (2005) and Suh and Han (2003). All the variables were measured on a 5-point Likert scale from "strongly disagree (1) to strongly agree (5)". The questionnaire was distributed to students from various premier B-schools in India who have online shopping experience and who opted to participate in the survey. In the first phase the students were asked whether they had done online shopping and whether they were interested to participate in the survey. The responses from affirmative students were considered and divided into heavy, medium and light users. Out of those students, only the heavy users of online shopping were short listed and in the second phase the questionnaire was administered to 1600 students randomly chosen from the affirmative list of students. 305 responses were received.

After eliminating unfilled and partially filled responses the final sample size came to 290. The sample characteristics are presented in table 1.

Sample size (N)	290
Male	240
Female	50
Years of Internet experience	8.37
Average age	27
Average Number of transactions with the portal in the last year	11

*Table 1: The sample characteristics*

To evaluate the relationship between the variables website factors, trust and purchase intention structural equation modelling was used. The advantage of SEM, as compared with other multivariate techniques such as multiple regressions, is that SEM allows simultaneous test of relationships with multiple variables. Although SEM is attractive in testing model robustness, both the estimation method and test of model fit are based on the assumption of large samples. In this study as far as complexity of the model is concerned, our sample size of 290 was more than sufficient for using the SEM (Hair et al 1998).

### *3.2 Results and Data Analysis*

To test the base model we followed a two stage procedure prescribed by Anderson and Gerbing (1988). The two-stage approach emphasizes the analysis of two conceptually distinct latent variable models: the measurement model and the structural model. The measurement model provides an assessment of convergent and discriminant validity should be estimated before the structural model which provides an assessment of predictive validity and testing of research hypotheses.

#### *3.2.1 Measurement Model*

All items were measured in a 5 point Likert scale. Confirmatory factor analysis (CFA) was used to test for the discriminant and convergent validity and reliability of the questionnaire items and the constructs. The results of CFA are presented in the table 2a. The fit of the ten-factor measurement model consisting of online shopping constructs on a correlation matrix of 37 measures was acceptable  $\chi^2(584) = 1151.975$  ( $p < .01$ ); CFI=.89; IFI =.89; RMSEA=.05. Although the  $\chi^2$  statistics is significant ( $p < .01$ ), the other good-

ness-of-fit indices indicated a good fit. The CFI and IFI of .90 satisfied the recommended cut-off criterion. The RMSEA for the model is below the cut-off criterion of .08. Convergent validity is achieved if the loading of each of the individual items on a construct is greater than 0.5. With the exception of 1 item each from social presence and communication all other items displayed high convergent validity with factor loading greater than 0.5. Hence convergent validity was achieved.

The assessment of discriminant validity was conducted for all the correlated constructs. The correlation matrices for the latent variables presented in table 2b show that the correlation coefficient between any two constructs was significantly below unity, which supports the discriminant validity of the model. However, a stringent criterion for testing discriminant validity, suggested by Bagozzi and Phillips (1982) is to fix the correlation between two constructs as 1.0 and then employ a  $\chi^2$  difference test for the constrained and unconstrained models. A significantly lower  $\chi^2$  value for the model in which construct correlations are not constrained to unity would indicate that the constructs are not perfectly correlated and discriminant validity is achieved. Our results indicated that with an additional degree of freedom there was an increase in  $\chi^2$  value ranging from 50 (with navigation design and visual design constrained) to 496 (with privacy and perceived risk constrained). So our model demonstrated improved model fits when the constructs were separated and hence discriminant validity was achieved.

In assessing measurement reliability, Fornell and Larcker (1981) stressed the importance of reliability of each measure (individual item), and the internal consistency of composite reliability of each construct. Composite reliability is calculated as the squared sum of the individual item loadings divided by the squared sum of loadings plus the sum of error variances for the measures. The composite reliability of each construct should be more than 0.6 for measurement reliability. The results stated in table 2a indicate that reliability of the measurement scales was achieved.

Construct	Measurement Item	Factor Loading	Mean (SD)	Composite Reliability (CR)
Information Design	ID1	0.700	3.97 (.806)	.75
	ID2	0.849	3.88 (.831)	
Visual Design	VD1	0.810	3.96 (.847)	.69
	VD2	0.633	3.82 (.819)	
Navigation Design	ND1	0.820	3.97 (.907)	.81
	ND2	0.763	3.97 (.753)	
	ND3	0.727	3.73 (.846)	

<b>Construct</b>	<b>Measurement Item</b>	<b>Factor Loading</b>	<b>Mean (SD)</b>	<b>Composite Reliability (CR)</b>
Social Presence	SP1	0.772	2.56 (1.018)	.82
	SP2	0.804	2.74 (.998)	
	SP3	0.817	2.63 (.918)	
	SP4*	0.445	2.41 (1.095)	
	SP5	0.604	3.07 (.889)	
Communication	COM1	0.636	3.33 (1.039)	.60
	COM2	0.640	3.21 (1.146)	
	COM3*	0.323	3.10 (1.02)	
Privacy	PRV1	0.724	3.58 (.957)	.76
	PRV2	0.837	3.83(.896)	
	PRV3	0.518	3.72(.913)	
	PRV4	0.56	3.76 (.979)	
Security	SEC1	0.782	3.77(.951)	.84
	SEC2	0.813	3.84 (.919)	
	SEC3	0.669	3.82 (.847)	
	SEC4	0.769	3.86 (.888)	
Trust	T1	0.661	3.78 (.844)	.85
	T2	0.740	3.81(.823)	
	T3	0.623	3.58 (.924)	
	T4	0.537	3.69 (.772)	
	T5	0.687	3.79 (.741)	
	T6	0.685	3.60 (.810)	
	T7	0.784	3.89 (.770)	
Perceived Risk	PR1	0.585	2.59(1.02)	.75
	PR2	0.640	2.41(.97)	
	PR3	0.659	2.09(.89)	
	PR4	0.718	2.2(.92)	
Purchase Intention	PI1	0.745	4.13 (.840)	.72
	PI2	0.772	4.08 (.799)	
	PI3	0.504	3.97 (1.109)	

\*The items that had factor loadings <.50 were removed from the model and not considered for calculation of composite reliability.

*Table 2a: Results of confirmatory Factor Analysis- Factor loadings and composite reliability*

Constructs	Information Design	Visual design	Navigation design	Communication	Social Presence	Privacy	Security	Trust Intention	Purchase Intention	Perceived Risk
Information Design		1.00								
Visual design	.51	1.00								
Navigation design	.54	.66	1.00							
Communication	.21	.19	.32	1.00						
Social Presence	.20	.16	.23	.52	1.00					
Privacy	.36	.29	.29	.21	.17	1.00				
Security	.40	.27	.29	.22	.16	.79	1.00			
Trust	.56	.38	.36	.40	.19	.83	.83	1.00		
Purchase Intention	.59	.42	.31	.22	.011	.60	.63	.77	1.00	
Perceived Risk	-.47	-.308	-.29	-.32	-.16	-.89	-.93	-.98	-.69	1.00

### 3.2.2 Structural Model

After achieving a satisfactory fit in the measurement model, the structural model based on a path analysis was then estimated. Path analysis using AMOS 4.0 was performed with trust, perceived risk and purchase intention as the dependent variables and information design, navigation design, visual design, privacy, security, social presence and communication as the independent variables. The goodness of fit indices was then evaluated to determine if the model could be considered reliable in testing the hypotheses. The structural model ( $\chi^2(14) = 102.953$ ,  $IFI = .94$ ,  $CFI = .94$ ,  $RMR = .028$ ) yielded a reasonable fit to the data. Although the  $\chi^2$  statistics is significant ( $p < .01$ ), the other goodness-of-fit indices also indicated a good fit. The comparative fit index (CFI) and incremental fit index (IFI) were above the guideline of .90. The RMR was also below .05. Therefore, the model was considered fit enough to proceed with further analysis. The results from the path analysis (shown in Table 3) indicate that information design ( $\beta = .189$ ,  $p < .01$ ), communication ( $\beta = .120$ ,  $p < .01$ ), privacy ( $\beta = .209$ ,  $p < .01$ ) and security ( $\beta = .442$ ,  $p < .01$ ) are significant predictors of trust in online stores. Security of the website was considered to be the most important factor for generating online trust, followed by privacy, information design and web enabled communication. However, the relationship between social presence, visual design, navigation design

and trust were found to be not significant. As indicated in table 3, trust was also found to be a significant predictor of purchase intention ( $\beta=.527$ ,  $p<.01$ ) and perceived risk ( $\beta =-.777$ ,  $p<.01$ ). Thus the hypotheses H1, H4, H6, H7, H8 and H9 were supported.

<b>Independent Variable</b>	<b>Standardized Coefficient (Beta)</b>
Information Design -> Trust	0.189***
Visual Design-> Trust	0.016
Navigation Design-> Trust	-0.032
Communication Exchange-> Trust	0.120***
Social Presence-> Trust	-0.006
Privacy-> Trust	0.209***
Security-> Trust	0.442***
Trust-> Purchase Intention	.527***
Trust-> Perceived Risk	-.777***
Perceived Risk-> Purchase Intention	-.010

\*indicates  $p <.1$ , \*\*indicates  $p <.05$  and \*\*\*indicates  $p <.01$  level

*Table 3: The path coefficients*

In the next step we tested the mediator effect of trust in the relationship between the website factors and purchase intention/perceived risk. The mediator test is limited to those website factors which have been found to be significant predictors of trust. We compared the Direct Effect model (D-E-M) when trust and purchase intention /Perceived risk are constrained (i.e., trust not linked to purchase intention to transact/ Perceived risk) with the free model when the mediating path from trust to intention / Perceived risk was not constrained. The Direct Effects model (Shown in Figure 2) included the additional direct path from website factors to intention to transact/ Perceived risk in addition to the mediating paths from trust to purchase intention/ perceived risk as shown in Figure 1. The comparison of the proposed constrained D-E-M model with the free D-E-M model allowed us to test whether trust fully or partially mediates the effect of the website factors on purchase intention/ perceived risk. To fulfill the condition of full/partial mediation, the effect of the antecedent variables on the dependent variables (purchase intention and perceived risk) should be significant in the constrained model and the previous significant effect should not be significantly/insignificantly reduced in the free model. This procedure of testing mediating effect is consistent with the one suggested by Baron and Kenny (1986).

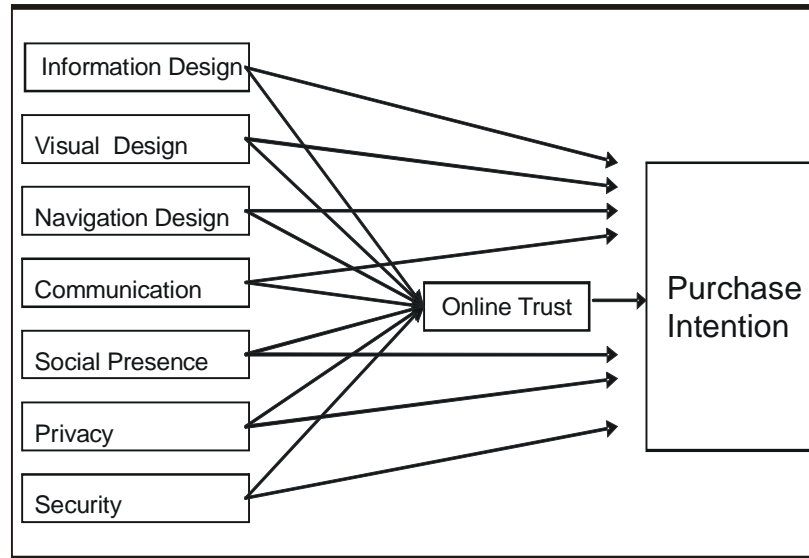


Figure 2: The Direct Effect Model with website characteristics as antecedents and purchase intention as consequence of trust in online stores

Our review of the conditions for mediation (Baron and Kenny, 1986) suggested that the mediating effects of trust were indeed present between the website factors (privacy, security, information design and communication) on purchase intention. First the F-M-M showed that some of the antecedent variables privacy ( $\beta = .209$ ,  $p < .001$ ), security ( $\beta = .441$ ,  $p < .001$ ), information design ( $\beta = .189$ ,  $p < .001$ ) and communication ( $\beta = .12$ ,  $p < .001$ ) had a significant direct effect on trust. When the mediating path, through trust, to purchase intention was constrained (i.e. trust not linked to purchase intention) the direct effects of information design ( $\beta = .280$ ,  $p < .001$ ), communication ( $\beta = .083$ ,  $p < .1$ ), privacy ( $\beta = .229$ ,  $p < .001$ ) and security ( $\beta = .320$ ,  $p < .001$ ) on purchase intention was significant. Fourth, the previously direct effects of communication ( $\beta = .08$ ,  $p > .1$ ), privacy ( $\beta = .112$ ,  $p < .001$ ), security ( $\beta = .182$ ,  $p < .05$ ) and information design ( $\beta = .187$ ,  $p < .001$ ) was significantly reduced when the mediating path from trust to purchase transaction was not constrained (See Table 4a). In addition, the results illustrated in Table 4a clearly indicated that the D-E-M is not improved by adding additional path providing support for our full mediated model (See Figure 1). Therefore, we can conclude that trust partially mediate the relationship between the information design, privacy, security and purchase transaction and fully mediates the relation between communication and purchase intention. Therefore H11a, H11f, H11g are partially supported and H11d is fully supported. We could not test the

mediating role of trust in the relationship between visual design, navigation design, social presence and purchase intention (H11b, H11c, H11e) because these website factors were not significant predictors of trust.

In order to test H12 which predicted that trust mediates the negative effect of the website factors on perceived risk, we followed the same procedure as outlined above. First, the F-M-M showed that the antecedent variables privacy, security, information design and communication had a significant effect on trust. Second, the F-M-M also noted that trust had a significant negative effect on perceived risk. Third, when the mediating path through trust to perceived risk is constrained (i.e. not linked to perceived risk) the direct effects of information design ( $\beta = -.350, p < .001$ ), communication ( $\beta = -.19, p < .001$ ), privacy ( $\beta = -.666, p < .001$ ) and security ( $\beta = -.737, p < .001$ ) were significant. Fourth, the previously direct effect of information design ( $\beta = .007, p > .05$ ), communication ( $\beta = .039, p > .05$ ) were insignificant when the mediating path from trust to perceived risk was not constrained. Further, the previously direct effect of privacy ( $\beta = -.281, p < .001$ ) and security ( $\beta = -.376, p < .001$ ) were reduced but remained significant when the mediating path from trust to perceived risk was not constrained (See Table 4b). From this result we can conclude that trust fully mediates the relationship between information design, communication and perceived risk and partially mediates the relationship between privacy, security and perceived risk. Therefore H12a, H12d are fully supported and H12f, H12g are partially supported. Similarly, in addition, the results illustrated in Table 4b clearly indicated that the D-E-M is not improved by adding additional path providing support for our full mediated model (See Figure 1). We could not test the mediating role of trust in the relationship between visual design, navigation design, social presence and purchase intention (H12b, H12c, H12e) because these website factors were not primarily significant predictors of trust.

Path	Path via Trust	Path Coefficient	$\chi^2$ (DF)	GFI	IFI	CFI	RMR
Information Design -> Purchase Intention	Not constrained	.187****	72.17 (7)	.94	.94	.94	.029
	Constrained	.280****	99.89 (8)	.92	.91	.91	.036
Communication -> Purchase Intention	Not constrained	.08	81.029 (7)	.93	.93	.93	.03
	Constrained	.083*	125.095 (8)	.90	.89	.89	.05
Privacy -> Purchase Intention	Not constrained	.112*	80.98 (7)	.93	.93	.93	.03
	Constrained	.229****	114.89 (8)	.90	.90	.90	.04
Security -> Purchase Intention	Not constrained	.182**	77.95 (7)	.93	.93	.93	.03
	Constrained	.320****	108.55 (8)	.91	.90	.90	.036

\*\*\*\* $p < .001$ , \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

Table 4a: The mediating effect of trust between website design factors and purchase intention

Path	Path via Trust	Path Coefficient	$\chi^2$ (DF)	GFI	IFI	CFI	RMR
Information design -> Perceived Risk	Not constrained	.007	83.58(7)	.93	.93	.93	.03
	Constrained	-.350****	313.446(8)	.83	.71	.70	.10
Communicaion -> Perceived Risk	Not constrained	.039	82.59(7)	.93	.93	.93	.03
	Constrained	-.190***	340.53(8)	.82	.68	.68	.12
Privacy -> Perceived Risk	Not constrained	-.281****	48.05 (7)	.96	.96	.96	.02
	Constrained	-.666****	181.43 (8)	.88	.84	.84	.045
Security -> Perceived Risk	Not constrained	-.376****	26.036 (7)	.98	.98	.98	.021
	Constrained	-.737****	124.92(8)	.90	.89	.89	.033

\*\*\*p< .001, \*\*p< .01, \*p< .05

*Table4b: The mediating effect of trust between website design factors and perceived risk*

## 4.0 Conclusions

### 4.1 Managerial Implications

We identified that the issue of website trust is one of the key obstacles of online transactions. In order to come up with a successful e-business online stores need to have a deeper understanding on how trust is developed and how it affects purchase intention in the online store. In this study we reviewed the past literature and empirically shown the drivers of trust that contribute to online purchase decision among the Indian customers. Our study provided empirical evidence that trust represents the generic mechanism through which website factors increase purchase intention and reduce perceived risk. Online stores should use effective implementation of website factors such as information design, communication, privacy and security, as a marketing tool by which trust towards the website can be created and subsequently enhance purchase intention. This is in accord with the work of Dash and Saji (2006) which pointed out that trust mediates the relation between website design and purchase intention.

Past studies such as Cyr (2008) found visual design and navigation design to be significant predictors of online trust in western countries like Canada. However, we found both these constructs to be insignificant predictors of trust. It was noted by the IAMAI report (2007), that most of the online shoppers in India start online shopping with air/rail tickets. In fact out of the \$

1,858,731,266 ecommerce market in India, online travel related purchases account for \$ 1,412,716,489. According to a report from I-cube (2006), most online shoppers do online shopping for saving time and convenience. We believe that for purchasing tickets, or any intangible goods, one does not require better visual design, however, better design implies use of applets and more add-ons that make the webpage download even slower and makes the online shopping process more time consuming. As for effective navigation design, in India the speed of Internet access is very slow (around 7% users had broadband connection even in 2008) and it is the speed of the Internet that acts as bottleneck and determines the speed of navigation and not the effectiveness of navigation design.

We found from our study that the Indian customers give the most importance to security and privacy to generate trust. According to Internet world stats report the penetration of Internet in India was less than 1% prior to 2002. So the ecommerce industry in India is in a nascent stage compared to the western countries. This coupled with nascent cyber laws could be the major reason for the customers giving more stress to privacy and security of the website. Perceived privacy of customer information can be improved by ensuring that at no point of time the customer is asked for irrelevant personal information. Even when the customer information is collected to serve him/her better for example before placing cookies in the computer the online store should take permission from the customer. Indian customers also give importance to information design to generate trust. This is consistent with prior findings of I-cube (2006) where it was found that the top two reasons for Indians shopping online was saving time and convenience. It means that online stores that sell products and services in India should give more emphasis on information design so as to help the customers in quick decision making. This can be achieved by logically presenting the relevant information in the website. The information should also be well organised so that the customer is able to compare across alternatives and get the most up-to-date information. Similarly, the Indian customers also want more communication from the online store. So, online stores selling customized products should stress more on better communication with the customers by providing more web-enabled communication like online salesperson, message boards, email etc. Communication can be further improved by sending personalized messages to customers and responding to customer queries faster.

Perceived risk was not found to be a significant predictor of trust. According to I-cube report (2008) only 26% of the Indian Internet users use Internet from their home. So, even if there is lower perceived risk from the online vendor there could be risk and threats from the cyber café, office computers etc from which online shopping is done. So, we believe that reduction of perceived risk from the online vendor may not significantly improve the purchase intention among the Indian customers.

In summary we have empirically found the website factors that generate trust in online shopping in India. Due to the fact that the e-commerce in India is in a nascent stage, the website factors that generate trust among Indian customers were somewhat different from the results of previous studies carried out in the US and Canada. We, for the first time in the Indian context, have comprehensively tested the mediator role of trust in online shopping.

#### *4.2 Limitations and directions for future research*

Some scholars such as Donthu and Garcia (1999) did psychographic profiling of online users. We have not shown how the customers' psychographic and cultural orientation influences the antecedents of trust in online shopping. Studies by Singh (2002), Cyr (2008), have shown that culture influences the factors that generate purchase intention. Expanding the analysis to include cultural dimensions would provide managers and researchers more incisive clues to the dynamics occurring between the customers and the online store. Customers' personal values such as demographics and psychographics may also influence the website factors that generate trust. We encourage the readers to test the moderator effects of demographics and psychographics so as to enrich the model further. Further, we have only used website characteristics as antecedents of trust. Jarvenpaa and Tractinsky (1999) had conceptualized that there are 'other' factors such as vendor reputation and vendor size affect purchase intention. Tan et al (2007) had shown empirically that external and internal norms affect purchase intention. We believe that future studies should include the effect of 'other' antecedents of trust such as vendor reputation, subjective norms etc on online trust. This would be a possible extension for future research.

We have used student sample from premier B-schools in India for our study. We believe that the study can be generalized further by taking other online shoppers like older company executives, rural online shoppers etc. Finally, in this study, our research focus was directed to online shoppers in Indian context. This limits the generalizability of the study in global context. For this reason, we recommend future research work to be based on global perspective by comparing the same model in different cultural context with equivalent samples, which may provide more generalizability of our finding.

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### **Author Biography**

**Boudhayan Ganguly** is a fellow student of The Indian Institute of Management Lucknow, 226013, India. He can be contacted at M- 91-9936452538, e-mail: fpm4003@iiml.ac.in. His area of specialization is Information Technology and Systems. Operations management and Marketing management are his minor areas. His primary research interest is in online consumer behavior, e-governance, and human computer interaction issues. Prior to joining the fellow program at IIM Lucknow he had done his B.Tech from Haldia Institute of Technology and worked in Ushacomm India as an associate manager for two and half years.

**Satyabhusan Dash** is currently working as an Assistant Professor at IIM, Lucknow. Canada. He has published in several major national and International journals including Academy of Marketing Science Review, Journal of International Consumer Marketing, Marketing Intelligence and Planning, International journal of Bank Marketing, Online Information Review. He has executed several research projects in India, USA and Canada. His current areas of teaching and research interest have been on the topics of Relationship Marketing, Buyer Behaviour in Insurance and Pharmaceutical industries, Rural Marketing, Lifestyle influences in food retailing and e-business.

**Dianne Cyr** is a Professor in the Faculty of Business at Simon Fraser University in Vancouver, Canada. She leads a government funded research project titled "Managing E-loyalty through Experience Design". This investigation focuses on how trust, satisfaction, and loyalty can be built in online business environments through website design. Unique features of this work are comparisons across cultures and genders, and concerning applications to mobile devices. Dianne Cyr is the author of five books and over 80 research articles including publications in MIS Quarterly, Journal of Management Information Systems, Information and Management, Journal of Global Information Management, among others. Further career information may be accessed at [www.dianneecyr.com](http://www.dianneecyr.com)