HOW CAN THE WEB HELP BUILD CUSTOMER RELATIONSHIPS? AN EMPIRICAL STUDY ON E-TAILING

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ABSTRACT

The Web is increasingly being viewed as a tool and place to enhance customer relationship. In this paper we define a model to analyze the Web characteristics that aid in building customer relationships and then used this model to examine consumer relationship building mechanisms in online retailing (e-tailing). Through a survey of 177 shoppers who had bought books, CDs, or DVDs online, the causal model was validated using LISREL; thirteen out of fourteen hypotheses were supported. This research has contributed to both theory and practice by providing a validated model to analyze online consumer relationship building and suggesting mechanisms to help e-tailers focus on online consumer relationship management.

Keywords: online retailing, relationship intentions, trust, satisfaction, switching costs, SEM
Section: Research

I. INTRODUCTION

Contrary to the early image that the Web was a place for bargain hunting for consumers, it is increasingly being viewed as a place to provide better service and enhanced consumer relationships. Some evidence indicates that Web customers consolidate their purchases with one primary retailer [43]. Relationships, such as trust in quality and brand, may serve as an important element in consumer decision making when purchasing products online, as the Internet lacks support for evaluative criteria such as tactile input. Relationships can also serve as risk reducers for online shoppers.

With the increasing recognition of customer relationships for business success, relationship marketing (RM) started to gain popularity in 1990s [44][53]. Due to its potential for interactive communication, the Internet is considered a promising tool for RM [46][55]. However, factors contributing to a consumer's intention to build a relationship with an online retailer are still not well understood.

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II. BUILDING ONLINE CUSTOMER RELATIONSHIPS

Generally, there are two stages in building a customer base: acquisition and retention. In the acquisition stage, customers are attracted to visit a retailer/retailing Website, and make initial purchases. The retention stage begins when customers who have had satisfactory experiences on a Website return and establish a long-term relationship.

Most research on online consumer behavior has addressed consumers in the acquisition stage, while research on the retention stage is still in its infancy. Studies have generally focused on first time online shoppers. While it is important to attract consumers, it is more important to retain them: failing to do so doomed many "dot com" companies.

Table 1 shows some papers that have explicitly considered consumer retention. While these studies created a picture of attributes that are important to online consumers, RM theories have not been well integrated into the discipline of online retailing (e-tailing). Most of the research so far has failed to address the fundamental changes that the Web can bring to retailing e.g., convenience is an important consideration when shopping online, but it does not contribute to e-loyalty as it is a factor applicable to all e-tailers, as are ease of use, speed, and security. Thus they do not result in a sustainable competitive advantage. It is therefore important to identify the major impacts the Web has on the retail market and use this knowledge in retaining customers.

Table 1 Research Addressing Customer Retention

Articles	Dependent Variables	Independent Variables
[13]	Loyalty	Usability, satisfaction, trust
[14]	Intentions	Web store functionality, product attribute description, ownership conditions, delivered products, customer service, security
[24]	Satisfaction, revisit intention	Customization
[26]	Unplanned purchases, intention to return	Perceived control, shopping enjoyment
[28]	Satisfaction	Socio-psychological value, economic value, product value
[39]	Site commitment, purchase behavior	Information quality, user interface quality, and security perceptions, information satisfaction, relational benefit
[52]	Customer loyalty	Customization, contact interactivity, care, community, convenience, cultivation, choice, character
[54]	Satisfaction	Convenience, merchandising, site design, financial security
[55]	Consumer-brand relationships	Personalized Web sites, customer communities, consumer Internet experience
[58]	Quality	Fulfillment/reliability, website design, privacy/security, customer service
[59]	Satisfaction/ dissatisfaction	Product cost and availability, customer service, online information systems quality
[61]	Overall site quality, attitude toward site, online purchase intention, site loyalty, site equity	Ease of use, design, speed, security
[62]	Quality	Efficiency, reliability, fulfillment, privacy, customer service (responsiveness, compensation, contact)

As noted by Wolfinbarger and Gilly [58], previous research has tended to provide a list of attributes, instead of constructs, or authors had not adequately addressed why some constructs were chosen over others. Furthermore, from the consumer RM perspective, most previous discussion had not considered the complete relationship mechanism: how market characteristics affect consumer relationship intentions. Many have employed relationship mediators such as trust and satisfaction as the destination construct, or examined the direct relationship between market/consumer/channel characteristics and relationship intention. Without considering the overall mechanism, our understanding is incomplete.

Our research attempted to build and validate a model that systematically examined the mechanism of the relationships between Web impacts on the retail market and consumer relationships. Our model differs from those previously studied because it:
(1) focuses on the fundamental elements of online retailing that provide opportunities for online retailers. If the selected constructs are known, e-tailers can focus on them to help build consumer relationships.
(2) addresses consumer relationship intentions. We specifically focused on examining consumer attitude through their re-purchase intention.
(3) investigates the mechanism of the impacts of consumer market perceptions on relationship intention through mediators. The constructs in this model were selected and designed in a manner that should lead to understanding how the mechanisms affect consumer intention.

III. THE MODEL

Figure 1 depicts a model used to help investigate attitudinal and perceptional factors affecting consumer relationship building in the online environment. Three layers of constructs were considered: consumer market perceptions, relationship mediators, and consumer relationship intention. Consumer market perceptions included four constructs: perceived consumer power, perceived relationship investment, perceived interaction, and perceived shopping risks. The model suggested that consumer market perceptions should be a precursor to consumer relationship intention. It also examined relationship mediators: perceived switching costs, trust, and satisfaction, which were incorporated between consumer perceptions and the relationship building process. Table 2 shows the expected characteristics of the constructs.

RELATIONSHIP MEDIATOR CONSTRUCTS

Perceived switching costs, trust, and satisfaction constructs were used to mediate the relationships between consumer perception of market characteristics and their relationship behavior in our model. In traditional RM literature, these constructs are considered important mediating constructs in customer relationship building and they have received much attention in research evaluating e-tailer performance.

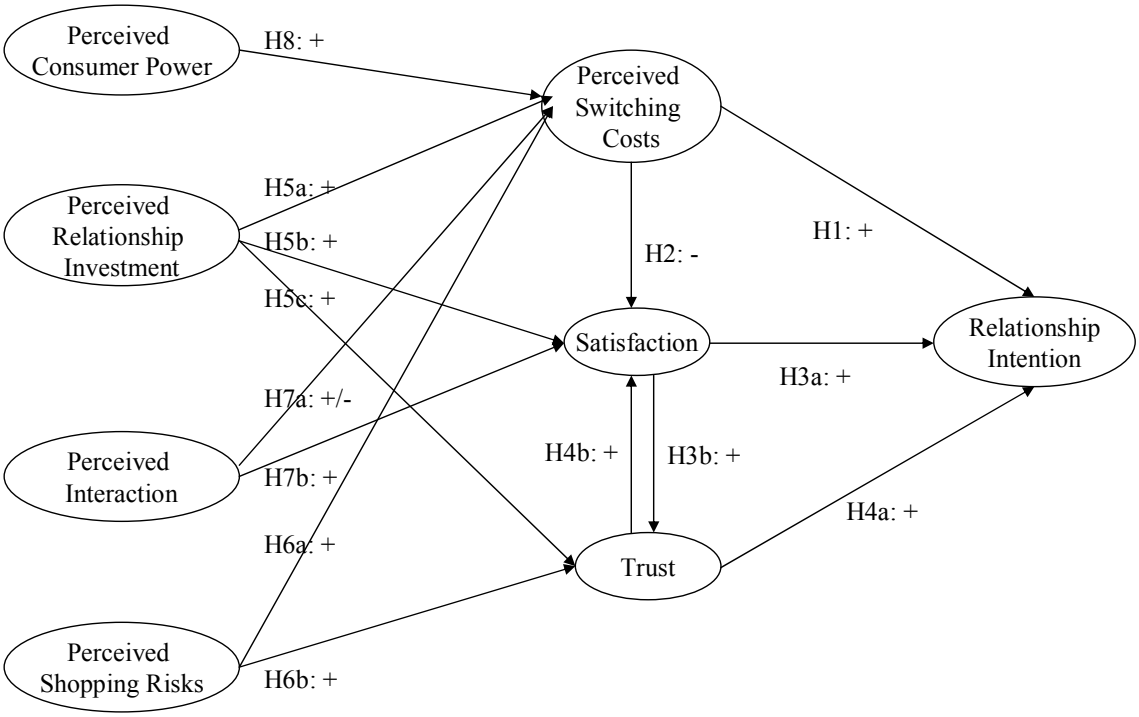

Figure 1: The Hypothesized Model

Table 2: A Summary of the Constructs in the Model

	Constructs	Expected Outcomes and Characteristics in online shopping
Consumer market perceptions	Perceived consumer power	• High: enabled to understand, control and change marketplace • May possess a correlation with length and quality of relationship • Future focus shift from market feedback loops to product design and overall market
	Perceived relationship investment	• High: enhanced tools, decreased costs • An additional/complementary channel for traditional retailers • Future focus shift from retention orientation to relationship orientation
	Perceived interaction	• High: many interaction opportunities, personalized interaction • Consumer-directed computer interaction • Future focus shift from B2C computer orientation to interaction with a broad range
	Perceived shopping risks	• High: various kinds, both environmental and retailer related • Online shoppers have overcome a certain level of risk perception to transact online • Future focus shift from transaction or product related risks to relationship or service related risks

Relationship mediators	Perceived switching costs	• Unsure, may increase or decrease depending on the specific shopping context • New categories of switching costs
	Satisfaction	• An important mediating factor to relationship building • Subjective judgment based on previous experience
	Trust	• Difficult to build • An explicit effect in consumer shopping decisions
Relationship intention		• A high level of relationship intention • Speeded/reduced relationship building process

Perceived Switching Costs

Switching costs occur when customers change suppliers. They have been associated with customer satisfaction and loyalty, but few researchers have examined their role in online shopping.

The online environment was once thought to present lower switching costs than brick-and-mortar shopping, because of the availability of online alternatives and ease of comparison shopping. On the other hand, constructs such as perceived relationship investment and perceived shopping risks were thought to positively impact switching costs. Online shoppers may also have additional technology-related efficiency needs than do traditional shoppers: a Web user may have to go through a learning curve before skillfully browsing a commercial site. Most online transactions require financial information, such as credit card and certain personal information, possibly resulting in security and privacy-related switching costs.

Perceived switching costs is a component of perceived relationship value. When consumers think that switching to another retailer is costly, they are more likely to stay with the current retailer and exhibit relationship behavior. Thus:
H1: A higher level of perceived switching costs leads to a higher level of relationship intention in online shopping.

Satisfaction

Satisfaction is a consumer's purchase perception of the difference between the expected and received value of a transaction. Szymanski and Hise [54] concluded that convenience, site design, and financial security are the dominant factors in online consumer satisfaction. Muylle et al. [34] discussed web site design dimensions of satisfaction, which has been widely used to predict behavioral intentions.

Consumers realize that online market information is easy to access. Retailing competitors are a click away. Purchasing from a particular retailer because of high switching costs may decrease overall satisfaction. Thus, we proposed:
H2: A higher level of perceived switching costs leads to a lower level of satisfaction in online shopping.

Olsen [36] claimed that relationships are actually based on continuous satisfaction. It also plays an important role in the formation of trust [10]. We therefore proposed that:

H3a: A higher level of satisfaction leads to a higher level of relationship intention in online shopping.
H3b: A higher level of satisfaction leads to a higher level of trust in online shopping.

Trust

Trust is a complex and multi-dimensional construct, where different dimensions affect different stages of customer equity management [7], such as customer acquisition, retention, and relationship expansion. In e-tailing, it has been found that window-shopping intentions are affected by the perceived trustworthiness of the e-tailer, while overall trust affects purchase intentions. Trust plays an important role in fostering strong relationships [50], and may be the most powerful RM construct available to a company [5].

In a traditional market, it is easier to believe that the vendor will satisfy its market promise. The risk is typically low. But with online shopping, consumers tend to display lower levels of trust towards online retailers. Though, few North American diners hesitate to pass credit cards to unknown waiters, they are skeptical about passing card information via the Internet, even when encryption is used. Trust is therefore likely to play an important mediating role in an online market. Therefore:
H4a: A higher level of trust leads to a higher level of relationship intention in online shopping.
H4b: A higher level of trust leads to a higher level of satisfaction in online shopping.

CONSUMER MARKET PERCEPTION CONSTRUCTS

Four consumer market constructs were tested in our model: perceived relationship investment, perceived shopping risks, perceived interaction, and perceived consumer power. RM literature has noted that there are environmental requirements, covering markets, marketers, consumers, and channel perspectives, that should be satisfied if RM implementation is to be successful [9]. E-tailing literature has indicated that there are significant differences in online markets [2][41][47], compared to the traditional shopping environment. Outlined in Table 2, there are two overarching characteristics for the four constructs of consumer market perceptions:

1. Perceived shopping risks, perceived interaction, perceived relationship investment, and perceived consumer power are major changes the Web brings to consumer shopping.
2. Consumer market perceptions may be evolving as e-tailing evolves. They consist of continuous challenges and problems for e-tailers to monitor, and may provide opportunities for them to build sustainable competitive advantages.

The constructs represent some important enhancements in online retailing. They may invoke significant changes in consumer relationship orientation [11][51].

Perceived Relationship Investment

Perceived relationship investment is a consumer's perception of the retailer's attempt to maintain or enhance relationships with customers. Using the Web in retailing increases this perception. E-tailers are thus more capable of implementing RM tactics [18]. E-tailers have more tools to build relationships with consumers, such as personalized Web sites and communities [21]. The Web also affects market offerings. Service is an essential component of online offerings and consumers may receive better individual treatment, including customized offerings.

Retailers with higher perceived relationship investment have better customer retention and create psychological bonds with their customers. Research in the traditional retailing context has demonstrated that perceived relationship investment affects relationship quality, leading to behavioral loyalty. Online empirical data has shown that the greater the online resources offered to enhance the shopping experience, the greater the customer's confidence [27].

Relationship investment is an important aspect of a retailer's marketing strategy and is context specific. The effect of relationship investment on online consumer attitude is not fully understood. While it has been demonstrated that perceived investment affects relationship quality, ultimately leading to behavioral loyalty, Krishnamurthy's results did not support the proposition that online services positively impact consumer confidence. Our model was intended to predict the impact of relationship investment on consumer relationship attitude through three mediators. Consumers may feel that the retailer with a high relationship investment cares about them, leading to high trust and satisfaction, but cannot continue to gain benefits from retailer investments when switching to another retailer. Thus:

H5a: Perceived relationship investment positively impacts perceived switching costs in online shopping.

H5b: Perceived relationship investment positively impacts satisfaction in online shopping.

H5c: Perceived relationship investment positively impacts trust in online shopping.

Perceived Shopping Risks

Online shopping risks may consist of: (i) environmental risk associated with the online media and thus affecting all retailers; and (ii) retailer risk, which can vary. Perceptions of environmental risk may differ significantly among individuals. The higher the risk evaluation, the less trust consumers may have. It has been found [60] that the concerns about risk components for online purchasers and non-purchasers are different. When reliability is seen as important, security is a critical concern for non-purchasers. In a high-risk situation, low perceived environmental risk can reinforce trust of a shopper in a particular retailer. Higher perceived risk leads to a greater consumer propensity to reduce choices and engage in relational market behavior [48]. This develops consumer self-confidence.

Since perceived shopping risks represented changes in the retail market, we focused on testing environmental rather than retailer risk. Thus, the higher the perceived risks, the higher the trust was assumed to be. Thus:

H6a: A higher level of perceived shopping risks leads to a higher level of perceived switching costs in online shopping.

H6b: A higher level of perceived shopping risks leads to a higher level of trust in online shopping.

Perceived Interaction

The Web is an interactive medium and thus the factor of importance is in understanding the different levels of interaction that the various actors desire. Use of the Web allows enhanced consumer interactivity which creates opportunities for rapid building of relationships. Interaction is important for a satisfactory shopping experience; consumers thereby access information to answer any questions [25]. Consumers may then believe that a good and informed decision was made.

Personal orientations toward interactions may apply to all retailers and make switching easier, thus negatively influencing the relationship between perceived interaction and perceived switching costs. Additionally, online consumers may require computer proficiency, etc. to feel comfortable in retailer interaction. Thus, high perceived interaction may demonstrate consumer ability and tendency to interact, with more competing retailers and thus result in lower switching costs. Higher interaction levels may not build switching barriers online. Thus:
H7a: A higher level of perceived interaction leads to changes in perceived switching costs in online shopping.
H7b: A higher level of perceived interaction leads to a higher level of satisfaction in online shopping.

Perceived Consumer Power

Power is the ability to act or produce an effect and possession of control, authority, or influence over others. In our hypothesized model, consumer power is the ability to understand, control, and potentially change the marketplace. Its enabling and limiting factors can be analyzed through four categories: constellation of actors and interests, context of interaction, process of interaction, and outcomes [19].

There is an imbalance of power between consumers and retailers in the traditional market; consumers are passive targets for fixed offerings. While consumers can negotiate price in some situations, they may not achieve their goals due to limited market information. Reducing the imbalance of power facilitates the conditions needed for relationship building in consumer markets [42].

The Web empowers consumers and creates a transparent environment. Online consumers can access more information and make better decisions. Consumers can interact and form groups to influence retailers. Thus, consumers have more opportunities to negotiate. Consumer power is important for long-term relationships. But consumers will not have the same level of power with different retailers and some may build a switching barrier using consumer power. Power may also affect consumer satisfaction if they have more choices and better control over the shopping experience. This has not been studied previously, but may be an additional path. Therefore:
H8: A higher level of perceived consumer power leads to a higher level of perceived switching costs in online shopping.

IV. METHODOLOGY

SETTING AND PROCEDURE

A survey was conducted at two Canadian universities using both undergraduate and graduate students. The use of college students has been supported [8][40] for research of a theoretical nature. Walczuch and Lundgren [56] advocated the use of students for e-retailing research as they can use the Internet for communication and commercial transactions and are a representative and appropriate sample for such studies.

In our study, eligible participants were required to have previous online shopping experience. Survey participants were asked to answer a questionnaire based on their latest

experience in buying books, CDs, or DVDs online. This product category was appropriate for studying relationship intentions as it has been found that 80-90% of buyers of books and CDs visit only one site, even though there are many competitive e-tailers and prices vary by as much as 25-30% [37]. Paper-and-pencil administration of questionnaires was used, following findings of Webster and Compeau [57]. First, online shopping is a computer-related experience where some measures may be sensitive to online testing. Using an online questionnaire may make the online perspective salient, influencing the relationships among constructs [12]. Second, subjective instead of objective measures were used and relationships among subjective measures were influenced more by different questionnaire administration modes. Thus, only one of the two modes was preferred.

Subjects were solicited through a combination of in-class and email notifications and requests for participation. With instructor permission, paper surveys were distributed to eligible subjects in various undergraduate and graduate classes. Eligible subjects could also obtain the paper survey from designated pick-up locations, such as the departmental secretary offices. During a six-week survey period, approximately 300 questionnaires were distributed and 186 survey responses received, for a response rate of about 60%. Preliminary data inspection showed that 9 respondents had purchased products in this category (books, CDs, or DVDs) at online auction sites, such as eBay. Because these retailers did not comply with our research parameters, these responses were excluded from the survey. Thus, a total of 177 responses were retained.

SAMPLE

Since the survey was conducted at universities, the respondents tended to be young (mean age = 26), well educated (62% held or were working towards a bachelor degree, 38% held or were working towards a masters or Ph.D. degree), and they were from the lower income brackets (80% had annual income below CAN$30,000). Male respondents (119) out-numbered female respondents (58). Approximately half were from engineering majors, and most of these were male. For respondents with other majors males slightly outnumbered females. The respondents were Web proficient, with 60% spending more than 7 hours online per week. The top five online retailers they had purchased from were: Amazon (37.9%), Chapters/Indigo (21.5%), HMV (5.7%), Columbia House (5.7%), and Future Shop (3.4%). The average amount spent on their last online purchase was CAN$87. Thirty-six percent of the respondents were first time shoppers at the online retailer where their purchase was made; 21% reported two and 35% reported three or more purchasing experiences from their retailer.

STRUCTURAL EQUATION MODELING

The data were analyzed by using SEM techniques, chosen because it is more powerful than multiple regression, path analysis, factor analysis, time series analysis, and analysis of covariance [15]. SEM also allows more flexible assumptions, the ability of testing models overall rather than individual coefficients, the ability to model error terms, handle difficult data, etc.

The sample size was sufficient to analyze the hypothesized model. According to Anderson and Gerbing [1], a sample size of 150 is needed to obtain parameter estimates that have standard errors small enough to be of practical use in SEM. A rule of thumb [4] is that the ratio of sample size to the number of free parameters should be at least 5:1, and a ratio of about

10:1 is desirable. The sample size used in our analysis was therefore sufficient at approximately 10:1.

The data was analyzed using LISREL 8 using the two-step structural equation procedure employed by many researchers [49]. Separate measurement models were run for constructs of consumer market perceptions (exogenous constructs), and constructs of relationship mediators and relationship intention (endogenous constructs).

MEASUREMENT MODELS

The construct measures were based on the literature. Because of the relative novelty of research in online shopping, no previously validated measurements were available for constructs such as perceived interaction and perceived consumer power, thus measures were developed based on related literature. Measures for other constructs are available [6][33][38], and were adapted to suit our survey. Three measurements were employed in each of the eight constructs. Seven-point Likert-scales were used in the questionnaire, which was pre-tested by 12 Ph.D. students in business disciplines; revisions were made according to their suggestions. Tables 3 (a) and 3 (b) show the questions used as measurement items for the exogenous and endogenous constructs, respectively.

Table 3(a): Measures and Estimates for Exogenous Constructs

Construct	Measurement Items	Mean	SD	λ	t-Value
Perceived relationship investment	This retailer makes efforts to increase regular customer loyalty.	5.28	1.4	0.82	12.6
	This retailer makes various efforts to improve its ties with regular customers.	5.19	1.3	0.82	12.5
	This retailer really cares about keeping regular customers.	5.25	1.3	0.85	13.1
Perceived interaction	I can easily find a way to communicate with the retailer.	4.53	1.5	0.85	12.1
	I can easily get answers for my questions.	4.20	1.3	0.66	8.9
	The retailer provides me with personalized interaction.	4.43	1.6	0.73	10.0
Perceived consumer power	I feel that I can influence this retailer on their offerings, pricing, or services.	3.15	1.5	0.84	10.5
	I think I can easily communicate with or influence other consumers in the online environment.	3.58	1.6	0.84	10.5
	I can control my online shopping process. *				
Perceived shopping risks	It is risky to purchase from an unfamiliar online retailer.	5.66	1.4	0.79	12.0
	If I purchase from an unfamiliar online retailer, I am concerned about giving financial or personal information.	5.69	1.3	0.83	12.8
	If I purchase from an unfamiliar online retailer, I am concerned about refund and after-sale service procedures.	5.42	1.4	0.89	14.1

Table 3(b): Measures and Estimates for Endogenous Constructs

Construct	Measurement Items	Mean	SD	λ	t-Value
Satisfaction	I am satisfied with this purchase.	5.29	1.2	0.74	11.1
	Compared to other online retailers, this retailer provides good service.	5.52	1.2	0.95	16.0
	I made a good choice by purchasing from this retailer.	5.76	1.2	0.79	12.2
Perceived switching costs	I feel unhappy when shopping from another retailer.	2.99	1.6	0.81	10.5
	It will be financially detrimental for me to switch to another retailer.	3.10	1.7	0.78	10.2
	If I purchase from another retailer, I would lose some other kinds of benefits such as convenience or confidence. *				
Trust	This retailer can be trusted.	5.61	1.2	0.92	15.1
	This retailer is reliable.	5.68	1.2	0.95	15.9
	This retailer can be counted on to provide high quality products and services. **				
Relationship intention	I will purchase from this retailer the next time I shop online with similar needs.	4.91	1.5	0.57	7.7
	I would like to become a regular customer of this retailer.	4.72	1.5	0.88	12.4
	I feel loyal to this retailer. *				

*Item dropped because of loading on more than two constructs.
** Item dropped because of high error correlation.
SD= Standard Deviation

To test the measurement models, separate confirmatory factor analyses were performed on variables associated with the exogenous constructs and variables measuring the endogenous constructs. The exogenous models initially were run with 12 measures to assess four latent constructs. One measure ("I can control my online shopping process") was excluded from the exogenous model because of high cross-loadings on two other constructs (perceived relationship investment and perceived interaction).

Fitness indices, convergent validity, and Cronbach alphas, shown in Tables 3, 4, and 5 respectively, indicated that the models had good fit even though a large sample was used. *P*-values of both the exogenous construct measurement model and the endogenous construct measurement model were not significant (p=0.20, 0.06, respectively, exceeding 0.05). The ratios of chi-square to degrees of freedom (d.f.) were 1.19 and 1.53 for the exogenous constructs and endogenous constructs, respectively; these were below the cutoff ratio of 3:1 used by Gefen et al. [16] and 5:1 suggested by Marsh and Hovecar [30]. Goodness-of-fit indices (GFIs) of both models were 0.96, above 0.9, a commonly used reference point for acceptable fit [17]. Comparative fit indices (CFIs) [3] of both models were 0.99, above the commonly used threshold of 0.95 [22]. Adjusted goodness-of-fit indices (AGFIs) of both models are 0.92, above 0.8, which has been suggested as an acceptable value [20]. Convergent validity was shown through large *t*-values and average squared multiple correlations (SMC). The *t*-values in Table 3 showed that all the measures loaded significantly on the intended latent constructs ($t > 1.96$). The squared multiple correlations (SMC) ranged from 0.32 to 0.90, and the averages were reported in Table 4. Large values for average SMCs indicated that a substantial amount of the variance in

the measures was captured by the latent constructs. The Cronbach alpha was used to judge set reliability. Rivard and Huff [45] suggested that the Cronbach alpha measures for reliability should be higher than 0.5 and ideally higher than 0.7. Nunnally [35] also recommended the Cronbach alpha of a scale should be greater than 0.7 for items to be used together as a construct. The Cronbach alphas of seven constructs out of the eight exceed the 0.7 threshold, with the remaining construct having a 0.63 alpha value. There were no standardized residuals greater than 3.0. Root mean square errors of approximation (RMSEA) of the models were 0.03 and 0.06, respectively, below the cutoff value 0.08 [23].

Table 4: Construct Validation

	α	Average SMC
Exogenous constructs		
Perceived relationship investment (3 questions)	0.85	0.69
Perceived interaction (3 questions)	0.75	0.56
Perceived consumer power (2 questions)	0.80	0.70
Perceived shopping risks (3 questions)	0.84	0.70
Endogenous constructs		
Satisfaction (3 questions)	0.83	0.69
Perceived switching costs (2 questions)	0.73	0.63
Trust (2 questions)	0.87	0.87
Relationship intention (2 questions)	0.63	0.55

Note: α= Cronbach alpha; SMC = squared multiple correlation.

Table 5: A Summary of Fit Indices for the Measurement Models

Model	df	χ^2	χ^2/df	*p*	GFI	AGFI	CFI	RMSEA	*p*
Exogenous constructs	38	45.2	1.2	0.20	0.96	0.92	0.99	0.03	0.78
Endogenous constructs	21	32.2	1.5	0.06	0.96	0.92	0.99	0.06	0.38

Note: df = degree of freedom; χ^2 = chi-square; GFI = goodness of fit index; AGFI = adjusted goodness of fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation (prefer non-significant *p* value).

By setting the correlation between each pair of constructs in the two measurement models to 1, one pair at a time, a discriminant validity test was performed. In all cases, the overall fit of the model was significantly diminished, confirming that all the constructs were empirically distinct.

V. RESULTS AND FINDINGS

The hypothesized structural model was analyzed using LISREL 8. The correlation matrix is shown in Table 6.

The standardized parameter estimates and *t*-values for the hypothesized paths of the structural models were summarized in Table 7. Thirteen out of the total 14 hypothesized paths (93%) were significant, with absolute *t*-values exceeding 1.96. The path from perceived shopping risks to perceived switching costs (H6a) was not significant. The perceived risks tested

here was the risk perceived in the online shopping environment. A significant level of environmental risk perceived by online shoppers may be overcome when shoppers have become more comfortable with the online environment. This could also reflect the fact that there were many competitive or brand name retailers in this product category. The data analysis supports the theoretical framework underlying hypotheses H6b and H7a, and confirms that perceived shopping risks positively impacts trust, and perceived interaction negatively impacts perceived switching costs.

Table 6: The Correlation Matrix of Constructs

	Y1	**Y2**	**Y3**	**Y4**	**X1**	**X2**	**X3**	**X4**
Satisfaction (Y1)	1.00							
Perceived switching costs (Y2)	-.09	1.00						
Trust (Y3)	.66	0.5	1.00					
Relationship intention (Y4)	.66	.49	.70	1.00				
Perceived relationship investment (X1)	.48	.30	.47	.52	1.00			
Perceived interaction (X2)	.45	.16	.27	.42	.38	1.00		
Perceived consumer power (X3)	.13	.49	.07	.31	.30	.47	1.00	
Perceived shopping risks (X4)	.18	.03	.23	.15	.12	.09	-.17	1.00

Table 7: Standardized Parameter Estimates for the Hypothesized Model

Parameter	**Estimate**	***t*-value**
H1: perceived switching costs to relationship intention	.51	15.4
H2: perceived switching costs to satisfaction	-.24	-4.4
H3a: satisfaction to relationship intention	.46	10.5
H3b: satisfaction to trust	.29	2.0
H4a: trust to relationship intention	.37	8.4
H4b: trust to satisfaction	.31	2.5
H5a: perceived relationship investment to perceived switching costs	.19	2.7
H5b: perceived relationship investment to satisfaction	.30	3.6
H5c: perceived relationship investment to trust	.31	3.5
H6a: perceived shopping risks to perceived switching costs	.11	1.7
H6b: perceived shopping risks to trust	.14	2.4
H7a: perceived interaction to perceived switching costs	-.17	-2.3
H7b: perceived interaction to satisfaction	.29	5.1
H8: perceived consumer power to perceived switching costs	.53	7.0

The survey supported the hypothesized model, as seen in Table 8. The overall fit of the model was excellent. Chi-square (8 d.f.) was 9.76 and the ratio of chi-square to degrees of freedom was 1.22. The p-value (0.28) of chi-square was not significant. Goodness of fit index, adjusted goodness of fit index, and comparative fit index were 0.99, 0.94, and 1, respectively. Root mean square error of approximation was 0.04 with a *p*-value of 0.57. No modification indices were suggested.

Table 8: A Summary of Fit Indices for the Structural Model

df	**χ^2**	**χ^2/df**	***p***	**GFI**	**AGFI**	**CFI**	**RMSEA**	***p***
8	9.8	1.2	0.28	0.99	0.94	1	0.04	0.57

Note: refer to Table 5 for notations.

Further post-hoc analysis was conducted to examine possible gender differences. With males significantly out-numbering females, a sampling problem may rise with our unbalanced gender population. Previous research suggested that males and females follow different decision making processes [32]. Sex roles, when activated, influence male and female judgments [31]. To test for possible gender differences, t-tests were conducted to examine whether the groups shared the same mean values for measure questions. The *t*-statistics and *p*-values for the final selected measures are shown in Table 9. All *p*-values were non-significant: we did not show that gender matters.

Table 9: Test Results on the Difference between Male and Female Groups

Construct	Measurement Items	*t*-Value	*p*-Value
Perceived relationship investment	This retailer makes efforts to increase regular customers' loyalty.	0.54	0.59
	This retailer makes various efforts to improve its ties with regular customers.	1.05	0.30
	This retailer really cares about keeping regular customers.	0.40	0.69
Perceived interaction	I can easily find a way to communicate with the retailer.	1.94	0.05
	I can easily get answers for my questions.	1.06	0.29
	The retailer provides me with personalized interaction.	0.47	0.64
Perceived consumer power	I feel that I can influence this retailer on their offerings, pricing, or services.	-0.40	0.69
	I think I can easily communicate with or influence other consumers in the online environment.	-0.66	0.51
Perceived shopping risks	It is risky to purchase from an unfamiliar online retailer	1.21	0.23
	If I purchase from an unfamiliar online retailer, I am concerned about giving financial or personal information.	0.93	0.35
	If I purchase from an unfamiliar online retailer, I am concerned about refund and after-sale service procedures.	0.50	0.62
Satisfaction	I am satisfied with this purchase.	0.98	0.33
	Compared to other online retailers, this retailer provides good service.	0.93	0.35
	I made a good choice by purchasing from this retailer.	1.10	0.27
Perceived switching costs	I feel unhappy when shopping from another retailer.	-1.48	0.14
	It will be financially detrimental for me to switch to another retailer.	-0.72	0.47
Trust	This retailer can be trusted.	0.21	0.83
	This retailer is reliable.	-0.16	0.87
Relationship intention	I will purchase from this retailer the next time I shop online with similar needs.	0.56	0.58
	I would like to become a regular customer of this retailer.	-0.73	0.46

Following a confirmatory analysis, it was natural to perform some additional exploratory research. A series of nested models were tested. The estimate for the link from power to satisfaction was 0.00. The links from perceived interaction to trust was insignificant, with a *t*-value of 0.20. Thus, no link from the nested tests was recommended.

To confirm the role of the three mediators (perceived switching costs, trust, and satisfaction) in the hypothesized model, an alternative model, shown in Figure 2, was tested. In this, perceived switching costs, trust, and satisfaction were not mediators, and direct links from four consumer market perceptions (perceived consumer power, perceived relationship investment, perceived interaction, and perceived shopping risks) were added. As shown in Table

10, the overall fit of this model was not as good as that with the original hypothesized model. The three market mediator constructs were also excluded, one at a time, as the mediating links from the four consumer market perceptions to the relationship intention construct. The overall fit was also decreased significantly (all *p*-values of chi-square were reported as 0.00). The mediating role of the three market mediator constructs was therefore confirmed.

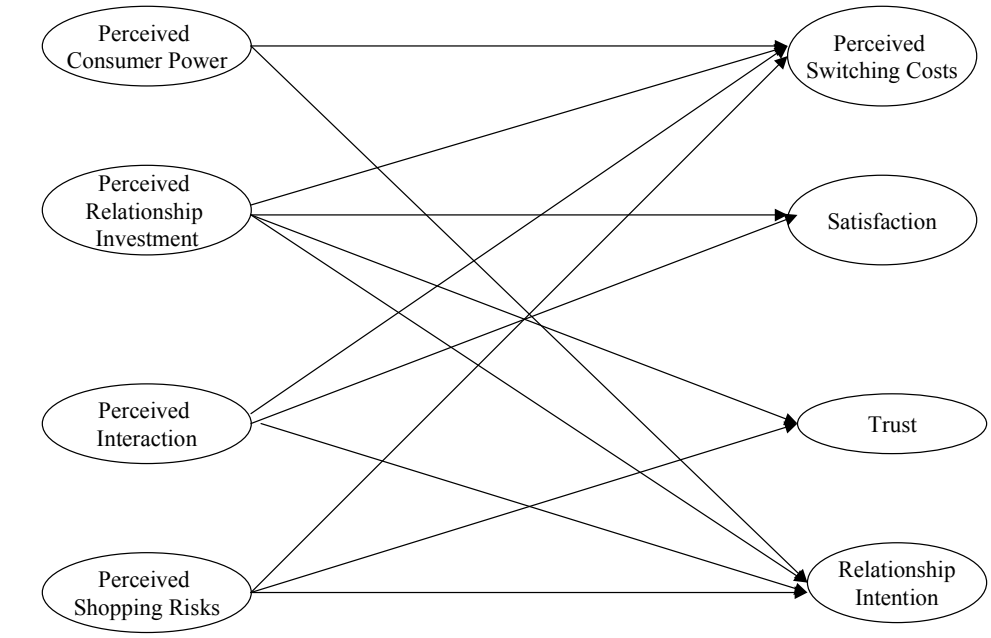

Figure 2: An Alternative Model

Table 10: A Summary of Fit Indices for the Alternative Model

df	**χ^2**	**χ^2/df**	***p***	**GFI**	**AGFI**	**CFI**	**RMSEA**	***p***
9	229.1	25.5	0.00	0.75	0.018	0.55	0.38	0.00

The effects of the three mediator constructs were further assessed using the method proposed in [29]. In this, a model, as shown in Figure 3, with both mediators and direct paths was included. If the direct path coefficient was zero when the mediator was included in the model, then the program effect would be entirely mediated by the mediating variable. The estimates of the direct paths from the four market perception constructs to the relationship intention construct from the LISREL results were summarized in Table 11. The estimates for the four paths were all very small and had non-significant *t*-values. These results, therefore, provided additional evidence that the selected mediators (satisfaction, perceived switching costs, and trust) were appropriate and that they mediated the effects of the market perception variables (investment, interaction, power, and risks) on the relationship variable.

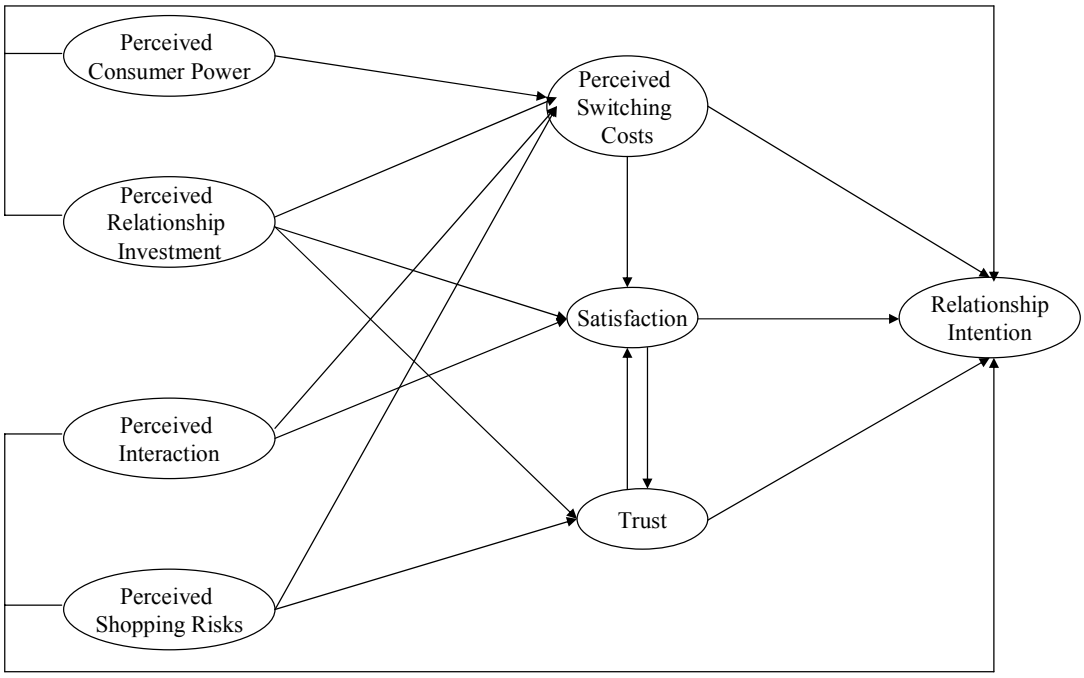

Figure 3: Another Alternative Model

Table 11: Estimation of the Direct Paths

Direct path to Relation	Coefficient	*t*-value	Significance (α=0.05)
Perceived Relationship Investment	-0.05	-1.23	Non-significant
Perceived Interaction	0.08	1.95	Non-significant
Perceived Consumer Power	-0.08	-1.90	Non-significant
Perceived Shopping Risks	-0.05	-1.58	Non-significant

Further exploratory analyses were conducted by testing models where each of the relationship mediators was removed. As shown in Table 12, none of these improved fit compared to the hypothesized model. This further supported the soundness of the original model.

Table 12: A Summary of Fit Indices for Alternative Models Removing Relationship Mediators

Models	df	χ^2	χ^2/df	*p*	GFI	AGFI	CFI	RMSEA	*p*
Without Satisfaction	9	87.6	9.7	0.00	0.89	0.56	0.84	0.23	0.00
Without Perceived Switching Costs	7	108.6	15.5	0.00	0.85	0.40	0.71	0.29	0.00
Without Trust	8	57.7	7.2	0.00	0.92	0.66	0.91	0.19	0.00

VI. DISCUSSION

Overall, the results provided strong support for the hypothesized model: the four factors can be important characteristics in online shopping, by facilitating relationship building through their effects on satisfaction, trust, and switching costs.

From a theoretical perspective, this research provided a well validated model for studying online consumer relationship building processes. While some previous studies have contributed to understanding online consumer behaviors, few were designed to target re-purchase behavior and integrate RM with online retailing. Our research combines findings from RM, online retailing, and consumer research, and extends previous off-line research to the online domain. We developed and validated measures for four consumer perceptions, three relationship mediators, and relationship intention. The perceived consumer power construct is novel, and its measures achieved a good fit.

The research also provided implications for practitioners. As shown in Table 4 (b), the means of two measures of the relationship intention construct value are 4.91 and 4.72, respectively. This corresponds to a response of "somewhat agree" which indicated online shopper intention to build a continuous relationship with e-tailers. It identified the important areas that online retailers should use to help build customer loyalty; consumer satisfaction, trust, and perceived switching costs apparently work together to have a profound effect on customer relationship building. As the four features of an e-tailer will continuously evolve with technology development and changing competition horizon, e-tailers may use these four features as direct and short-term benchmarks in evaluating success of customer relationship programs.

Our research found that risk perception plays an important role in trust building in online retailing. This simply highlights the high risk perceptions of online shoppers and the importance that retailers should place on mitigating risks. On the other hand, reducing risks does not enhance consumer satisfaction, while enhancing perceived interaction and relationship investment do.

Our research confirmed that a higher level of perceived switching costs lead to a lower level of satisfaction in online shopping. Our research provided a further step in explaining the complex relation between it and satisfaction. While switching cost has a direct positive effect on relationship building, it had a negative effect on customer satisfaction in online shopping. Online retailers who chose to be listed in search engines, shopping agents, or provided competitor price search buttons and matched the lowest competitor price instantly, probably generate higher consumer satisfaction and trust.

Our research had some limitations. The hypothesized model was designed to address RM effects from the impacts of the Web on consumer market perceptions but by being in a relationship, it may affect consumer market perceptions, and evaluation of relationship mediators. For example, repeat online shoppers may perceive more relationship investment, interaction, and power but they may also possess higher trust, satisfaction, and face resulting switching costs. The benefits from being a repeat shopper are called commitment values. For our hypothesized model, this means that feedback loops may exist from the construct of

relationship intention to the constructs of consumer market perceptions and relationship mediators. However, due to the way in which the measures were designed for our empirical study, these potential feedback loops were not investigated.

Focusing on online consumer relationship building, we did not consider the elements and impacts of the traditional channel versus the online channel. Since online consumers are exposed to both offline and online channels, integration is important.

Lastly, the survey was conducted in the product category of books, CDs, and DVDs. This may lead to some product category-related characteristics being incorporated. Caution must be taken when generalizing research results to other contexts.

Nevertheless, understanding online consumer behavior and applying RM theories to e-tailing aided our research in defining and testing a validated model for discerning important e-tailer characteristics in online consumer relationship building. The knowledge gained can help e-tailers design effective strategies and mechanisms for online consumer relationship management.

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