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Understanding channel purchase intentions

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5 Research Methodology

This chapter explains the research methodology. First, the research technique is addressed, followed by the research instrument. Next, a background of the two empirical studies is given. Finally, the research procedure is discussed, which will be used as a guideline in Chapter 6 and in Chapter 7.

5.1 Structural equation modeling

Structural equations modeling (SEM) is used as a means to analyze the hypothesized relationships. SEM starts with a theoretically based model, which is transformed into a path diagram. It does not only allow researchers to analyze a set of latent factors much like independent and dependent variables in regression analysis (Segars and Grover 1993), but also provides a comprehensive means assessing and modifying theoretical models (Karahanna and Straub 1999; MacKenzie 2001). As such, SEM offers great potential for furthering theory development. SEM is able to accommodate multiple interrelated dependence relationships in a single model. It provides a confirmatory test to a series of causal relationships. Jöreskog and Sörbom (1982) initially proposed that each equation in the model represents a causal link rather than a mere empirical association. The causality issue that SEM proclaims is often criticized (Hair et al. 1998). Causation refers to the principle by which cause and effect are established between two variables. It requires that there is a sufficient degree of association between the two variables, that one variable occurs before the other, that one variable is clearly the outcome of the other, and that there are no other reasonable causes for the outcome (Hair et al. 1998). Although in its strictest terms causation is rarely found (e.g. chemical reactions), in practice strong theoretical support can make empirical estimation of causation possible (Hair et al. 1998, p. 579).

5.1.1 Reasons to adopt structural equation modeling

The reasons to adopt SEM in this study are based on the work of Steenkamp and Baumgartner (2000). They provide three principles of SEM that fit with the aim of this study, including: (1) focus on theoretical explanation rather than on prediction, (2) incapability of directly measuring encompassing constructs, and (3) necessity of the inclusion of measurement error. First, SEM is covariance-based rather than variance-based. The estimation techniques used in SEM attempt to minimize a function that depends on the differences between the variances and covariances implied by the model and the observed variances and covariances. Compared to other modeling techniques, SEM is more focused on explaining marketing phenomena than on predicting specific outcome variables. In line with this, this study attempts to explain why consumers intend to purchase online or offline, rather than to predict the intentions to shop online or offline. Second, the constructs (i.e. factors) that are used in this study (e.g. service quality, informativeness, perceived value) are rich in nature and cannot easily be defined; they differ among persons and situations. As a result, they cannot be directly observed. They can only be measured through observable measures (i.e. items) that vary in their degree of observational meaningfulness and validity. A single indicator is not likely to capture the full theoretical meaning of each underlying construct and, consequently, multiple indicators are necessary. Third, observed measures of theoretical constructs always have some measurement error, and the correspondence between constructs and their measures has to be an explicit component of the model. In SEM, the interplay between constructs and measures plays a crucial role in theory development and model testing, and in deriving empirical generalizations. Apart from these principles, SEM is also capable of comparing relationships between latent factors across groups and contexts (Steenkamp and Baumgartner 2000), making the choice for SEM an obvious one.

5.1.2 Assumptions, requirements and issues of SEM

This section provides the assumptions, requirements and related issues of SEM.

Assumptions. SEM generally assumes linear relationships, although it is possible to account for nonlinearity (Hair et al. 1998). This assumption seems not to be troublesome, as other perceived value studies also commonly assume and find linear relationships between the

identified factors (Baker et al. 2002; Dodds et al. 1991; Sweeney et al. 1999). Next, this study uses a maximum likelihood estimation (MLE) based on the variance-covariance matrix. ML estimation is commonly used in practice and provides consistently efficient estimation under the assumption of multivariate normality and is relatively robust against moderate departures from the latter (Diamantopoulos and Siguaw 2000). Compared to other multivariate techniques, SEM is more sensitive to distributional characteristics of the data, particularly to the departure from multivariate normality or a strong kurtosis (Hair et al. 1998). A lack of multivariate normality is particularly troublesome, because it substantially inflates the chi-square statistic and provides parameter estimates with too much statistical power (Hair et al. 1998).

Sample size. SEM requires relatively large sample sizes for robust estimates. As a rule of thumb, researchers suggested relatively large sample sizes ($N > 200$) for SEM (Hair et al. 1998). Comrey and Lee (1992) suggested that a sample size of 50 is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1,000 is excellent. According to Hair et al. (1998) there are many factors impacting the required sample size. When misspecification is suspected, the model is overly large or complex, the data exhibit nonnormal characteristics, or an alternative estimation procedure is used, a larger sample size than 200 is needed. As some authors (Hair et al. 1998; Kline 1998) suggest, it is more helpful to think in terms of the number of respondents per estimated parameter. These authors suggest a minimum of at least five respondents for each estimated parameter, with a ratio of 10 respondents per parameter considered as most appropriate. As the proposed model is relatively complex (estimation of approximately 60 parameters), the studies require a minimum sample size of 300.

Missing data. There are several ways to treat missing data in SEM. One standard method for dealing with incomplete data is to just eliminate any observations where some data are missing: listwise deletion. This is the most frequently used method (Hair et al. 1998). This method can be unsatisfactory if sample sizes are small. Another standard approach is called pairwise deletion, in which each sample moment is calculated separately. This method only excludes an observation from the analysis when it is missing a value that is needed for the computation of that particular moment (Arbuckle and Wothke 1999). A third approach is data imputation. Here, the missing values are replaced with imputed values, after which

consequent analysis are performed. In Chapter 6 and 7, it is discussed which approach (listwise deletion, imputation) is used.

Reflective versus formative models. This study uses reflective measurement models to estimate the base model, rather than formative indicators (Diamantopoulos and Winklhofer 2001). As such, it is assumed that the latent variable causes the observed items, instead of the items causing the latent variable. It is a challenging to decide whether to specify the observed items as reflective or formative indicators of the latent constructs (Diamantopoulos and Winklhofer 2001; Jarvis, MacKenzie and Podsakoff 2003; Parasuraman et al. 2005). With formative models it is necessary to include all relevant concepts that form the construct, because dropping an indicator may alter the meaning of the construct. Therefore, there has to be a very high level of agreement among researchers on the factors that determine each latent construct. On the other hand, with reflective models the meaning generally does not alter when dropping an item (Jarvis et al. 2003). Although many of the constructs are well established in the psychometric and marketing literature, it seems to be an almost impossible task to ensure the nomological and criterion-related validity for all latent constructs. This blocks the decision to choose for formative models. Apart from this, the reasons for choosing reflective over formative models are based on the following criteria (Jarvis et al. 2003): the relative homogeneity and hence interchangeability of items pertaining to a latent construct, the high degree of covariation among items, and the expectation that the items (e.g. items of perceived value) are likely to be affected by the same antecedents (e.g. price, service) and have the same consequences (increase or decrease purchase intentions).

5.2 Instrumentation

A self-administrated questionnaire was used to collect data. Apart from questions regarding the background of the respondents, the final questionnaire entailed 11 relevant constructs (8 constructs in base model, 3 additional constructs in extended model) that were measured for the online and offline context. Respondents had to express their prepurchase evaluations towards using the online and offline channel for buying books. As such, the perceptual differences between using the online versus the offline channel could be elicited.

5.2.1 Pilot study

A pilot study was performed with a convenience sample of 102 respondents in order to investigate the scales. The goals of this pilot study were to investigate the reliability of the scales and to check the scales' face validity. Items were generated from a literature review and with help of marketing academics. The initial questionnaire comprised 71 pairs of statements, and additional socio-demographic questions. Respondents indicated that the questionnaire was too extensive and that they felt uncomfortable answering the "same" statement three of four times. Two constructs (i.e. socialization and perceived control) comprising eight items were left out of the model. Additionally, Cronbach's alphas, item-to-total correlations and exploratory factor analyses were used to reduce the number of questions. After analysis, 40 items were retained. Finally, marketing academics were asked to judge the constructs' content validity; they indicated that the selected items closely represented the underlying constructs.

5.2.2 Operationalization of the constructs

For SEM it is necessary to develop valid and reliable scales that have robust psychometric properties (Hair et al. 1998). Ideally, each construct is measured by multiple indicators in order to account for measurement error (Steenkamp and Baumgartner 2000). If possible, validated scales were used from previous research. In order to facilitate comparisons between the online and offline context, the constructs were operationalized in a generic form. A very concrete item (e.g. credit card theft) would be less likely to apply to both contexts; therefore, more abstract items were developed (e.g. level of risk). All the constructs in the questionnaire were measured by multiple items with seven-point Likert scales, anchoring at 1 (strongly disagree) and 7 (strongly agree). Table 5.1 displays the items used in this study, their sources, and their corresponding item number.

Service quality

Service quality is an elusive and abstract construct that is difficult to measure (Cronin et al. 2000). SERVQUAL, developed by Parasuraman et al. (1988) is one of the most widely used and cited measure for service quality in the offline context (Dabholkar et al. 1996). There is some controversy about the extent to which the traditional SERVQUAL captures service quality in the online context, especially when retailers that sell merchandise are considered.

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Leading service researchers (Grönroos et al. 2000; Parasuraman et al. 2005; Zeithaml et al. 2000) stress that additional dimensions are needed in order to fully explain consumer evaluations of e-services. Online shopping is more utilitarian, and based on ease and speed; online shoppers only need assistance when problems occur and/or when they have questions to be answered (Wolfenbarger and Gilly 2003; Zeithaml et al. 2000). In these circumstances, they often demand quick responses, such as order delivery confirmation or answers to e-mail questions.

Another disputed aspect refers to whether service quality is a single construct or consists of multiple underlying constructs. Sweeney et al. (1999) distinguished between functional (how the service is delivered) and technical (what is received from the service) service quality and found that these were distinct factors in their perceived value model. Sirohi et al. (1998) initially used three separate constructs –store operations, personnel service, store appearance– to define service quality, but discriminant tests showed that they related to one overall service quality factor. This study also uses one factor to address the influence of retail service quality on perceived value and purchase intentions¹¹.

Here, service quality is measured by the overall quality, the quality of the additional services delivered, courtesy, responsiveness and fulfillment/reliability. These five items were adapted from Baker et al. (2002), Dabholkar et al. (1996), and Wolfenbarger and Gilly (2003). The tangible aspects (i.e. physical environment, website) were excluded from the scale, as the respondents in the pilot study indicated that they were difficult to compare.

Merchandise quality

Merchandise quality consists of number, composition and quality of alternatives. Sirohi et al. (1998) measured merchandise quality for a supermarket in terms of the quality of the merchandise, the variety of grocery items, and the appropriateness of the items. This study investigates commodity-like products (i.e. books); thus the perceived quality of the books itself is expected to be the same across contexts. Contrastingly, the perceived quality of the selection of books may differ between the online and offline channel. Note that a larger assortment does not lead instantly lead to higher merchandise quality perceptions. Similar

¹¹ Based on the exploratory factor analyses in Chapter 6 and Chapter 7, it appeared that all five items pertained to the same factor: service quality.

to information overload, consumers may refrain from extensive choice that can lead to confusion (Huffman and Kahn 1998). This study uses two items to measure whether the store/website offers a good selection and whether it provides a wide selection of books that fits the individual customer's needs (cf. Sirohi et al. 1998; Wolfinbarger and Gilly 2003).

Monetary price

Monetary price refers to the customers' perceptions of the prices offered by the website and the physical store. This study measures it by including both the general price level and sales promotions. A few studies have separated sales promotions from price (cf. Sirohi et al. 1998); this study, however, combines sales promotions with the general price level to develop one overall measure of the price level. Other studies distinguished between perceived monetary price and perceived transaction value (i.e. the pleasure of getting a good financial deal) (Thaler 1985; Grewal et al. 1998a). This study, however, does not make this distinction, as it deals with prepurchase evaluations and not actual purchase evaluations or postpurchase evaluations. It uses two items (see Table 5.1) to measure the perceived price level of the store/website and its price offers. Although the SEM literature indicates that it is preferable to measure each construct with at least three items (Hair et al. 1998), it is not uncommon to use just two items¹² (cf. Baker et al. 2002; Chen et al. 2003). The two items have been adapted from prior studies (Baker et al. 2002; Sirohi et al. 1998). The questionnaire explicitly addressed that consumers were expected to give their perceptions of the end price; thus, including delivery costs. Although the list prices may be the same online versus offline, delivery costs may cause perceptual differences in the price level between channels.

¹² From the pilot study, it became clear that respondents felt uncomfortable when being confronted with multiple items that appeared very similar. To avoid annoyance, it was decided to select two items for measuring price and merchandise quality.

Perceived risk

In this study, perceived risk refers to the overall amount of uncertainty perceived by a consumer in shopping through an online and offline retailer (cf. Cox and Rich 1964). Five items were used to measure perceived risk (see Table 5.1). The items were rather abstract to ensure comparability; the items should be relevant to both contexts and not be specific to one context only. Most of the items were adapted from Wolfinbarger and Gilly (2003) and from Sweeney et al. (1999). Although the literature identifies a number of risk dimensions (Kaplan, Szybillo and Jacoby 1974; Peter and Tarpey 1975), this study uses one overall risk construct to account for the perceived prepurchase uncertainty. The items included the following types of risk: financial/monetary, product/performance, time/convenience, psychological (privacy concerns), and overall risk. Social risk and physical risk were excluded, as they were expected to play a minor role (cf. Forsythe and Shi 2003).

Time and effort costs

Time and effort costs relate to the nonmonetary costs to shop for a particular item through either channel (e.g. Zeithaml 1988). These costs clearly refer to the utilitarian aspects of shopping. Most of the items in this study referred to the opposite of the channel's time and effort costs, that is, the efficiency of the shopping channel. To ensure that most aspects of utilitarian shopping value were included, one item relating to perceived control was added based on the work of Babin and Darden (1995) and Hui and Bateson (1991). Next, the results of the pilot study showed that a distinction between the cognitive and physical effort would lead to extreme answers with little variation in the online context (i.e. hardly any physical effort is required to shop online). As SEM assumes normally distributed items, it was decided to use a more appropriate overall term implicitly measuring both cognitive and physical effort. In total, four items were used to measure the time and effort required.

Enjoyment

This study uses the construct of enjoyment to capture the hedonic aspects of shopping. Environmental research frequently distinguished between pleasure and arousal (Mehrabian and Russell 1974; Eroglu et al. 2003; Wakefield and Baker 1998) or other types of intrinsic value (e.g. Mathwick et al. 2002). In most TAM studies (e.g. Childers et al. 2001; Monsuwé et al. 2003), however, perceived enjoyment is treated as a single construct. In this respect, Monsuwé et al. (2004) argued that escapism, pleasure and arousal are fully mediated

through enjoyment. In conformance with these TAM studies, this study uses a single construct to capture the hedonic value derived from the shopping activity. Childers et al (2001) initially used eight items to measure the construct; four items were used for this study.

Perceived value: Value for money

Despite perceived value –when defined as the tradeoff between all perceived benefits and costs– entails more than just quality divided by its monetary costs (Dodds et al. 1991), this study uses *value for money* as indicator of perceived value. It refers to what consumers receive for what they pay (Sirohi et al 1998). Apart from this, this study also takes into account the nonmonetary costs and benefits, which are treated as separate components. Perceived value was measured with three items that were modified from Sirohi et al. (1998) and Sweeney et al. (1999).

Purchase intentions

Purchase intentions here refer to the intentions to purchase books through a particular channel (i.e. online or offline retail outlet). Three items were used to operationalize channel purchase intentions. Similar to previous studies (Baker et al. 2002; Sirohi et al. 1998; Sweeney et al. 1999), purchase intentions were measured through the following items: (1) probability of making the next purchase through a particular channel, (2) recommending the store/website to others, and (3) probability to predominantly use a particular channel for future purchases.

Reputation

Reputation here refers to the trustworthiness and reputation of the store and the website. This study does not make a distinction between trust and reputation, although other studies found that they were separate constructs (cf. Einwiller 2003; Pavlou 2003). Reputation generally engenders trust (Einwiller 2003; Jarvenpaa and Tractinsky 1999) and the consequences of reputation and trust on other constructs are quite similar (e.g. reducing risk, increasing purchase intentions) (cf. Doney and Cannon 1997). The four items that were used to measure reputation were adapted from prior studies (Chen and Dubinsky 2003; Doney and Cannon 1997; Einwiller 2003; Teas and Agarwal 2000).

Informativeness

As Chen and Dubinsky (2003) clearly explained, consumers perceive only relevant information to be useful and valuable; they do not consider the sheer amount of information that they can derive from a channel, but rather whether they can find relevant information to make a well-informed decision. Three items were used to measure informativeness, based on prior scales from Mishra, Umesh and Stem (1993), Chen and Dubinsky (2003) and Wolfinbarger and Gilly (2003).

Ease of use

Ease of use refers to the ease or convenience of shopping through either channel. The five items were selected based on TAM literature (e.g. Childers et al. 2001), Internet literature (Szymanski and Hise 2000; Wolfinbarger and Gilly 2003) and convenience literature (Seiders et al. 2000). In particular, these items measured access convenience (2 items), search convenience, transaction convenience and overall convenience.

Table 5.1: Scale items

Scale	Item number	Items	Source of Measure
Service quality	SQ1	This store/website provides high-quality service	Baker et al. (2002); Dabholkar et al. (1996); Wolfinbarger and Gilly (2003)
	SQ2	The additional services delivered by this store/website are of high quality	
	SQ3	This store/website treats its customers well	
	SQ4	This bookstore/website is always willing to help its customers	
	SQ5	This store/website keeps its promises	
Merchandise quality	MQ1	This store/website provides me a good selection	Sirohi et al. (1998); Szymanski and Hise (2000); Wolfinbarger and Gilly (2003)
	MQ2	This store/website offers a wide variety of books that interest me	

Table 5.1: Scale items (continued)

Price level	Price1	This store/website offers low prices (r)	Baker et al. (2002); Sirohi et al. (1998)
	Price2	This store/website has attractive offers (r)	
Time and effort costs	Time1	I spend my time efficiently, when I shop through this bookstore/website (r)	Babin and Darden (1995); Baker et al. (2002)
	Time2	It costs me little time and effort to shop for books through this bookstore/website (r)	
	Time3	Buying books through this bookstore/website gives me great control (r)	
	Time4	Buying books through this bookstore/website is a good way to quickly get what I want (r)	
Perceived risk	Risk1	I do not feel safe in my transactions with this bookstore/website	Jacoby and Kaplan (1972); Sweeney et al. (1999); Wolfenbarger and Gilly (2003)
	Risk2	There is a considerable chance that the book will be less than expected, when I buy through this bookstore/website	
	Risk3	Purchasing through this bookstore/website leads to uncertainties	
	Risk4	Things can easily go wrong when I purchase through this bookstore/website	
	Risk5	I feel like my privacy is not protected at this bookstore/website	
Enjoyment	Enjoy1	Buying books through this bookstore/website is fun for its own sake	Childers et al. (2001)
	Enjoy2	It makes me feel good, when I buy books through this bookstore/website	
	Enjoy3	Buying books through this bookstore/website is enjoyable	
	Enjoy4	It is interesting to buy books through this bookstore/website	
Perceived value: Value for money	PV1	This bookstore/website offers me good value for money	Sirohi et al. (1998); Sweeney et al. (1999)
	PV2	This bookstore/website offers books with an attractive price/quality ratio	
	PV3	The prices at this bookstore/website are economical, compared to what I receive	

Table 5.1: Scale items (continued)

Purchase intentions	Int1	There is a considerable chance that I will purchase my next book through this bookstore/website	Sirohi et al. (1998); Deveraj et al. (2002)
	Int2	I recommend others to buy their books through this bookstore/website	
	Int3	In the near future, I will predominantly shop through this bookstore/website	
Reputation/trust	Rep1	I can trust this store/website	Chen and Dubinsky (2003); Einwiller (2003); Teas and Agarwal (2000)
	Rep2	This store/website has a good reputation	
	Rep3	This store/website has a reputable standing	
	Rep4	I trust this store/website not to sell my personal data to others	
Informative-ness	Inf1	This bookstore/website provides in-depth information about books	Chen and Dubinsky (2003); Mishra et al. (1993); Wolfenbarger and Gilly (2003)
	Inf2	I can exactly find the information I need.	
	Inf3	I can find the information I need to make a well-informed decision.	
Ease of use	Ease1	I can easily visit this bookstore/website	Childers et al. (2001); Seiders et al. (2000); Szymanski and Hise (2000); Wolfenbarger and Gilly (2003)
	Ease2	I can visit the bookstore/website whenever it suits me	
	Ease3	I can quickly find interesting books in the bookstore/on the website	
	Ease4	Payments are easy, when I buy books through the bookstore/website	
	Ease5	The process of buying books through the bookstore/website runs smoothly	

5.3 Two empirical studies

This research performs a main study and a replication study. The first study is performed for a well-known Dutch multichannel bookseller, which exists for over a century. The bookseller is known for its wide variety of books, customer service, and professional personnel. In a way, the bookseller resembles Barnes and Noble. This generalist bookseller

has its roots in selling books through physical stores located in city centers, but has recently decided to sell books online too. The first study elicits offline and online buyers' perceptions of buying leisure books through the stores and website of this bookseller. Offline buyers refer to customers who have not bought through the website, whereas online shoppers refer to customers who have at least shopped once through the website.

The second study acts as a replication study and deals with the perceptions of online buyers of a pure e-tailer. This pure e-tailer is specialized in selling management-related books. The company originally sold these books through catalogs, but decided more than five years ago to sell them online. The online channel has superseded the catalog, and most of the sales are conducted online. The company successfully created awareness and gained a substantial market position. As this specialized bookseller does not have an offline counterpart, respondents are asked to give their offline perceptions of the well-known bookseller used in study 1. The second study is predominantly used to replicate the findings in the first study. However, this study also investigates whether consumers are motivated to shop online by the wider selection of this specialized store (this will be explained in detail in Chapter 7). While in the first study the online and offline assortments are very similar, as it deals with the same retailer, in the second study the assortments are not. The comparison of a specialist retailer versus a generalist retailer makes it possible to render the motivations to shop online for superior selections (found in Chapter 2). Specialist bookstores are more frequently found on the Internet, as they can more cost-effectively serve a wider public.

5.4 Research procedure

Table 5.2 provides the procedure of analyzing the data, which is largely based on the work of Arnold and Reynolds (2003) and Duman (2002). Next, this section explains how a distinction is made between online and offline buyers and why this study decides to pool the data collected from online and offline buyers for each context.

Table 5.2: Research procedure

Stage	Analysis	Purpose
1	Item analysis	Investigation of sample characteristics Investigation of item means Investigation of item-to-total correlations
2	Exploratory factor analysis	Exploration of loadings; removal of items with low loadings and high cross-loadings Assessment of number of latent factors Assessment of reliability (Cronbach's alpha)
3	Confirmatory factor analysis	Assessment of convergent validity Assessment of discriminant validity Assessment of construct reliability Assessment of correlations and multicollinearity
4	Multiple Group Confirmatory Factor Analysis for base model	Assessment of structural relationships (baseline models): H1-H8 Assessment of measurement invariance
		A. Across contexts: testing the relative importance of criteria in the offline and online context: H12-H15
		B. Across groups of buyers: testing the moderating effect of prior online shopping experience on relationships in the online context: H17-H19
5	Multiple Group Confirmatory Factor Analysis for extended model	Assessment of structural relationships (baseline models): H9-H11 Assessment of measurement invariance
		B. Across contexts: testing the relative importance of reputation on risk in the offline and online context: H16
		C. Across groups of buyers: testing the moderating effect of prior online shopping experience on relationship between reputation and risk in the online context: H20
6	Presentation of results	Discussion of findings

First, item analysis is performed to describe the sample characteristics, to investigate the item means, and to assess item-to-total correlations. Second, exploratory factor analysis is

performed to explore whether the items load highly on their intended latent construct, and have low cross-loadings. After the exploratory factor analysis, the reliability of the underlying factors is discussed in terms of Cronbach's alphas. Third, confirmatory analysis (CFA) is performed to ensure that the constructs are valid and reliable; this refers to the measurement part of the model. Many SEM researchers argue that the measurement model should be established, before one can assess structural relationships (Anderson and Gerbing 1988; Steenkamp and Baumgartner 2000). Consequently, CFAs (without any structural relationships) are performed with AMOS 5.0 to check whether the items meet the criteria for convergent and discriminant validity, as well as construct reliability. In this phase, the presence of multicollinearity is also investigated through regression and correlation analysis. The regression analyses are performed by using SPSS 11.0, whereas correlations are derived through AMOS 5.0. Fourth, prior to testing measurement invariance, it is customary to first establish the baseline models separately, for each group under study (Byrne 2001). These baseline models are also used to test the Hypotheses 1-8. Multiple group confirmatory analysis is then performed to check whether the items used are equivalent (invariant) across contexts. SEM researchers argued that analyses of the differences between the structural relationships can only be meaningful, when the items measure the same thing and to the same degree in each context (Byrne 2001; Steenkamp and Baumgartner 2000); therefore the establishment of measurement invariance across contexts is a logical prerequisite for testing the invariance of structural parameter estimates, that is structural invariance (Vandenberg and Lance 2000). This study conducts invariance tests in order to investigate whether the relative importance of the antecedents varies between *contexts*, and between *groups of buyers*. It is first tested whether certain factors have a more (less) pronounced effect in either context (Hypotheses 12-15). Then, it is investigated whether there are differences between experienced online buyers and less experienced online buyers in the construction of online purchase intentions (Hypotheses 17-19). In doing so, it is investigated indicate whether the level of prior online shopping experience has a moderating effect on the relationships in the online context (see Chapter 4). In the fifth stage, the same procedure outlined for the base model is followed for the extended model. Baseline models test the hypotheses regarding reputation, ease of use and information (Hypotheses 9-11). Then, after the establishment of measurement invariance, it is investigated whether reputation more strongly reduces risk in the online context compared to the offline context (Hypothesis 16). Next, it is tested whether the level of

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prior online shopping experience attenuates the relationship between reputation and risk in the online context (Hypothesis 20). Finally, an overview is presented to highlight the main findings.

The research procedure for the second study is somewhat shorter, as it limits itself to the base model. The aim is on testing the relationships within the perceived value framework rather than to replicate the rather complex extended model. Thus, the second study tests whether the relationships found in the first study are replicated in the second study (Hypotheses 1-8). Then, structural invariance tests are performed to check whether certain factors play a more profound role in either context (Hypotheses 12-15). Finally, Study 2 investigates the moderating influence of prior level of online shopping experience in the online context (Hypotheses 17-19).

Distinction between online and offline buyers. The distinction between experienced and less experienced online shoppers is an important issue. Offline buyers refer to those with little online experience, whereas online buyers refer to experienced online buyers. Study 1 discriminates between less experienced and more experienced online buyers based on whether the respondents had prior shopping experience with the multi-channel bookseller's website. The reason for assigning respondents according to their prior direct experience (rather than the number of prior purchases) is that the respondents who have shopped through the website have experienced the online shopping process for this particular bookseller. Personal experience with an e-tailer has a strong influence on the customer's perceptions and behavior (Einwiller 2003; Gefen 2000). Those with personal experience are likely to differ from those that have to rely on indirect experiences (e.g. personal experience with *other* e-tailers, experiences from friends and relatives). In Study 2, it is not possible to assign respondents according to their prior direct shopping experience, as all respondents have shopped through the corresponding website. To account for the level of online experience, Study 2 makes a distinction between online and offline buyers based on the number of prior purchases, as this also acts as an indicator of the level of experience with online shopping.

Pooling of data. Another important issue that needs to be addressed relates to the pooling of data. As mentioned before, Study 1 involves online and offline perceptions from online

and offline buyers. Therefore, it seems plausible to treat online and offline shoppers as heterogeneous groups. On the other hand, it seems justifiable to pool the data of online and offline shoppers regarding each channel and then look for differences in the strength of relationships in the online and offline context. This study aims to pool the data, because of two related advantages. First, by pooling the data more variation exists within each context. Variation is needed to have more robust estimates of the relationships in each context. Second, after pooling the data, the factors found in the factor analyses will represent those factors that are more homogeneous across the entire sample (Hair et al. 1998), facilitating comparisons between the two contexts. A possible downside of this method is that it assumes that the strengths of the relationships of the groups are similar. Therefore, this study will check whether the relationships for online and offline buyers are similar for the offline context and for the online context (i.e. moderating effects) (see section 6.6.2).

