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Multichannel integration quality, online perceived value and online purchase intention
A perspective of land-based retailers

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Abstract

Purpose – The purpose of this paper is to understand the role of multichannel integration quality in enhancing online perceived value and online purchase intention via the online store operated by a land-based retailer.

Design/methodology/approach – This paper develops a research model based on the "quality-value-purchase" chain, with four dimensions of multichannel integration quality as antecedents and three dimensions of online perceived value as mediators of online purchase intention. Empirical data were collected from 390 multichannel shoppers and structured equation modeling was used to test the research hypotheses.

Findings – Among the four multichannel integration quality dimensions, transparency of service configuration, process consistency and business ties positively affect online purchase intention through online perceived value, whereas the effects of information consistency are not significant; process consistency exerts a stronger influence on online perceived value than business ties; the effect of online convenience on online purchase intention is weaker than that of online monetary savings and online hedonic value.

Research limitations/implications – The study identifies the theoretical principles of the relationships among multichannel integration quality, online perceived value and online perceived value in multichannel context. Based on these theoretical principles, this study will help researchers to better understand consumers' online purchase intention and the creation of online perceived value in the integrated multichannel context.

Practical implications – The findings of this study can provide retailers with useful strategies to increase online purchase intention depending on improvement of multichannel integration quality and online perceived value.

Originality/value – This study provides a first study to empirically assess various types of online perceived value attached to multidimensional properties of multichannel integration quality and the corresponding effects on online purchase intention. Overall, the results offer insights of how land-based retailers could manage their online performance by integrating multiple channels and improving online perceived value.

Keywords Land-based retailer, Multichannel integration quality, Online perceived value, Online purchase intention

Paper type Research paper

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1. Introduction

In recent years, e-commerce has been growing steadily on the strength of rapidly evolving consumer shopping habits and game-changing retail technology. Impacts on the traditional bricks-and-mortar retailers are profound and far-reaching. In fact, the dominance of big box stores are declining, replaced by online alternatives offering superior selection, lower prices and even more convenience (Nelson and Leon, 2012). In the severe situation, an increasing number of traditional land-based retailers[1] have migrated to the multichannel format by establishing their own online stores, thus providing customers with multichannel shopping experience. However, many online stores of land-based retailers achieve much smaller sales than pure e-tailers since a lot of shoppers are more likely to purchase through well-known pure e-tailers. The report of Nielsen (2008) also shows that online stores of multichannel retailers continue to underperform on shoppers' purchase intentions compared to online stores of pure internet players. Therefore, traditional land-based retailers need to better understand online consumer behavior based on multichannel environment to compete more effectively against pure internet retailers (Konuş *et al.*, 2008; Rigby, 2007).

According to Robey *et al.* (2003), Chan and Pan (2005), reinforcement effect between offline and online channels takes place when a retailer integrates both channels. Reinforcement is the spill-over effect resulting from multiplicity and redundancy of channels, which helps in improving performances of each individual channels. Therefore, compared with pure e-tailers, land-based retailers theoretically have the advantage of multiple channels in expanding their online business. However, many land-based retailers who try to develop their online business are practically unable to play this advantage because of lack or low level of multichannel integration. In light of this, a key question is how to effectively integrate online and offline channels to strengthen customers' online perceived value and online purchase intention.

Though past studies discuss the effect of multichannel integration on consumer behavior (Oh and Teo, 2010; Lee and Kim, 2010), few studies explore why and how retailers' multichannel integration characteristics increase online perceived value and online purchase intention. Thus, this study serves to investigate the relationships among multichannel integration quality dimensions, online perceived value dimensions and online purchase intention. From a practical standpoint, this study offers insights on how land-based retailers could integrate multiple channels to improve online perceived value and manage online purchase intention. From a theoretical standpoint, the study advances knowledge regarding the creation of customer perceived value in online stores of multichannel retailers by integrating insights from multichannel retailing, perceived value, cognitive dissonance, and group entitativity literatures.

2. Literature review and hypotheses

2.1 Multichannel integration quality

Multichannel integration refers to providing an integrated system capable of handling multiple channels of operation for an enterprise (Ganesh, 2004). A multichannel integration strategy involves decisions about the number of channels to adopt, the nature of the interactions between them and what channels will be offered to customers for what purpose (Neslin and Grewal, 2006), and the assurance that the customers experience positive and consistent interactions with all of them (Payne and Frow, 2004).

Past studies provide several classifications of constructs of retailers' multichannel integration. Saeed *et al.* (2003) argue that integration of information systems supporting virtual and physical channels could be presented in terms of value added services

categorized as content, informational and logistical integration. Berman and Thelen (2004) propose that common characteristics of a well-integrated retail strategy include: high-integrated promotions, product consistency across channels, an integrated information system that shares customer, pricing and inventory data across multiple channels, a process that enables store pick-up for items purchased on the Web, and the search for multichannel opportunities with appropriate partners. Lee and Kim (2010) divide multichannel retailer's cross-channel integration practices and effectiveness into five dimensions: information consistency, freedom in channel selection, e-mail marketing effectiveness, channel reciprocity, appreciation of store-based customer service. Oh and Teo (2010) identify six integrated retail processes: integrated promotion information, integrated product and pricing information, integrated transaction information, integrated information access, integrated order fulfillment and integrated customer service.

In particularly, Sousa and Voss (2006) propose the concept of multichannel integration quality. They argue that multichannel service quality consists of three components: physical, virtual and integration quality. Multichannel integration quality is defined as the ability to provide customers with a seamless service experience across multiple channels (Sousa and Voss, 2006). According to current literatures related to multichannel shopping (see Table I), three characteristics of multichannel integration are generally recognized as important customer need within multichannel mind-set, that is, diversification, consistency and reciprocity. Diversification across channels, which involves available choice in different channels, facilitates customers choosing alternative channels for a given service or accomplishing preferred tasks through individual channels. Consistency (i.e. consistent information and customer service offered across channels) has been considered key to customer satisfaction in multichannel settings (Ganesh, 2004). Reciprocity between channels, which means an interaction taking place through one channel is connected with interactions through other channels (Sousa and Voss, 2006), enhances service convenience perceived by multichannel shoppers (Oh and Teo, 2010). Corresponding to these characteristics, four perceivable dimensions of multichannel integration quality were identified. Diversification-based integration quality is indicated by transparency of service configuration, which is defined as the degree to which customers are familiar with attributes of all available channels (Sousa and Voss, 2006). Consistency-based integration quality include: information consistency, which refers to the degree to which a customer receives the same responsive information through different channels; process consistency, which is defined as the consistency in relevant and comparable process attributes across channels (e.g. service's feel, image, waiting times, employee

Scholars	Diversification (transparency of service configuration)	Consistency Information consistency	Process consistency	Reciprocity (business ties)
Saeed *et al.* (2003)		v		v
Berman and Thelen (2004)		v		v
Sousa and Voss (2006)	v	v	v	v
Madaleno *et al.* (2007)	v	v	v	v
Neslin and Shankar (2009)			v	v
Oh and Teo (2010)		v		v
Lee and Kim (2010)	v	v	v	v
Note: v, Characteristic of multichannel integration				

Table I.
Dimensions of multichannel integration quality supported by past research

discretion levels; Sousa and Voss, 2006). Reciprocity-based integration quality is reflected by business ties between channels, which refer to the extent to which one channel cooperate with other channels in terms of transaction information, order fulfillment and customer service.

2.2 Online perceived value

Customer value refers to the customer's perceived preference for and evaluation of those product (or service) attributes, attribute performances and consequences arising from use that facilitate achieving the customer's goals and purposes in use situations (Flint *et al.*, 2002). It is the consumer's overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given and represents a trade-off the major give-and-get components (Zeithaml, 1988). Similarly, we define online perceived value as the customer's perceived preference for and evaluation of online store attributes that facilitate achieving the customer's goals and purposes in use situations.

Utilitarian and hedonic values are universally accepted as two important components of customer perceived value by extant literatures (Rintamäki *et al.*, 2006; Gutman, 1982; Smith and Colgate, 2007; Chang and Tseng, 2013). Moreover, the measurement of both values is proved to have good reliability and validity by empirical evidence. Thus, utilitarian and hedonic values can be considered as the basic constructs of customer perceived value in online retail environment. Utilitarian value is defined as an overall assessment of functional benefits and sacrifices, while hedonic value is an overall assessment of experiential benefits and sacrifices and focusses on the entertaining or hedonic benefits the online shop brings (Overby and Lee, 2006). However, since IT is an integral enabler of online stores, perceived usefulness and ease of use proposed by TAM model should be important determinants in predicting web use for utilitarian purposes (Van der Heijden, 2004). Furthermore, according to the study of Rintamäki *et al.* (2006) and Dong and Yang (2008), utilitarian value of online stores contains two classifications: monetary savings and convenience, corresponding to perceived usefulness and ease of use, respectively. Monetary savings reduce the pain of paying; therefore, utilitarian value can be increased when customer is able to find discounted products or when prices are perceived to be less than those at competing stores (Rintamäki *et al.*, 2006). Convenience can be defined as a ratio of inputs to outputs, time and effort being the relevant inputs (Seiders *et al.*, 2000). Therefore, our study identifies three dimensions of online perceived value, that is, monetary savings, convenience and hedonic value.

2.3 Multichannel integration quality > online perceived value > online purchase intention

Multichannel integration is an important controllable factor for land-based retailers who transform into multichannel retailers. Research shows that multichannel integration influences information quality, service convenience, consumer value and loyal intention (Oh and Teo, 2010; Lee and Kim, 2010). However, these studies do not explain why and how multichannel integration affects online purchase intention. One explanation is that multichannel integration quality creates various types of online perceived value, which in turn enhance online purchase intention.

Zeithaml (1988) presents the quality-value-purchase framework and argues that perceived value of products mediating the relationship between perceived quality of products and purchase. Similarly, as the integrated service quality of multichannel retailers, multichannel integration quality should influence online perceived value, which motivates consumers to make online purchase.

2.3.1 The relationship between multichannel integration quality and online perceived value. Multichannel integration quality includes four dimensions: transparency of service configuration, information consistency, business ties and process consistency. Good transparency of service configuration implies that consumers are familiar with attributes of both online and offline channels, however, consumers' unfamiliarity with attributes of either online or offline channel will lead to poor transparency of service configuration. Thus, in order to explore the relationship between transparency of service configuration and online perceived value, the effects of consumer's familiarities with offline and online store attributes on online perceived value are discussed, respectively.

According to Festinger's theory of cognitive dissonance (Festinger, 1957, 1964), when individuals are exposed to new information that disagrees with existing cognitions, they experience dissonance. Because cognitive dissonance is psychologically uncomfortable, individuals are motivated to reduce or eliminate it and restore cognitive consonance (Kwon and Lennon, 2009). To reduce cognitive dissonance, consumers may refuse to trust that the new dissonant information is valid, or they may interpret it in a biased way that agrees with their existing attitude (Feshbein and Ajzen, 1981; Festinger, 1957). In the current context, physical stores of land-based retailers, which have been operated for a long time, have good performance in-store attributes (Kwon and Lennon, 2009). Thus, when consumers are familiar with the attributes of physical stores, they may form a strong offline store image (i.e. strong existing cognitions) and perceive the online performance more positively (in a positively biased way). However, when consumers are unfamiliar with attributes of physical store, the offline store image will be weak and consumers may perceive the online performance less positively (Kwon and Lennon, 2009). Thus, online store image of a land-based retailer is more favorable when consumers are more familiar with attributes of offline store. Furthermore, Chang and Tseng (2013) verify that online store image affects customer perceived value positively. For example, online store attributes such as price and web interfaces improving consumers' shopping capability and efficiency (Childer *et al.*, 2001), are related to monetary savings and convenience. Besides, ambient conditions of online store evoke customers' emotion and create online hedonic value (Chang and Tseng, 2013). Therefore, higher familiarity with offline store attributes of land-based retailers leads to greater online perceived value.

Konuş *et al.* (2008) argue that using channels for either search or purchase depends on the utility the consumer derives from searching on or purchasing from the multiple channels. These utilities therefore depend on the benefits and costs of search and purchase. In the process of multichannel decision making for both search and purchase, customers must assess costs and benefits and adopt a way to maximize their utility. In situation of high familiarity with attributes of online store, consumers have got a lot of information regarding the relative costs and benefits in using online channel, such as merchandise selection and quality, store and service quality, and the price, time and effort it takes to make a purchase (Grewal *et al.*, 2004). Accordingly, customers who are more familiar with online store attributes are likely to make a multichannel decision which results in more utility. For example, if consumers are aware that online channel provides abundant products and quick response to query, they are more likely to search for new products through online channel, and thus enjoy more novelty and improve shopping efficiency. Accordingly, their perceived hedonic value and convenience are increased. Moreover, when customers understand that online store can accurately recommend discounted products based on their past purchases, they are

more likely to purchase these products and perceived more monetary savings. Therefore, higher familiarity with online store attributes of land-based retailers leads to greater online perceived value.

According to above discussions, this study infers that high transparency of service configuration (i.e. high familiarity with both online and offline store attributes) leads to more online perceived value compared with low transparency (i.e. low familiarity with online or offline store attributes). Thus, we predict the following hypotheses:

H1a. Transparency of service configuration of land-based retailers has a positive effect on online perceived monetary savings.

H1b. Transparency of service configuration of land-based retailers has a positive effect on online perceived convenience.

H1c. Transparency of service configuration of land-based retailers has a positive effect on online perceived hedonic value.

McConnell *et al.* (1997) find information processing is performed following the impression formation strategy for groups high in entitativity (i.e. the degree to which a collection of individuals is perceived as forming a group). Once an initial impression of one group member is formed, other group members are perceived in terms of that impression, and information about them is processed in such a manner as to try to confirm the impression (McConnell *et al.*, 1997). Thus, if one group member is believed to be trustworthy, when a new group member is encountered, that group member may be assumed to be trustworthy to the extent that the group is perceived to be high in entitativity (Stewart, 2003). Accordingly, the following hypotheses will be generated based on group entitativity theory which is applied to multichannel retail environment.

According to this theory, when similarity (which means group members share some similar characters) or interaction (such as standing in a line at a bank, working with others on a project or a sports team) is used as the criterion for group formation, group members are grouped into a distinct social category; the greater the perceived similarity or interaction between group members, the higher degree of entitativity the group will be (Wilder and Simon, 1998). Furthermore, according to the impression formation strategy for groups high in entitativity, the greater the perceived interaction or similarity between an unknown target and a trusted target, the more positive the initial trusting beliefs about the unknown target will be. In other words, perceived interaction or similarity may lead to trust transfer from a trusted target to an unknown target (Stewart, 2003). In the current context, process consistency and information consistency represent the degree of similarities between online and offline channels in process attributes (e.g. service's feel, service image, waiting times, employee discretion levels) and responsive information (e.g. product, pricing, promotion and stock information), respectively; business ties indicate that online and offline channels cooperate with each other in process of information recommendation, order fulfillment and customer service (i.e. the interaction between channels). Moreover, trust in physical stores of traditional land-based retailers is historically higher than in e-tailers (Laroche *et al.*, 2005; Benedicktus *et al.*, 2010). Thus, high levels of process consistency, information consistency and business ties between channels of a land-based retailer may strengthen trust transfer from offline channel (i.e. a trusted target) to online channel (i.e. an unknown target). In other words, process consistency, information consistency and business ties increase the trust in online channel. Furthermore, some researches support that trust is an important antecedent of customer perceived value (Chan and Chu, 2007;

Chong *et al.*, 2003; Sirdeshmukh *et al.*, 2002). High degree of trust in online store's ability means that customers have good evaluation in the competencies of online channel to meet their demand for products, information and services (Mayer *et al.*, 1995; Roy *et al.*, 2001). Especially, customers believe that online channel can provide valuable products and services as well as information facilitating making inexpensive purchases. Accordingly, their perceived online monetary savings are enhanced. Moreover, customers' trust in online channel may lessen the time and effort required to monitor transaction environment (Coffa, 2007), thus enhancing the efficiency of transaction (i.e. more online convenience). Also customers are more likely to feel fun, joyful and relaxed during online shopping trip because perceived risk is reduced by online trust (Kim *et al.*, 2008), which increases online perceived hedonic value. Therefore, higher degrees of process consistency, information consistency and business ties lead to more online monetary savings, convenience and hedonic value:

H2a. Information consistency between online and offline channels of land-based retailers has a positive effect on online perceived monetary savings.

H2b. Information consistency between online and offline channels of land-based retailers has a positive effect on online perceived convenience.

H2c. Information consistency between online and offline channels of land-based retailers has a positive effect on online perceived hedonic value.

H3a. Business ties between online and offline channels of land-based retailers has a positive effect on online perceived monetary savings.

H3b. Business ties between online and offline channels of land-based retailers has a positive effect on online perceived convenience.

H3c. Business ties between online and offline channels of land-based retailers has a positive effect on online perceived hedonic value.

H4a. Process consistency between online and offline channels of land-based retailers has a positive effect on online perceived monetary savings.

H4b. Process consistency between online and offline channels of land-based retailers has a positive effect on online perceived convenience.

H4c. Process consistency between online and offline channels of land-based retailers has a positive effect on online perceived hedonic value.

2.3.2 The relationship between online perceived value and online purchase intention. Purchase intentions are an individual's conscious plan to make an effort to purchase a brand (Spears and Singh, 2004). Similarly, this study defines online purchase intention as an individual's conscious plan to make an effort to purchase products or services provided by an online store.

The impact of customer perceived value on behavior has been supported by theoretical and empirical researches. Chang and Wildt (1994) argue that perceived value mediates the relationship of perceived quality and price to behavioral intention. The studies of Grisaffe and Kumar (1998), Grewal *et al.* (1998), and Sweeney and Soutar (2001) also prove that customer perceived value directly affects purchase intention. Furthermore, Chang and Tseng (2013) verify that customer perceived value from online shopping influences a consumer's purchase intention. Therefore, this study suggests

that online monetary savings, convenience and hedonic value motivate consumer's online purchase intention, which leads to the following hypotheses:

H5a. Online perceived monetary savings has a positive effect on online purchase intention.

H5b. Online perceived convenience has a positive effect on online purchase intention.

H5c. Online perceived hedonic value has a positive effect on online purchase intention.

2.4 Control variable
Several past studies on land-based retailers who have migrated to multichannel format show that constructs of prior offline store image, such as offline brand beliefs, attitude and trust, have positive influences on online brand beliefs, attitude and trust because of attitude and trust transference between channels (Kwon and Lennon, 2009; Benedicktus *et al.*, 2010; Badrinarayanan *et al.*, 2012). Moreover, online store image, which includes online brand beliefs, attitude and trust, positively affects online perceived value (Chang and Tseng, 2013). Hence, prior offline store image of multichannel retailers should have positive influence on online perceived value, which means good offline performance has been an advantage of some land-based retailers in creating online customer value. Accordingly, this study uses the factor of prior offline store image as a control variable to online perceived value dimensions.

Figure 1 presents the conceptual framework guiding this study, which adopted the quality-value-purchase relations of Zeithaml (1988) as a reference model, with the aim of focussing and elaborating on the relationships among multichannel integration quality, online perceived value and online purchase intention.

3. Research methodology
3.1 Data collection
The formal survey data were collected with the assistant of an independent market research company in December 2012. This company is a professional organization specializing in consumer behavior survey and holds a constantly updated database of approximately 2,600,000 Chinese consumers with various occupations and ages in different regions. Random sampling was used to obtain a list of 5,000 consumers who are older than 18 years with e-mail invitations. We carefully followed Dillman's (2000)
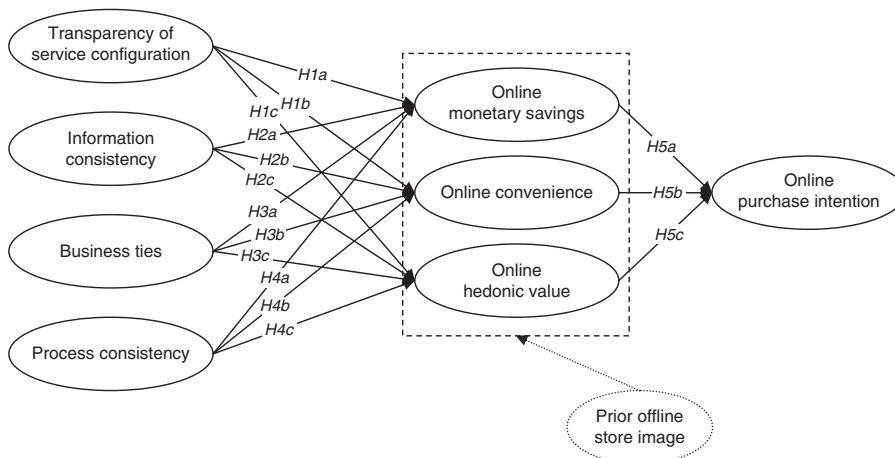

Figure 1.
Proposed conceptual framework

recommendations for an online survey and follows-ups. Four days and then a week after, a second and a third reminder e-mail were sent to the people who had not responded to the survey. Respondents followed a link to an online questionnaire. A total of 844 responses were obtained, which results in a response rate of 16.9 percent. Elimination of incomplete responses left 803 eligible responses. Among 803 respondents, 390 respondents were identified as multichannel shoppers of land-based retailers, whose data were used for final analysis to test our hypotheses (See Table II).

Adopting the method suggested by Lee and Kim (2010), a screening question was used to identify multichannel shoppers. The question reads, "Have you purchased any products from both physical and online stores operated by one land-based retailer?" Following the question we marked "In this survey, land-based retailers are limited to traditional retailers who had operated known physical stores for a long time before their own online stores were established." Respondents who answered "yes" were then asked to provide the name of the land-based retailer and to complete the remaining questionnaire. Those who answered no were then directed to the demographics section.

To detect non-response bias, the responses of early and late respondents were compared. Statistical analyses (analysis of variance, χ^2-test) showed no significant difference between early and late respondents, which suggests that non-response bias is not a problem in our data (Armstrong and Overton, 1977).

Table II provides further details of the demographics of the respondents. The samples of multichannel shoppers included consumers from a variety of backgrounds (51.5 percent employees of company, 22.6 percent students, 18.0 percent staffs of government and state-run institutions, 7.9 percent others; 52.3 percent female, 47.7 percent male; and average age of 28.7 years. Respondents also indicated that they had purchased through the following land-based retailers (types of physical stores): consumer electronics retailers ($n = 176$); apparel and/or shoes retailers ($n = 75$); other specialty retailers ($n = 54$); supermarkets ($n = 45$); and department stores ($n = 40$).

Demographic categories	Respondents n	$\%$	Multichannel shoppers n	$\%$
Age				
18-24	275	34.2	123	31.5
25-34	377	47.0	198	50.8
35-44	124	15.4	53	13.6
Over 45	27	3.4	16	4.1
Education				
High school or below	125	15.6	51	13.1
College (2 or 4 year)	639	79.6	319	81.8
Graduate school or above	39	4.8	20	5.1
Occupation				
Students	231	28.8	88	22.6
Employees of companies	370	46.1	201	51.5
Staffs of government or state-run institutions	124	15.4	70	18.0
Others	78	9.7	31	7.9
Gender				
Male	429	53.4	186	47.7
Female	374	46.6	204	52.3
Total	803		390	

Table II.
Demographics

3.2 Measurement development

The scales used for measurement have two sources: empirically validated scales (for online perceived value and online purchase intention) and self-developed scale based on existing theoretical conceptualizations (for multichannel integration quality). Table III indicates the detailed sources of scale or conceptualization for each construct. The questionnaire's constructs are measured with seven-point Likert scales anchored by strongly disagree and strongly agree.

To assess the consumer's perception of multichannel integration quality, the researchers developed a multi-item measure for the present study. A review of the theoretical papers (Sousa and Voss, 2006; Chan and Pan, 2005; Robey *et al.*, 2003) and empirical studies (Oh and Teo, 2010; Lee and Kim, 2010; Madaleno *et al.*, 2007) related to multichannel integration was conducted to draw on the conceptual framework for the constructs of multichannel integration quality. On the basis of items used in the literature and the definitions established in our research, we generated a pool of sample measure. Item generation is important to ensure content validity of the scale (Churchill, 1979) because failure to consider all facets of the construct will lead to the exclusion of relevant indicators (Nunnally and Bernstein, 1994). The in-depth interviews with three academic experts, two retail industry professionals and 24 consumers ensured that the items selected as indicators covered the major facets of the latent variables. Transparency of service configuration measures consumers' familiarity with online and offline store attributes. We developed three items based on the conceptual definition of Sousa and Voss (2006). Information consistency measures consumers' perception about the multichannel retailer providing consistent product, promotion, price and stock information. We adapted four items from Lee and Kim (2010) and Oh and Teo (2010). Process consistency was measured as consumer's perception of consistency in process attributes across channels such as service's feel, image, waiting times and level of customer service. We assessed it with four items based on the work of Sousa and Voss's (2006). Business ties measure connection or cooperation between channels in terms of pre-sales information recommendations, order fulfillment and after sales service. We assessed this construct with five items adapted from studies by Madaleno *et al.* (2007), Lee and Kim (2010) and Oh and Teo (2010).

Regarding the measurement of online perceived value, three items for online monetary savings and three for online convenience were from the scale developed by Rintamäki *et al.* (2006). We modified these items so that they can be applied to online setting. Three items for online hedonic value were from the scale developed by Overby and Lee (2006). Prior offline store image was measured with eight items from the scale developed by Pappu and Quester (2006). To measure online purchase intention, two items were adopted from the scale developed by Pan *et al.* (2010).

3.3 Pilot test

A pilot test was conducted with 60 graduate students attending two major universities in China. Only those students who had visited the physical stores and online stores of a land-based retailer in the past three months were invited to participate in the pilot test. The test was carried out in a Chinese university's computer labs. The respondents followed a set of instructions to familiarize themselves with the online store and then they were asked to finish an online questionnaire. Based on the results of the pilot test and comments from the participants, some modifications on the semantic errors and item sequence were made before main data collection was conducted.

Constructs (sources)	Measurement	Factor loadings
Transparency of service configuration (Sousa and Voss, 2006) $\alpha = 0.68$; CR $= 0.68$	I am aware of attributes of the retailer's online and offline stores	0.62[b]
	I am familiar with attributes of both online and offline stores of the retailer	0.66
	I know how to utilize attributes of both online and offline stores of the retailer to meet my needs	0.66
Information consistency (Lee and Kim, 2010; Oh and Teo, 2010) $\alpha = 0.75$; CR $= 0.75$	The retailer provides consistent product information between online and offline stores	0.64
	The product prices are consistent both online and offline	0.72
	The retailer provides consistent promotion information between online and offline stores	0.68
	The retailer provides consistent stock information between online and offline stores	0.58
Business ties[a] (Madaleno *et al.*, 2007); Lee and Kim, 2010; Oh and Teo , 2010) $\alpha = 0.64$; CR $= 0.65$	The retailer makes future purchase recommendations to me based on my past consolidated online and offline purchases	0.55
	The physical store allows me to collect, return, repair and exchange of products that I purchased online	0.70
	The retailer's gift coupons issued by one channel can be redeemed by another channel	0.59
Process consistency (Sousa and Voss, 2006) $\alpha = 0.80$; CR $= 0.81$	The service images are consistent both online and offline	0.72
	The levels of customer service are consistent both online and offline	0.74
	The service feelings are consistent both online and offline	0.76
	Online and offline stores have consistent performance in timeliness of services	0.63
Online monetary savings (Rintamäki *et al.*, 2006) $\alpha = 0.67$; CR $= 0.67$	I saved money when I shopped through online store of the retailer	0.65
	I made inexpensive purchases from online store of the retailer	0.63
	I got my purchases done cheaper from online store of the retailer than if I had made them elsewhere	0.63
Online convenience (Rintamäki *et al.*, 2006) $\alpha = 0.73$; CR $= 0.74$	I was able to get everything I needed at one stop from online store of the retailer	0.64
	I was able to shop efficiently through online store of the retailer	0.74
	I was able to make my purchases conveniently through online store of the retailer	0.70
Online hedonic value (Overby and Lee, 2006) $\alpha = 0.84$; CR $= 0.84$	Making a purchase through online store of the retailer totally absorbs me	0.75
	The online store of the retailer doesn't just sell product or services – it entertains me	0.84
	Making a purchase from online store of the retailer truly feels like "an escape"	0.80
Online purchase intention (Pan *et al.*, 2010) $\alpha = 0.79$; CR $= 0.79$	I am very likely to make my purchases from online store of the retailer when I need something	0.83
	I would be willing to make my purchases through online store of the retailer	0.79
Prior offline store image (Pappu and Quester, 2006) $\alpha = 0.82$; CR $= 0.82$	I like offline stores of the retailer	0.55
	I trust offline stores of the retailer	0.61
	Offline store merchandise of the retailer offers value for money	0.59
	Offline stores of the retailer offer very good store atmosphere	0.56
	Offline stores of the retailer offer very convenient facilities	0.58
	Offline stores of the retailer offer very good customer service	0.64
	Offline stores of the retailer offer very good variety of products	0.64
	Offline stores of the retailer offer very good after sales service	0.62

Notes: [a]Dropped items: the online store advertises the physical store by providing the address of the location of the physical stores; the online store enables me to search for products available in the physical store; [b]all factor loadings significant at $p < 0.001$

Table III.
Measurement scales and summary statistics

4. Data analysis and results

Structural equations modeling (SEM) appears to be the appropriate method for addressing the research question about multiple relationships between the dependent, mediating and independent variables (Zweig and Webster, 2003). Therefore, this study conducted SEM analysis by employing the statistical software Amos 16.0 and maximum likelihood estimation method.

To evaluate the fit of measurement and structural models, ratio of χ^2 with degree-of-freedom (χ^2/df), goodness-of-fit index (GFI) and adjusted goodness-of-fit index (AGFI), comparative GFI including normal fit index (NFI), Tucker-Lewis index (TLI), comparative fit index (CFI), and incremental fit index (IFI), in addition to root mean square error of approximation (RMSEA) were assessed. In general, model fit is considered to be reasonable if GFI and AGFI are larger than 0.8, comparative GFI exceed 0.9 and RMSEA is smaller than 0.08. Moreover, the ratio of χ^2/df falling within the suggested value of 5 is acceptable (see Hu and Bentler, 1999 for a review of cutoff criteria of fit indexes).

4.1 The measurement model

The measurement model for all the multi-item constructs in our framework was assessed by testing convergent validity, discriminant validity and reliability. A confirmation factor analysis was carried out by SEM, using maximum likelihood estimation method. Indicators with factor loading of < 0.5 on each factor were eliminated (Carmines and Zeller, 1979), leading to an exclusion of two items from further analysis. Table III presents a complete list of our refined measures and their psychometric properties. The measures of overall fit mostly meet conventional standards, which suggests that our model fits the data adequately ($\chi^2 = 828.82$, df $= 459$, χ^2/df $= 1.806$, RMSEA $= 0.05$, GFI $= 0.91$, AGFI $= 0.88$, NFI $= 0.96$, TLI $= 0.95$, CFI $= 0.97$, IFI $= 0.97$).

More specially, for all constructs, the composite reliability and all coefficient α values exceed the threshold value of 0.6. Therefore, the scale for the constructs appears to exhibit satisfactory internal consistency reliability. All the factor loadings, which range from 0.55 to 0.84, are significant ($p < 0.001$), indicating that convergent validity is achieved for all the study constructs.

As for the discriminant validity, the correlation coefficients of the latent factors and the corresponding confidence intervals were checked according to the suggestion of Anderson and Gerbing (1988). The correlation coefficients range from 0.31 to 0.71 and the 99 percent confidence intervals of the latent factor correlation matrix verifies that 1.0 is not included in any of them (see Table IV). This result indicates distinct differences among the constructs, confirming discriminant validity of measures.

To test for potential common method bias, we used Harman's one-factor test and assessed whether a single latent factor would account for all the manifest variables through confirmatory factor analysis. A single-factor model in which all manifest variables are explained by one common method factor was compared to our nine factors measurement model through χ^2 difference test (Malar *et al.*, 2011). The χ^2 value of the single-factor model was 2719.06 (df $= 495$), which is significantly worse compared with our nine factors measurement model ($\Delta\chi^2 = 1,890.24$, df $= 36$, $p < 0.001$). Therefore, the test result provides preliminary evidence that the measurement model of our study is robust to common method variance.

4.2 Structural model

We tested the structural relationships posited by the path model using SEM (see Figure 1). The measures of overall fit indices suggests a reasonable model fit

Variable	1	2	3	4	5	6	7	8	9
1 Transparency of service configuration	1								
2 Information consistency	0.33 (0.12-0.54)***ᵃ	1							
3 Business ties	0.35 (0.14-0.56)***	0.39 (0.18-0.60)***	1						
4 Process consistency	0.31 (0.08-0.54)***	0.69 (0.41-0.97)***	0.48 (0.23-0.73)***	1					
5 Online monetary savings	0.60 (0.39-0.81)***	0.43 (0.25-0.61)***	0.53 (0.35-0.71)***	0.54 (0.33-0.75)***	1				
6 Online convenience	0.39 (0.21-0.57)***	0.35 (0.14-0.56)***	0.43 (0.22-0.64)***	0.46 (0.23-0.69)***	0.69 (0.48-0.90)***	1			
7 Online hedonic value	0.31 (0.10-0.52)***	0.36 (0.15-0.57)***	0.40 (0.19-0.61)***	0.53 (0.27-0.79)***	0.59 (0.38-0.80)***	0.70 (0.47-0.93)***	1		
8 Online purchase intention	0.44 (0.21-0.67)***	0.39 (0.16-0.62)***	0.43 (0.20-0.66)***	0.51 (0.23-0.79)***	0.71 (0.48-0.94)***	0.60 (0.34-0.86)***	0.64 (0.38-0.90)***	1	
9 Prior offline store image	0.42 (0.27-0.57)***	0.43 (0.28-0.58)***	0.43 (0.28-0.58)***	0.46 (0.28-0.64)***	0.64 (0.49-0.79)***	0.45 (0.30-0.60)***	0.51 (0.33-0.69)***	0.42 (0.24-0.60)***	1

Notes: ᵃ99 percent confidence interval. ***$p < 0.001$

Table IV.
Correlation matrices and discriminate validity

$(\chi^2 = 1,232.70,\ df = 477,\ \chi^2/df = 2.58,\ RMSEA = 0.06,\ GFI = 0.89,\ AGFI = 0.86,$
$NFI = 0.94,\ TLI = 0.93,\ CFI = 0.95,\ IFI = 0.95)$. Table V and Figure 2 report the
parameter estimates of our structural model.

4.2.1 Effects of multichannel integration quality dimensions on online perceived value. Empirical support is found for the effects of multichannel integration quality dimensions to the dimensions of online perceived value dimensions, as hypothesized by

Effects	Standardized parameter	t-value	Conclusion
Effects of multichannel integration quality on online perceived value			
H1a transparency of service configuration → online monetary savings	0.45***	5.43	Supported
H1b transparency of service configuration → online convenience	0.27***	3.82	Supported
H1c transparency of service configuration → online hedonic value	0.15**	2.46	Supported
H2a information consistency → online monetary savings	0.01 ns	0.09	Not supported
H2b information consistency → online convenience	−0.02 ns	−0.34	Not supported
H2c information consistency → online hedonic value	−0.05 ns	−0.98	Not supported
H3a business ties → online monetary savings	0.28***	3.69	Supported
H3b business ties → online convenience	0.26***	3.61	Supported
H3c business ties → online hedonic value	0.20***	3.16	Supported
H4a process consistency → online monetary savings	0.33***	4.85	Supported
H4b process consistency → online convenience	0.33***	4.96	Supported
H4c process consistency → online hedonic value	0.42***	7.04	Supported
Effects of online perceived value on online purchase intention			
H5a online monetary savings → online purchase intention	0.41***	4.67	Supported
H5b online convenience → online purchase intention	0.15*	2.12	Supported
H5c online hedonic value → online purchase intention	0.32***	4.86	Supported
Effect of prior offline store image on online perceived value (control)			
prior offline store image → online monetary savings	0.41***	5.54	
prior offline store image → online convenience	0.27***	4.06	
prior offline store image → online hedonic value	0.34***	5.63	
Notes: ns, not significant. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$			

Table V.
Structural model estimates
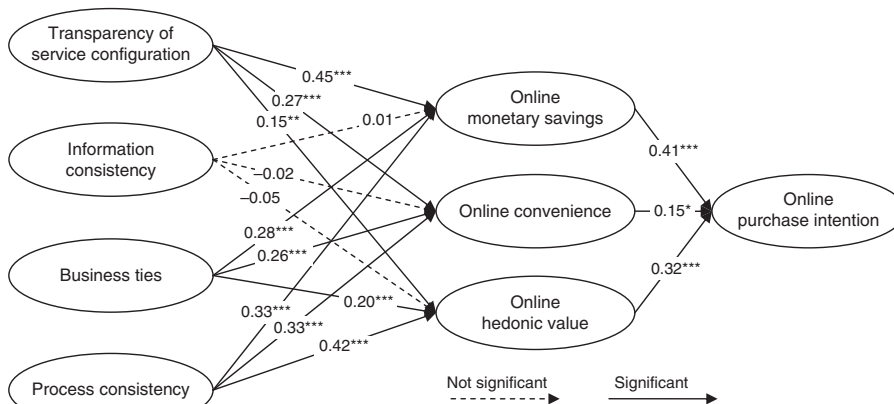
Notes: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Figure 2.
Results of path coefficients

H1a-H1c, *H3a-H3c*, and *H4a-H4c*. However, the effects of information consistency on online monetary savings ($\gamma = 0.01$, *t*-value $= 0.09$), online convenience ($\gamma = -0.02$, *t*-value $= -0.34$), and online hedonic value ($\gamma = -0.05$, *t*-value $= -0.98$) are all weak and insignificant. Therefore, *H2a-H2c* are rejected. The *t*-values for the hypothesized paths, except for *H2a-H2c*, ranged from 2.46 to 7.04. The strongest of the supported paths is transparency of service configuration to online monetary savings ($\gamma = 0.45$, *t*-value $= 5.43$), and the weakest is transparency of service configuration to online hedonic value ($\gamma = 0.15$, *t*-value $= 2.46$). Moreover, the three paths of process consistency to online perceived value (effect sizes range from 0.33 to 0.42) are all stronger than that of business ties to online perceived value (effect sizes range from 0.20 to 0.28).

4.2.2 Effects of online perceived value dimensions on online purchase intention. As hypothesized by *H5a-H5c*, online purchase intention is positively affected by online monetary savings, online convenience, and online hedonic value. The effect of online monetary savings on online purchase intention is the strongest ($\beta = 0.41$, *t*-value $= 4.67$), next is the effect of online hedonic value on online purchase intention ($\beta = 0.32$, *t*-value $= 4.86$). The effect of online convenience on online purchase intention is the weakest ($\beta = 0.15$, *t*-value $= 2.12$). Consistent with previous studies (Chang and Tseng, 2013), this finding shows that as a part of online utilitarian value, online monetary savings is the most important dimension of online perceived value which affects online purchase intention.

5. Conclusion
The purpose of this research is to understand the role of multichannel integration quality in enhancing online perceived value and online purchase intention via the online store operated by a land-based retailer. Based on the "quality-value-purchase" chain proposed by Zeithaml (1988), we proposed and empirically tested a model of online behavioral intention in the integrated multichannel context, and, by doing so, underscored the importance of the multidimensional concept of multichannel integration quality and the influence of each dimension on online purchase decisions. Overall, our results have shown that the monetary savings, convenience and hedonic values attached to high quality of multichannel integration are important antecedents of online purchase intention.

The results reveal that the transparency of service configuration affects three dimensions of online perceived value significantly. The familiarity with offline store attributes of land-based retailer produces halo effect on perception of online performance, namely, consumers believe that performance of online store is as good as physical store. On the other hand, the familiarity with online store attributes facilitates customers utilizing the advantages of online store to meet their own needs. Thus, land-based retailer can enhance the appeal of online store by improving transparency of service configuration. Conversely, customers' unfamiliarity with online or offline channel attributes reduces transparency of service configuration, which restricts land-based retailers from playing the advantage of multiple channels.

Business ties have significant effects on the three dimensions of online perceived value. In process of online purchasing, consumers worry about the quality of product because they are unable to pre-examine physical products through online store. Once consumers are not satisfied with the delivered product, the difficulties in return and exchange of products as well as complaints arise. The business support provided by offline channel, especially the in-store collection and in-store after sales service for

online purchase, can reduce the perceived risks of online transaction. Thus, consumers are more likely to trust the online store of a land-based retailer which is supported by physical stores, and perceive online value to the extent of the cooperation between online and offline channels.

Process consistency also affects three dimensions of online perceived value significantly. This suggests that consumers highly value the consistency of service image and service ability between online and offline channels, and consider land-based retailers' ability to maintain the same level of customer service across channels as a major benchmark to judge the trustworthiness of online channel. Furthermore, compared with business ties, the effects of process consistency on online perceived value are stronger. This result suggests that land-based retailers should make sure that consumers perceive the same level of service image and service ability across channels before promoting the cooperation of online and offline stores.

To our surprise, the empirical tests show that information consistency has no significant effects on any dimensions of online perceived value. This finding might be explained by the coexistence of both positive and negative effects of information consistency on online perceived value. On the positive side, information consistency leads to trust in online store, which in turn enhances online perceived value. However, the more consistent the responsive information (e.g. product, pricing and promotion information) between channels, the more possible offline channel is to be a substitute for online channel in transaction. In other words, online store may be replaced by offline store to the extent of information consistency, which decreases online perceived value.

The study shows that online monetary savings, convenience and hedonic value positively affect online purchase intention, which is in congruence with the conclusion of prior studies (Chang and Tseng, 2013). Among the three dimensions, online monetary savings and online hedonic value have stronger effects on online purchase intention than online convenience. Compared with offline store, online store is generally considered to have the advantage of shopping convenience. However, as for multichannel shoppers of land-based retailers, such an advantage is far less important than online monetary savings and enjoyment in shopping trip. This interesting finding means that multichannel shoppers are more likely to spend time and effort in obtaining value for money as well as enjoy the fun of online shopping trip when making purchasing through online store of land-based retailers.

6. Implication, limitations and future research
6.1 Theoretical contributions
This study provides a first study to empirically assess the online perceived value attached to multidimensional properties of multichannel integration quality and the corresponding effect on online purchase intention, resulting in a more effective model that explicates consumers' online purchase decisions in multichannel integrated context. Three relevant theoretical contributions are worth discussing.

First, our research demonstrates the importance of multichannel integration in online purchase decisions. The multichannel integration should be considered as a new service activity that contributes to expanding online business of land-based retailers. Current studies regarding online purchase decisions in multichannel context have somehow neglected the role of multichannel integration, being mainly focussed on prior offline store image or its components as key drivers for the transference effect imposed on online channel. Our study demonstrates that multichannel integration quality constitutes an important means for value creation during online purchase, which

confirms the reinforcement effect between channels (Robey *et al.*, 2003; Chan and Pan, 2007) and distinguishes it distinctly from prior research.

Second, though multichannel integration quality is proposed as a new component of service quality in multichannel context (Sousa and Voss, 2006), little empirical research has been addressed to substantiate and validate the constructs of this concept. Our research identifies four constructs of multichannel integration quality and validates corresponding measurements with empirical evidence. The aspect of the present study extends prior research to discuss constructs of multichannel integration according to different customer needs, which enriches the existing literature concerning constructs of multichannel integration factors.

Third, this study classifies online perceived value into three types and examines online value-related issues, based upon which consumers make decisions as they consider purchasing through online store of a land-based retailer. Chang and Tseng (2013) tested the effects of utilitarian and hedonic value in online purchase decisions. Our research further divides utilitarian into two components: online monetary saving and online convenience, extending the study of Chang and Tseng (2013). By examining the specific change in each type of online perceived value caused by multichannel integration, we gain a better understanding of how online perceived value mediates the relationship between multichannel integration quality and online purchase intention.

6.2 Managerial implications

The study offers some managerial implications for land-based retailers to expand online business. In order to play the advantages of multiple channels, land-based retailers should enhance multichannel integration quality and online perceived value to increase online purchase intention. First, land-based retailers should improve transparency of service configuration, business ties and process consistency. Online and offline stores of land-based retailers should be advertised through various media to increase transparency of service configuration. Especially, retailers can advertise online store through physical stores, which many customers frequently visit. In order to strengthen business ties between channels, land-based retailers may consolidate online and offline transaction information, which facilitates future purchase recommendation and gift coupon redemption, and provide in-store after sales service for online purchases. Also uniform standards for delivery, return and exchange of products should be established and performed across channels to strengthen process consistency. Second, land-based retailers should pay attention to the positive and negative effects of information consistency on online perceived value. In terms of the positive effect, land-based retailers should ensure that salable goods of physical store can also be offered through online store in the same price. In order to weaken the negative effect, land-based retailers should encourage irreplaceability of online store by providing some online items and categories which are unavailable in physical store. Finally, land-based retailers can increase online perceived value of customers by providing valuable and fresh products, customized purchase recommendation, appealing webpage, powerful search engine and prompt order fulfillment online, which in turn enhances online purchase intention.

6.3 Limitations and future research

This study has some limitations when interpreting the results. First, since this research was largely made up of people who make their purchases through consumer electronics retailers, the results might not be generalizable across retailers selling other products. Future research should attempt to replicate the study on a wider sample of land-based

retailers across different categories and countries to generalize the findings. Second, the study neglected shopper's characteristics and specific purchase scenarios, such as shopping orientation, involvement, time pressure, etc. Future research could further explore the influence of these factors on the relationship between multichannel integration quality and online perceived value. Finally, this study is limited to focus on the effect of multichannel integration quality on online customer perceived value and online purchase intention. Future research may further examine the relationship between multichannel integrated quality and offline customer perceived value or multichannel customer perceived value.

Note

1. According to the suggestion of Badrinarayanan *et al.* (2012), We limit our focus to traditional land-based retailers (land-based retailers in abbreviation) who have operated physical stores for a long time and migrate to multichannel format by establishing their own online stores.

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