Decision Support Systems 54 (2013) 858–869

Contents lists available at SciVerse ScienceDirect

Decision Support Systems

journal homepage: www.elsevier.com/locate/dss

Why do consumers adopt online channel? An empirical investigation of two channel extension mechanisms

Shuiqing Yang [a], Yaobin Lu [b,*], Patrick Y.K. Chau [c]

[a] School of information, Zhejiang University of Finance and Economics, Hangzhou, China
[b] School of management, Huazhong University of Science and Technology, Wuhan, China
[c] School of Business and Economics, University of Hong Kong, Hong Kong, China

ARTICLE INFO

Article history:
Received 12 August 2011
Received in revised form 3 April 2012
Accepted 18 September 2012
Available online 25 September 2012

Keywords:
Online channel adoption
Brand extension theory
Expectation–confirmation theory
Service quality
Relative benefits
Channel synergies
Channel dissynergies

ABSTRACT

As increasingly more organizations transit from a brick-and-mortar into a brick-and-click organization, consumers' embracing the new online channel is becoming critical to the success of these organizations. Although consumers' online channel adoption behavior has recently received a lot of attention, there still lacks a systematic investigation into the internal mechanism of consumers' channel adoption behaviors, especially, in an offline plus online channel context. Using brand extension theory and expectation–confirmation theory as the theoretical basis, this study examines what factors affect a consumer's decision on moving or extending from an offline channel to an online channel. A research model based on the above two theories is developed and empirically tested against data collected from 308 customers of a major commercial bank in China. The results confirm the usefulness of the two theories in explaining the online channel adoption and identify the concurrence effects of cross-channel synergies and dissynergies on customer's channels evaluation. This research advances our theoretical understanding of online channel adoption behaviors and offers practical implications for organizations to manage such online channel adoption.

1. Introduction

The transition from being a brick-and-mortar to becoming a brick-and-click organization is becoming a standard business strategy for firms to enhance their existing business processes in the new economy [6]. A recent survey reported that more than 80% of a broad cross-section of U.S. retail organizations sell merchandise through both offline and online channels [67]. By incorporating the Internet into their channel portfolios, firms seek to build upon competitive advantages such as a stable customer base, added revenue, and higher market share. Nevertheless, the benefits of a transition to e-commerce will only be realized when consumers embrace the new online channels. How to lead consumers to adopt online channels is a question that many organizations are asking.

With few exceptions, most firms have initiated their online businesses from expanding their existing traditional offline businesses [37]. Accordingly, most consumers are also single channel users at first, and they gradually develop into multi-channel users through channel extension. Consumers' channel extension is defined as a dynamic process in which consumers make purchases or use services by utilizing additional channels in addition to the ones they currently use [64]. During this channel extension process, consumers' experiences with a firm in one channel may affect their perceptions and beliefs about the same firm in another channel [39]. Therefore, examining the determinants of consumers' online channel behavior is critical to consider the impact of traditional offline channel on the evaluation and use of this more innovative option.

Although a great deal of past research was devoted to understanding consumers' online channel adoption, most of them have generally viewed the online channel as isolated from the offline channel rather than as an extension of a traditional offline channel [26,43]. Recently, a few studies have discussed the customer's online behaviors in a multi-channel context that consider channel interactions [26,64]. However, as we will see in detail later, the effects of channels interactions on customer's online channel evaluation need further exploration. In brief, the results of these studies were not consistent [26]. Some of them regarded channel interactions as complementary which reported an effect of cross-channel synergies [37,62,64], while others regarded channel interactions as cannibalistic which stated an effect of cross-channel dissynergies [26,42]. This inconsistency can be problematic because it further constrains our understanding of the influences of channel interactions on customer's online channel evaluation, and subsequently might confuse our understanding of the mechanisms of cross-channel synergies or dissynergies on customer's use of online channel. As for practical implications, an unclear mechanism of cross-channel interactions inhibits us from prediction customer adoption, designing the features between offline and online channel appropriately to achieve higher

* Corresponding author.
E-mail addresses: xtysq@smail.hust.edu.cn (S. Yang), luyb@mail.hust.edu.cn (Y. Lu), Pchau@business.hku.hk (P.Y.K. Chau).

0167-9236/$ – see front matter © 2012 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.dss.2012.09.011

customer acceptance. Verhoef, Neslin, and Vroomen [61] report that although online channel can display synergies with offline channel, channel conflicts would also exist as well. Therefore, it is critical for us to systematic investigate the effects of both cross-channel synergies and dissynergies on consumers' channel adoption behaviors, especially, in an offline plus online channel context.

To fill the gap, this study investigates the consumers' online channel adoption behavior by focusing on how the effects of cross-channel synergies and dissynergies on customer' channel evaluation in the context of banking services. A review of the literature suggest that both brand extension theory [1] and expectation–confirmation theory [45], which reflected these two effects, might offer an explanation why consumers of one channel extend their consumption to another channel. Using banking services as the research context, this study investigates the effects of prior offline channel experiences, including offline channel service quality and confirmation of offline channel performance, on the corresponding perceived online channel service quality and relative benefits perceptions, both of which might influence the intention to extend the use of banking services to the corresponding online channel.

The remainder of the paper is organized as follows. In Section 2, we review the related literature of customers' behavior in the multichannel context. Then, we present the theoretical background in Section 3. The research model and hypotheses based on the theories are presented in Section 4. Next, in Section 5, we describe the research methodology, followed, in Section 6, by our presentation of the results. We then discuss the results in Section 7 and suggest theoretical and practical implications in the Section 8. Finally, we conclude the paper and summarize the limitations of the study in Section 9.

2. Literature review

Over the past decade, customer behavior in the multichannel context has received increasingly attention from academics. Table 1 summarizes a review of empirical studies of customer multichannel behavior.

In academia, the empirical investigations in the realm of customer multichannel behaviors have generally focused on two perspectives: channel synergies and dissynergies. Behind the studies on channel synergies is the idea that channels are complementary. That is, satisfaction with one channel enhances a customer's behavioral intention towards another channel [57,62]. Wallace et al. [62] examined customer retailer loyalty in the multiple channels retailing context. They found that the channel synergies made by a multiple channel retailing strategy enhance customer retailer loyalty. Kim and Park [33] found that a consumer's attitude towards an offline store positively influence his/her attitude toward the online store, which demonstrated the existence of the cross-channel synergies. Similarly, Kwon and Lennon [38] also reported a channel synergy effect in terms of brand images in a multichannel retailing context. They found that offline brand image exerts significant effects on online brand image, which in turn explains online customer loyalty.

Opposite to this synergies aspect is the idea of channel dissynergies [26,42]. That is, a customer's intention to use the online channel is diminished because people have a preference for the corresponding offline channel [26]. Montoya-Weiss et al. [42] examined customer online channel use and overall satisfaction with a multichannel service provider. They reported a dissynergies effect between offline and online channels: the service quality for the currently used channel has a negatively impact on online channel use. Similar to the study of Montoya-Weiss et al. [42], Falk et al. [26] examined customer evaluation conflicts between service channels in a multichannel environment. They developed and empirically examined a model that relates offline channel satisfaction to perceptions about a new self-service channel. They found that a customer's offline channel satisfaction reduces his/her perceived usefulness of the online channel, which validated the channel dissynergies effect on channel evaluation.

Table 1
literature review of customer multichannel behavior.

Year	Study	Context	Focus of the study	Type
2002	Nicholson et al.	Retailing	purchase channel choice	synergies
2003	Shankar et al.	Retailing	Overall satisfaction, loyalty	synergies
2003	Lee and Tan 2003	Retailing	purchase channel choice	dissynergies
2003	Montoya-Weiss et al.	Financial/ university	Overall satisfaction, online channel use	dissynergies
2004	Wallace et al.	Retailing	Customer retailing loyalty	synergies
2004	Sullivan and Thomas	Retailing	Purchase volume, cross buying	synergies
2005	Noble et al.	Retailing	Channel utilization	synergies
2005	Kim and Park	Retailing	Online purchase intention	synergies
2005	Van Baal and Dach	Retailing	Cross-channel free-riding	dissynergies
2005	Kumar and Venkatesan	Retailing	Multichannel shopping	synergies
2006	Van Birgelen et al.	Financial	Behavioral intention	synergies
2007	Venkatesan et al.	Retailing	Channel adoption duration	synergies
2007	Falk et al.	Financial	Behavioral intention	dissynergies
2007	Verhoef et al.	Retailing	Channel choice	synergies
2007	Lee et al.	Financial	Online channel behavior	synergies
2008	Ansari et al.	Retailing	channel selection	synergies
2009	Hahn and Kim	Retailing	Online channel behavior	synergies
2009	Verhagen and van Dolen	Retailing	Online channel behavior	synergies
2009	Kwon and Lennon	Retailing	Offline/online purchase intention	synergies
2010	Chiu et al.	Retailing	Cross-Channel Free-Riding	dissynergies

As a result of these efforts, we have a much better understanding about the cross-channel synergies and dissynergies metrics on the customer's multichannel behaviors, how those mechanisms may affect customer's channel evaluation, and how they can be used for channel design and management. However, despite the progress made by the extant studies, a careful review of the related literature indicates that there is still a need for a thorough investigation into the concurrence mechanisms of cross-channel synergies and dissynergies on customer's channel evaluation.

3. Theoretical background

3.1. Brand extension theory

A brand is a name, term, sign, symbol, or design, or a combination of these, that identifies the products or services of one provider or a group of providers, and it differentiates the provider from competitors [31]. Brand extension refers to use of an established brand name to facilitate entering a different product class or market [1]. It has been recognized as one of the most frequently used strategies for firms to reduce the cost and risk of introducing a product in a new market [29]. In practice, we see many successes of brand extension of products that are introduced by the same firm.

Brand extension theory is based on associate network memory model [19]. According to this model, a semantic memory or knowledge is depicted as consisting of a set of nodes and links [31]. Nodes are stored information connected by links, and the extent of retrieval in the memory is determined by a "spreading activation" process from node to node. Particular brand information can be retrieved from the memory when a variety of associations about a brand are linked [31]. Thus, when a new product brand is considered to be consistent with the original known product brand image held in the memory, the underlying mechanism of brand extension may be triggered. Expanding a traditional offline firm brand to the online virtual

space shares similar characteristics and mechanisms with the extension of a product brand to other products [38].

For years, researchers have studied brand extension in different market contexts; for instance, in the traditional offline market context [1,29,51,52], in the online market context [53,58], and in recent years, in a multi-channel context [38]. With the widespread acceptance of the Internet and electronic commerce, brand extension has become increasingly a standard business strategy for firms to lever a strong offline brand to the online market space.

Realizing the underlying brand extension mechanism, many brick-and-click firms use the same brand name for both their offline and online channels. For instance, the Barnes & Nobel name can be found in the online bookstore marketplace, National City Bank of New York is associated with an online bank, and the Wall Street Journal is now affiliated with an online newspaper label. As this strategy to shift from an offline channel to an online channel has brought remarkable shifts in the business paradigm and the market structure [44], multi-channel firms may also be able to leverage this brand extension effect from presumably favorable images associated with their existing offline brand names to achieve a favorable online brand image and service quality evaluation [38]. In fact, a number of studies in the literature of customers' multi-channel behavior regarded channels as complementary and found some channel synergies effect on customer's online channel adoption [30,39,60]. In other words, with the brand extension mechanism, firms can exert a positive influence on online channel adoption via their positive offline channel brand image.

3.2. Expectation–confirmation theory (ECT)

Developed from cognitive dissonance theory, expectation–confirmation theory (ECT) is widely used in different product post-purchase and service continuance contexts by researchers to explain consumers' satisfaction and re-purchase intentions [3,11,12,45].

In the expectation–confirmation theory, it hypothesizes that there are five stages in a consumer's product repurchase/service continuance intention [45]. First, consumers form an initial pre-usage expectation about a specific product or service. Second, after using the product or service over time, they form perceptions about its performance. Third, by capturing the dissonance between their original expectations and the perceived performance, they form their confirmation perceptions. Confirmation is defined as consumers' subjective judgments of the observed performance related to their initial expectations. The confirmation may be positive or negative depending on whether their observed performance is above or below their initial expectations. Fourth, based on their disconfirmation (or conformation) level and expectation, consumers are satisfied or dissatisfied with the product. Finally, their satisfaction or dissatisfaction determines continued product or service usage or non-usage.

In the information systems literature, Bhattacherjee [11] developed and empirically tested an model of continued IT usage based on ECT. The resulting expectation–confirmation model of information technology continuance (ECM-IT) differs from ECT in the following three ways. First, ECT examines both pre-usage and post-usage constructs, whereas ECM-IT focuses only on post-usage constructs because any pre-usage constructs are already captured in the confirmation constructs [11]. Second, whereas ECT tests the influence of pre-usage expectation and ignores post-usage expectation, which is important for understanding consumers' modified expectations, ECM-IT highlights the importance of post-usage expectation. Third, consumers' post-usage expectations are represented in ECM-IT by post-usage perceived usefulness because perceived usefulness has been validated in many IS studies as the most consistent and salient cognitive belief in determining a user's intention over time [25,59]. In addition, this surrogate is also consistent with the definition expectation in ECT, which captures individual beliefs or the sum of beliefs about a product's attributes [8,17].

In the context of consumers adopting another service channel, the confirmation level of the first service channel becomes a crucial step. Following the logic in ECT, in the case of offline versus online channels, if a user's initial service quality expectation is confirmed to be negative during his or her actual offline channel usage, the user may try to remedy this dissonance by either modifying his or her expectation or seeking to use another channel, in this case, the online channel, if available, in order to make it more consistent with the expectation. On the other hand, if a user's initial service quality expectation is positively confirmed in the offline channel, he or she might unlikely perceive the relative benefits of the corresponding online channel because his or her needs are already satisfied in the offline channel and the motivation to explore online channel is not triggered. Wallace et al. [62] reported that firms employ multi-channel strategies not only to respond to competitors, but to respond to customer expectations as well. In a recent study, Falk et al. [26] have started to explore the cross-channel dissynergies on customers' channel behavior. They report a cannibalization effect between two channels: offline channel satisfaction reduces the perceived usefulness. In fact, a customer's intention to use the online channel may be diminished as people have a preference for the offline channel [26]. In other words, with the expectation–confirmation mechanism, a positive confirmation of offline channel performance might exert a negative influence on online channel adoption.

4. Research model and hypotheses

Based on the above two theories, we develop a research model that examines how factors in the offline channel might affect the online channel adoption. We assert that the multiple channels have both synergies and dissynergies effects on customer' channel evaluation. Fig. 1 depicts the research model with its corresponding hypotheses. In essence, it proposes that the brand extension and expectation–confirmation based mechanisms are exerting opposite forces, cross-channel synergies and dissynergies, to consumer's online channel adoption. Theoretical justifications of the hypotheses are presented below.

4.1. Offline channel service quality, perceived online channel service quality and intention to use

As highlighted in Kwon and Lennon [38], while as increasingly more firms have expanded their traditional businesses to include online channels, more and more consumers have changed from being single channel users to multi-channel users. With this and following the brand extension theory, a positive opinion of the brand image of a multi-channel firm held by its customers based on their offline interactions with the firm may therefore have an effect on their evaluation of an online channel offered by the same firm. The more positive an offline brand image is, the more favorable an online evaluation will be. In a study of consumer shopping channel extension, Kim and Park [33] found that a consumer's attitude towards an offline store positively predicted his/her attitude toward the online counterpart, which suggests that the existing image or reputation of the offline retail store can be transferred to the online format. Similarly, Bhatnagar et al. [10] reported that consumers' offline service experiences have a strong cross-domain impact on their online service expectations, which are measured in five dimensions, including tangibles, reliability, responsiveness, assurance and empathy.

In a multichannel service context, the offline and online services offered by a services provider may differ. When customers have a higher service quality evaluation in a bank's offline channel, they tend to develop a relative higher service quality perception about that bank's online channel. Therefore, based on the brand extension mechanism, we posit that the service quality of the offline channel will have a positive influence on perceptions of the service quality

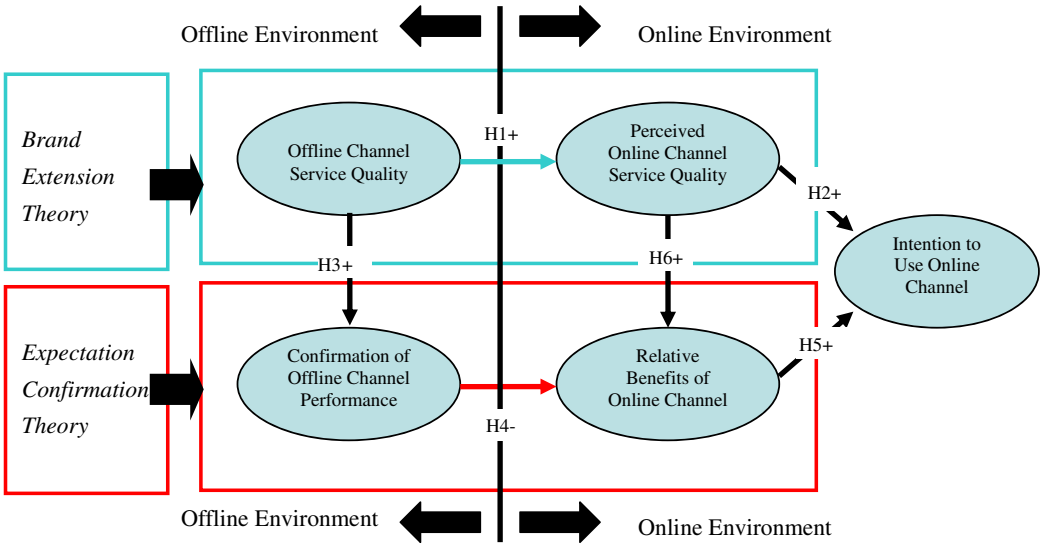


Fig. 1. Research model.

of a corresponding online channel. In other words, we hypothesize that:

Hypothesis 1. Service quality of an offline channel will have a positive impact on the perceived service quality of an online channel.

Positive association between quality and behavior has been empirically validated in many studies [21,66]. For instance, Tse and Wilton [56] found that service quality has direct and significant effects on continued intention to use a product. Similarly, Bhatnagar et al. [10] found that service quality is a determinant of the intention to repurchase in an online channel. Montoya-Weiss et al. [42] investigated customer online channel use and overall satisfaction in the multichannel context. They found that customers' perceived service quality of online channel positive influence the intention to use the online channel. Therefore, it is possible that when the service quality of an online channel is perceived to be high, the consumer's intention to use the online channel will also be high. Based on these findings, we offer the following hypothesis:

Hypothesis 2. Perceived service quality of an online channel will have a positive influence on the intention to use the online channel.

4.2. Confirmation of offline channel, relative benefits of online channel and intention to use

In the marketing literature, the relationship between service quality and confirmation is well established [24,45,46]. Cronin and Taylor [22] developed and empirical validated a performance-based measures of services quality scale (SERVPERF), and found that the performance-based scale is efficient in comparison with the SERVQUAL scale. A number of studies show that performance-based service quality is actually an important antecedent of confirmation [11,46]. In fact, the relationship between services quality and confirmation is straightforward: a user's evaluation of high services quality that is greater than his or her initial expectation will result in positive confirmation, vice versa. Therefore, we propose that:

Hypothesis 3. Service quality of an offline channel will have a positive impact on the confirmation of the offline channel performance.

As we continually receive various kinds of information from our own experience, our beliefs, attitudes, and intentions change over time. Cognitive dissonance theory [27] and expectation–confirmation theory suggest that an individual may experience cognitive dissonance or psychological discomfort if his/her initial expectation is confirmed to be negative during actual use. The stronger the cognitive dissonance, the more motivated the user is to minimize the dissonance by adjusting the cognitive element [5]. In the IS literature, this confirmation–adjustment association has been examined and validated by [11,12]. Bhattacherjee [11] argued and found evidence that just like cognitive beliefs, the confirmation and post-usage expectations in information systems continuance contexts are related.

In the multichannel environment, several studies have also validated the confirmation–adjustment relationship in the financial services setting. Montoya-Weiss et al. [42] examined whether alternative channel evaluations influence online channel use. They found that a higher performance assessment of the primary channel leads to lower intention to use the online channel. Similarly, Falk et al. [26] examined customers' evaluation conflicts in a multichannel environment by testing the relationship between satisfaction with the traditional channel and usefulness perceptions of the online channel. They reported a cross-channel dissynergies effect on customer channel evaluation and found that customers' satisfaction with the offline channel has negative impact on perceived usefulness of online channel. Indeed, an online channel might be perceived less benefits by a customer in a situation of positive confirmation of the primary channel performance than by a customer in a neutral situation, although they both face the same offer [26].

Applying expectation–confirmation theory, when customers' initial performance expectations are not confirmed positively during actual offline environment, they may experience cognitive dissonance or psychological tension. That is, the actual service quality of the offline channel experience failed to satisfy the user's needs. Users may then try to remedy this dissonance by seeking to use another channel such as the online channel or by modifying their usefulness perceptions to be more consistent with reality. In contrast, when a consumer's expectations are confirmed with the actual performance of the offline channel experience, he or she may "remain" in the offline channel rather than moving to the online channel because the services offered by the current offline channel are adequate to fulfill his/her needs. Consequently, the user may be less motivated to explore the (positive) relative benefits of another available channel such as the online channel. Hence, we hypothesize that:

Hypothesis 4. Confirmation of the offline channel performance will have negative impacts on the relative benefits of the online channel.

In the IS literature, the relationship between relative benefits and adoption is well researched and established [16]. In an online

shopping setting, Bhatnagar et al. [9] pointed that those consumers who choose online channels are owing to its benefits such as convenience. Similarly, Choudhury and Karahanna [16] concluded that consumers will adopt online channels if they perceive its relative benefits, such as the efficiency of interaction and convenience, over traditional channels. In short, the online channel in many cases offers benefits in terms of convenience and efficiency that the traditional offline channel cannot match. When people see that services offered by the online channel deliver values that offline channel cannot offer, they may develop a positive intention to adopt the service. Therefore, we hypothesize that:

Hypothesis 5. The relative benefits of an online channel will have positive impacts on the intention to use the online channel.

4.3. Perceived online channel service quality and relative benefits of online channel

Service quality has long been recognized as an important value-added weapon in developing consumer retention strategies [28,55]. Many studies have empirically examined the relationships between service quality and consumer's perceived value and found a positive influence of service quality on perceived value in both offline and online channels [7,13,20,35]. The link between service quality and perceived value is intuitively straightforward as delivering quality service can add utility to the consumer who consume the service [55]. In our research setting, banking services delivered from online channel can potentially increase consumer utility in a number of ways: providing services more dependably and accurately; giving service more promptly and willingly; offering more appropriate services for consumers' needs; and providing more personalized attention. Since the benefits consumers received from the product or service are an important component of value [65], when the online channel service quality is perceived to be more positive, the evaluation of the relative benefits offered by the online channel service will also be more favorable. Thus, we hypothesize that:

Hypothesis 6. Perceived service quality of an online channel will have a positive influence on the relative benefits of the online channel.

5. Research method

5.1. Data collection

To examine the research model and its corresponding hypotheses, data were collected from customers of a major commercial bank in China that has introduced online banking services since 2002. There were several reasons why we chose a banking environment as the test bed for the research. First, banking services are among the most critical and commonly used applications in both offline and online environments. We could thus be ensured that there would be users for both channels. Second, an individual's use of banking services is usually volitional. We could thus be confident that there would be no effects from any mandate. Third, online banking is relatively new compared to offline banking at least in China where the data collection was conducted. This evolution ensures the temporal order of channel extension.

The data collection was conducted via a Web-based survey. Participants are users who had bank accounts with a large nationwide banking in China. We chose users from the same bank to eliminate potential institution-related confounding factors. A survey hyperlink was placed on the homepage of the website of the bank and participants were solicited from the bank's online forum at the same time. To be able to evaluate the effects of cross-channel synergies and dissynergies on the multichannel situation, all participants were informed that they should have experiences of using the bank's services via both the offline and online channels. Before the participants answered the questionnaire, they were asked whether they use the bank's offline and online channels within the last month. Only if the answer was positive, the respondents would be asked to complete the questionnaire.

The main survey questionnaire developed for this study is composed of two sections. The first section contained questions related to the bank's offline channel, and the second section included measurements of the bank's online channel. Participants were first asked to recall and evaluate their perceptions of the bank's offline channel service quality as well as their confirmation of the bank's offline branch performance. Then, they are asked to offer their assessment about service quality, relative benefits, and intention to use the bank's online channel in relation to its offline channel. In order to attract more respondents to participate in this survey, subjects were informed that they all have a 10% chance of winning a lucky prize by completing the survey. The data was collected over four weeks. We scrutinized all responses and dropped those from respondents who used the same answer for all questions. Considering respondents need some online banking experience to assess their perceptions of the online channel service quality and relative benefits, those responses from respondents who had used the online bank services for less than 3 months were also discarded. Thus, a total of 308 valid responses were collected. Table 2 presents the demographic information of the respondents. The demographic statistics showed that 58.1% of the participants were male and 41.9% were female.

5.2. Measurement

Each construct in this study was measured with multiple items, and all of these items were adapted from the extant literature by modifying the wording of the questionnaire to fit the study context. The questionnaire used 7-point Likert scales, with response choices ranging from one (strongly disagree) to seven (strongly agree). Five items on offline banking service quality were adapted from Cronin and Taylor [22] and measured the five components of perceived service quality: tangibles, reliability, responsiveness, assurance, and empathy. To be consistent, five items on online banking service quality were also adapted from Cronin and Taylor [22]. We adapted the confirmation items from Bhattacherjee [11] to assess a user's confirmation of his/her offline banking service performance. Four items on relative benefits of online channel were adapted from Kim et al. [32]. They measured the convenience, efficiency, effectiveness and limitless location and time of an online banking service. Two items

Table 2
Demographic information of the respondents.

Measure	Item	Number ($N=308$)	Percentage
Gender	Male	179	58.1%
	Female	129	41.9%
Age (years old)	<18	3	1.0%
	18–24	106	34.4%
	24–30	148	48.1%
	>30	51	16.6%
Monthly Income (RMB)	<1000	52	16.9%
	1000–3000	162	52.6%
	>3000	94	31.5%
Education	High school or below	40	13.0%
	Two-year college	130	42.2%
	Four-year college	122	39.6%
	Graduate school or above	16	5.2%
Occupation	Corporate	167	54.2%
	Government	13	4.2%
	Education	27	8.8%
	Student	78	25.3%
	Others	23	7.5%

on behavioral intention were adapted from Agarwal and Karahanna [2]. They measured the intention to use online banking services.

As the questionnaire was in Chinese, to ensure the validity of the translation, we conducted a back-to-back translation procedure. First, all original items were translated into Chinese by a researcher whose native language was Chinese. Then, another researcher independently translated the items back to English. Further, the two researchers confirmed the meaning of the Chinese version by comparing the two English versions. We then invited three Information Systems professors to give suggestions on the instrument. Based on their feedback, we modified the wording of some items to make them clear and understandable. Finally, the two initial translators rechecked the modified version and compiled the final Chinese questionnaire. A pilot test of 45 subjects who were current online banking services users was then conducted to further test the flow and the wording of the instrument. The final items used in the questionnaire are listed in the Appendix.

6. Results

PLS Graph 3.0 (PLS-Graph version 3.01060) was used to estimate the proposed research model because this component-based approach not only places minimal demands on the sample size and residual distributions [15] but also can handle both formative and reflective constructs. In our study, offline channel service quality and perceived online channel service quality were treated as formative constructs because they reflected different dimensions of service quality (i.e., tangibles, reliability, responsiveness, assurance, and empathy) [48]. The remaining constructs were treated as reflective constructs. Following the two-step approach recommended by Anderson and Gerbing [4], we first examined the measurement model and tested the construct reliability and validity. Then, we examined the structural model and tested the hypotheses.

6.1. Measurement model

To examine the reliability of the instrument, its internal consistency was calculated using both Cronbach's alpha and composite reliability. As shown in Table 3, the Cronbach's alphas and composite reliabilities for the reflective constructs in the model were all above the suggested threshold of 0.7. In addition, all Average Variance Extracted (AVE) values of the reflective constructs were higher than 0.5. As for the formative constructs, reliability in the form of very high internal consistency of constructs is actually undesirable [48]. To ensure multicollinearity is not present in our formative construct measurements, the variance inflation factor (VIF) statistic was computed. As a rule of thumb, multicollinearity in a formative measure is a concern when the VIF is greater than 3.33 [14]. None of the VIF values were above this benchmark, suggesting that multicollinearity was unlikely to be a threat in this dataset.

Convergent validity detects whether the measures of a construct are more correlated with one another than with measures of other constructs [48], and it is considered acceptable when all indicators loadings on their reflective constructs are greater than 0.50 [63] and when all indicators weigh on their formative constructs are significant [14]. Also shown in Table 3, the item loadings of the three reflective constructs are all greater than 0.50, suggesting adequate convergent validity. As for formative constructs, similar to the statistical results of service quality construct demonstrated in the study of Cenfetelli and Bassellier [14], two of the indicators of offline channel service quality(reliability and responsiveness) and two of the indicators of perceived online channel service quality (assurance and empathy) are not significant (Table 3). Cenfetelli and Bassellier pointed out that the statistical significance and magnitude of indicator's weight of formative constructs are closely related to the number of indicators used for formative measures. "A greater number of indicators will result in a greater likelihood that many of the indicator weights will be low in magnitudes as well as statistically nonsignificant" [14(p.694)]. Although formative indicator weights are important for determining their relative contribution to their assigned construct, it is also worthwhile evaluating the absolute importance of a formative indicator to its construct. Following the procedure suggested by [14], we therefore assessed both the relative and absolute contribution of the indicators. Contrary to what we found from the indicator weight results alone, these indicator loadings are all significant at least in $p<0.01$ level, indicating their importance in an absolute sense. We further examined the theoretical overlap of the indicators and found no such effects in our measures. Thus, we decided to keep the indicator for their respective constructs and use them in the subsequent data analysis.

Table 3
Psychometric features of the measurement model.

Construct	Item	Weight	Std. error	*t*-value	Loading	Std. error	*t*-Value
Offline channel service quality (formative)							
VIF = 1.288	FSQ1	0.224	0.123	1.972	0.622	0.097	6.119
VIF = 2.392	FSQ2	0.254	0.197	1.286	0.764	0.095	8.004
VIF = 1.646	FSQ3	−0.217	0.138	1.573	0.573	0.103	4.570
VIF = 2.471	FSQ4	0.426	0.185	2.301	0.818	0.065	12.565
VIF = 1.520	FSQ5	0.557	0.152	3.677	0.767	0.087	8.792
Perceived online channel service quality (formative)							
VIF = 1.342	OSQ1	0.297	0.079	3.758	0.704	0.061	11.506
VIF = 2.209	OSQ2	0.373	0.111	3.348	0.843	0.050	16.732
VIF = 1.506	OSQ3	0.306	0.108	2.829	0.761	0.057	13.404
VIF = 2.742	OSQ4	0.182	0.140	1.297	0.821	0.051	15.947
VIF = 1.752	OSQ5	0.137	0.114	1.197	0.687	0.059	11.487
Confirmation of offline channel performance (reflective)							
CR = 0.931	CON1				0.902	0.147	6.149
AVE = 0.818	CON2				0.892	0.184	4.858
Cronbach α = 0.894	CON3				0.917	0.193	4.749
Relative benefits of online channel (reflective)							
CR = 0.932	REA1				0.876	0.019	45.95
AVE = 0.774	REA2				0.916	0.013	72.00
Cronbach	REA3				0.888	0.018	48.83
α = 0.900	REA4				0.834	0.018	47.58
Intention to use online channel (reflective)							
CR = 0.930	INT1				0.938	0.010	89.91
AVE = 0.870	INT2				0.926	0.012	76.85
Cronbach α = 0.850							

Discriminant validity determines whether two constructs are distinct constructs. We compared the square root of the AVE of each reflective construct and its correlation coefficients with other constructs. Table 4 shows that the square roots of the AVEs are larger than the corresponding correlation coefficients.

In addition, we used cross loading to assess the discriminant validity of the scales. As shown in Table 5, the items for each construct that loaded on each distinct factor were higher than the cross loading on other factors. Thus, the discriminant validity was deemed to be satisfactory.

To examine the potential common method bias, we performed two statistical analyses to assess the severity of common method bias. First, a Harman's one-factor test suggested by Podsakoff and Organ [50] was conducted on the five conceptually crucial constructs in our proposed model including offline banking service quality, online banking service quality, confirmation, relative benefits of online channel, and intention to use online channel. The results showed that five factors are present and the most covariance explained by one factor is 19.62%, indicating that common method bias was unlikely a problem in our data. Second, following the procedure used by Podsakoff et al. [49] and Liang et al. [41], we added a common method factor in the PLS model to further examine the common method bias. The common method factor included all the principal variables' indicators and calculated each indicator's variance substantively explained by the principal variables and by the

Table 4
Factor correlation coefficients and square roots of the AVE[a].

	FSQ	OSQ	CON	REA	INT
FSQ	NA				
OSQ	0.491	NA			
CON	0.542	0.380	0.904		
REA	0.225	0.489	0.070	0.879	
INT	0.239	0.514	0.178	0.618	0.933

[a] The square root of the AVE is on the diagonal. These values should exceed the inter-construct correlations for adequate discriminant validity.

method [41]. As shown in Table 6, the results of statistical analyses demonstrate that the average substantively explained variance of the indicators is 0.690, while the average method based variance is only 0.002. Moreover, the principal variables loading are all significant at the $p<0.001$ level, while the method factor loadings are all not significant. Given the small magnitude and non significance of method variance, we conclude that the common method bias was unlikely to be a serious problem in this study.

6.2. Structural model

We next assessed the structural model. Fig. 2 presents the results. We used the bootstrapping procedure to test the significance of all paths. As shown in Fig. 2, all proposed hypotheses in the research model were found to be supported. More specifically, the hypothesized paths from offline channel service quality to perceived online channel service quality and from perceived online channel service quality to intention to use were both significant at the $p<0.001$ level, supporting H1 and H2 and the cross-channel synergies mechanism based on the brand extension theory. The paths from the confirmation of offline channel performance to relative benefits of online channel and the relative benefits of online channel to intention to use were also found to be significant as hypothesized, supporting H4 and H5 and providing evidence on the cross-channel dissynergies mechanism based on expectation–confirmation theory. Moreover, the path from offline channel services quality to the confirmation of offline channel performance and from perceived online channel service quality to relative benefits of online channel were found to be significant, thus supporting H3 and H6. Overall, the model explained slightly lower than half of the variance of the dependent variable, intention to use.

To verify the causal direction between offline perceptions and online perceptions, we set up three competing models based on the methods proposed by Cohen et al. [18]. The usefulness of Cohen et al.'s methods has been validated by a number of previous studies [53,54]. We reversed causal direction of our original model, i.e., from perceived online channel services quality to perceived offline channel services quality, from perceived relative benefits of online channel to confirmation of the offline channel performance, and both. The causal relationships of other constructs remained the same as in the based model. Following Sun and Zhang's procedure [54], we first conducted path analysis on our original model as well as on the three competing models, and then compared the estimated and actual correlations between constructs in the model. The results are displayed in Table 7.

We first checked the error changes from the original model to the three competing models. The total squared errors (TSEs) are changed by 36.07% ((0.083–0.061)/0.061), 49.18% ((0.091–0.061)/0.061), 72.13% ((0.105–0.061)/0.061), respectively. The positive signs mean the TSEs are actually increased from the original model to the three competing models. Then, we checked error changes in reverse order: from the three competing models to the original model. The TSEs are changed by −26.51% ((0.061–0.083)/0.083), −32.97% ((0.061–0.091)/0.091), −41.90% ((0.061–0.105)/ 0.105), respectively. The negative signs indicate that the TSEs are actually reduced or deteriorated from the three competing models to the original model. We thus conclude that our original model's assumptions in terms of causal direction (offline channel services quality → perceived online channel services quality, and confirmation of the offline channel performance → perceived relative benefits of online channel) fit the data better than the opposite assumptions.

Table 5
Loadings and cross loading.

Factor	REA	CON	INT
REA1	0.859	0.013	0.211
REA2	0.907	0.013	0.203
REA3	0.871	0.046	0.202
REA4	0.738	0.010	0.362
CON1	0.018	0.921	0.057
CON2	−0.012	0.922	0.105
CON3	0.055	0.873	0.037
INT1	0.409	0.081	0.826
INT2	0.292	0.118	0.884
Eigen-values	3.119	2.483	1.738
Variance %	34.653	27.593	19.315
Cumulative	34.653	62.247	81.562

Table 6
Common method bias analysis.

Construct	Indicator	Substantive factor loading (R1)	$R1^2$	Method factor loading (R2)	$R2^2$
Offline channel service quality	FSQ1	0.586***	0.343	0.067	0.004
	FSQ2	0.827***	0.684	−0.032	0.001
	FSQ3	0.764***	0.584	−0.047	0.002
	FSQ4	0.841***	0.707	−0.019	0.000
	FSQ5	0.681***	0.464	0.037	0.001
Perceived online channel service quality	OSQ1	0.596***	0.355	0.086	0.007
	OSQ2	0.798***	0.637	0.043	0.002
	OSQ3	0.759***	0.576	−0.029	0.001
	OSQ4	0.921***	0.848	−0.073	0.005
	OSQ5	0.770***	0.593	−0.033	0.001
Confirmation of offline channel performance	CON1	0.909***	0.826	0.023	0.001
	CON2	0.948***	0.899	0.035	0.001
	CON3	0.866***	0.750	0.013	0.000
Relative benefits of online channel	REA1	0.874***	0.764	0.008	0.000
	REA2	0.961***	0.924	−0.058	0.003
	REA3	0.890***	0.792	0.002	0.000
	REA4	0.790***	0.624	0.053	0.003
Intention to use online channel	INT1	0.924***	0.854	0.022	0.000
	INT2	0.941***	0.885	0.014	0.000
Average		0.823	0.690	0.006	0.002

*** $p<0.001$.

7. Discussion

Using brand extension theory and expectation–confirmation theory, the study examined the process of consumers' channel extension in the online banking service domain by focusing on effects of cross-channel synergies and dissynergies on consumers' channel evaluation. The findings indicated that consumers' offline channel experience influences their intention to extend to the online channel through two routes. These two routes are based on two different mechanisms: the brand extension mechanism and the expectation–confirmation mechanism. Under the brand extension mechanism, the perceived service quality of the offline channel positively influences the perception of the corresponding service quality of the online channel, which further influences the intention to use the online channel. Under the expectation–confirmation mechanism, the confirmation of the performance of the offline channel negatively affects the perception of the relative benefits of its online channel, which further affects the intention to use the online channel. This study thus confirmed that the effects of cross-channel synergies and dissynergies on consumers' channel evaluation simultaneously exist during the process of consumers' channel extension.

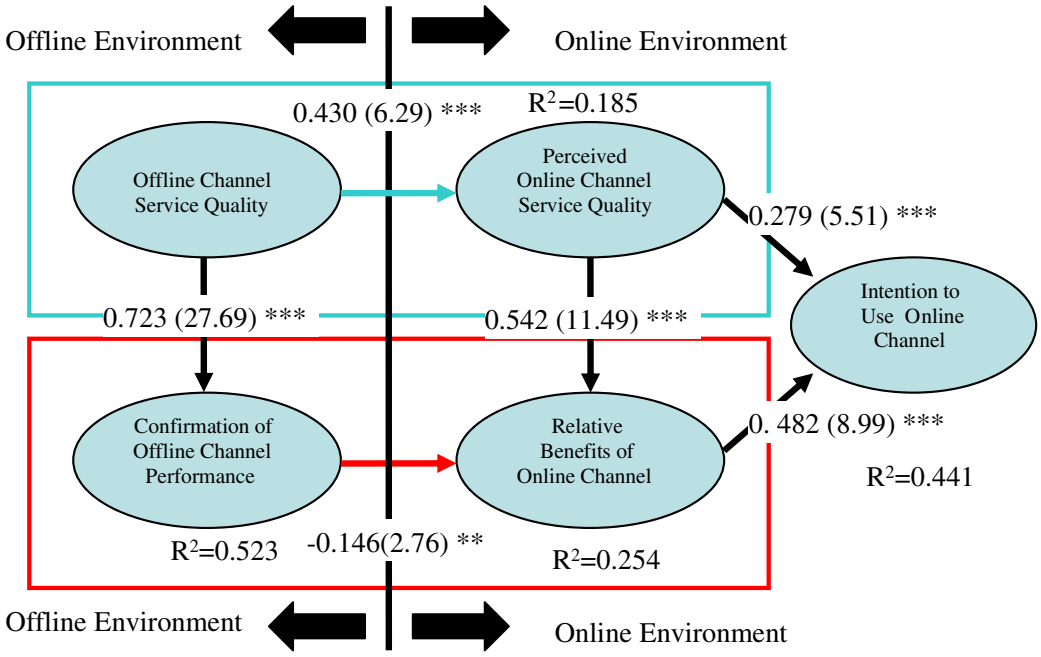


Fig. 2. Test results of the research model ($N = 308$). ($^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$).

Findings from this study suggest that the determinants of consumers' online channel extension are more complicated than we might originally think. Consumers' online channel extension decisions are affected by both the offline channel service quality and the confirmation of offline channel service performance, both of which are expected to be done well from the service provider's perspective. The effects of these two factors, however, are theoretically hypothesized, and empirically confirmed, to be in opposite direction.

Specifically, similar to the results of Kwon et al. [37], this study found that the offline channel service quality has strong positive effects on perceived online channel service quality perceptions. This finding confirmed the validity of brand extension theory in a cross-channel setting and suggested that the extension from a brick-and-mortar to a brick-and-click through brand extension is very plausible. During the extension process, firms that have operated for a long time in the offline channel are likely to take advantage of a new online channel by leveraging existing favorable perceptions of their offline channel service quality. This means that firms that maintain a high level of service quality in the offline channel will enjoy both a positive effect on their existing offline channel operations and a positive cross-channel impact onto their new online channel practice. Compared to those pure online banks, these firms can make their online channels easily accepted by their customers.

This study also found that the confirmation of offline channel service performance might make the perceived relative benefits of online channel less obvious. In consistent with [26], this finding confirms the validity of expectation–confirmation theory in the multi-channel environment. According to expectation–confirmation theory, if users' initial service performances expectations are not confirmed during their actual offline channel usage, they may try to remedy this dissonance by seeking to use the online channel or modify their usefulness perceptions in order to be more consistent with reality. Our study demonstrated that using the advanced alternative to remedy the dissonance may be more consistent to customer utility. On the other hand, if users' initial service performances expectations are positively confirmed in the offline channel, they may unlikely perceive the relative benefits of the corresponding online channel even with a high perceptions of the online channel. The reason is that their needs have already been satisfied in the offline channel and their motivation to use online channel is not yet triggered. Wallace et al. [62] reported that firms employ multi-channel strategies not only to respond to competitors, but to respond to customer expectations as well. This finding suggests that firms' online channel experience can be served as a kind of buffer to meet some consumers' high expectations. In fact, firms provide multi-channel facilities can be considered as a strategy for retaining customers who value the convenience and self-service [36].

Offline channel services quality displayed a strong direct effect on confirmation of the offline channel performance. This result is consistent with previous arguments [46], suggesting that the effect of offline channel services quality is salient in explaining offline channel confirmation level. Online channel services quality also displayed a strong direct effect on perceived relative benefits of online channel. This result further validated the finding of several prior studies [7,13], indicating that higher services quality add utility to the consumer who use the service. One intriguing finding is that offline channel services quality has a positive influence on both perceived online channel services quality and confirmation of the offline channel performance, while the two factors further exert an opposite influence on perceived relative benefits of online channel. The explanation may be that the effects of services quality is always a positive enablers in both offline and online channels during the process of consumers' channel extension, while the effects of confirmation of the offline channel performance not only depend on offline channel services quality but also depend on different expectation. The strong and positive influence from offline channel services quality to confirmation of the offline channel performance, and from online channel services quality to the perceived relative benefits of online channel, suggest that the brand extension mechanism and the expectation–confirmation mechanism on consumers' channel evaluation simultaneously exist during the process of consumers' channel extension.

8. Theoretical and practical implications

8.1. Theoretical implications

This study has several significant theoretical implications. First, it advances our understanding of online channel adoption behavior. Although consumers' online channel adoption behavior has recently received a lot of attention, the fact remains that much of the scholarly effort has been limited to the determinants in a single online channel.

Table 7
Direction of causality analysis.

Causal direction analysis					
Original theoretical model			Total squared error: 0.061		
Causal relations	Direct paths	Indirect paths	Estimated correlation	Actual correlation	Squared error
FSQ → OSQ	FSQ → OSQ	NA	0.430	0.525	0.027
FSQ → CON	FSQ → CON	NA	0.723	0.737	0.006
CON → REA	CON → REA	NA	−0.146	0.073	0.015
OSQ → REA	OSQ → REA	NA	0.542	0.500	0.003
OSQ → INT	OSQ → INT	OSQ → REA → INT	0.540	0.520	0.000
REA → INT	REA → INT	NA	0.482	0.619	0.010
Competing Model 1: OSQ → FSQ			Total squared error: 0.083		
OSQ → FSQ	OSQ → FSQ	NA	0.430	0.525	0.026
FSQ → CON	FSQ → CON	NA	0.723	0.737	0.005
CON → REA	CON → REA	NA	−0.146	0.073	0.008
OSQ → REA	OSQ → REA	NA	0.542	0.500	0.007
OSQ → INT	OSQ → INT	OSQ → REA → INT	0.542	0.520	0.021
REA → INT	REA → INT	NA	0.482	0.619	0.016
Competing Model 2: REA → CON			Total squared error: 0.091		
FSQ → OSQ	FSQ → OSQ	NA	0.430	0.525	0.025
FSQ → CON	FSQ → CON	NA	0.727	0.737	0.005
REA → CON	REA → CON	NA	−0.031	0.073	0.022
OSQ → REA	OSQ → REA	NA	0.485	0.500	0.006
OSQ → INT	OSQ → INT	OSQ → REA → INT	0.513	0.520	0.017
REA → INT	REA → INT	NA	0.482	0.619	0.016
Competing Model 1: OSQ → FSQ, REA → CON			Total squared error: 0.105		
OSQ → FSQ	OSQ → FSQ	NA	0.430	0.525	0.026
FSQ → CON	FSQ → CON	NA	0.727	0.737	0.004
REA → CON	REA → CON	NA	−0.031	0.073	0.035
OSQ → REA	OSQ → REA	NA	0.485	0.500	0.004
OSQ → INT	OSQ → INT	OSQ → REA → INT	0.513	0.520	0.019
REA → INT	REA → INT	NA	0.482	0.619	0.017

This study contributes to the literature by providing a channel extension perspective on consumer online channel adoption. More importantly, unlike previous studies that regard the offline and online channel as a single and separate channel strategy, this study explores the mechanism of the offline to online channel extension by considering effects of both cross-channel synergies and dissynergies on customers' channel evaluation. The results demonstrate that the effects of cross-channel synergies and dissynergies on consumers' channel evaluation simultaneously exist during the process of consumers' channel extension.

Second, in the IS literature, brand extension theory and expectation–confirmation theory have seldom been examined in the multi-channel environment. Moreover, to the best of our knowledge, no studies in the past have put together the two theories to examine the mechanism of the online channel extension process, in particular the effects of cross-channel synergies and dissynergies on consumers' channel evaluation. In this sense, this study contributes to the literature by theoretically highlighting the two possible routes of the channel extension process and empirically demonstrating the usefulness of the two theories. We believe that this study has provided valuable insights in understanding the offline to online channel extension process.

Third, many prior studies confirmed that perceived relative benefits of online channels over offline channels such as convenience, efficiency and usefulness are the main drivers of users' reactions to online services adoption. This study found that in addition to positive perception of online service quality, confirmation of offline channel performance is also an important trigger of the perception of relative benefits of the online channel, though in this case, the effect is negative. This finding has important implications for IS research because, although many IS studies have shown the efficacy of perceived relative benefits in explaining online channel behavior [11,34], few of them have investigated what factors have significant effects on this factor.

8.2. Practical implications

From a practical point of view, the results highlight several important issues that may guide a successful transition from a brick-and-mortar to a brick-and-click organization. First, managers should be aware of the critical role that offline channel service quality plays in online channel adoption because findings in this study indicate that offline channel service quality has a strong cross-channel effect on perceived online channel service quality. By maintaining a high level of service quality in the offline channel, managers can leverage their existing offline service quality to produce similar positive perceptions of their online service quality. To enhance service quality in the offline channel, managers can pay more attention to traditional offline service's five dimensions: tangibles, reliability, responsiveness, assurance, and empathy.

Second, managers have to understand that there also exist cross-channel dissynergies on customer' channel evaluation. If they want to trigger the use of both channels, they can implemented a channel integration strategy by differentiating channel offers along the stages of the service delivery process to alleviate channel dissynergies and to enhance the overall channel system performance [26,43,67]. For instance, they can offer customer advice, support and the possibility to "touch and feel" their product in the offline channel, while provide the product order function on the Internet only. If they want to implement a substitution strategy by transferring customers from the offline to online, managers should aim to increase the relative benefits of the online channel over the offline channel so as to manage the channel extension strategy successfully. Managers have to understand that confirmation of offline channel performance may play a switch function to perceived relative benefits of online channel. That is, when consumer's confirmation is high in the offline channel, they may not likely perceive the relative benefits of the corresponding online channel. However, if the user does have a positive perception of the perceived online channel service quality, this positive view may exert a positive effect on the relative benefits of online services. Therefore, whatever the strategy the firms taken, they not only should emphasize the importance of service quality but also should ensure the relative benefits of online channel during the transition from being a brick-and-mortar to becoming a brick-and-click organization.

9. Conclusion

Based on brand extension theory and expectation–confirmation theory, this study theorized and validated a consumer online channel extension model. The results indicate that the impacts of offline channel experience on consumers' online channel extension occur through two different routes: the brand extension route and the expectation–confirmation route. Specifically, this study contributes to the literature by showing that the service quality in a bank's offline channel positively influences the service quality perceptions of the bank's online channel, which further influences the intention to use the online channel. Also, the confirmation of a bank's offline channel performance negatively affects the relative benefit perceptions of the bank's online channel, which further affects the intention to use the online channel. These findings suggest the possible dilemma that a firm with both offline and online channels may face. How to balance the two becomes an important issue for both research and practice.

Like all other studies, this study has limitations. First, the study was conducted with data collected in a major commercial bank in China. The study results might be different if the model was retested in a different cultural environment or in a different industrial context. In several cross-cultural studies, researchers have found significant differences in online channel behaviors between people from the East and those from the West [40]. It is noteworthy that China is characterized by its long-term orientation and uncertainty avoidance and as more collectivist than individualist, which may impact the perceptions of online channels [23]. Differences between product and service industries may also affect the results. Therefore, we encourage investigators to further test and validate our findings in different cultural and in different industrial contexts.

Second, in order to faithfully capture the complex online channel extension process, an ideal empirical design would be a longitudinal analysis of the transfer process from the offline channel to the corresponding online channel. However, such temporal analyses are restricted by the cross-sectional nature of our study. Future research can use a longitudinal design to examine the dynamic online channel extension process.

Finally, a major theme of this paper is that online channel extension phenomena are driven by the mechanisms of cross-channel synergies and dissynergies on customer' channel evaluation. Although essential, these two mechanisms are insufficient to offer a complete picture of online channel extension behavior. Behavioral sciences and psychology suggest that social influences and individual self-efficacy are also potentially important factors of online channel adoption [2,47]. Thus, it is important for further research to investigate how social influences and individual self-efficacy affect consumer online channel extension behavior.

In conclusion, although considerable effort has gone into research on online channel adoption in the recent IS literature, little research has realized the possible influence of the two different mechanisms examined in this study underlying the online channel extension behavior. We believe that this study is among the first to focus on the internal mechanisms of consumer online channel extension by considering the effects of both cross-channel synergies and dissynergies on customer' channel evaluation. We hope that this study can serve as a stepping-stone for further research in this interesting and important area.

Acknowledgement

This work was partially supported by the grants from the NSFC (70971049), a grant from NSFC/RGC (71061160505). This work also supported by Ministry of Education Humanities and Social Sciences Youth Fund project (11YJC630028).

Appendix A. The Items Used in the Questionnaire

Offline channel service quality (FSQ) (adapted from Cronin and Taylor 1992)

FSQ1 Offline bank presents visually attractive physical facilities. (Tangibles)
FSQ2 Offline bank's service is dependable. (Reliability)
FSQ3 Offline bank's employees can respond to customer requests promptly. (Responsiveness)
FSQ4 You can feel safe in your transactions with offline bank's employees. (Assurance)
FSQ5 Offline bank has your best interests at heart. (Empathy)

Perceived online channel service quality (OSQ) (adapted from Cronin and Taylor 1992)

OSQ1 Online bank presents visually attractive web appearance. (Tangibles)
OSQ2 Online bank's service is dependable. (Reliability)
OSQ3 Online bank can respond to customer requests promptly. (Responsiveness)
OSQ4 You can feel safe in your transactions with online bank's information system. (Assurance)
OSQ5 Online bank have your best interests at heart. (Empathy)

Confirmation of offline channel performance (CON) (adapted from Bhattacherjee 2001)

CON1 My experience with using offline banking was better than what I expected.
CON2 The service level provided by offline banking was worse than what I expected. (Reversed)
CON3 Overall, most of my expectations from using offline banking were confirmed.

Relative benefits of online channel (REA) (adapted from Kim et al. 2009)

REA1 Online banking has more advantages than offline banking because services are not limited by location.
REA2 Online banking is more convenient than offline banking.
REA3 Online banking is more efficient than offline banking.
REA4 Online banking is more effective than offline banking in managing a bank account.

Intention to use online channel (INT) (adapted from Agarwal and Karahanna 2000)

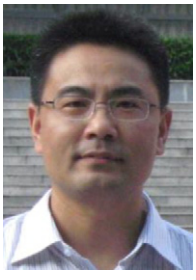
INT1 I plan to use the online bank in the future.
INT2 I intend to use the online banking in the future.

References

[1] D. Aaker, K. Keller, Consumer evaluations of brand extensions, Journal of Marketing 54 (1) (1990) 27–41.
[2] R. Agarwal, E. Karahanna, Time flies when you're having fun: cognitive absorption and beliefs about information technology usage, MIS Quarterly 24 (4) (2000) 665–694.
[5] R. Anderson, Consumer dissatisfaction: the effect of disconfirmed expectancy on perceived product performance, Journal of Marketing Research 10 (1) (1973) 38–44.
[4] J.C. Anderson, D.W. Gerbing, Structural equation modeling in practice: a review and recommended two-step approach, Psychological Bulletin 103 (3) (1988) 411–423.
[3] E. Anderson, M. Sullivan, The antecedents and consequences of customer satisfaction for firms, Marketing Science 12 (2) (1993) 125–143.
[6] A. Ansari, C. Mela, S. Neslin, Customer channel migration, Journal of Marketing Research 45 (1) (2008) 60–76.
[7] H. Bauer, T. Falk, M. Hammerschmidt, eTransQual: a transaction process-based approach for capturing service quality in online shopping, Journal of Business Research 59 (7) (2006) 866–875.
[8] W. Bearden, J. Teel, Selected determinants of consumer satisfaction and complaint reports, Journal of Marketing Research 20 (1) (1983) 21–28.
[9] A. Bhatnagar, S. Misra, H. Rao, On risk, convenience, and internet shopping behavior, Communications of the ACM 43 (11) (2000) 98–105.
[10] N. Bhatnagar, N. Lurie, V. Zeithaml, Reasoning about online and offline service experiences: the role of domain-specificity in the formation of service expectations, Advances in Consumer Research 30 (2003) 383–384.
[11] A. Bhattacherjee, Understanding information systems continuance: an expectation–confirmation model, MIS Quarterly 25 (3) (2001) 351–370.

[12] A. Bhattacherjee, G. Premkumar, Understanding changes in belief and attitude toward information technology usage: a theoretical model and longitudinal test, MIS Quarterly 28 (2) (2004) 229–254.
[13] R. Bolton, J. Drew, A multistage model of customers' assessments of service quality and value, Journal of Consumer Research 17 (4) (1991) 375–384.
[14] R.T. Cenfetelli, G. Bassellier, Interpretation of formative measurement in information systems research, MIS Quarterly 33 (4) (2009) 689–707.
[15] W. Chin, Issues and opinion on structural equation modeling, Management Information Systems Quarterly 22 (1) (1998) 7–16.
[16] V. Choudhury, E. Karahanna, The relative advantage of electronic channels: a multidimensional view, MIS Quarterly 32 (1) (2008) 179–200.
[17] G. Churchill Jr., C. Surprenant, An investigation into the determinants of customer satisfaction, Journal of Marketing Research 19 (4) (1982) 491–504.
[18] P.R. Cohen, A. Carlson, L. Ballesteros, R.S. Amant, in: Automating path analysis for building causal models from data, Citeseer, 1993, pp. 57–64.
[19] A. Collins, E. Loftus, A spreading-activation theory of semantic processing, Psychological Review 82 (6) (1975) 407–428.
[22] J. Cronin Jr., S. Taylor, Measuring service quality: a reexamination and extension, Journal of Marketing 56 (3) (1992) 55–68.
[20] J. Cronin, M. Brady, R. Brand, R. Hightower, D. Shemwell, A cross-sectional test of the effect and conceptualization of service value, Journal of Services Marketing 11 (6) (1997) 375–391.
[21] J. Cronin Jr., M. Brady, G. Hult, Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments, Journal of Retailing 76 (2) (2000) 193–218.
[23] D. Cyr, Modeling web site design across cultures: relationships to trust, satisfaction, and e-loyalty, Journal of Management Information Systems 24 (4) (2008) 47–72.
[24] P.A. Dabholkar, C.D. Shepherd, D.I. Thorpe, A comprehensive framework for service quality: an investigation of critical conceptual and measurement issues through a longitudinal study, Journal of Retailing 76 (2) (2000) 139–173.
[25] F. Davis, Perceived usefulness, perceived ease of use, and user acceptance of information technology, MIS Quarterly 13 (3) (1989) 319–340.
[26] T. Falk, J. Schepers, M. Hammerschmidt, H. Bauer, Identifying cross-channel dissynergies for multichannel service providers, Journal of Service Research 10 (2) (2007) 143–160.
[27] L. Festinger, A theory of Cognitive Dissonance, Stanford University Press, Stanford, CA, 1957.
[28] R. Fisk, S. Brown, M. Bitner, Tracking the evolution of the services marketing literature, Journal of Retailing 69 (1) (1993) 61–103.
[29] V. Franziska, I. Sattler, Drivers of brand extension success, Journal of Marketing 70 (2) (2006) 18–34.
[30] K. Hahn, J. Kim, The effect of offline brand trust and perceived internet confidence on online shopping intention in the integrated multi-channel context, International Journal of Retail & Distribution Management 37 (2) (2009) 126–141.
[31] K. Keller, Conceptualizing, measuring, and managing customer-based brand equity, Journal of Marketing 57 (1) (1993) 1–22.
[33] J. Kim, J. Park, A consumer shopping channel extension model: attitude shift toward the online store, Journal of Fashion Marketing and Management 9 (1) (2005) 106–121.
[34] S.S. Kim, J.Y. Son, Out of dedication or constraint? A dual model of post-adoption phenomena and its empirical test in the context of online services, MIS Quarterly 33 (1) (2009) 49–70.
[32] G. Kim, B. Shin, H.G. Lee, Understanding dynamics between initial trust and usage intentions of mobile banking, Information Systems Journal 19 (3) (2009) 283–311.
[35] A. Kumar, D. Grisaffe, Effects of extrinsic attributes on perceived quality, customer value, and behavioral intentions in B2B settings: a comparison across goods and service industries, Journal of Business to Business Marketing 11 (4) (2004) 43–74.
[36] V. Kumar, R. Venkatesan, Who are the multichannel shoppers and how do they perform? Correlates of multichannel shopping behavior, Journal of Interactive Marketing 19 (2) (2005) 44–62.
[37] W. Kwon, S. Lennon, Reciprocal effects between multichannel retailers' offline and online brand images, Journal of Retailing 85 (3) (2009) 376–390.
[38] W. Kwon, S. Lennon, What induces online loyalty? Online versus offline brand images, Journal of Business Research 62 (5) (2009) 557–564.
[39] K.C. Lee, I. Kang, D.H. McKnight, Transfer from offline trust to key online perceptions: an empirical study, IEEE Transactions on Engineering Management 54 (4) (2007) 729–741.
[40] D.E. Leidner, T. Kayworth, Review: a review of culture in information systems research: toward a theory of information technology culture conflict, MIS Quarterly 30 (2) (2006) 357–399.
[41] H.G. Liang, N. Saraf, Q. Hu, Y.J. Xue, Assimilation of enterprise systems: the effect of institutional pressures and the mediating role of top management, MIS Quarterly 31 (1) (2007) 59–87.
[42] M. Montoya-Weiss, G. Voss, D. Grewal, Determinants of online channel use and overall satisfaction with a relational, multichannel service provider, Journal of the Academy of Marketing Science 31 (4) (2003) 448–458.
[43] S. Neslin, D. Grewal, R. Leghorn, V. Shankar, M. Teerling, J. Thomas, P. Verhoef, Challenges and opportunities in multichannel customer management, Journal of Service Research 9 (2) (2006) 95.
[44] M. Nicholson, I. Clarke, M. Blakemore, 'One brand, three ways to shop': situational variables and multichannel consumer behaviour, the international review of retail, Distribution and Consumer Research 12 (2) (2002) 131–148.
[45] R. Oliver, A cognitive model of the antecedents and consequences of satisfaction decisions, Journal of Marketing Research 17 (4) (1980) 460–469.
[46] R.L. Oliver, Cognitive, affective, and attribute bases of the satisfaction response, Journal of Consumer Research (1993) 418–430.
[47] P.A. Pavlou, M. Fygenson, Understanding and predicting electronic commerce adoption: an extension of the theory of planned behavior, MIS Quarterly 30 (1) (2006) 115–143.
[48] S. Petter, D. Straub, A. Rai, Specifying formative constructs in information systems research, MIS Quarterly 31 (4) (2007) 623–656.
[50] P. Podsakoff, D. Organ, Self-reports in organizational research: problems and prospects, Journal of Management 12 (4) (1986) 531–544.
[49] P. Podsakoff, S. MacKenzie, J. Lee, N. Podsakoff, Common method biases in behavioral research: a critical review of the literature and recommended remedies, Journal of Applied Psychology 88 (5) (2003) 879–903.
[51] B. Sharp, Managing Brand Extension, Journal of Consumer Marketing 10 (3) (1993) 11–17.
[52] B. Shine, J. Park, R. Wyer Jr., Brand synergy effects in multiple brand extensions, Journal of Marketing Research 44 (4) (2007) 663–670.
[53] P. Song, C. Zhang, Y. Xu, L. Huang, Brand extension of online technology products: evidence from search engine to virtual communities and online news, Decision Support Systems 49 (1) (2010) 91–99.
[54] H.S. Sun, P. Zhang, Causal relationships between perceived enjoyment and perceived ease of use: an alternative approach, Journal of the Association for Information Systems 7 (9) (2006) 618–645.
[55] J. Sweeney, G. Soutar, L. Johnson, The role of perceived risk in the quality–value relationship: a study in a retail environment, Journal of Retailing 75 (1) (1999) 77–105.
[56] D. Tse, P. Wilton, Models of consumer satisfaction formation: an extension, Journal of Marketing Research 25 (2) (1988) 204–212.
[57] M. Van Birgelen, A. de Jong, K. de Ruyter, Multi-channel service retailing: the effects of channel performance satisfaction on behavioral intentions, Journal of Retailing 82 (4) (2006) 367–377.
[58] A. Van Riel, H. Ouwersloot, Extending electronic portals with new services: exploring the usefulness of brand extension models, Journal of Retailing and Consumer Services 12 (4) (2005) 245–254.
[59] V. Venkatesh, F. Davis, A theoretical extension of the technology acceptance model: four longitudinal field studies, Management Science 46 (2) (2000) 186–204.
[60] T. Verhagen, W. van Dolen, Online purchase intentions: a multi-channel store image perspective, Information Management 46 (2) (2009) 77–82.
[61] P. Verhoef, S. Neslin, B. Vroomen, Multichannel customer management: understanding the research-shopper phenomenon, International Journal of Research in Marketing 24 (2) (2007) 129–148.
[62] D. Wallace, J. Giese, J. Johnson, Customer retailer loyalty in the context of multiple channel strategies, Journal of Retailing 80 (4) (2004) 249–263.
[63] B. Wixom, H. Watson, An empirical investigation of the factors affecting data warehousing success, MIS Quarterly 25 (1) (2001) 17–41.
[64] S. Yang, Y. Lu, L. Zhao, S. Gupta, Empirical investigation of customers' channel extension behavior: perceptions shift toward the online channel, Computers in Human Behavior 27 (5) (2011) 1688–1696.
[65] V. Zeithaml, Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence, Journal of Marketing 52 (3) (1988) 2–22.
[66] V. Zeithaml, L. Berry, A. Parasuraman, The Behavioral Consequences of Service Quality, Journal of Marketing 60 (2) (1996) 31–46.
[67] J. Zhang, P. Farris, T. Kushwaha, J. Irvin, T. Steenburgh, B. Weitz, Crafting integrated multichannel retailing strategies, Journal of Interactive Marketing 24 (2) (2010) 168–180.

Shuiqing Yang is a Lecturer at School of information, Zhejiang University of Finance and Economics in China. His research interests include technology implementation, electronic commerce, mobile electronic commerce, and related topics. His research has been published in *Information & Management, Computers in Human Behavior*, and others. E-mail:xtysq@smail.hust.edu.cn.



Yaobin Lu is a Professor of Information Systems and the Associate Dean of school of management in Huazhong University of Science and technology. He received his PH.D from the Huazhong University of Science and technology in 1997. His research interests include technology implementation, individual adoption, customer trust, electronic commerce, and related topics. His research has been published in *Decision Support Systems, Information Systems Journal, Information & Management, Computers & Education, Electronic Commerce Research and Applications, and others.* E-mail:luyb@mail.hust.edu.cn.

Patrick Y.K. Chau is a Professor in Information Systems at the Faculty of Business and Economics of the University of Hong Kong (HKU). He obtained his doctorate from the Richard Ivey School of Business at the University of Western Ontario, Canada. In the academic community, Dr. Chau founded the Hong Kong Association for Information Systems in 2006 and was President of the Chinese Association for Information Systems in 2007. In March 2010, he was appointed as a Chang Jiang Scholar, a scheme jointly administered and awarded by the Ministry of Education, PRC and Li Ka Shing Foundation in Hong Kong. His work has appeared in leading Information system, organizational behavior, and marketing journals. Some of his papers published in various journals (*Journal of management information systems, MIS quarterly, Journal of the Association for Information Systems, Decision sciences, Information & Management, Decision Support Systems, Omega, and others.* E-mail:Pchau@business.hku.hk).