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Understanding cross-product purchase intention in an IT brand extension context

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Abstract

This study investigates why some customers of a brand tend to purchase IT products launched by the same brand in a different category, but others do not. Combining insights from marketing and information systems research, this study develops an integrative model of cross-category purchases of IT products in a brand extension context. This research extends the information system (IS) continuance model by integrating brand extension factors such as perceived fit into the new model. The proposed model is empirically tested using data collected from 342 Xiaomi customers. The results show that in addition to post-acceptance usefulness perceptions and brand satisfaction, the perceived service quality and perceived fit of the initial purchase also have strong effects on consumers' continuance purchase intentions toward a brand extension product. Hedonic and utilitarian expectancy mediate the relationship between consumers' post-consumption views of the initial purchase and their intention of the subsequent purchase of a different product under the same brand.

KEYWORDS

brand extension, brand satisfaction, continuance purchase behavior, cross-product purchase, hedonic expectancy, IT product purchase, perceived service quality, utilitarian expectancy

1 | INTRODUCTION

Intense market competition and technological developments have shortened product lifecycles, such that information technology (IT) product manufacturers need to launch new products quickly to maintain and increase their market share (Jun, Park, & Yeom, 2014). In the IT industry, branded products tend to exhibit high similarities and generally rely on the same technology infrastructure or platform, such as the Android system for different phone manufacturers including HTC, Lenovo, Huawei, and Xiaomi. Because of the high similarity in technology, IT companies endeavor to differentiate their products through branding strategies, especially by applying brand extension strategies when launching a new product.

Brand extension refers to a marketing strategy whereby a firm develops and launches a product using an existing brand name from a different product category (Aaker & Keller, 1990; Kotler & Keller, 2013). This strategy has been shown to reduce new product introduction costs (Swaminathan, Fox, & Reddy, 2001) by leveraging the brand equity of the parent brand for the newly released products and reducing the expenses of advertising and trade deals (Broniarczyk & Alba, 1994; Völckner & Sattler, 2006). Although statistics show that brand extension accounts for approximately 80% of new product

introductions (Keller, 2008), little is known about the factors that determine the success of brand extension strategies across different IT product categories. For example, the leading computer manufacturer Lenovo first launched its smartphone in China in 2014 with a brand extension strategy, applying its existing brand name "Lenovo" and hoping to leverage its position as a prominent PC vendor with 15% market share (Canalys, 2015). Yet the Lenovo smartphone has achieved only a 4.7% share in the smartphone market, well behind its domestic competitors Huawei and Xiaomi (International Data Corporation [IDC], 2015). Some Lenovo PC users were eager to adopt a new Lenovo mobile phone, while others decided to switch to other brands (e.g., Huawei), even though the alternative brands had very similar technology and configurations (e.g., same version of Android, equivalent hardware configurations, standards, and prices). Why does the brand extension strategy work for some IT brands but not for others?

This paper attempts to solve this puzzle and address the question: what factors impact the success of brand extension strategies for IT products? Specifically, *what factors encourage IT brand users to continue purchasing IT products in different categories from the same brand?* To disentangle this problem and identify factors that influence consumers' continuance purchase intentions toward a brand extension IT product, it is imperative to take a multidisciplinary approach from marketing

and information systems perspectives given the complex nature of IT products. This multidisciplinary approach is a response to prior calls for an interdisciplinary approach to develop a more integrated perspective on consumer behavior studies of IT-related products and services (e.g., Morgan-Thomas & Veloutsou, 2013; Taylor & Strutton, 2010). The authors thus integrate product-level factors, motivational factors in consumer decision making, and the IS continuance model to establish a brand extension model of continuance purchases of IT brand extension products. This study uses the IS continuance model developed by Bhattacherjee (2001) as a base model and extended this model to address marketing questions associated with brand extensions.

First, although previous marketing literature has extensively examined drivers of brand extension success from a brand perspective, it has yet to explore factors tied to IT products. Previous branding research identifies 10 pertinent predictors of brand extension success, such as parent brand experience, perceived fit, and the quality of the parent brand (Völckner & Sattler, 2006). However, these factors have not addressed the uniqueness of an IT product in a brand extension setting. Specifically, extant brand extension literature (e.g., Aaker & Keller, 1990; Völckner & Sattler, 2006) and the expectation–confirmation theory (ECT) (Oliver, 1980) predominantly focus on the fast-moving consumer good (FMCG) brand extension context. Some representative FMCGs include soft drinks, toiletries, over-the-counter drugs, processed foods, meat, fruit and vegetables, alcohol, chocolate, candies, and cleaning products. Compared to IT products involving many sophisticated technical details (e.g., processor, GPU, storage, memory, and Wi-Fi Connectivity) and large investments, most FMCGs can be viewed as low-involvement, non-durable goods that individuals are not required to think carefully about before purchase, due to low cost, short lifespans, and simplicity of choice. As Laurent and Kapferer (1985, p. 42) said "*In marketing, price is probably the most commonly used indicator of involvement…. Durable goods also have been used to create conditions of high involvement because, in case of mispurchase, one is stuck with a poor product for a long time.*" Thus, consumers usually form their pre-purchase expectations toward these FMCGs based on mass media information obtained from various channels, such as TV, the Internet, and newspapers. Based on the ECT model, consumers' pre-expectation is a key determinant of satisfaction in the FMCG context. The pre-expectation represents a baseline or reference point for consumers to confirm initial expectation and finally form satisfaction. Confirmation is modeled as the consequence of pre-expectation and perceived performance after the purchase. Confirmation represents a psychological feeling resulting from a cognitive appraisal of the discrepancy between pre-expectation and perceived performance after consumers purchased and used the product (i.e., first-hand experience). ECT proposes that lower pre-expectation and/or higher perceived performance will lead to greater confirmation, which increases consumers' satisfaction and the likelihood of repurchase.

The expectancy confirmation theory has been questioned for its emphasis on pre-purchase expectations and ignoring consumers' potential change in their initial expectations after the purchase. Expectation changes typically occur in the IT product purchase context in which goods are generally replaced over a period of several years (i.e., durable goods) and purchase decisions require consumers to have pro-

fessional knowledge to compare and choose between various technical parameters. Unlike FMCGs, IT products (e.g., mobile phones, computers, and camera) are usually durable, high-involvement goods with technically complex and sophisticated functions and parameters as stated in Gu, Park, and Konana's (2012, p. 183) research that "*durable products such as consumer electronics, appliances, and automobiles are typical examples of high-involvement products.*" An IT product typically presents the combined application of various information technologies. For example, a smartphone includes an operating system, a navigation device/component, sensors, and a camera. An individual may increase or decrease his or her pre-expectation to form a new expectation if he or she realizes that the benefits and/or usefulness of a new product (e.g., a smartphone) is above or below the initial expectation after first-hand experience. Prior studies have found that post-expectations based on consumers' first-hand experience exert a greater influence on consumers' satisfaction than pre-expectation based on third-party information such as others' opinions or media articles (Fazio & Zanna, 1981; LaTour & Peat, 1980). For example, when consumers search for laptops with a price over £750 on Amazon.co.uk, they will obtain more than 3000 results. Most of the laptops in the search results have similar configurations and technical parameters, and received similar online ratings from third parties (e.g., CNET's online expert reviews). Moreover, many laptops received hundreds of online consumer reviews. As a result, consumers face a more serious information overload problem than before. It is impossible for consumers to carefully read all third-party reviews and find subtle differences between products with similar ratings. Thus, the authors believe that post-expectations based on first-hand experience have stronger influence on consumers' satisfaction in the context of information overload. A key difference between Bhattacherjee's (2001) IS continuance model and the ECT model is that the former theorizes that post expectation (rather than pre-expectation) plays a vital role in determining IT consumers' satisfaction (please see Section 2.1 for a detailed discussion regarding the differences between the two models). From this perspective, this study argues that the IS continuance model is more appropriate to serve as a baseline model to explain repurchase intention in the context of IT product brand extension in which the pre-expectations formed via second-hand information are more biased and susceptible to changes.

Although the existing IS continuance model can serve as a base model for continuance brand purchase behavior, the model itself is technology focused and does not include factors that represent brand perceptions or offer any underlying mechanism to address consumers' motivations, which are essential to consumer purchases of brand extension products. Therefore, by combining perspectives from marketing literature and IS literature, this study gains a better understanding of IT brand extension strategies in the context of consumers' cross-category purchase behavior. In addressing these gaps, this research contributes to brand extension and IT adoption literature in three main ways. First, this study explicates cross-category purchases of IT products in a brand extension context. The new brand extension model in this study is different from the original IS continuance model because it addresses the cross-category purchase behavior of two different products, whereas the IS continuance model only examines purchase

behavior toward one product. This new model also broadens the scope of the base model by including perspectives from branding and brand extension–such perspectives are absent in the IS continuance model. Specifically, extant IS research acknowledges the importance of technological sophistication on continuance adoptions of an IS system but has not yet incorporated other important decision factors that influence consumers' repurchase of different IT products within the same brand. A more practical question regarding what factors influence consumers to keep buying different products from the same brand has yet to be addressed. Since companies increasingly use brand extension strategies, and consumers rely heavily on their brand experience to inform their purchase decisions, this study extends technology continuance theories by incorporating constructs related to brand extension, such as perceived service quality of a brand and brand satisfaction.

Second, the existing IS continuance model reveals that both perceived usefulness and satisfaction have positive impacts on IS users' continuance intentions, but it does not offer potential explanations or identify any potential psychological drivers of these relationships. To disentangle the underlying mechanisms, this study uncovers two mediators, hedonic expectancy and utilitarian expectancy, which channel the effects of consumers' brand perceptions (i.e., perceived usefulness and perceived service quality) on brand satisfaction and continuance intentions. This study thus yields new insights into the mechanisms underlying the relationships between consumers' brand perceptions and their continuance purchase of the same brand for a different IT product.

Third, this study contributes to the brand extension literature by empirically examining the concept of perceived fit of real brand users and measuring their perceptions of a different product, produced by the same brand that the consumers have previously purchased. In addition, this study is the first to incorporate perceived fit, an essential brand extension concept, into the IS continuance base model to examine its effect on continuance intentions. Many prior literatures examine perceived fit using experiments and convenience samples (Aaker & Keller, 1990; Bottomley & Holden, 2001), offering an important foundation for brand extension literature. However, the external validity of the perceived fit measures prompts criticism that perceived fit may not be as important as previous research has claimed, because participants in previous studies were making inferences about hypothetical brand extension scenarios with limited information (Klink & Smith, 2001). Even when studies collected field data to examine the impact of fit on brand extension success (Völckner & Sattler, 2006), the respondents were potential consumers of a brand, rather than consumers who have actually purchased and used the brand, which is critical to examination of brand extensions. The authors diverge from these previous methods and instead ask consumers who have already bought a product from the brand to indicate their intention to purchase subsequent IT products launched by the same brand. Therefore, this study fills the research gap by offering empirical insights into the impact of perceived fit on the purchase of brand extension products using real consumers who are actual brand users (i.e., examining the purchase intentions of current Xiaomi users toward newly released Xiaomi products).

The rest of the paper is structured as follows: First, the authors present the process of developing a conceptual framework based on the review of consumer satisfaction theories, and describe the existing and extended IS continuance model. Then an extended model and the hypotheses derived from it are presented. After the description of the research methodology that has been used to empirically test the framework, the results and findings are reported. This paper then concludes with a discussion of the implications of research findings for theory and practice as well as suggestions for future research.

2 | THEORETICAL FOUNDATION AND MODEL DEVELOPMENT

To develop a theoretical framework to address the research question, this study first explored ECT and the IS continuance model, and then applied the IS continuance model as a base model for the current research context. Last, this study outlines the steps of building an extended model that is designed to assess cross-product purchase behavior in a brand extension context. Specifically, this study integrates factors originating in brand extension and technology acceptance research to theorize a model to investigate the cross-product purchase intention in the IT brand extension context. This study also proposes hedonic expectancy and utilitarian expectancy as two motivational factors that may mediate the relationships between post-consumption perceptions of the initial product and purchase intentions toward a brand extension product from the same brand.

2.1 | Theories concerning customer satisfaction: The expectation–confirmation theory and the IS continuance model

In marketing, consumer satisfaction research has been perpetuated by the ECT developed by Oliver (1980), which is depicted in Figure 1. The ECT model described consumer behavior as three separate but closely related stages: purchase, disconfirmation/confirmation, and response/feedback (i.e., complaining and repurchase). In the first stage, consumers develop an initial expectation of a product or service prior to purchase. During the usage period, consumers conduct a cognitive comparison between anticipated performance (i.e., expectation) and actual performance (i.e., perceived performance) and assess the extent to which their expectations have been met. Lower anticipated and/or higher perceived performance, both increase the likelihood of confirmation. The comparison provides a foundation for satisfaction, prompting either a positive response (e.g., repurchase, use) or a negative one (e.g., complaining).

Bhattacherjee (2001) extends the ECT model to an IS continuance usage model and examines the influence of consumers' satisfaction on their intention to continue using an IS technology they previously adopted. This IS continuance model adjusts the ECT model to an IS context in three main ways. First, it removes initial expectation and perceived performance, focusing instead on post-acceptance variables, with the argument that the effect of expectation and perceived performance has already been captured by confirmation and satisfaction constructs. As Figures 1 and 2 indicate, the two antecedents of confirmation do not appear in the IS continuance model.
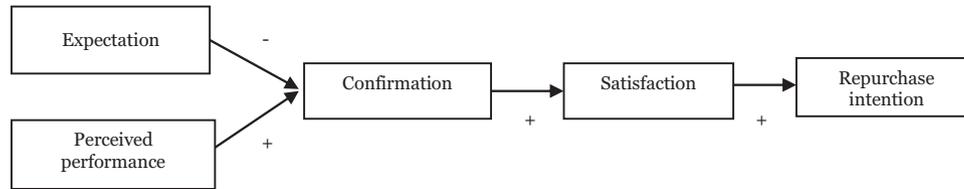
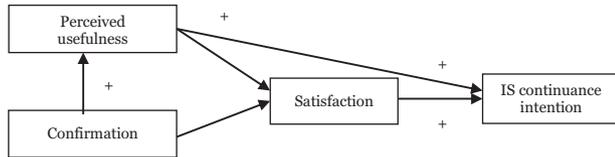**FIGURE 1** Expectation–confirmation theory (Oliver, 1980)

FIGURE 2 Extended ECT model: IS continuance model (Bhattacherjee, 2001)

Second, the IS continuance model adds an *ex post* (post-consumption) perception variable, perceived usefulness, which is particularly important for the final decision to adopt or use IS products. According to self-perception theory (Bem, 1972), consumers continually adjust their expectations as they acquire new information through actual usage. Thus, adjusted *ex post* expectations, such as product usefulness, replace initial expectations and serve as a new basis for subsequent decision making. Perceived usefulness refers to the degree to which a person believes that using a particular system will enhance his or her performance (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989). It was initially developed and defined by Davis (1989) in an IS initial adoption context. Unlike other IT-related beliefs (e.g., ease of use) in prior IS usage, perceived usefulness is the only user belief in IS studies that has a steady impact on user decisions across temporal stages of IS usage (e.g., Davis et al., 1989; Karahanna & Straub, 1999). Thus, the IS continuance model predicts that perceived usefulness is a determinant of satisfaction, with a constant influence on subsequent IS continuance usage decisions.

Third, the revised model adds two new relationships: (1) a direct impact of *perceived usefulness* on IS *continuance intention*, in addition to its indirect effect through satisfaction, and (2) a direct impact of confirmation on perceived usefulness. The perceived usefulness–intention relationship originally was proposed in the technology acceptance model (TAM), relative to an initial adoption stage. According to the IS continuance model, the direct relationship between perceived usefulness and intention also likely exists in a continuance context. Regarding the relationship between *confirmation* and *perceived usefulness*, prior literature suggests that perceptions of usefulness can be influenced by whether they confirm or disconfirm users' prior expectations of the products (e.g., Davis et al., 1989; Festinger, 1957). That is, users first establish initial usefulness perceptions in the early stages of using a new IS. After initial trial, the users may or may not change their existing usefulness perceptions, depending on whether their initial expectations have been confirmed or disconfirmed. According to cognitive dissonance theory (Festinger, 1957), if users' initial perceptions are disconfirmed, they experience cognitive dissonance or psychological tension. The users will then increase or decrease their usefulness percep-

tions to match the reality. The IS continuance model echoes this view and suggests that confirmation affects usefulness perceptions. Figure 2 illustrates the key constructs and relationships in this IS continuance usage model (Bhattacherjee, 2001).

2.2 | An integrative model of cross-product consumer behavior in the IT brand extension context

2.2.1 | IS continuance model as a base model

A consumer's decision process on whether to continue purchasing a new type of IT product from the same brand to some extent mirrors the process of IS users deciding on whether to keep using the same IS system. The basic logic for both decision processes indicates confirmation → satisfaction → continuance intention (Figure 3). Because of the similarity between the two decisions and its focus on the continuance intention, the IS continuance model is an ideal base model for this study to address the central research question. Applying IS models developed in organizational settings to a consumer context is not alien in IS and consumer behavior research. Instances of such work include: Venkatesh, Thong, and Xu (2012) examined the boundary conditions of the Unified Theory of Acceptance and Use of Technology model (Venkatesh, Morris, Davis, & Davis, 2003) and applied the model in a consumer context to explain the purchase intention of a mobile service; Bruner and Kumar (2005) applied the TAM model to a consumer context (i.e., adoption of handheld Internet devices); Hsiao and Chang (2014) extended Bhattacharjee's (2001) IS continuance model by examining consumers' continue use of mobile advertising. A key difference between organization context and consumer context is that in the latter, a hedonic factor also plays an essential role in addition to the role of utilitarian factors (Childers, Carr, Peck, & Carson, 2002; van der Heijden, 2004).

Drawing upon marketing and IS theories, this study proposes new constructs and relationships to extend the IS continuance model. The influence of satisfaction on continuance intention has been examined in different research contexts (e.g., Morgan-Thomas & Veloutsou, 2013; Oliver, 1993). Accordingly, the authors propose that consumers' brand satisfaction also affects their intention to purchase from the same brand again. Brand satisfaction can capture the influence of brand experience on consumers' decisions to keep purchasing a new type of IT product launched by the same brand. This reasoning leads to the first proposition:

P1: Consumers' brand satisfaction is positively associated with their continuance intentions to purchase a new IT product launched by the same brand in a different category.
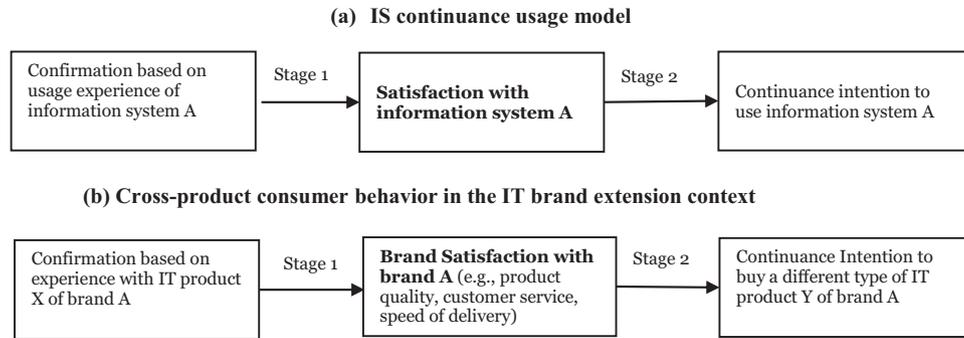
FIGURE 3 A comparison between the IS continuance model and the brand extension context (a) IS continuance usage model (b) cross-product consumer behavior in the IT brand extension context

The relationships among perceived usefulness, confirmation, satisfaction, and continuance intention, as developed by Bhattacherjee (2001) in a technology acceptance context, may also apply to cross-product purchasing behavior in a brand extension context. Four propositions summarize these links:

P2: The extent of consumers' confirmation is positively associated with their brand satisfaction.

P3: The extent of consumers' confirmation is positively associated with their perceived usefulness.

P4: Consumers' perceived usefulness is positively associated with their brand satisfaction.

P5: Consumers' perceived usefulness is positively associated with their continuance intentions to purchase a new IT product launched by the same brand in a different category.

To ensure the rigor of the extended model, the authors begin by first assessing the base IS continuance model. Thus, in the hypotheses testing, Proposition 1 to Proposition 5 are examined in parallel with seven new hypotheses (H1–H7) that are proposed in the next section. By testing these propositions, this study imposes a complex control on the extended model; validating the base model also increases the external validity of the extended model. Despite the logic behind the IS continuance model suits this study, this model is insufficient to answer questions tied to the cross-category purchases of brand extension products. Thus a theoretical extension of the IS continuance model is needed to address fundamental differences raised by the research context. First, the IS continuance model only involves a decision of one product (i.e., one information system), but in the context of a brand extension, consumers' decisions involve at least two different products. For example, a consumer who already purchased a Xiaomi smartphone will then face the decision of whether to buy a Xiaomi smartwatch, a brand extension product. Second, satisfaction in the IS continuance model cannot adequately represent consumers' brand satisfaction for the current study because it only focuses on users' evaluation of a single IS system and it is mainly driven by users' perceived usefulness. Thus, brand satisfaction is a more complicated concept than satisfaction because of the technology aspect of an IT product and the multiple products involvement in the decision-making process. These major differences motivate us to extend the IS continuance model by modifying the original constructs, incorporating new brand extension concepts, and illustrat-

ing newly proposed relationships in the extended model. Therefore, this study developed a comprehensive view of consumers' brand satisfaction in the context of a brand extension through measuring both consumers' view of perceived usefulness and perceived service quality associated with the brand.

2.2.2 | Brand extension model development and hypotheses

Because the IS continuance model mainly focuses on technology acceptance and users' continued usage of an IS, it does not offer insights into brand-related decisions. Thus, to address the research question regarding purchases of a brand extension product in a different category, this study modified the IS continuance model to incorporate brand and behavioral components. Specifically, the model development encompasses the following theoretical reforms: (1) replace the concept of satisfaction with brand satisfaction; (2) introduce a marketing factor, perceived service quality as an *ex post* perception variable, in the model; (3) include perceived fit as an important antecedent of brand extension success; and (4) include hedonic and utilitarian expectancy as two potential mediators of the relationship between post-consumption perceptions of the initial product and purchase intentions toward additional products from the same brand.

The four major theoretical reforms of the base model are described as follows: First, brand satisfaction replaces the satisfaction construct in the IS continuance model. In the IS continuance context, satisfaction refers to a pleasurable or positive emotional state resulting from an appraisal of using a new IS (Bhattacherjee, 2001). However, the concept of satisfaction in this study denotes consumers' affective reactions (i.e., perceived usefulness and perceived service quality) to a specific brand, based on their prior experiences with the brand. Second, this study incorporates perceived service quality as an important marketing construct in the extended model. Consumers' brand experience consists of two main dimensions: product experience and the service experience associated with the product. The former refers to consumers' perceptions about the product's functioning, including assessments of the ingredients and features; the latter entails an evaluation of the intangible services associated with the product, including customer services and delivery speed (Carlson & O'Cass, 2010; Sivakumar, Li, & Dong, 2014). To capture these dimensions of consumers' brand experience, marketing scholars measure consumers' perceptions of

the tangible aspects of a brand, such as product-related attributes, as well as the intangible aspects, such as services associated with the brand (e.g., Donovan & Jalleh, 1999; Laurent & Kapferer, 1985). The IS continuance model reflects a technology usage perspective, such that it only measures technology aspects of a product and is silent about the service element. Therefore, for a complete understanding of the brand experience, this study includes not just the *perceived usefulness* construct from the IS continuance model to measure experience with IT products but also a *perceived service quality* construct to capture intangible elements of those products.

Furthermore, the IS continuance model suggests a continuous association between perceived usefulness and confirmation, in that consumers update their evaluations based on the confirmation or disconfirmation of their initial expectation (Bhattacherjee, 2001; Davis, 1989; Davis et al., 1989; Lankton, McKnight, Wright, & Thatcher, 2016; Venkatesh & Goyal, 2010). Following a similar process, confirmation should influence perceived service quality (Torres, 2014), such that consumers first establish their initial expectation of the brand's service quality, which may be low or high, because they lack any experience with it. After consumers purchase the brand and experience its services, they can either confirm or disconfirm their initial expectation, then use this information to form their perceptions of service quality. If consumers confirm their expectations, their perception of service quality should increase. This study thus posits:

H1: Consumers' confirmation positively influences their perceptions of service quality.

In the IS continuance model, perceived usefulness is an essential belief about IT product or technology-related attributes that consistently influence consumers' behavior across different usage stages (e.g., Adams, Nelson, & Todd, 1992; Mohammadi, 2015). Marketing literature offers empirical support for a similar relationship between service quality and intentions (e.g., Carlson & O'Cass, 2010; Cronin, Brady, & Hult, 2000; Wang, Kim, Ko, & Liu, 2016). Because perceived service quality is indispensable to consumers' evaluations of the expectation–performance discrepancy (Lee, Lee, & Yoo, 2000; Parasuraman, Zeithaml, & Berry, 1988), which parallels the use of perceived usefulness to measure brand experience and has been examined in various settings including tourism (e.g., Chen & Chen, 2010), transportation (e.g., Chen, 2008), and mobile service (e.g., Kuo, Wu, & Deng, 2009); this study proposes:

H2: Consumers' perceived service quality positively influences their (a) brand satisfaction and (b) continuance intentions to purchase a new IT product of the same brand in a different category.

Third, this study incorporates perceived fit as an important antecedent of a brand extension. Unlike the continued use of a single system in the IS continuance model, continuance purchases of IT products in a brand extension context involve at least two different IT products of the same brand. In the first stage, consumers build their brand experience by using an IT product, such as a smartphone launched by Xiaomi. Their experiences with the Xiaomi smartphone increase their first-hand information, knowledge, and familiarity with

the Xiaomi brand. These updated beliefs then affect their confirmation process (Lankton et al., 2016; Qazi, Tamjidyamcholo, Raj, Hardaker, & Standing, 2017), and their resulting cognitive beliefs determine their satisfaction or dissatisfaction with the brand. This information influences their decision in stage 2, when they go to purchase a different IT product, such as a smartwatch, from Xiaomi.

Because the brand extension process involves at least two products, the extended model in this research must address the question of perceived fit, which refers to whether consumers believe that the people, facilities, skills, and other resources used to make product X (e.g., smartphone) positively contribute to the production of an extension product Y (e.g., smartwatch), which would validate the extension product as useful and effective (Aaker & Keller, 1990; Swaminathan et al., 2001). According to Aaker and Keller (1990), perceived fit is one of the most significant factors for brand extension success, along with perceived quality. Replications of Aaker and Keller's (1990) work converge in showing that perceived fit drives the success of a brand extension (see Albrecht, Backhaus, Gurzki, & Woisetschläger, 2013; Bottomley & Doyle, 1996; Bottomley & Holden, 2001; Verhellen, Dens, & De Pelsmacker, 2016). Thus, any brand extension study should include this important concept.

When a parent brand introduces a new product in a different product category, the perceived fit of the parent brand with the extension product category can significantly affect consumers' preferences for the extension products (Helmig, Huber, & Leeflang, 2007; Verhellen et al., 2016; Völckner & Sattler, 2006). For example, if Xiaomi were to extend into the smartwatch market, consumers may believe that it possesses the required skills, facilities, sales channels, and other resources to develop and distribute a smartwatch, because its existing electronic products (i.e., parent products) and smartwatches both belong to the electronics sector and are similar in terms of basic technologies and infrastructure. Notwithstanding, perceived fit also pertains to consumers' perceptions of whether the brand can offer the same level of service quality for the extension that it has for the parent products (Broniarczyk & Alba, 1994; Kim & John, 2008; Völckner, Sattler, Hennig-Thurau, & Ringle, 2010). Therefore, in the proposed brand extension model this study includes perceived fit and examine whether positive associations with the initial product (e.g., Xiaomi smartphone in stage 1) persist and apply to the extended product (e.g., Xiaomi smartwatch in stage 2). Following prior brand extension research, this study argues that a high degree of fit or consistency with the parent brand should significantly influence consumers' intentions to purchase new products. Thus, the authors hypothesize:

H3: Consumers' perceived fit positively influences their continuance intentions to purchase a new IT product launched by the same brand in a different category.

Fourth, the extended model includes intrinsic motivation and extrinsic motivation, namely hedonic expectancy and utilitarian expectancy, as mediators of the relationship between the *ex post* variables and continuous purchases of additional IT products from the same brand. Drawing on motivation theory, prior IS acceptance research identifies hedonic (intrinsic) and utilitarian (extrinsic)

expectancy as motivations for individual purchases of IT products in consumer contexts (Childers et al., 2002; Davis, Bagozzi, & Warshaw, 1992; Turel, Serenko, & Bontis, 2010; van der Heijden, 2004). In the same vein, the marketing literature asserts that the hedonic and utilitarian aspects of a product drive consumer behaviors and attitudes (e.g., Voss, Spangenberg, & Grohmann, 2003). As Batra and Ahtola (1991, p. 159) assert, *"consumers purchase goods and services and perform consumption behaviors for two basic reasons: (1) consummatory affective (hedonic) gratification (from sensory attributes), and (2) instrumental, utilitarian reasons."*

Hedonic expectancy implies that consumers expect to experience enjoyment, fun, or pleasure (Venkatesh et al., 2012) from purchasing and using a product (e.g., playing games on a smartphone). Utilitarian expectancy instead refers to consumers' expectation that purchasing and using a product will enhance their task performance or improve their work efficiency (e.g., using the smartphone to schedule tasks). For decades, consumer behavior researchers have acknowledged that consumers expect to obtain hedonic or utilitarian outcomes from the products they purchase (e.g., Guo & Barnes, 2011; Liu & Forsythe, 2011; Ozkara, Ozmen, & Kim, 2017; Pascual-Miguel, Agudo-Peregrina, & Chaparro-Peláez, 2015). This study introduces these two complementary constructs to capture a consumer's motivations for purchasing a brand extension product. For example, smartphone users might expect hedonic value from using the phone to browse YouTube videos but also expect work enhancement from using it to keep track of the time or reply to work e-mails. Thus, this study proposes both intrinsic and extrinsic motivations as antecedents of consumers' continuance purchase intentions.

H4: (a) Hedonic expectancy and (b) utilitarian expectancy of using a new IT product positively influences consumers' continuance intentions to purchase a new IT product launched by the same brand in a different category.

These hedonic and utilitarian expectations in turn might mediate the impact of post-consumption factors (i.e., perceived usefulness and perceived service quality) on purchase intentions toward a brand extension product. Self-perception theory (Bem, 1972) suggests that after acquiring new information through the use of a previously purchased product, customers adjust their perceptions of post-consumption factors, including perceived usefulness and perceived service quality. These adjusted perceptions replace the initial expectations in consumers' cognitive memories and serve as the new bases for subsequent decision processes (Bhattacherjee, 2001; Bhattacherjee, Perols, & Sanford, 2008; De Guinea & Markus, 2009; Hsu, Yen, Chiu, & Chang, 2006). In this research, perceived usefulness and perceived service quality are grounded in users' first-hand experience with the Xiaomi products they have used. As shown in Figure 3, in the IT brand extension context, the authors argue that a user's post-consumption expectation from IT product X of brand A not only replaces the initial consumption expectation in the consumer's cognitive memory as the basis for determining subsequent cognitive processes, such as satisfaction with the use of IT product X of brand A, but also changes their upcoming pre-consumption (initial) expectation regarding newly developed products from the focal brand (i.e., IT product Y of brand

A in this case). As mentioned earlier, prior continuance studies (e.g., Bhattacherjee, 2001; Fazio & Zanna, 1981) mainly focus on examining users' continuance usage behavior of the same product and thus propose that initial expectation is formed through others' opinions and third-party information reports. In the brand extension context involving two different products from the same brand, the authors believe that the post-consumption, expectation tempered by their first-hand usage experience of the first product (i.e., product X of brand A), will influence their pre-purchase expectation of a new product developed by the same brand (i.e., product Y of brand A).

Thus, adjusted perceptions of perceived usefulness and perceived service quality influence consumers' expectations of hedonic and utilitarian aspects; if they believe the perceived usefulness of a smartphone is high and the phone helps them improve their task performance (i.e., utilitarian value) (Kim, Jahng, & Lee, 2007), and the amusing ringtones also bring them enjoyable experiences (i.e., hedonic value) (Turel et al., 2010); these beliefs should also lead to positive expectations about the utilitarian and hedonic aspects of other products. If the perceived service quality of the brand is high, because it provides useful product information online (i.e., utilitarian value) (Ledden, Kalafatis, & Mathioudakis, 2011) and cheerful customer service (i.e., hedonic value) (Wang, Hernandez, & Minor, 2010), consumers' purchase intentions may also increase (Kivetz & Zheng, 2017), because they likely believe that this brand is capable of offering utilitarian and hedonic value for its brand extension products. Theoretical support for this association also comes from the theory of brand awareness. In the marketing literature, brand awareness with strong associations forms a specific brand image. Aaker (1991) defines brand associations as *"anything linked in memory to a brand"* and brand image as *"a set of [brand] associations, usually in some meaningful way"* (p. 109). Brand associations are complicated and connected to one another, and consist of multiple ideas, episodes, instances, and facts that establish a solid network of brand knowledge. The associations are stronger when they are based on many experiences or exposures to communications, rather than a few (Aaker, 1991; Alba & Hutchinson, 1987). For example, Apple has created a brand where consumers trust that the products released by the company will be of the highest utilitarian and hedonic value. The authors thus believe that post-consumption factors should influence consumers' pre-consumption expectation toward new products released by the same brand in the future. This study proposes extending the IS continuance model as follows:

H5: Consumers' perceived usefulness positively influences the (a) hedonic expectancy and (b) utilitarian expectancy of using a new IT product launched by the same brand in a different category.

H6: Consumers' perceived service quality positively influences the (a) hedonic expectancy and (b) utilitarian expectancy of using a new IT product launched by the same brand in a different category.

Parallel to perceived usefulness and perceived service quality, brand satisfaction offers another post-consumption factor, reflecting experience with the initial product (Nam, Ekinci, & Whyatt, 2011) and having an important effect on subsequent brand or product
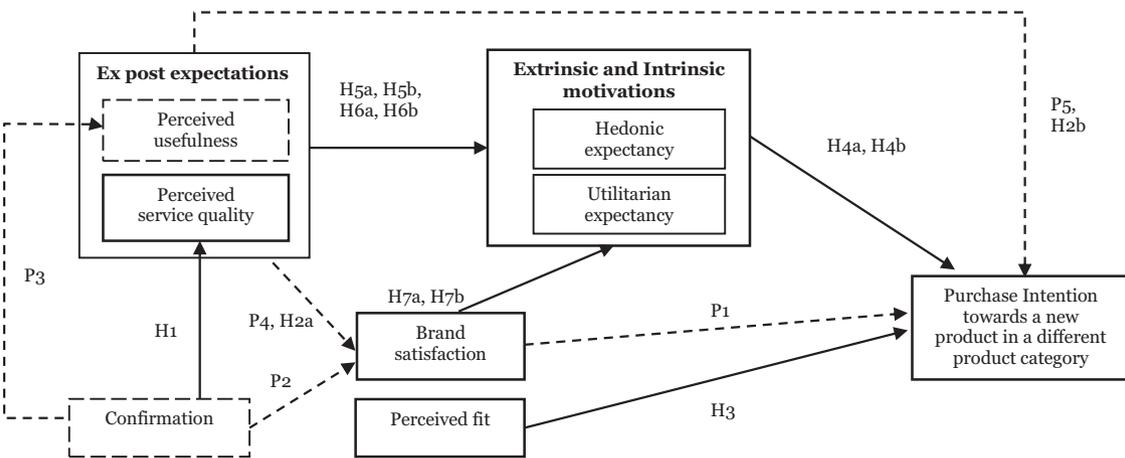
FIGURE 4 Brand extension model
Note: Dotted line represents the constructs and relationships proposed in the IS continuance model.

expectations (Angelova & Zekiri, 2011; Gupta & Stewart, 1996). Thus, the two pre-consumption expectations developed in the proposed model (i.e., hedonic and utilitarian expectations) might mediate the relationship between brand satisfaction and continuance purchase intentions. If consumers are highly satisfied with the brand, for example, this brand satisfaction likely increases their purchase intention (Kuo et al., 2009; Ledden et al., 2011; Qazi et al., 2017; Wang et al., 2010) toward a brand extension product, because they anticipate that the hedonic and utilitarian aspects of the new product will also satisfy their future needs (Hellén & Sääksjärvi, 2011; Kim et al., 2007; Venkatesh & Goyal, 2010). However, if they are unsatisfied with the previous product, they may think the hedonic and utilitarian value of the future product will be disappointing too (Kim & Forsythe, 2008), such that they are less likely to purchase more products from the same brand. Since consumers are likely to follow this psychological process when deciding whether to buy brand extension products, this study predicts:

H7: Consumers' brand satisfaction is positively associated with the (a) hedonic expectancy and (b) utilitarian expectancy of using a new IT product launched by the same brand in a different category.

In the latter three hypotheses (H5–H7), the authors thus propose mediating roles of hedonic and utilitarian expectations in the brand extension model (Figure 4). The effect of the three *post-consumption perceptions* about the initial product (i.e., perceived usefulness, perceived service quality, and brand satisfaction) on *consumers' intention to purchase* a brand extension product is mediated by hedonic and utilitarian expectations. In this way, this study extends the IS continuance model by proposing an underlying mechanism that can explain cross-category purchase behavior toward a brand extension product. In summary, the proposed new model (1) integrates initial acceptance of the previous purchase into continued purchases of future brand extension products, (2) predicts relationships among the post-consumption factors of initial purchase and their impact on the purchase behavior of brand extension products, and (3) proposes two mediators that reflect the underlying psychological process.

3 | STUDY DESIGN AND METHODOLOGY

3.1 | Data collection

To test the brand extension model, the authors seek a brand that is familiar to consumers but not too strong, such that it might overshadow or bias consumers' purchase decisions (e.g., Apple). Decades of customer loyalty can weaken the effect of other factors on purchases of brand extensions. Furthermore, if a brand has not launched brand extension products recently, it cannot provide the data needed to test the brand extension model. Therefore, the authors identified Xiaomi, which is a relatively new IT brand that frequently launches new brand extension products, as an ideal candidate for testing the brand extension model. In its short history, Xiaomi has quickly expanded through a brand extension strategy; it is currently the fifth largest smartphone maker in the world (IDC, 2016). Since the release of its first smartphone in August 2011, Xiaomi has gained significant market share and continues to develop wider ranges of consumer electronics products, including smartphones, a smartwatch, smart routers, a smart home device ecosystem, and other products, under the Xiaomi brand.

To obtain data for this study, the authors conducted an online survey on a leading Chinese Web-based survey platform (similar to QuestionPro). The URL of the questionnaire was authorized and published on the official forum of Xiaomi (https://www.miui.com/forum.php). All Xiaomi customers automatically become forum members to obtain after-sales online support (e.g., driver updates). These forum members received a private message from the forum manager soliciting their participation in a survey about IT brand continuance purchase and usage. The message described the research purpose, provided the URL of the questionnaire, and, as an incentive, offered respondents the opportunity to register in a draw to win Xiaomi mobile accessories. To control for potential common method bias (CMB) and ensure that this study captured the necessary data for all stages of IT consumer purchase behavior in a brand extension context, the questionnaire was divided into two parts. The first part included all items except for those measuring behavioral intentions; the second part, issued one month later, measured behavioral intentions to purchase newly released Xiaomi IT products. The survey also included distinct

response formats to minimize the threat of CMB, including semantic differential scales, Likert scales, and reverse-coded statements. Invalid and suspicious data were removed (e.g., duplicate IP addresses, unreasonable survey completion times).

Prior to the data collection, this study computed the required sample size, using the power analysis technique in G*Power 3.0 (Faul, Erdfelder, Lang, & Buchner, 2007). For the conceptual model to achieve a medium effect size ($1 - \beta = 0.95$, $\alpha = 0.05$), the sample size should be at least 146. Rumors that Xiaomi was developing a smartwatch first occurred in 2015 and were finally confirmed by co-founder Liu De on April 29, 2016, who stated that Xiaomi's first smartwatch would be available for purchase in the second half of the year in China (Wanjala, 2016). This brand extension scenario provides a natural experiment setting that allows this study to realistically examine the proposal model and hypotheses. Data for the first part of the online questionnaire were collected from 456 respondents on May 1, 2016. These respondents were Xiaomi customers who had actually purchased and used Xiaomi products. One month later, the second part of the online questionnaire involving three purchase intention questions toward the Xiaomi smartwatch were sent to the same respondents and 400 completed responses were received. A comparison of the demographic characteristics of 400 respondents and 56 non-respondents in the second part of the questionnaire showed no significant differences between the two groups. After 58 invalid responses were removed, this study had 342 valid responses for the analysis, which is far greater than the required minimum. All respondents are Xiaomi consumers who live in China's 21 provinces, four municipalities, or five autonomous regions, except for special administrative regions (i.e., Hong Kong and Macau) and the Gansu province. To test for nonresponse bias, the authors compared the demographic characteristics of the respondents in early and late waves of data collection and found no significant differences. Likewise, a comparison of the demographic characteristics of early and late respondents in the second wave also showed no significant differences. The descriptive statistics indicate that 55.3% of respondents are women, and most respondents are educated (88% with a degree). Furthermore, 96% of respondents are younger than 45 years of age, primarily because Xiaomi has targeted young consumers who are accustomed to using computers, tablet devices, and smartphones to access the Internet and shop online. Moreover, 96.3% of respondents had used Xiaomi smartphones and phone accessories, such as Xiaomi In-Ear Headphones (48.3%). Thus, more than 80% of respondents claimed to have bought two or more different kinds of Xiaomi products. Considering Xiaomi's relatively recent adoption of a brand extension strategy, it is reasonable to anticipate that some respondents might continue or discontinue buying new Xiaomi products in other categories, due to their satisfaction and evaluation of the products they are currently using.

3.2 | Measurement

Multi-item scale measurements are used in this research. Measurement items for most constructs in the brand extension model are adopted from items that had been used and validated in previous studies (see Appendix A). The measure of satisfaction used 7-point

semantic differential items, while all other items were based on a 7-point Likert scale (1 = "strongly disagree" and 7 = "strongly agree"). Prior to releasing the formal online survey, the authors conducted pre-tests of the questionnaire among 20 customers who are using at least one Xiaomi product and 20 former customers who had switched to other IT brands. The goal of this study was to enhance the content validity by checking for any differences in understanding between current and former Xiaomi customers. Confirmation consisted of three measurement items: product performance, service quality, and overall evaluation. These items measured important aspects that customers expect to obtain from a brand (i.e., product and service). Continuance purchase intention was also measured with three items, which would capture consumers' intention to continue purchasing Xiaomi's new product (i.e., smartwatch). The six items used to measure confirmation and continuance purchase intention were adapted from items in previous studies (Bhattacherjee, 2001; Venkatesh & Goyal 2010). Three items from Venkatesh and Brown (2001) and Venkatesh and Goyal (2010) were modified to measure utilitarian expectancy. Hedonic expectancy was operationalized with three items from prior IS studies (Davis, 1989; Venkatesh & Brown, 2001). Perceived usefulness is measured by four items adopted from Davis (1989) and Davis et al. (1989). The first item assesses overall usefulness in respondents' daily activities, and the other three items tap the performance, productivity, and effectiveness dimensions of IT product usefulness. Service quality was operationalized with three items obtained from prior service quality studies (Brady, Cronin, & Brand, 2002; Zeithaml, 1988). Brand satisfaction was measured by three items with 7-point semantic differential scale adapted from Bhattacherjee (2001). Three items, created by Aaker and Keller (1990), Bottomley and Doyle (1996), and Taylor and Bearden (2002), were used to measure perceived fit, such that they capture the similarity between the new extension product and the original product, the helpfulness of the firm's resources and skills for the extension, and the congruency between the image of the brand and the extension.

The authors conducted several tests of the potential threat of CMB. First, Harman's one-factor test was performed using principal components factor analysis (Podsakoff & Organ, 1986). Four factors emerged in the results, the largest variance accounted for by a single factor is 38% (less than 50%), which suggests that CMB does not affect the results. Second, following the recommendation from Podsakoff, MacKenzie, Lee, and Podsakoff (2003), a single-method factor test was conducted using indicators that measured both the theoretical constructs and a common method latent construct; then the structural model was rerun. The results did not change, which further suggests that CMB was not a concern in the research data.

4 | DATA ANALYSIS AND RESULTS

4.1 | Convergent validity and reliability

To test for convergent validity and reliability, three metrics were used: average variance extracted (AVE), Cronbach's alpha, and composite reliability (CR). As illustrated in Table 1, all the AVE (0.739 or greater)

TABLE 1 Convergent validity and reliability measurement

Construct	AVE	Composite reliability	Cronbach's alpha
Purchase intention (PI)	0.853	0.946	0.914
Brand satisfaction (BS)	0.773	0.911	0.853
Hedonic expectancy (HE)	0.745	0.898	0.829
Utilitarian expectancy (UE)	0.791	0.919	0.868
Perceived usefulness (PU)	0.768	0.909	0.849
Perceived service quality (SQ)	0.813	0.929	0.885
Confirmation (Con)	0.757	0.903	0.839
Perceive fit (PF)	0.739	0.895	0.824

and CR (0.895 or greater) values for the constructs were satisfactory. The multiple-item constructs also indicate Cronbach's alpha values greater than 0.70, suggesting the high internal reliability of the scales (Nunnally, 1978). Thus, the measurement items used in this study converged on the same latent construct and demonstrated internal consistency.

4.2 | Discriminant validity

To assess discriminant validity, the techniques proposed by Chin (1998), Fornell and Larcker (1981), and Henseler, Ringle, and Sarstedt (2015) were used. First, a matrix of correlations between constructs with reflective measures was developed. As shown in Table 2, the square root of the AVE of each construct on the diagonal is greater than the correlations between each construct and other constructs that are off the diagonal. Second, discriminant validity was assessed by comparing the loadings of items for an associated construct and their cross-loadings on other constructs. In the model, all items loaded on their corresponding constructs more strongly than on other constructs (see Table 3). Third, the heterotrait–monotrait ratio of correlations (HTMT), a new approach for assessing discriminant validity in variance-based structural equation modeling (SEM) (Henseler et al., 2015), produced HTMT values far below the 0.90 threshold (see Table 4). Finally, to test multicollinearity, the variance inflation factors (VIFs) were calculated. All the VIFs were less than the conservative threshold of 5 indicating that multicollinearity was not a concern. Overall, the results from different analyses provided a strong empirical support for the discriminant validity of the constructs in the research model.

4.3 | Hypotheses testing

The authors extended the original IS continuance model by incorporating new concepts and relationships in a new brand extension model. To ensure rigor in the extended model, the authors first validate the propositions (P1–P5) developed from the base IS continuance model and then test the hypotheses (H1–H7) derived from the extended model. By examining the base model, the authors provide a warrant of the effectiveness of the original model on which a brand extension model is built.

To evaluate the proposed model and the hypothesized relationships among the constructs, the partial least squares (PLS) SEM in Smart-PLS 3.0M were used. Each indicator was modeled reflectively. PLS is commonly used in quantitative research because it has notable advantages, such as minimal demands on measurement scales, sample distribution, and sample size. It excels at causal-predictive analyses in which the hypothesized relationships are complex as shown in this study. Data sample in this research did not display a multivariate normal distribution which is required by covariance-based SEM (CBSEM) methods (Hair, Ringle, & Sarstedt, 2011). Moreover, PLS is more suitable for complex models than CBSEM, especially those with multiple endogeneity and mediation analyses, as appear in the research model in this study. The complexity embedded in the current research model can increase the total number of parameter estimates and cause model identification and convergence issues in CBSEM (Peng & Lai, 2012). Therefore, SmartPLS 3.0M is suitable for data analysis in this study.

The results support the five propositions derived from the original IS continuance model, as well as six of the seven hypotheses (see Appendix B). Figure 5 shows the standardized path coefficients and path significance. The t-statistics and path significance levels for each hypothesized relationship were computed using a bootstrapping method. The path coefficients and R^2 values were obtained by running the PLS algorithm to assess the predictive performance of the structural model. The construct for purchase intention produced an R^2 of 0.506, indicating that more than half of the intention to buy new IT products in the brand extension context could be explained by respondents' perceptions of usefulness, perceived service quality, confirmation, brand satisfaction, perceived fit, hedonic expectancy, and utilitarian expectancy. This empirical evidence strongly confirms the explanatory power of the brand extension model. As shown in Figure 5, the results provided a strong support for most of the relationships in the extended model. Perceived fit was the strongest determinant

TABLE 2 Correlations of constructs (square root of AVE on diagonal)

	BS	Con	HE	PF	PU	PI	SQ	UE
BS	**0.879**							
Con	0.485	**0.870**						
HE	0.491	0.382	**0.863**					
PF	0.210	0.219	0.288	**0.860**				
PU	0.417	0.434	0.455	0.190	**0.876**			
PI	0.533	0.459	0.520	0.439	0.462	**0.923**		
SQ	0.434	0.480	0.425	0.298	0.432	0.477	**0.901**	
UE	0.437	0.376	0.538	0.209	0.485	0.496	0.367	0.889

TABLE 3 Loadings and cross-loadings

	BS	Con	HE	PF	PU	PI	SQ	UE
BS1	**0.881**	0.436	0.450	0.186	0.345	0.475	0.364	0.400
BS2	**0.890**	0.479	0.398	0.202	0.388	0.489	0.396	0.395
BS3	**0.866**	0.360	0.449	0.164	0.368	0.441	0.384	0.356
Con1	0.438	**0.886**	0.319	0.212	0.358	0.409	0.421	0.325
Con2	0.378	**0.882**	0.291	0.156	0.403	0.358	0.446	0.293
Con3	0.450	**0.842**	0.388	0.204	0.373	0.433	0.387	0.365
HE1	0.397	0.335	**0.882**	0.243	0.392	0.502	0.356	0.454
HE2	0.450	0.355	**0.877**	0.256	0.378	0.417	0.359	0.461
HE3	0.425	0.300	**0.831**	0.248	0.409	0.426	0.386	0.479
PF1	0.137	0.193	0.206	**0.844**	0.141	0.338	0.222	0.142
PF2	0.181	0.190	0.224	**0.861**	0.180	0.361	0.234	0.160
PF3	0.214	0.184	0.303	**0.873**	0.167	0.425	0.304	0.227
PU1	0.385	0.351	0.428	0.156	**0.852**	0.395	0.362	0.397
PU2	0.375	0.389	0.378	0.161	**0.895**	0.427	0.377	0.452
PU3	0.337	0.402	0.391	0.183	**0.882**	0.392	0.396	0.425
PI1	0.490	0.431	0.504	0.424	0.424	**0.919**	0.439	0.472
PI2	0.522	0.421	0.489	0.397	0.412	**0.932**	0.435	0.453
PI3	0.464	0.420	0.447	0.396	0.445	**0.919**	0.446	0.449
SQ1	0.411	0.438	0.426	0.286	0.385	0.447	**0.895**	0.352
SQ2	0.391	0.420	0.379	0.267	0.387	0.438	**0.921**	0.337
SQ3	0.369	0.442	0.339	0.252	0.397	0.401	**0.888**	0.300
UE1	0.452	0.360	0.485	0.225	0.431	0.513	0.367	**0.904**
UE2	0.348	0.328	0.475	0.181	0.418	0.403	0.298	**0.889**
UE3	0.354	0.311	0.474	0.144	0.445	0.394	0.307	**0.874**

TABLE 4 Heterotrait–monotrait ratio (HTMT)

	BS	Con	HE	PF	PU	PI	SQ	UE
BS								
Con	0.572							
HE	0.585	0.458						
PF	0.246	0.264	0.344					
PU	0.490	0.515	0.543	0.226				
PI	0.603	0.525	0.596	0.501	0.525			
SQ	0.498	0.558	0.494	0.344	0.499	0.529		
UE	0.502	0.439	0.634	0.239	0.565	0.552	0.414	

of purchase intention (H3), significant at the 0.1% level. In line with P1, brand satisfaction contributed significantly to motivating current brand users to continue buying other products from the same brand in the future. H4a and H4b were also supported by the results, such that intrinsic and extrinsic motivators significantly influenced consumers' intentions to buy brand extension products, consistent with previous marketing research.

Empirical research findings fully supported the paths between confirmation and perceived usefulness (P2), and between perceived usefulness and brand satisfaction (P4); they also demonstrated that perceived service quality is significantly related to consumers' satisfac-

tion (H2a). This result is understandable, in that the authors explore an individual consumer's intention to continue purchasing products from the same brand. In strong support of P3 and H1, confirmation was a significant predictor of perceived usefulness ($\beta = 0.434$) and perceived service quality ($\beta = 0.480$), explaining 18.9% of the variance in usefulness and 23.1% of the variance in service quality. In addition to demonstrating the strong relationship between perceived usefulness and IT product purchase intentions in a brand extension context (P5), the model showed that perceived service quality offered another significant predictor of purchase intentions, at a 5% significance level (H2b). Brand satisfaction and perceived usefulness had strong direct effects
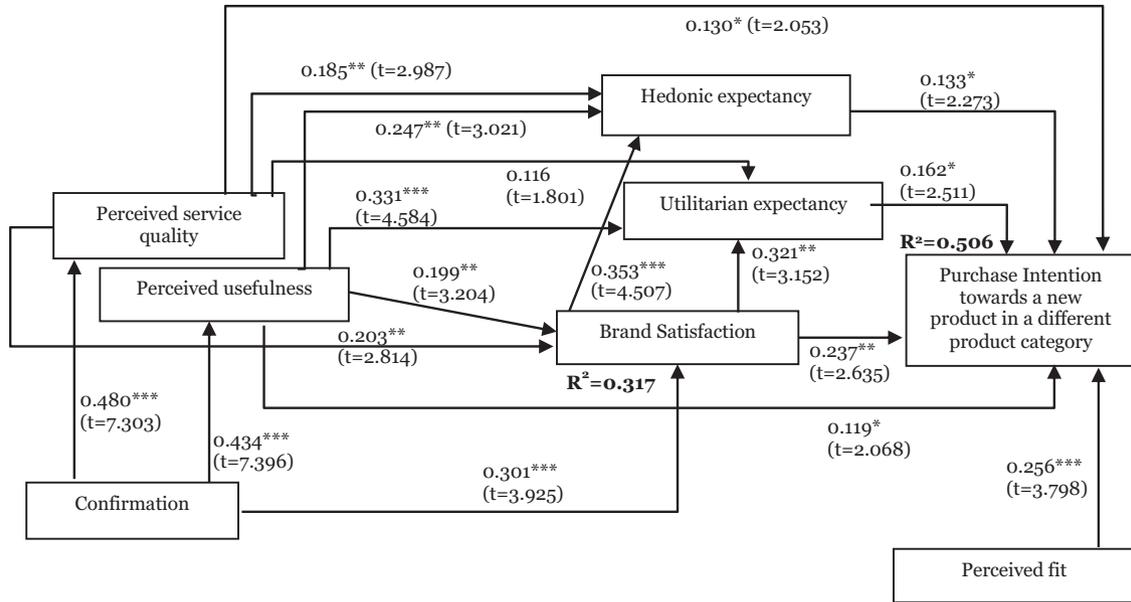
FIGURE 5 Brand extension model with empirical results
Note: *denotes $p < 0.05$, **denotes $p < 0.01$, and ***denotes $p < 0.001$
$R^2 = 0.189$ (Perceived usefulness); $R^2 = 0.231$ (Service quality)
$R^2 = 0.342$ (Hedonic expectancy); $R^2 = 0.312$ (Utilitarian expectancy)

on hedonic expectancy and utilitarian expectancy, and the four paths (H5a, H5b, H7a, and H7b) were significant at the 0.1% or 1% level. Perceived service quality also related significantly to hedonic expectancy (H6a) at the 1% level. However, research findings did not affirm a path between perceived service quality and utilitarian expectancy at the 5% level of significance (H6b); this relationship was only significant at the 10% level. In this research, the authors develop the construct of perceived service quality mainly to capture Xiaomi users' evaluations of the intangible services associated with the transaction process. For example, the intangible services could include prior and after-sales enquiry and delivery services. The construct of utilitarian expectancy is used to capture Xiaomi users' expectations that the functions of Xiaomi's newly developed products can enhance their task performance or improve their work efficiency. It is plausible that high service quality during prior and after-sales enquiry and product delivery do not have strong impact on consumers' functional perceptions, which are captured by the utilitarian expectancy, of Xiaomi products.

4.4 | Post hoc assessment of mediating effects

The authors expected hedonic expectancy and utilitarian expectancy to act as mediators between the three post-consumption variables and behavioral intentions. Because the brand extension model contained two mediators, the authors applied the bootstrapping method suggested by Preacher and Hayes (2008) to test for multiple mediations. Bootstrapping is a nonparametric resampling procedure that does not impose an assumption of normality on the sampling distribution. This method involves repeated sampling from the data and estimating the indirect effects of mediators in each sampled data set.

Through the repeated sampling, a 95% confidence interval (CI) for the indirect effects will be obtained. If the CI for a mediator contains zero, it suggests that no significant mediating effect is found. In addition, contrasting the two mediators can show how their indirect effects might be distinguished, in terms of the magnitude of the dependent variable. Following Preacher and Hayes's (2008) recommendations, a bias-corrected (BC) bootstrapping method was applied. This method tends to be superior to the Sobel test (Sobel, 1982) and the product-of-coefficients approach (e.g., Williams & MacKinnon, 2008). The BC bootstrap performs better in terms of both statistical power and Type I error rate (Preacher & Hayes, 2008). Using Preacher and Hayes' SPSS macro, each independent variable (IV) can be tested in a separate model if there are two or more IVs in the model. In each model, one IV can serve as a primary IV, and other IVs as covariates. Table 5 shows the tests results for mediating effects. First, when brand satisfaction is the IV and perceived usefulness and perceived service quality are covariates in a model (Model 1), brand satisfaction exerted a significant total effect on purchase intention (coefficient = 0.340, t-value = 6.941). The inclusion of the mediators, hedonic expectancy, and utilitarian expectancy decreased the direct effect of brand satisfaction on purchase intentions, though it remained significant (coefficient = 0.243, $t = 4.867$). Thus, utilitarian expectancy and hedonic expectancy partially mediate the impact of brand satisfaction on purchase intentions. The difference between the total and direct effects is the total indirect effect, reflecting the mediating effects of utilitarian expectancy and hedonic expectancy; the point estimate is 0.097, with a 95% BC bootstrap CI between 0.046 and 0.168. Thus, the significant indirect effect suggests that both hedonic and utilitarian expectancy exert significant mediating effects. The point estimate of the indirect impact through utilitarian expectancy is 0.042, and that through hedonic expectancy

TABLE 5 Summary of the tests of mediating effects

Total effect of IV on DV		Direct effect of IV on DV				Indirect effects		
						Point estimate	BC 95% confidence interval	
Coefficient	t-Value	Coefficient	t-Value				Lower	Upper
Model 1: BS as the IV								
0.340	6.941	0.243	4.867	Total		0.097	0.046	0.168
				Mediators	UE	0.042	0.008	0.115
					HE	0.055	0.010	0.132
				Contrast	UE vs. HE	−0.013	−0.0111	0.078
Model 2: PU as the IV								
0.219	4.469	0.119	2.363	Total		0.100	0.046	0.192
				Mediators	UE	0.056	0.015	0.129
					HE	0.044	0.009	0.111
				Contrast	UE vs. HE	0.012	−0.061	0.096
Model 3: SQ as the IV								
0.235	4.755	0.182	3.771	Total		0.053	0.011	0.126
				Mediators	UE	0.020	−0.001	0.070
					HE	0.033	0.005	0.090
				Contrast	UE vs. HE	−0.013	−0.066	0.037

IV, independent variable; DV, dependent variable; BC, bias-corrected bootstrap; BS, brand satisfaction; SQ, perceived service quality; PU, perceived usefulness; HE, hedonic expectancy; UE, utilitarian expectancy; PI, purchase intention.

is 0.055, a difference of −0.013. The CI of the contrast contains 0, suggesting that the indirect effects of hedonic expectancy and utilitarian expectancy on purchase intention are not significantly different in magnitude. In summary, both utilitarian and hedonic expectancy partially mediate the impact of brand satisfaction on purchase intention and the magnitude of the two mediating effects is similar. Second, when perceived usefulness is the IV, and brand satisfaction and perceived service quality are covariates in a model (Model 2 in Table 5), the result is consistent with that of the Model 1, yielding the significant mediating effects of utilitarian and hedonic expectancy on the relationship between perceived usefulness and purchase intention.

Third, when perceived service quality is the IV and brand satisfaction and perceived usefulness are covariates in a model (Model 3 in Table 5), perceived service quality exerts a significant total effect on purchase intention (coefficient = 0.235, t-value = 4.755). When the mediators, hedonic expectancy, and utilitarian expectancy are introduced in the model, perceived service quality still has a significant direct effect on purchase intentions, but the effect decreases (coefficient = 0.182, t = 3.771). The indirect effects show that only hedonic expectancy acts as a mediator given its 95% CI does not contain 0. The contrast between utilitarian expectancy and hedonic expectancy has a 95% CI of −0.066 to 0.037, suggesting that their indirect effects do not differ significantly, even though one is significantly different from 0 and the other is not. Such "apparent paradoxes" occur "when one of the specific indirect effects involved in the contrast is not sufficiently far from zero" (Preacher & Hayes, 2008, p. 886). In summary, utilitarian expectancy and hedonic expectancy partially mediate the impact of brand satisfaction and perceived usefulness on purchase intention, whereas the impact of perceived service quality on purchase intentions is only mediated through hedonic expectancy.

5 | DISCUSSION

5.1 | Theoretical implications

The use of brand extensions as a marketing strategy to launch new products is pervasive (Keller, 2008). Although marketing studies on brand extension and IS research on continuance usage are abundant, few studies thoroughly illustrate continuance purchase behavior for a brand extension of IT products. The proposed interdisciplinary model examines cross-category purchases of brand extension products using data collected from real brand users. The findings contribute to the prior literature in a number of ways. First, research findings advance research at the IS and marketing interface by identifying perceived service quality as an antecedent of brand satisfaction, in addition to perceived usefulness. Whereas IS studies have examined how perceived usefulness affects users' intentions to adopt the system continuously (Bhattacherjee, 2001), they remain silent about the importance of service perceptions for determining the brand experience. The extended model decomposes *ex post* perceptions (i.e., brand experience) into two dimensions: perceived usefulness and perceived service quality. Perceived usefulness captures product attribute-related evaluations; perceived service quality refers to non-product attribute-related elements (e.g., customer service). Together, these two concepts offer a more in-depth understanding of the effect of *ex post* expectations on consumers' brand satisfaction. The empirical results illustrate that perceived service quality has a significant impact on both brand satisfaction and consumers' intentions to purchase a brand extension product.

Second, this research advances brand extension literature by offering explanations of the underlying processes for purchase intentions, beyond the mediating effect of satisfaction in prior IS models.

Unlike prior theories and models (e.g., ECT, IS continuance), which mainly focus on the direct influence of pre-consumption and post-consumption variables on behavioral intentions, this study investigates the mediation effect of motivation variables on behavioral intentions. By developing and testing two parallel mediators (hedonic and utilitarian expectancy), the authors provide a theoretical explanation of the impact of post-consumption perceptions on subsequent purchase intentions toward a brand extension product. All three post-consumption variables (i.e., perceived usefulness, perceived service quality, and brand satisfaction) affect consumers' continuance purchase intentions through hedonic expectancy and two of the three (perceived usefulness and brand satisfaction) also through utilitarian expectancy. This finding contributes to a deeper understanding of the mechanisms through which post-consumption variables influence subsequent brand purchases via pre-consumption expectations of a new brand extension product.

Third, this study contributes new insights to brand extension literature by empirically testing perceived fit using real consumer data. The results provide support for the effect of perceived fit on cross-category purchases of brand extension products. Many brand extension studies rely on convenience samples, hypothetical scenarios, and fictitious brands (e.g., Aaker & Keller, 1990; Broniarczyk & Alba, 1994; Taylor & Bearden, 2002), leading some scholars to challenge the importance and external validity of the perceived fit construct (Klink & Smith, 2001). The empirical results from this study address validity criticisms and confirm the strong effect of perceived fit on consumers' intentions to buy a brand extension product, in line with the original findings from Aaker and Keller (1990) and subsequent empirical work by Bottomley and Holden (2001).

This research also answers calls for a more integrative, multidisciplinary view of consumers' interactions with IT products and services (Morgan-Thomas & Veloutsou, 2013). This study offers arguably one of the first conceptualizations and tests of a theoretical model of consumer acceptance of IT products in a brand extension context. By examining consumers' continuance purchase behavior toward new IT products introduced by firms that rely on brand extension strategies, this study extends literature on technology adoption into a relatively new area. In particular, the authors introduce a complementary brand perspective to current IS theoretical models (e.g., Bhattacherjee, 2001) and thus achieve a better understanding of IS continuance behavior in consumer contexts.

5.2 | Practical implications

This study provides several important implications for brand managers and IT product manufacturers. In particular, brand managers should work to improve their brands' service quality, because it not only influences the formation of consumers' brand satisfaction but also convinces them to keep purchasing new products from other categories with the same brand. For IT products that use the same technologies as their competitors, brand managers should endeavor to provide exceptional service to consumers and use this service as a differentiation strategy. For example, brand managers should ensure that all external communications (e.g., Web site enquires, social media posts, and cus-

tomer e-mails) can be processed in a timely fashion so that existing customers perceive a high-level service quality. Moreover, brand managers can examine past consumer behavior through different methods (e.g., surveys and trial studies) and accumulate large volumes of reliable consumer data. Subsequently, brand managers can formulate effective marketing campaigns based on simulation and big data analysis and enhance brand and product visibility and quality. Marketing managers can improve consumers' perceptions of service quality by offering fast delivery, easy product returns and repair, and reliable and effective call center services.

Marketing managers may study competitors' products and services and try to identify their shortcomings that lead to customers' dissatisfaction. A specific technique that marketing managers can rely on is to automatically obtain online reviews about competitors' products and services through developing a Web crawler. These online reviews are provided by consumers and are widely available, free or low cost, and easily accessible from anywhere anytime. These online reviews provide a rich source of data to understand the advantages and disadvantages of competitors' products and services, which lead to customers' satisfaction/dissatisfaction. Marketing managers may consider using data mining techniques in the field of natural language processing (e.g., Latent Dirichlet Allocation or LDA) to extract the attributes of products and services from online reviews. These extracted attributes represent different aspects influencing customer satisfaction. Manufacturers should enhance and communicate about both hedonic and utilitarian aspects of their products, because such features have direct impacts on consumers' subsequent purchases from the same brand. Hedonic and utilitarian perceptions also mediate the influence of post-consumption views formed through past purchase on consumers' purchases of future products. When consumers are satisfied with their prior purchase, their positive perceptions could spill over to their expectations of the hedonic and utilitarian aspects of the brand extension product. For example, if consumers are satisfied with a certain brand of smartphone because its connections are always stable, its camera takes high quality pictures, and it has fun ringtones and exciting wallpapers for the screen, offered only by this brand, they are likely to believe that the same brand can provide similar hedonic and utilitarian values in its brand extension products. Therefore, IT manufacturers should highlight these two aspects of their products through advertisement, social media, product package, and other communication channels. Sales and service personnel should also be trained to convey these benefits to consumers consistently.

Since hedonic and utilitarian features have positive impact on purchase intention, IT manufacturers should develop such features to attract consumers' attention. Their product designers can find inspiration for new products from crowdsourcing platforms and incorporate innovative ideas in brand extension products. In addition, IT manufacturers can launch Enterprise 2.0 coordination platforms (e.g., Yammer and Slack) and invite customers to participate in new product development. By adapting the technologies and philosophies of individual-level Web 2.0 applications (e.g., Facebook, LinkedIn, and Twitter), Enterprise 2.0 platforms also allows companies to solicit individual consumer's feedback and track consumer satisfaction with different products.

The significant impact of perceived fit on consumers' purchase intentions suggests that companies need to demonstrate the congruency between the characteristics associated with the parent brand and the brand extension products. Brand managers could emphasize the technological strength and resources possessed by the company and how these advantages can be utilized in subsequent brand extension products. These messages should be delivered to consumers through advertising, social media, and sales channels. By doing so, companies can build consumers' confidence in their future products. If consumers believe that the company's strengths and capabilities demonstrated in the current product can be readily transformed to its brand extension products in other categories, consumers will be more confident about what to expect from their future purchases and thus are more likely to buy the brand extension products. For example, brand managers should have a deep understanding of both the current and the future target market, so they can ensure that the brand-related elements (e.g., Web design, graphic design, and advertising slogans) valued highly by existing consumers will be carried over to future brand extension products.

5.3 | Limitations

This study is not without its limitations. The first limitation concerns the generalizability of the current research findings. This study was conducted in China, where Xiaomi reshapes the smartphone market; the findings may not apply to countries with more established marketing structures or consumption habits. Second, the research results may not hold equally in other brand contexts, because well-established brands may have other non-brand-related advantages, such as a patent on certain technology or an extensive sales network. Third, the effects of the proposed factors on consumers' purchase intention toward the Xiaomi smartwatch may not be the same for other IT brands that have different brand equity, brand awareness, brand preference, and technological advantages. For example, Apple is a strong brand with positive brand image, high brand equity, and brand loyalty and it also possess its own operation system, the iOS system. It is plausible that Apple users will continue to purchase new Apple products even if they experience unpleasant customer service and inferior product performance. As a fourth limitation, the data sample of this study consists of consumers who are younger than 45 years old, so the current findings may not apply to brands with older consumer demographics. Future research should test the proposed brand extension model in different product, brand, and market contexts. Finally, the questionnaire in this study did not include measurements such as consumers' involvement level in the decision-making process. Scholars are encouraged to develop reliable scales to measure and examine the consumers' involvement level during their purchasing decision toward brand extension products.

6 | CONCLUSIONS

This research has sought to develop a brand extension model and address the questions about cross-category purchases of IT products

from the same brand. To build the proposed model, this study used the IS continuance model as a base model and incorporated brand extension-related factors in the proposed model, such as perceived fit, perceived service quality, and brand satisfaction. The unique data set comes from real brand users, enabling the authors to assess these users' purchase intentions toward a newly released product from the same brand. These field data from existing Xiaomi customers, regarding their purchase intentions toward future Xiaomi products, provide empirical support for the brand extension model. Perceived usefulness continues to influence users' continuance intentions to buy new IT products from the same brand, but the newly added factors, such as perceived service quality of the brand, perceived fit of the parent brand, and brand satisfaction, also have strong effects on consumers' purchase decisions regarding brand extension products. Noteworthy contributions of this study also include the revelation of two mediators—utilitarian expectancy and hedonic expectancy—that offer additional explanations for the impact of post-consumption factors on purchase intentions toward impending brand extension products.

In summary, this study draws attention to substantive differences between general technology-level adoption and continuance purchases of a brand extension product. The authors theorize a brand extension model by integrating brand extension factors and underlying motivation constructs. Both the base IS continuance model and the extended model are validated and supported by real consumer data. In the future, the authors recommend that scholars conduct longitudinal research on brand extensions, with a particular focus on further testing of consumers' continuance purchase decisions regarding an IT brand in multiple waves of new product launches, as well as to capture complex, dynamic changes in individual perceptions (e.g., perceived usefulness, perceived service quality).

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APPENDIX A: MEASUREMENT ITEMS FOR THE BASE MODEL AND THE BRAND EXTENSION MODEL

TABLE A1 Constructs from the base model: IS continuance model

Items	Operational definition	Construct items	Sources
Perceived usefulness	A Xiaomi user's perception of the expected use benefits of purchased Xiaomi products.	*(1 = Strongly Disagree to 7 = Strongly Agree)* 1. I find Xiaomi products useful in my daily activities. 2. Using Xiaomi products enables me to accomplish tasks more quickly. 3. Using Xiaomi products increases my productivity. 4. Using Xiaomi products improves my job performance.	Davis, 1989; Davis et al., 1989
Purchase intention	A Xiaomi user's intention to continue purchasing new Xiaomi products.	*(1 = Strongly Disagree to 7 = Strongly Agree)* 1. I intend to buy a Xiaomi smartwatch in the future. 2. I predict that I would buy a Xiaomi smartwatch in the future. 3. I don't plan to buy a Xiaomi smartwatch in the future (reverse coded).	Bhattacherjee, 2001; Venkatesh & Goyal, 2010
Confirmation	A Xiaomi user's perception of the congruence between the expectation of Xiaomi products and their actual performance.	*(1 = Strongly Disagree to 7 = Strongly Agree)* 1. My experience with using Xiaomi products was better than I expected. 2. The service level provided by Xiaomi was better than I expected. 3. Overall, most of my expectations from using Xiaomi were confirmed.	Bhattacherjee, 2001; Venkatesh & Goyal, 2010

TABLE A2 Constructs modified or added to the extended model: brand extension model

Brand satisfaction	A Xiaomi user's feelings about prior Xiaomi products and services via first-hand experience.	*How do you feel about your overall experience with Xiaomi products and services to the present time:* Very dissatisfied (1) to Very satisfied (7) Very displeased (1) to Very pleased (7) Very frustrated (1) to Very contented (7)	Bhattacherjee, 2001
Perceived service quality	A Xiaomi user's evaluation of the intangible services associated with the transaction process (including prior/after-sales enquiry services and delivery services).	*(1 = Strongly Disagree to 7 = Strongly Agree)* 1. I find that Xiaomi provides superior customer service. 2. I feel that Xiaomi delivers excellent service. 3. I would say that Xiaomi offers a high-quality service.	Brady, Cronin, & Brand, 2002; Zeithaml, 1988
Perceived fit	A Xiaomi user's beliefs about whether the new, extended product is consistent or compatible with the parent brand.	*(1 = Strongly Disagree to 7 = Strongly Agree)* 1. I find that there is a global similarity between the parent brand (of the smartphone) and the extension product, Xiaomi smartwatch. 2. People, facilities, and skills used in making the original product (smartphone) are helpful for Xiaomi to make the extension product, Xiaomi smartwatch. 3. I feel that there is a match between the image of Xiaomi and the smartwatch extension product.	Aaker & Keller, 1990; Bottomley & Doyle, 1996; Taylor & Bearden, 2002
Hedonic expectancy	A Xiaomi user's expectation that purchasing and using Xiaomi's new products can bring enjoyment, fun, or pleasure.	*(1 = Strongly Disagree to 7 = Strongly Agree)* 1. I expect that using a Xiaomi smartwatch would be enjoyable. 2. I expect that using a Xiaomi smartwatch would be pleasant. 3. I expect that using a Xiaomi smartwatch would be fun.	Davis, 1989; Venkatesh & Brown, 2001
Utilitarian expectancy	A Xiaomi user's expectation that the functions of Xiaomi's new products are useful for enhancing task performance or improving work efficiency.	*(1 = Strongly Disagree to 7 = Strongly Agree)* 1. I expect that purchasing a Xiaomi smartwatch would be useful in my daily activities. 2. I expect that purchasing a Xiaomi smartwatch would enable me to accomplish tasks more quickly. 3. I expect that purchasing a Xiaomi smartwatch would increase my productivity.	Venkatesh & Brown, 2001; Venkatesh & Goyal, 2010

APPENDIX B: RESULTS OF HYPOTHESIS TESTING

TABLE B1 Base model testing: IS continuance model

Scale items	Path coefficient	Test result	p-Value
P1: Consumers' brand satisfaction is positively associated with their continuance intentions to purchase a new IT product launched by the same brand in a different category.	0.237 ($t = 2.635$)	Supported	0.004
P2: The extent of consumers' confirmation is positively associated with their brand satisfaction.	0.301 ($t = 3.925$)	Supported	<0.001
P3: The extent of consumers' confirmation is positively associated with their perceived usefulness.	0.434 ($t = 7.396$)	Supported	<0.001
P4: Consumers' perceived usefulness is positively associated with their brand satisfaction.	0.199 ($t = 3.204$)	Supported	0.001
P5: Consumers' perceived usefulness is positively associated with their continuance intentions to purchase a new IT product launched by the same brand in a different category.	0.119 ($t = 2.068$)	Supported	0.039

TABLE B2 Extended model testing: brand extension model

Scale items	Path coefficient	Test result	p-Value
H1: Consumers' confirmation positively influences their perceptions of service quality.	0.480 ($t = 7.303$)	Supported	<0.001
H2a: Consumers' perceived service quality positively influences their brand satisfaction.	0.203 ($t = 2.814$)	Supported	0.006
H2b: Consumers' perceived service quality positively influences their continuance intention to purchase a new IT product launched by the same brand in a different category.	0.130 ($t = 2.053$)	Supported	0.041
H3: Consumers' perceived fit positively influences their continuance intentions to purchase a new IT product launched by the same brand in a different category.	0.256 ($t = 3.798$)	Supported	<0.001
H4a: Hedonic expectancy of using a new IT product positively influences consumers' continuance intentions to purchase a new IT product launched by the same brand in a different category.	0.133 ($t = 2.273$)	Supported	0.023
H4b: Utilitarian expectancy of using a new IT product positively influences consumers' continuance intentions to purchase a new IT product launched by the same brand in a different category.	0.162 ($t = 2.511$)	Supported	0.012
H5a: Consumers' perceived usefulness positively influences the hedonic expectancy of using a new IT product launched by the same brand in a different category.	0.247 ($t = 3.021$)	Supported	0.003
H5b: Consumers' perceived usefulness positively influences the utilitarian expectancy of using a new IT product launched by the same brand in a different category.	0.331 ($t = 4.584$)	Supported	<0.001
H6a: Consumers' perceived service quality positively influences the hedonic expectancy of using a new IT product launched by the same brand in a different category.	0.185 ($t = 2.987$)	Supported	0.003
H6b: Consumers' perceived service quality positively influences the utilitarian expectancy of using a new IT product launched by the same brand in a different category.	0.116 ($t = 1.801$)	Not supported	0.072
H7a: Consumers' brand satisfaction is positively associated with the hedonic expectancy of using a new IT product launched by the same brand in a different category.	0.353 ($t = 4.507$)	Supported	<0.001
H7b: Consumers' brand satisfaction is positively associated with the utilitarian expectancy of using a new IT product launched by the same brand in a different category.	0.321($t = 3.152$)	Supported	0.002