



Online information product design: The influence of product integration on brand extension

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ABSTRACT

With users placing an increasing demand on cross-product integration in electronic markets, the success of new information products becomes increasingly dependent on its integration design with existing products. Consequently, many online vendors have been incorporating branding into information product designs. This approach reflects a critical marketing strategy called “brand extension.” In contrast to the popularity of this strategy by online vendors, however, there is little theoretical work or empirical evaluation in the information systems (IS) literature on the relationship between information product integration design under the same brand umbrella and consumers’ usage of the newly introduced information products. Addressing this gap, this study investigates the antecedents of online brand extension evaluation with an emphasis on the influence of product integration. Based on the stimulus–organism–response paradigm and the categorization theory, this study proposes and validates a research model using a scenario-based experiment that involves a search engine and its extension to an e-commerce website and an online encyclopedia. The findings confirm that integration level influences perceived fit and perceived tie between focal and newly extended products. Perceived fit and perceived tie positively impact users’ evaluations of online brand extension, and consequently influence users’ intention to use the extended products. User expertise moderates the effect of product integration on perceived tie: the greater the users’ expertise in focal product, the stronger perceived tie is affected by online product integration. This study contributes to both research and practice by advancing the overall understanding of exploiting online branding values and by providing insights into online information product design and promotion.

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1. Introduction

The commercial success or failure of any product innovation does not rely solely on technological features, but often rests on finding the right combination of product design and marketing strategies [13,27,65]. Online information products are no exception. As the widespread acceptance of Internet has given rise to popular online brands such as eBay, Google, Amazon, and Yahoo, exploiting brand values to support product innovation has become of increasing concern to companies. In this regard, the design of new information products and their introduction in electronic markets are of particular interest, because a significant part of a brand’s value comes from its contribution to launching new products [60].

Brand extension, described as the “use of established brand names to enter new product categories or classes” [1, p. 27], has become a subject of increasing interest to scholars in marketing and

information systems disciplines because it represents an efficient strategy for firms to leverage online brand value. Literature on this topic has focused on: (1) various conceptualizations of perceived fit (usually defined as shared associations between the extension and parent brand) (e.g. [49,61]), (2) communication strategies for brand extension success (e.g. [42,64,75]), and (3) individual-level differences (e.g. [2,34,43,79]). However, little is known about the product design elements for online brand extension. IS scholars are thus presented with ample opportunities to contribute unique knowledge to this research area.

Online information products refer to intangible information goods that can be used to satisfy Internet users’ desires or needs. Compared with traditional physical products, there are at least three distinct characteristics for online information products. First, as intangible goods, electronic bits are the most important constituent of online information products. With increasingly transmission speed, online information products can be delivered within minutes or even seconds, resulting in a delivery scheme that is impossible for physical products [50]. This extends the traditional notion of product boundaries, and facilitates an information retrieval process that

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strengthens associations between extended and existing products [72]. Second, hyperlinks are another distinguishing feature for online information products that allows vendors to easily associate one product with another [67]. As these are based on stable and pre-defined interfaces, the high connectivity of hyperlinks facilitates information sharing and ensures a sense of interoperability between products [72]. Third, the marginal cost of producing information products is generally negligible when compared with conventional physical products. Hence, online information products can be easily integrated and packaged for users [35,36]. These distinctions present IS scholars with both challenges and opportunities for investigating online product design.

Studying online brand extension builds upon and further contributes to innovative thinking in the IS field because it considers a behavioral mechanism that has been under-investigated. That is, if newly developed information products share the same brands with incumbent products, users may be more likely to adopt and use them. As a result, many online vendors have been trying to incorporate branding values into product design to promote product adoption. For example, building on its success in the search engine market, Google exploited its widely recognized brand to launch its email service, Gmail. To promote Gmail, Google added a hyperlink between the main page and Gmail, and incorporated search engine functionality into Gmail pages. This coupling allows Gmail users to perform searches without going to Google's home page, and facilitates visitors of Google's home page to check their email messages.

Despite the advanced practice of brand extension by online vendors, there is little theoretical work in the IS literature that considers the relationship between information product design and the cognitive and behavioral measures of users. Incisive research on product design can help online providers better understand the different factors contributing to successful product design, and the ways they can be used to maximize the benefit of exploiting branding values. The notion of IS/IT adoption and usage has played a central role in IS research [12,74]. Following a call by Rogers [56] that people should not view innovation in isolation, and that the adoption of one innovation may trigger the adoption of others, IS researchers have gradually paid attention to the relationship of usage behavior between different information technologies [40,63]. However, scant research has scrutinized the adoption and usage behavior between different information products from the product design perspective. Thus, studies in this area should complement the current understanding of adoption of multiple IS/IT products. In particular, we expect that the research presented here can shed light for a cross-boundary research stream that incorporates market value and product design into technology innovation research.

Our study identifies distinct elements of online brand extension and focuses on the influence of online information product integration design. Product integration is the assembling of different products together to facilitate data/information sharing (such as information about user profile) and to enhance the overall value to users through products' mutual cooperation [45,57]. In the context of product integration and brand extension, products can be categorized as a focal product and a newly extended product under promotion. Although studies have argued that the success of a new product is dependent on its integration with relevant extant products [18], the present study poses the following questions that have so far received little theoretical and empirical attention: (1) to what extent does information product integration influence users' acceptance of a newly extended information product sharing the same brand? (2) What is the underlying psychological process that explains the relationship between information product integration and online brand extension evaluation?

2. Theoretical background

The stimulus–organism–response (S–O–R) paradigm provides an overarching framework to explain how human responses are

developed from environmental stimuli [41]. Based on the S–O–R paradigm, environmental cues act as stimuli that cause an individual's cognitive or affective reactions, which in turn affect his or her behavior [41]. Stimulus is conceptualized as an influence that arouses the individual, affecting his or her internal organismic states [4,24]. In the context of a marketing environment, the stimulus can be any product design elements, such as product presentation contents and formats, which form an extrinsic attribute of a product [48]. As a design element of online information products, product integration works as an extrinsic attribute of the focal product and, thus, triggers an individual's cognitive and behavioral reactions.

2.1. Online information product integration as an environmental stimulus

Product integration has two facets of coupling: the nature of coupling and the extent of coupling. The former refers to whether the integration is achieved outside or inside of the focal product [44,66], while the latter refers to whether the integration is comprehensive with additional value-added functionalities or a minimal level of functional integration across two products [10,44]. Three different types of product integration were identified based on the two dimensions: *value-added integration*, *add-on module integration*, and *data interface integration* [45].

Value-added integration involves combining the focal product with a relevant product internally, and merging the data and the functions of the two products in a seamless fashion [28]. On the basis of the coupling between the two products, the integration offers additional product features. Because of internal coupling and the comprehensive sharing of functions, the boundary between the focal and the relevant product is obscured. This boundary becomes even more obscured in online environment because additional features can be delivered to users as soon as they are requested. For example, through the coupling of Yahoo! portal and Yahoo! mailbox, Yahoo! provides additional features that were previously unavailable. On the homepage for Yahoo.com, Yahoo! email users can see their number of new messages, subjects, and sender names without having to log into the inbox page.

Add-on module integration involves the integration of the focal product with a relevant product through an external module or component. The external module or component is not an independent product, but rather an add-on function (e.g. the Skype add-on for Internet Explorer), a pop up mini-site (e.g., the mini-site of Tencent QQ in China), or a pop up messenger (e.g. Real Messenger). For example, in order to promote film.com through the RealPlayer software, RealNetworks uses the external module, Real Messenger, to integrate the RealPlayer and film.com. While the integration is achieved externally, such an add-on module provides the requisite support for a comprehensive integration and sharing of data and functions between products [45].

Data interface integration involves the external integration of the focal product with a relevant product by defining the technical interface to facilitate the transfer of data across the two products [57]. Such product interface specifications provide only a minimal level of functional integration across the two products. Based on well-documented and predefined interface, online vendors usually use hyperlinks to facilitate data sharing across focal and promoted products [72]. The integration of Google search engine and Google Calendar represents such an example. To promote Google Calendar, Google adds a hyperlink between Google's home page and Google Calendar to facilitate data exchange. Hence, Google search engine users can directly follow this linkage and visit Google Calendar. Except for simple connectivity between these two products, any changes made in Google's search engine do not require the company to make changes to Google calendar.

2.2. Categorization theory and online user's cognitive reactions

When an individual faces a stimulus, cognitive reactions usually occur [24]. Upon being presented with a newly extended product,

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