



Technology sourcing for website personalization and social media marketing: A study of e-retailing industry[☆]



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ABSTRACT

Extant streams of literature on technology sourcing, website personalization and social media marketing are distinct from one another and hence are unable to explain the impact of technology sourcing for website personalization and social media marketing on sales. To address this gap, we use various concepts such as efficiency, adaptability, risks of dependency, lack of quality control, asset-specificity and tacit knowledge to hypothesize the direct effect of technology sourcing on sales as well as the indirect effect through social media performance. Using survey data from 105 U.S. e-retailers, we show that e-retailers using mixed technology sourcing for website personalization have greater sales than e-retailers that use either internally or externally developed technology. On the contrary, e-retailers selecting externally developed technology for social media marketing have greater sales than e-retailers that offer social media marketing that uses either internally developed technology or mixed technology sourcing.

1. Introduction

The Web has made one-to-one marketing eminently possible by allowing e-retailers to implement website personalization (WP) and social media marketing (SMM) (Ho, 2006; Kaptein & Parvinen, 2015). The digital nature of the Web has created opportunities for e-retailers to quickly collect and analyze customer data at a low cost and provide unique content of direct relevance to each customer (Ho & Bodoff, 2014). However, e-retailers are using different technology sources for implementing WP and SMM; and are experiencing substantial heterogeneity in market performance. Let's consider the following examples. In 2012, Wal-Mart started 'Pangaea', a process to develop its e-retailing website from scratch. It meant changing the underlying transaction software, database servers, creating its own search engine, and the backend data center tools to manage it all. Wal-Mart opted for in-house technology sourcing for WP and SMM; but despite these efforts at creating in-house expertise, its sales have not improved until today.¹ In contrast to Wal-Mart, BestBuy.com uses external technology vendors for WP and SMM. The revenue of BestBuy.com continues to grow every year.² As these examples indicate, there is heterogeneity in the technology sourcing decisions for WP and SMM, across e-retailers.

The existing literature on technology sourcing across marketing

strategy and information systems research fails to explain whether the effect on sales performance is likely to be higher for e-retailers that develop the technology for WP and SMM in-house or those that outsource these technologies. This is surprising given the vast number of papers on these topics. The most plausible explanation for this important gap in existing literature is that there are distinct and separate literature streams on technology sourcing, WP and SMM. The literature on technology sourcing can be divided into three main streams. The first stream of literature provides alternative explanations from social, economic, and political points of view for outsourcing decisions (Han & Mithas, 2013). The second stream focuses on the client–supplier relationship, analyzing its characteristics, its partnership quality, and the impact of these on outsourcing success (Fitoussi & Gurbaxani, 2012; Goo, Kishore, Rao, & Nam, 2009). The third stream studies the advantages and disadvantages of in-house technology development versus outsourcing, and the impact of technology sourcing decision on outcome (Nam, Rajagopalan, Rao, & Chaudhury, 1996) but does not address the context of technology sourcing for WP or SMM.

Further, there are three existing streams of literature on WP. The first stream of literature discusses the effects of personalization on customer privacy (Piotrowicz & Cuthbertson, 2014; Zhao, Lu, & Gupta, 2012). The second stream focuses on the impact of WP on various

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¹ <http://fortune.com/2015/10/14/walmart-weak-sales/>; accessed on 04/03/2016

² <https://www.internetretailer.com/2015/11/19/web-sales-drive-all-growth-best-buy>; accessed on 04/03/2016

performance metrics (Choi, Lee, & Kim, 2011). WP improves customer experience (Li & Unger, 2012); increases satisfaction (Komiak & Benbasat, 2006); trust, loyalty and switching cost (Choe & Lee, 2008); increases customer's confidence in their choice (Cai & Xu, 2011); and impacts customer's decision-making process (Komiak & Benbasat, 2006). The third stream studies the effect of customer-level variables like content relevance, self-reference, and customer's need for cognition on the performance of WP (Tam & Ho, 2006).

Finally, the literature on social media is recent and empirical research is limited. The three main streams of literature on SMM are as follows. The first stream of literature focuses on how and why companies are adopting social media for marketing (Du & Jiang, 2014). Culnan, McHugh, and Zubillaga (2010) noted the use of social media in marketing and the Fortune 500 companies' use of four of the most popular social media platforms—Twitter, Facebook, blogs, and client-hosted forums—to interact with customers. Miranda, Kim, and Summers (2015) identified the use of social media for brand promotion as one of four major ways in which Fortune companies used social media between 2006 and 2012. The second stream, though scant, relates SMM to firm performance. Rishika, Kumar, Janakiraman, and Bezawada (2013) show the positive impact of customers' social media participation on firm profitability. Luo, Zhang, and Duan (2013) suggest that social media-based metrics (Web blogs and consumer ratings) are significant indicators of firm equity value. The third stream questions how little is known about the different resources and capabilities that organizations deploy internally to support SMM initiatives (Alfaro & Watson-Manheim, 2015; Felix, Rauschnabel, & Hinsch, 2016).

In this paper, we contribute to all three literature streams by synthesizing them and studying *the effect of technology sourcing choices for website personalization and social media marketing on e-retailer's sales performance*. This is an important and crucial knowledge gap because the delivery of automated processes, like WP and SMM, depends upon the implementation of the relevant technology.

We test our arguments using data from the U.S. e-retailing industry. We have a representative sample of 105 e-retailers from the Internet Retailer (Editions 2014, 2015 and 2016). Our results show that e-retailers opting for mixed technology sourcing for WP have the highest sales performance, whereas e-retailers selecting external sourcing for SMM have the highest social media and sales performance. In the next sections, we define our key variables and develop our framework. We then describe our research context and method. The concluding sections present our results and implications.

2. Theory and hypotheses

2.1. Definitions

Technology sourcing is the extent to which a firm relies on a third party's expertise versus efforts of its own staff to develop the core components of a technology for further use (Henderson & Clark, 1990; Weigelt, 2009). If a firm depends on its own staff, invests financial and managerial resources, and does in-house R & D in order to develop the core technological components then it is using *internally developed technology* (Veugelers, 1997; Weigelt, 2009). Whereas, if a firm depends on a third party vendor, to whom it subcontracted to provide the core technological components, then it is using *externally developed technology* (Klepper, 1995; Weigelt, 2009). Further, if a firm invests in equipment, staff coordination and R & D for some core technological components, while also engaging in selecting, negotiating with, and maintaining external technology suppliers for other core technological components, then they are involved in *mixed technology sourcing* (Krzeminska, Hoetker, & Mellewigt, 2013). *Website personalization* is a process for creating individualized web content that includes, but is not limited to, content concerning the product, promotional communication, and pricing. WP is firm-initiated and firm-driven and does not require the user's explicit input or control to generate individualized

content (Bodoff & Ho, 2015). It is an automated technological process that identifies a web user, collects navigation patterns of the user, analyzes known preferences of similar users, and estimates his or her specific preferences to tailor web content for each user (Lavie, Sela, Oppenheim, Inbar, & Meyer, 2010). Depending on the type of web content that is tailored, there are numerous specialized WP applications (Kaptein & Parvinen, 2015). For example, recommender systems tailor a user's home page by recommending a specific set of products that match the user's preferences (Choi et al., 2011). Other WP applications focus on offering individualized price quotes, individualized search results, individualized advertisements or promotions based on the user's browsing history (Hauser, Urban, Liberali, & Braun, 2009; McFarland, Challagalla, & Shervani, 2006). The goal of providing individualized web content relevant to each user's needs is to influence the user's decision-making process (Zanker, Ricci, Jannach, & Terveen, 2010).³ *Social media marketing* is a form of Internet marketing that utilizes media platforms as a marketing tool. The goal of SMM is to produce tailored content that users will share with their social network to help a company increase brand exposure and broaden customer reach (Kaplan & Haenlein, 2010). *Social media success* is defined as positive conversations about a firm and its products on social media platforms (Vries, Gensler, & Leeflang, 2012). The number of 'likes' on a particular post and the number of 'followers' a company has on various social media platforms shows its success on social media. *Sales performance* is the monetary value of goods sold by an e-retailer.

2.2. Theoretical framework

In our theoretical framework we use the concepts of efficiency, adaptability (Weigelt & Sarkar, 2012), tacit knowledge (Nonaka & Takeuchi, 1995), asset-specificity (Williamson, 1985), risks of dependency and lack of quality control (Ye, Zhu, & Mukhopadhyay, 2014) to develop our hypotheses and model (see Fig. 1).

2.2.1. Technology sourcing for website personalization and sales performance

There is considerable heterogeneity in sales performance across firms that make different technology sourcing choices for WP. Firms have the choice to obtain technology for implementing WP that are either externally developed or internally developed or have mixed technology sourcing. For ease of exposition, we organize our subsequent arguments according to the different technology sourcing choices.

First, recent empirical research by Weigelt and Sarkar (2012) has shown that externally developed technology increases efficiency⁴ but reduces adaptability⁵ resulting in a trade-off situation. The firm routines underlying use of technology from external sources are formal, standardized and replicable. Such routines support efficiency because they allow for disciplined problem solving and use existing resources and competencies. But these routines do not support adaptability since they do not allow for experimentation, novel approaches and search for new alternatives. Thus, externally developed technology increases efficiency in terms of cost and speed of transactions, but it reduces the firm's adaptability to customer's changing needs (Weigelt & Sarkar, 2012). Applying Weigelt and Sarkar's (2012) findings to the context of

³ Another way to individualize web content is through *Customization*. Customization is a user-initiated and user-driven process (Bodoff & Ho, 2015). Users tailor the website content to their specific needs. In order to individualize, both customization and personalization require detailed information about the user, however, the difference lies in the control of the adaptation process.

⁴ Efficiency refers to a firm's efforts to lower process costs and execute these processes faster (Rivkin & Siggelkow, 2003; Smith & Tushman, 2005; Tjader, Shang, Duh, & Chow, 2004; Weigelt & Sarkar, 2012).

⁵ Adaptability refers to a firm's responsiveness in adjusting and altering its processes to customers' changing needs (Tjader et al., 2004; Weigelt & Sarkar, 2012).

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